

**MODELS OF MATERNITY CARE FOR WOMEN WITH
LOW SOCIOECONOMIC STATUS AND SOCIAL RISK
FACTORS: WHAT WORKS, FOR WHOM, IN WHAT
CIRCUMSTANCES, AND HOW?
A REALIST SYNTHESIS AND EVALUATION**

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Women's Health Research**

Abstract

Background

Health inequalities are caused by both biological and social factors with discrimination thought to play a significant part. Race, ethnicity, gender, class and other social risk factors intersect to exacerbate the effect of health inequalities. Factors associated with poor childbirth outcomes and experiences of maternity care include; Black and minority ethnicity, poverty, young motherhood, homelessness, difficulty speaking or understanding English, domestic violence, mental illness and substance abuse. These women struggle to access and engage with services. It is not known what aspects of maternity care work to improve outcomes and experiences for women with social risk factors.

Methods

This research aimed to uncover the mechanisms that lead to improved experiences and outcomes through an evaluation of two specialist models of maternity care. One model of care takes a local approach and was placed within an area of significant health inequality. The other model was based within a hospital setting and provides care for women based on an inclusion criteria of social risk factors. Using a realist approach a synthesis of qualitative literature and focus groups with midwives working in the specialist models was conducted to develop preliminary theories regarding how, for whom and under what circumstances the model of care is thought to work. Quantitative data on birth outcome and service use measures for 1000 women accessing different models, including standard care, group practice and specialist models of care at two large, inner-city maternity services were prospectively collected analysed using multinomial regression. Longitudinal interviews with 20 women with social risk factors were conducted to refine the theories.

Results

Although women with low socioeconomic status, Black and minority ethnic women, and those with social risk factors were significantly more likely to be cared for in the specialist models of care, women experienced substandard care when they were not in the presence of a known healthcare professional. The specialist model of care appeared to mitigate the effects of inequality and revealed no adverse outcomes compared to other models of care. Women receiving the specialist models of care were significantly more likely to use water for pain relief in labour, have skin to skin contact with their baby shortly after birth, and be referred to social care and support services. Maternity care based in the community setting was associated with a significant decrease in induction of labour, preterm birth and low birth weight. A subgroup analysis found that the improved preterm birth outcome was particularly significant for women with the highest level of

social complexity. The qualitative analysis highlighted possible mechanisms for these findings that were related to access, interpreter services, education, information and choice, continuity of care, social, emotional and practical support and stigma, discrimination, and perceptions of surveillance. Women described the benefits of seeing a known healthcare professional during pregnancy and particularly valued not having to repeat often difficult social and medical histories. Women accessing the specialist models described feeling able to disclose difficult circumstances to a known and trusted midwife. Women in the hospital-based model described a lack of local, community support and had difficulty integrating into unfamiliar support services. This was not reported by the women accessing the community-based specialist model.

Conclusions

This research highlights how carefully considered place-based care with a focus on continuity can create safe spaces for women and identify their specific needs. The quantitative data highlighted interesting relationships between all community based models of care and neonatal outcomes that require further testing in future research. The identification of specific mechanisms will allow those developing maternity services to structure models of care around local need without losing the core aspects that lead to improved outcomes. These mechanisms, in which contexts they are fired, and what outcomes they effect are detailed in six refined CMO configurations. These configurations provide a framework for future models of care for women with low socioeconomic status and social risk factors.

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Abbreviations

Abbreviation	Meaning
BAME	Black and Ethnic Minority
COSMOS	COmparing Standard Maternity care with One-to-one midwifery Support Trial
CBM	Community Based Model of Care
CMO	Context + Mechanism = Outcome
CTG	Cardiotocography fetal heartrate monitoring
EU	European Union
EU-SILC	European Union Statistics on Income and Living Conditions
FGM	Female Genital Mutilation
GP	General Practitioner
HBM	Hospital Based Model of Care
HCP	Healthcare Professional
HIC	High Income Country
IMD	Indices of Multiple Deprivation
LAC	Looked After Child
LMIC	Low and Middle Income Country
MLCC	Midwife Led Continuity of Care
MRC	Medical Research Council
MMR	Maternal Mortality Rate
NHS	National Health Service
NICE	National Institute of Clinical Excellence
NNU	Neonatal Unit
NRPF	No Recourse to Public Funds
OECD	Organisation for Economic Cooperation and Development
OECD-DAC	OECD Development Assistance Committee
PA	Participatory Appraisal
PPI	Public and Patient Involvement
QMNC	Quality Maternal Newborn Care
RCT	Randomised Control Trial
SES	Socioeconomic Status
SRF	Social Risk Factors
TOP	Termination of Pregnancy
UN	United Nations
UNECE	United Nations Economic Commission for Europe
WHO	World Health Organisation

Publications and presentations arising from this work

Publications: (presented in full in Appendix G):

Rayment-Jones, H., Silverio, S.A., Harris, J., Harden, A. and Sandall, J., 2020. Project 20: Midwives' insight into continuity of care models for women with social risk factors: What works, for whom, in what circumstances, and how. Midwifery.

Rayment-Jones, J, Harris, J., Harden, A., Sandall, J., 2019. How do women with social risk factors experience maternity care in the UK? A Realist Synthesis. Birth

Oral presentations:

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Engaging Hard-to-Reach Groups & Including PPI. CLAHRC Maternity Event. London. 2019.

Poster presentations:

Models of maternity care for women with low socioeconomic status and complex lives: A Realist Evaluation. 2020 International Conference for Realist Research, Evaluation and Synthesis. Dublin, Ireland. Postponed from 2020-2021

How do women with social risk factors experience maternity care in the UK? A Realist Synthesis. Poster Presentation. British Maternal and Fetal Medicine Society Annual Conference. Edinburgh. 2019.

Maternity care for women with Social Risk Factors, what works, for whom, in what circumstances? Health Inequalities Research Network (HERON) Conference. King's College London. 2018.

Chapter 1 Introduction

Women and children across the globe are the most likely groups to be affected by poor health outcomes related to avoidable social inequities ^{1,2}. These differences in health and wellbeing begin before birth and accumulate across the life course and onto the next generations ³⁻⁷. This chapter will explore this issue by first defining social inequalities and inequity, poverty and social deprivation, and explaining how they contribute to poorer health and wellbeing. It will then go on to provide an overview of the relevance to women and children, the impact on pregnancy, maternal and child health outcomes, how this differs across the globe and how governments are addressing the issue. The chapter will conclude by detailing the current evidence base on what is known to reduce health inequalities for women and children, and what is left to learn.

1.1 Health and social inequalities and inequities

The World Health Organisation (WHO) defines health inequalities as ‘differences in health status or in the distribution of health determinants between different population groups’ ⁸. These differences might be due to social, economic, geographical, biological or other factors. As some of these factors, such as age and genetics, pose inevitable differences in health it is important to differentiate between ‘inequality’ and ‘inequity’. These terms are often confused but not interchangeable; Inequity, as described below by Marmot ⁹, refers to the unfair and avoidable differences in opportunity for different population groups, such as access to health services, and plays a major part in overall health inequalities that include these inevitable differences.

‘That there should be a spread of life expectancy of 48 years among countries and 20 years or more within countries is not inevitable. A burgeoning volume of research identifies social factors at the root of much of these inequalities in health.’ (Marmot, 2005 p1099)

Throughout this thesis the term ‘inequality’ is used to encompass both the inevitable and avoidable, unjust factors that create differences in health and wellbeing. This is because there is a lack of understanding of the causal mechanisms for many differences in health outcomes. Figure 1 below provides a clear example of health inequity, showing the difference in life expectancy and healthy life expectancy for females in the UK depending on their level of deprivation.

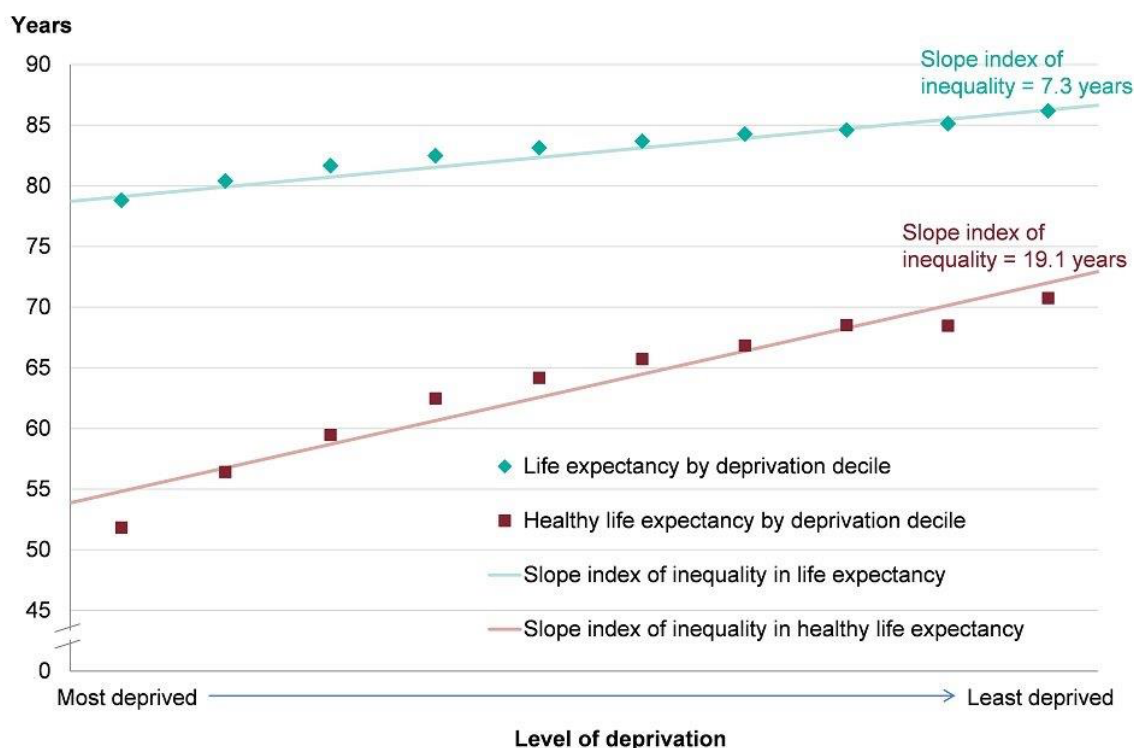


Figure 1: Slope index of inequality in life expectancy and healthy life expectancy at birth, females, England, 2014-2016

Marmot’s landmark study of health inequalities in England ¹¹ has recently been followed up with the ‘Health Equity in England’ Report ¹². It finds that although there are some areas where health inequality has improved, there is overall widening health inequalities between wealthy and deprived areas, and life expectancy is stalling. Between 2010-2020 life expectancy actually fell for the poorest 10% of women, and for men and women across the UK the time spent in poor health is increasing ¹³.

Defining and measuring inequality and inequity

Tasked with producing a glossary for health inequalities, Kawachi et al ¹⁴ acknowledge the complexity and debate that health inequality research has put forward. Instead of producing a list of definitions, they highlight some of the debates around terminology in an attempt to introduce key concepts and ideas around inequality. Their paper highlights that although health inequity refers to differences in health that are deemed to be unfair or unjust, differing views exist around what particular factors and outcomes are deemed unfair or unjust, and how to measure inequality based on underlying theories and beliefs. These include behavioural and cultural explanations to health inequalities, life course approaches such as cumulative disadvantage theory, and psychosocial comparison, materialist/structuralist and fundamental causes theory that will be discussed in more detail in Chapter 2 ‘Theoretical perspectives’.

Perhaps the most pertinent and widely accepted cause of health inequality is poverty and the socio-economic gradient ⁹. Whether the focus is on low, middle- or high-income countries, there are wide variations in health between and within different social groups at all levels (for example countries, regions and neighbourhoods) ^{15,16}. As Figure 1 demonstrated for the UK, the lower an individual's socio-economic status the more likely they are to experience poor health and lower life expectancy ¹⁰, Figure 2 below shows these wide variations between different local authorities in England, with Tower Hamlets having significantly lower life expectancy, and healthy life expectancy than more affluent local authorities such as Kensington and Chelsea, despite being only 7 miles apart.

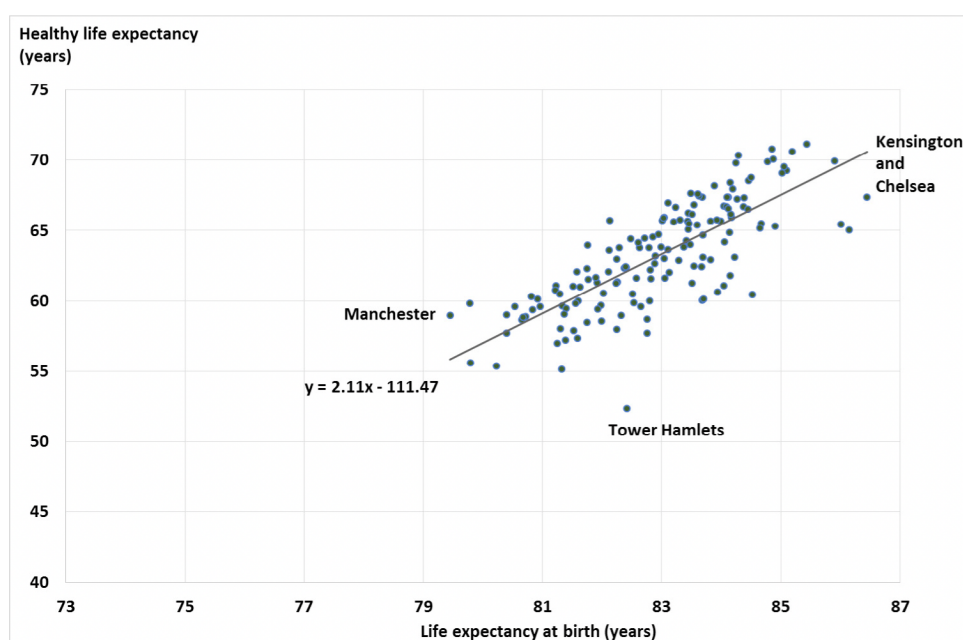


Figure 2 Female life expectancy at birth and health life expectancy by local authority, 2013-2015 ²

These health inequities have significant social and economic costs both to individuals and societies as a whole ^{17,18}. Epidemiological research has shown that the more unequal a country or society is, that is the wider the gap between the rich and poor, the more pronounced health inequalities are and that individuals across the socio-economic gradient are affected ¹⁹⁻²¹. For example, even the affluent are negatively affected by high levels of inequality through reduced social cohesion and trust, and levels of increased stress, fear and insecurity ²². That said, the negative effects of health and income inequality are felt the greatest amongst the poor. Wilkinson and Picketts' ²³ well-known scatter plots demonstrate that for each of the eleven identified health and social problems: physical health, mental health, drug abuse, education, imprisonment, obesity, social mobility, trust and community life, violence, teenage pregnancies, and child well-being, outcomes are significantly worse in more unequal, rich countries- see Figure 3. This

illustrates the impact of the socioeconomic gradient and income gap on health and social wellbeing.

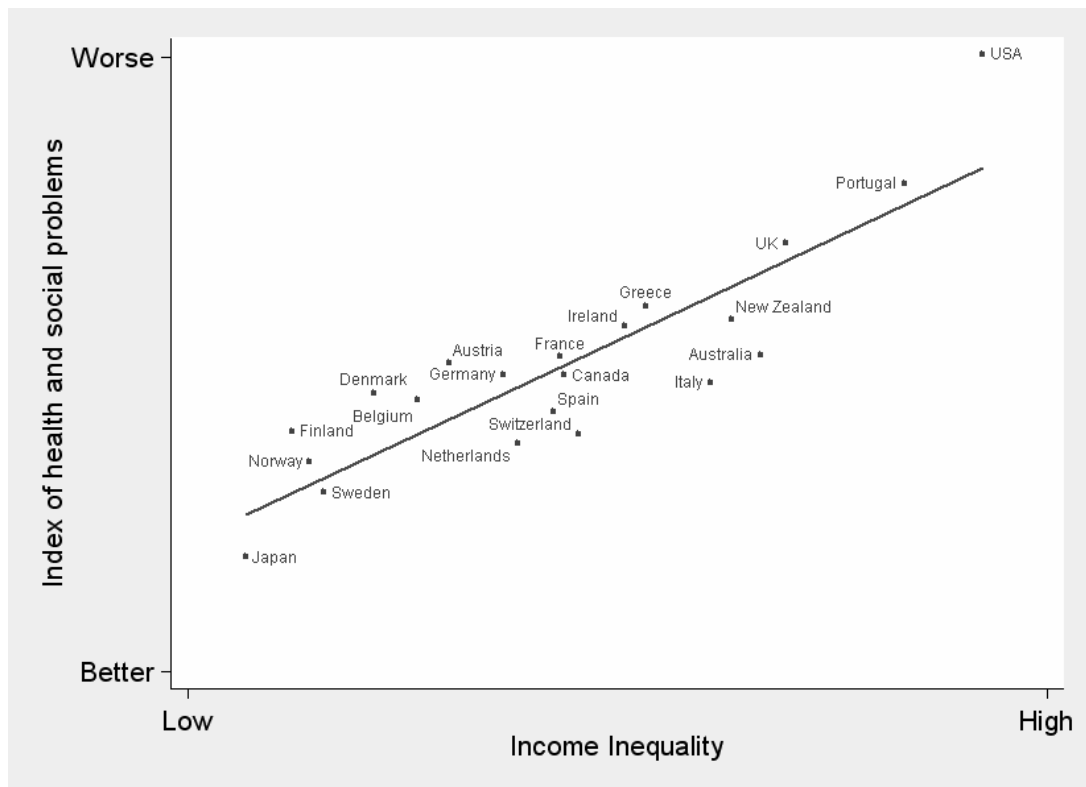


Figure 3: Health and social problems are closely related to inequality among rich countries²³

Poverty, socioeconomic status, and health inequities

In light of the vast amount of research indicating that poor health is not confined to the poorest in society, Kawachi et al¹⁴ ask what, then, is the role of poverty in producing health inequalities? Is it the impact of poverty itself, or the socioeconomic gradient that drives poorer health outcomes? They suggest that the answer depends on how we define 'poverty'. Again, defining poverty is not without great debate and controversy. Poverty refers to unmet human need has long been defined as either 'relative' or 'absolute':

ABSOLUTE poverty refers to a situation where people lack the resources necessary for subsistence.

RELATIVE poverty refers to a situation where people lack resources or opportunities when compared with that of other members of society.²⁴

It is the difference in these definitions and how poverty is measured that causes controversy, particularly in the political arena. Should poverty be defined and measured strictly in terms of the

resources needed to maintain subsistence and a minimal standard of living, or is it better measured in terms of one person's resources relative to the resources of others around them? Most official definitions of poverty use a relative measure of income to calculate an 'income threshold', with those falling below the threshold said to be 'living in poverty'^{25,26}. This is relatively easy to capture and useful to see change over time but is it an arbitrary measure that ignores the complexity of deprivation, social exclusion, and intergenerational disadvantage²⁷. This measure also fails to explain the gradient seen in health inequalities, for example the US census uses a set of money income thresholds that vary by family size and composition to determine who is in poverty. Currently, about 13.4% of Americans live below the official threshold²⁸. However, inequalities in health outcomes in the US extend far beyond individuals living below this official threshold^{29,30}. The socioeconomic gradient in health shows poorer health for those with a lower socioeconomic position, whether that is measured by income, occupation or educational attainment, and is even apparent in the higher socioeconomic groups^{31,32}. This tells us that it is not just those living in absolute poverty that experience health inequalities, and a more appropriate measure of poverty is needed in order to reduce health inequity to avoid ignoring populations at significant risk because they do not meet an arbitrary threshold. Demakakos et al's⁴ study of wealth and mortality in older ages found that wealth, that is an individual's valuable material possessions or resources, appears to be more strongly associated with mortality than other socioeconomic position measures such as income. This insight demonstrates that poverty is about more than just money or resources, wealth contributes to wellbeing by generating more income flow and providing life course and intergenerational financial stability. This stability is thought to reduce the toxic effects of stress and anxiety that are known to have significant impact on health and wellbeing³³.

The sociologist Peter Townsend put forward two main theories for understanding the impact of poverty;

- 1) Poverty is best understood as being relative rather than absolute³⁴
- 2) Poverty is less about shortage of income and more about the inability of people on low incomes to participate actively in society³⁵

The latter informed an alternative approach to defining poverty by focusing on measures of deprivation rather than income. Townsend³⁵ argued that poverty involved social exclusion as well as material deprivation, stating;

Individuals, families and groups in the population can be said to be in poverty when they lack the resources to obtain the types of diet, participate in the activities, and have the living conditions and amenities which are

customary, or at least widely encouraged or approved, in the societies to which they belong. Their resources are so seriously below those commanded by the average individual or family that they are, in effect, excluded from ordinary patterns, customs and activities.' (Townsend, 1979)

Twenty years later, Acheson's ³⁶ ground-breaking independent inquiry into inequalities in health was the first to report clear health inequalities between the social classes, stating:

'The poor were unhealthy. They did not live as long and they suffered more from lung cancer, coronary heart disease, strokes, suicide and violent accidents than their richer peers. These inequalities had steadily worsened over the preceding twenty years. They were more likely to have their cars stolen and their homes vandalised. They ate less iron, calcium, dietary fibre and vitamin C. They were fatter, their homes were colder.' (Acheson, 1998)

Considering this alongside the WHO's constitution ³⁷ that defines health not merely in terms of the medical model, as an absence of disease, but in the more holistic social model of physical, emotional and social wellbeing, the socioeconomic gradient in health can be better understood. Research to date has highlighted many mechanisms that exacerbate health inequalities including; psychosocial harm such as the shame, anxiety, loss of self-respect and confidence when comparing oneself to other members of society ³⁸⁻⁴⁰; loss of 'control over destiny' ⁴¹, austerity measures and their impact on education, health services and welfare spending ^{12,42,43}. Referring back to the findings of the 'Health Equity in England' Report ¹² the year on year reduction in welfare spending depicted in Figure 4 below correlates with worsening health inequalities seen in the poorest parts of the country. The report finds that these cuts in public spending are inequitable, with the greatest cuts in the most deprived areas, and states *'it is likely these cuts have harmed health and contributed to widening health inequalities in the short term and are highly likely to do so over the longer term'*.

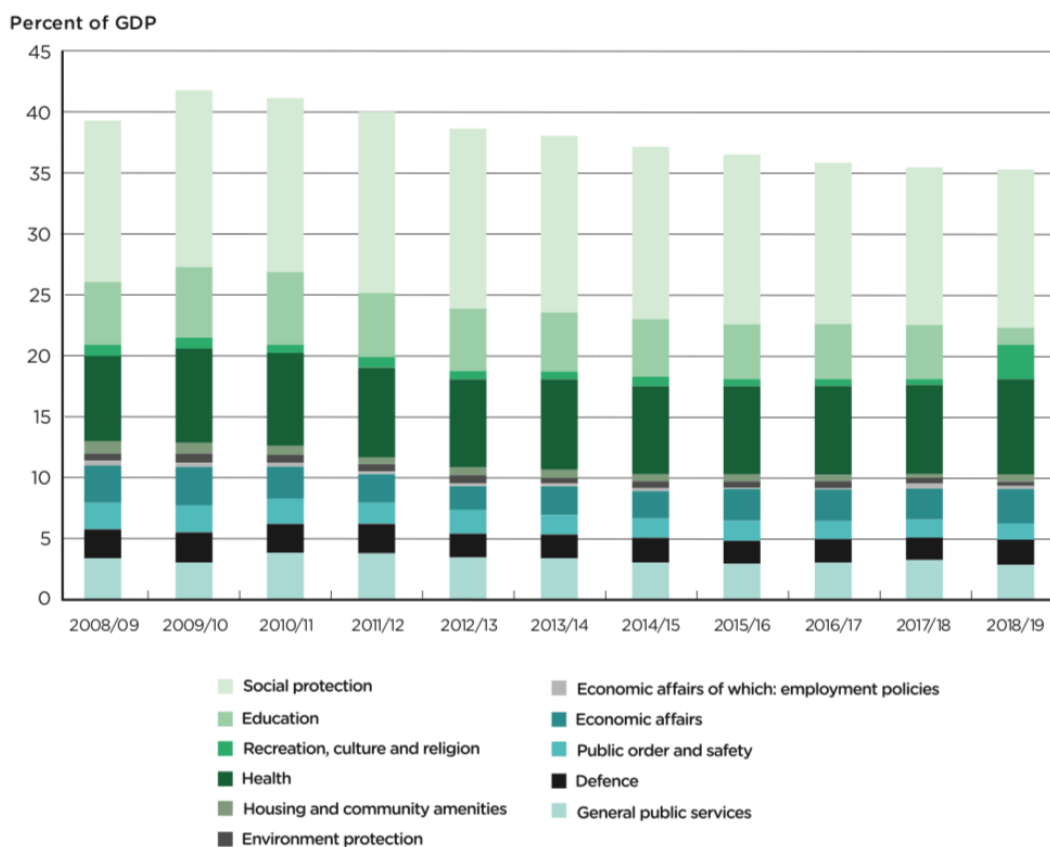


Figure 4: Public sector expenditure on services by function as a percentage of GDP, UK 2008/09-2018/19 ¹²

In addition to those welfare spending cuts, there is a wealth of evidence to suggest a lack of social cohesion, sense of community, and social capital in the UK that contributes to poverty and health inequalities ^{11,44}. One definition of social capital refers to ‘connections among individuals – social networks and the norms of reciprocity and trustworthiness that arise from them’ ⁴⁵. Although the benefits of social capital have traditionally been considered by academics and health professionals to be purely psychological, such as trust, emotional support and reciprocity, there is a growing body of evidence suggesting it may provide a protective factor for some physical health outcomes ⁴⁶. Social relationships and connectivity also provide physical resources such as access to information, services, practical and financial support, and members of society who are socially excluded often lack these protective factors, exacerbating poor physical, social and mental health ^{47–50}. Figure 4 shows that until 2018/2019 the resources that support social capital such as recreation, culture, religion and public services accounted for a small proportion of public expenditure that has decreased over time.

Measuring poverty, deprivation and social exclusion

The discussion so far has highlighted the complexities of measuring poverty and social exclusion but has not yet put forward a straightforward answer as to how to define and measure them. This

is because there is great debate and little consensus around poverty indicators, and they are subjective due to wide variation in context. As previously stated, many countries such as the US, and the World Bank, measure poverty by comparing a person's or family's income to a set poverty threshold, or minimum amount of income needed to cover basic needs. People whose income falls under their threshold are considered poor ²⁸. In 2017 the United Nations Economic Commission for Europe (UNECE) published detailed guidance on how to measure poverty with an aim of improving comparability of international poverty statistics to support the 2030 Agenda for Sustainable Development ⁵¹. The guide draws on Townsends definition of relative poverty but adds the cumulative effect of poverty and social exclusion stating:

'poverty is the inability to obtain or realize choices and opportunities; it is a violation of human dignity. Poverty means a lack of basic capacity to participate effectively in society. It means not having enough to feed and clothe a family, not having a school or health clinic to go to, not having land on which to grow one's food or a job to earn one's living, not having access to credit. It means insecurity, powerlessness and exclusion of individuals, households, and communities. It means susceptibility to violence, and it often implies living in marginal or fragile environments, without access to clean water or sanitation' UNECE, p4 ⁵¹.

This wide definition is applicable to both high, middle- and low-income countries and takes the focus away from money and towards choice and social capital. The EU-SILC (European Statistics on Income and Living Conditions) is a statistical instrument used to gather data on poverty. In 2009 this instrument was found to have weak reliability and was revised to measure multi-dimensional indicators related to social cohesion and wealth rather than just material deprivation ⁵². The updated measures include access to holidays and leisure activities, time deprivation (accounting for long working hours) and the capacity to face unexpected expenses ⁵³ as a measure of wealth. The UN guide also introduces the concept of indices of multiple deprivation and provides examples of material deprivation measures in Europe. Each of the four constituent countries in the UK measure deprivation using their own distinct index of multiple deprivation (IMD), designed to identify small areas of deprivation and facilitate targeting of interventions and policies within that area. Although a significant weight is placed on income and deprivation, the index includes other measures of resources and choice. See Figure 5 below for the seven domains of the English indices of deprivation score, and how each domain is weighted.

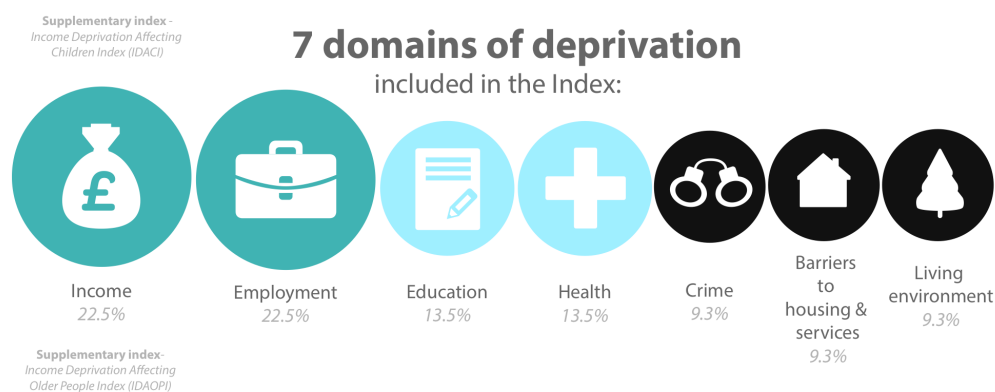


Figure 5 English Indices of Deprivation: The Seven domains including weighting ⁵⁴

Social class

The concept of social class (see Appendix A for definitions) and its relation to health inequalities is more complex still than poverty because of the relationship between social class background and persistent inequities in health and life chances despite social mobility ⁵⁵. In other words, being born working class is bad for health, and moving up the social ladder does not necessarily compensate for it. In order to understand this, it is important to consider the difference between social class and socioeconomic status (or position) and understand why these terms are not interchangeable. Socioeconomic status (SES) refers to the notion of a stratified society where people are ranked in order of a socially valued ‘good’, be it income, prestige, education or other commodities ⁵⁶. This notion implies a fluid society in which people can move up or down the scale depending on their valued ‘goods’ and means that SES refers to a person’s current situation. In contrast, the more subjective concept of social class refers to a person’s background and so remains fairly static across the life course and generations ⁵⁷. Therefore, it is possible for a ‘middle’ or ‘upper class’ person to have relatively low socioeconomic status but hold power to be able to access resources that are not accessible to their ‘working class’ counterparts, such as property ownership and powerful social networks that contribute to lessened stress and improved health. It is also hypothesised that this difference in stability of status results in ‘intergroup power’ and status differences that contribute to discrimination and prejudice ⁵⁸. Although this merely scratches the surface of this complex phenomenon, it is important to consider these differences before moving on to discuss other characteristics related to health inequalities, the intersections between these characteristics, and later, how they relate to how women’s and children’s health outcomes.

Gender, Ethnicity, Race and Health Inequalities

‘Ascriptive characteristics’ are those that are present at birth, whether they are socially constructed or not they are traits we cannot choose, for example sex, ethnicity, race, and the social class of one’s parents (See Appendix A for definitions). These characteristics can influence a person’s status in society, and therefore have implications for their health and wellbeing. Linton ⁵⁹, Davis ⁶⁰ and Mayhew ⁶¹ described the labelling of status based on these characteristics as ascription, and in some delimited ways this has been useful, for example the ascription of age and sex in performance related contexts such as sports. However, characteristics such as race, ethnicity, religion and class are not inherently related to performance capacity and their use for ascription can often be explained by power structures between ascriptive sub-categories ⁶². This type of ascription can compound the previously discussed effects of low socioeconomic status, particularly when characteristics associated with less power intersect. This concept of intersectionality, that describes how individual characteristics “intersect” with one another and overlap to perpetuate inequality, oppression and discrimination ⁶³ is an important lens for this research and is discussed in further detail in Chapter 2. A review of studies on health inequalities by Nuru-Jeter et al ⁶⁴ describes intersectionality by stating:

Public health literature consistently demonstrates that (a) racial inequalities exist across health outcomes, (b) Socioeconomic position (SEP) inequalities exist across health outcomes, (c) SEP attenuates racial inequalities across health outcomes, and (d) there are residual effects of race on health after controlling for a variety of socioeconomic indicators. Together these studies show that race and SEP explain both unique and shared variance in relation to a wide variety of health outcomes.’

Before moving on to discuss how these characteristics are associated with health inequalities and inequities it is important to review the distinctions between ‘sex’, ‘gender’, ‘race’, ‘ethnicity’ and ‘minority groups’ as these are of little analytical purpose when used interchangeably. Table 1 below selects these terms from the glossary (Appendix A) to provide a definition each concept in relation to sociology to give clear comparisons before dissecting these and their relevance to health inequalities:

Table 1: Definitions of Sex, Gender, Race, Ethnicity and Minority groups

Characteristic	Definition
Sex	The UK government defines sex as referring to the biological aspects of an individual as determined by their anatomy, which is produced by their chromosomes, hormones and their interactions. Sex is generally male or female and is assigned at birth. ⁶⁵
Gender	The UK government defines gender as a social construct relating to behaviours and attributes based on labels of masculinity and femininity. Gender identity is a personal, internal perception of oneself and so the gender category someone identifies with may not match the sex they were assigned at birth. An individual may see themselves as a man, a woman, as having no gender, or as having a non-binary gender. ⁶⁵
Race	In the past, theorists have categorised race on geographic regions, ethnicities, skin colours, and ancestral ties. Now however, a far more common way to understand race is through the ‘social construction of race’ or ‘racialization’: race is not biologically identifiable. Rather, certain groups become racialized through a social, subjective, process that refers to superficial physical differences that a particular society considers significant. ⁶⁶
Ethnicity	A subjective concept referring to the identification of population groups based on shared social, cultural and historical variations. Ethnic groups are characterised by organised cultural boundaries such as language, religion and country of origin ⁶⁶
Minority ethnic groups	This term describes groups that are subordinate, or lacking power in society regardless of skin colour or country of origin. Minority groups are often stigmatised and subject to economic and social discrimination. It is the lack of power that is the predominant characteristic of a minority group, not the numerical size. ⁶⁷

The impact of race and ethnicity on health inequalities has been widely recognised as a serious injustice since the 1970’s ⁶⁸. Across the globe individuals from black and minority ethnic backgrounds display greater levels of poor health and lower life expectancy than the general population ^{69,70}. Many reasons for this are contested, but the sociology field rejects biological and genetic interpretations due to the lack of evidence and the limitations of basing assumptions on a social construct such as racial and ethnic categorisation ^{71,72}. Instead, social and economic inequalities and power structures are thought to be the main causes of this disparity ⁷³. A recent example of this is seen in the global Covid-19 pandemic which has disproportionately affected racial and ethnic minority groups in various settings including the UK ^{74–77}, USA ^{78,79}, Norway ⁸⁰ and Brazil ⁸¹. The mechanisms of these disparities are being rapidly investigated, but early theories suggest they arise from intersecting social determinants of health such as working

conditions that predispose them to worse outcomes ^{76,82,83}, biomedical factors^{84–86}, systemic and institutional racism ^{76,87–90}.

The UK, and much of Western Europe, has a significant multi-ethnic population, with diversity increasing year on year ⁹¹. The UK governments Race Disparity Unit recently published an audit finding significant disparities between ethnic groups in; poverty and living standards, education, employment, housing, criminal justice and health ⁹². Most relevant to this thesis were the findings that minority ethnic households, particularly Asian and Black, were more likely to be living in persistent poverty, receive income support, and live in areas of deprivation. Differences in physical and mental health, health behaviours, treatment and outcomes were also found between ethnic groups; most Asian groups reported lower levels of satisfaction when accessing NHS services. Black women were the most likely to experience common mental disorders and to have been sectioned under the Mental Health Act. It is clear that ethnicity is a multi-dimensional concept, and its relationship to health inequalities appear to be driven by stigmatisation and exclusion ⁹³. This stigma has been heightened in recent decades through anti-immigrant attitudes fuelled by the perception of a migration ‘crisis’ across Europe, increasing support for far right political parties, islamophobia, and fear of terrorism and cultural change ^{94–97}.

Research on ethnicity, diversity and health inequalities is generally situated in one of two categories: one that focuses on inequalities across subpopulations defined by race and ethnicity, the other focuses on the health patterns of immigrants. A particularly interesting, and growing, field of research is the experiences and health outcomes of second generation, or the descendants of, immigrants. The ‘immigrant health paradox’ describes how foreign born immigrants generally have better health and lower mortality than the native born population of a country, often referred to as the ‘healthy migrant effect’ ⁹⁸. However this advantage has been found to reverse over time in the receiving country and across generations despite increasing socioeconomic status ^{99–101}. There are two main theories behind this unexpected trend: the first is that as immigrants and their descendants become acculturated to a different culture, they adopt negative health behaviours and poorer diets ⁹⁹. The second is that stigma and discrimination based on race and ethnicity leads to stress, lack of employment or lesser valued jobs, residence in areas of poverty, overcrowding, and decreased access to healthcare and good quality education, as described in the previously mentioned race disparity audit ⁹². These theories are supported by a review that suggests that ‘ethnic maintenance’, that is the maintenance of social connection and cultural norms specific to ethnicity, is protective of these stressors ¹⁰². The US based review identifies a lack of breadth and methodological rigor in this area but recommends healthcare services and research focuses on community-based settings to test this phenomenon further. The

factors listed above are likely to have a cumulative effect on poorer health outcomes and mortality rates and are important to consider when researching health inequalities. The effect of these factors on maternal and newborn health will be explored in the next section of this chapter. First, gender differences in the wider health arena are explored to provide an underlying understanding of the context of women's health.

As has been presented so far, a range of socio-economic factors influence a person's health, wellbeing, and access to health services. One of the most powerful determinants of health, distinct from those caused by biological differences based on sex, is gender. Gender norms have detrimental consequences for women, men, and gender minorities, but the inequality in health outcomes fall most heavily on women, and just as with ethnicity, particularly if they are poor and/or socially deprived ¹⁰³. This is due to complex, and often intersecting factors including gender based violence, the gender pay gap, occupational segregation, primary caring responsibilities, gender bias in scientific research, and less economic and political power ^{103–106}. Although the focus of health inequalities in relation to gender is often dominated by mortality rates being higher in men, women experience greater morbidity, giving rise to another paradox: 'women get sicker, but men die quicker' ¹⁰⁷. However, this paradox has been contested through historical demographic data. For example in the late 19th and 20th centuries the UK's gender gap in life expectancy widened due to poor working conditions for men, and a lower risk of dying in labour and from tuberculosis (which was more prevalent in men) ¹⁰⁸. Since the 1970's the gender gap decreased significantly, with mortality falling faster in males than females as a result of less smoking and cardiovascular disease in men ¹³. As with ethnicity, the current global Covid-19 pandemic has revealed a gender inequality; epidemiological data indicates higher morbidity and mortality in ^{77,109}. The mechanisms for this inequality have not yet been determined but early evidence suggests theories describing higher expression of enzyme receptors in men, immunological differences driven by sex hormones, gender lifestyle behaviour (higher levels of drinking and smoking among men compared to women), and irresponsible attitudes that impact on preventative measures such as hygiene, use of face masks and social distancing ¹¹⁰. This reveals that the apparently paradoxical gender differences in mortality and morbidity are neither universal nor fixed within and across societies. It also disputes the popular biomedical explanation that variations in health across genders are solely due to inherent biological differences ¹¹¹, and demonstrates the significant impact of public health, and the way men, women and gender minorities are treated in society.

Beyond socioeconomic status, class, gender and race, there are numerous other dimensions associated with health inequality including political power, legislation, cultural and social assets,

honorific status and resources such as skills, expertise and training ^{112,113}. The Lancet series on ‘Syndemics’ explores these health inequalities in greater detail giving specific examples of how disease, environment and socioeconomic status interact to further accentuate health inequalities. This introduction provides an overview of the dominant themes and gaps in knowledge but has only begun to scratch at the surface. What is clear is that the social constructs described above, and the stigma associated with them, are fundamental causes of health inequalities. Dissecting the commonly used terms surrounding health inequalities is essential in understanding the context before looking at how these concepts are at play for pregnant women and newborns.

1.2 Maternal and newborn health inequalities

This section of the introduction will explore the issues previously discussed in relation to reproductive health for women and newborns. A short overview of the global context will be given before focusing on high income countries, in particular the UK where this research is based. Maternal, infant mortality and stillbirth rates will be presented to explore the significant disparities between and within low, middle- and high-income countries.

Maternal mortality is defined as ‘the death of a woman whilst pregnant or within 42 days of delivery or termination of pregnancy, from any cause related to, or aggravated by pregnancy or its management, but excluding deaths from incidental or accidental causes’ ¹¹⁴. Figure 6 below shows that since 2000 the global maternal mortality rate has declined by 38%, from 342 maternal deaths per 100,000 births, to 211¹¹⁵. Although this is encouraging it demonstrates a slower gradient than the decline seen between 1990-2000 ¹¹⁶ and falls well below the Millennium Development Goal 5 target for improving maternal health ¹¹⁷.

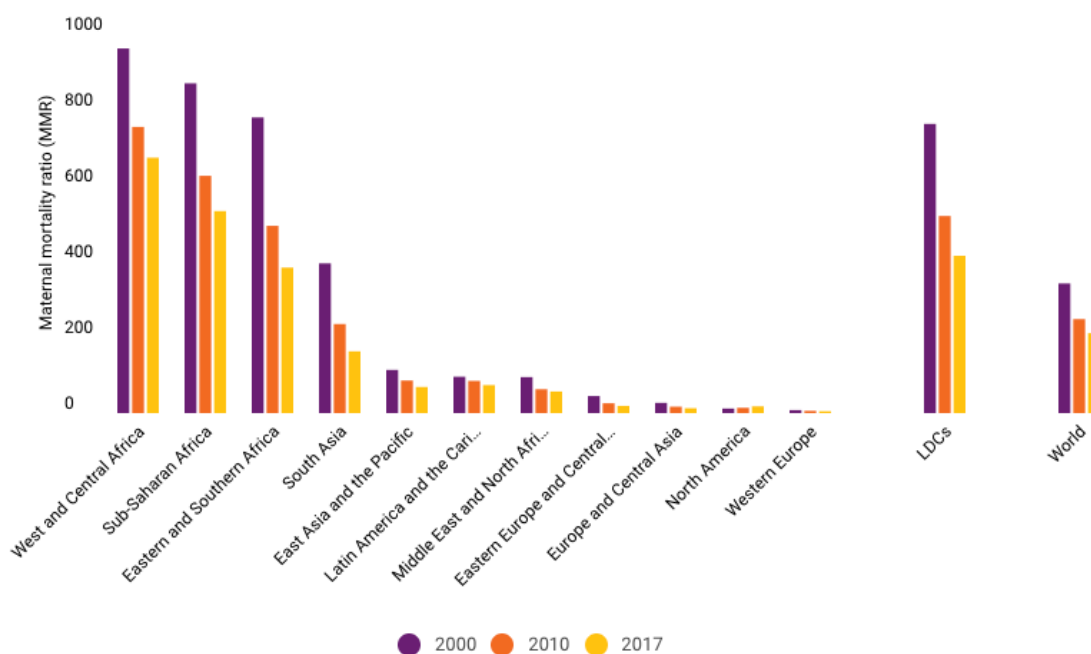


Figure 6: Maternal mortality ratio (MMR) trends by global region 2000-2017 ¹¹⁵

Notes: Maternal mortality ratio (MMR) is the ratio of the number of maternal deaths per 100,000 live births.

It is important to remember that almost all maternal deaths can be prevented, this is evident in the stark differences in maternal mortality rates between richer and poorer populations. In 2017 the maternal mortality rate in high income countries was 1 in 5400, compared to 1 in 45 in low income countries ¹¹⁵. This disparity is often linked to the higher incidence of fertility and HIV/AIDS, female genital mutilation, poor access to information and high quality healthcare, and cultural beliefs and practices in low income countries ^{118,119}. The leading causes of maternal death, particularly indirect deaths, differ substantially according to a regions poverty level. In low and middle income countries the leading causes of maternal mortality are haemorrhage, hypertensive disorders and sepsis ¹¹⁹⁻¹²². Deaths resulting from obstructed labour and unsafe abortion, both of which are significantly more common in low income countries, are often defined as haemorrhage or sepsis ¹²³. In high income countries, where maternal mortality is relatively rare, the leading causes of death include those listed above as well as embolism, cancer, cardiac disease, and suicide ^{118,124-127}.

A similar picture is seen in global infant mortality trends. Defined as death under one year of age, the global infant mortality rate has declined from around 56 deaths per 1000 livebirths in 1990, to 29 deaths per 1000 in 2018 ¹²⁸. Figure 7 below shows this decline and the disparity between global regions closely reflecting that of the maternal mortality rate described above.

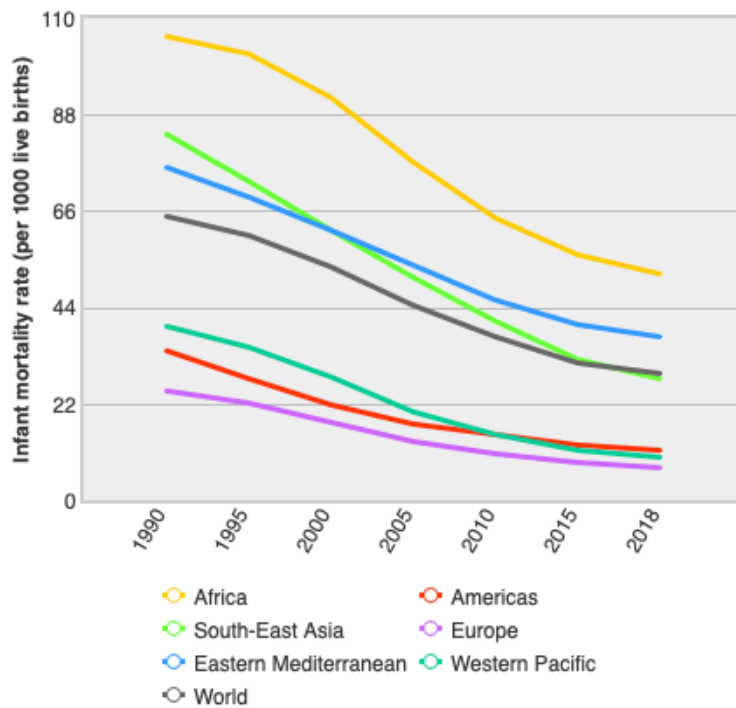


Figure 7: Infant mortality rate (IMR) trends by global region 1990-2018 ¹²⁹

Stillbirth, defined by the World Health Organisation as death in utero, or an infant born with no signs of life, at or after 28 weeks' gestation ¹³⁰. Neonatal, or newborn, mortality is defined as death within the first 4 weeks of life ¹³¹. Again, in low income countries stillbirth and neonatal mortality rates are disproportionately higher than high income countries, with a variance of between 29 in 1000 pregnancies to 3 in 1000 pregnancies ¹³¹⁻¹³⁵. The leading causes of stillbirth and neonatal death globally are infection, prematurity, and birth asphyxia, with some variance between countries depending on how their maternal and child health systems are organised ^{135,136}.

Although the past few decades have shown a decline in global rates of stillbirth, neonatal and infant mortality, particularly in high income countries, the decline has slowed or stalled in recent years. Figure 8 below shows the variance between European countries from 1990-2015, with the UK ranking falling from 7th to 19th, demonstrating one of the highest rates in western Europe.

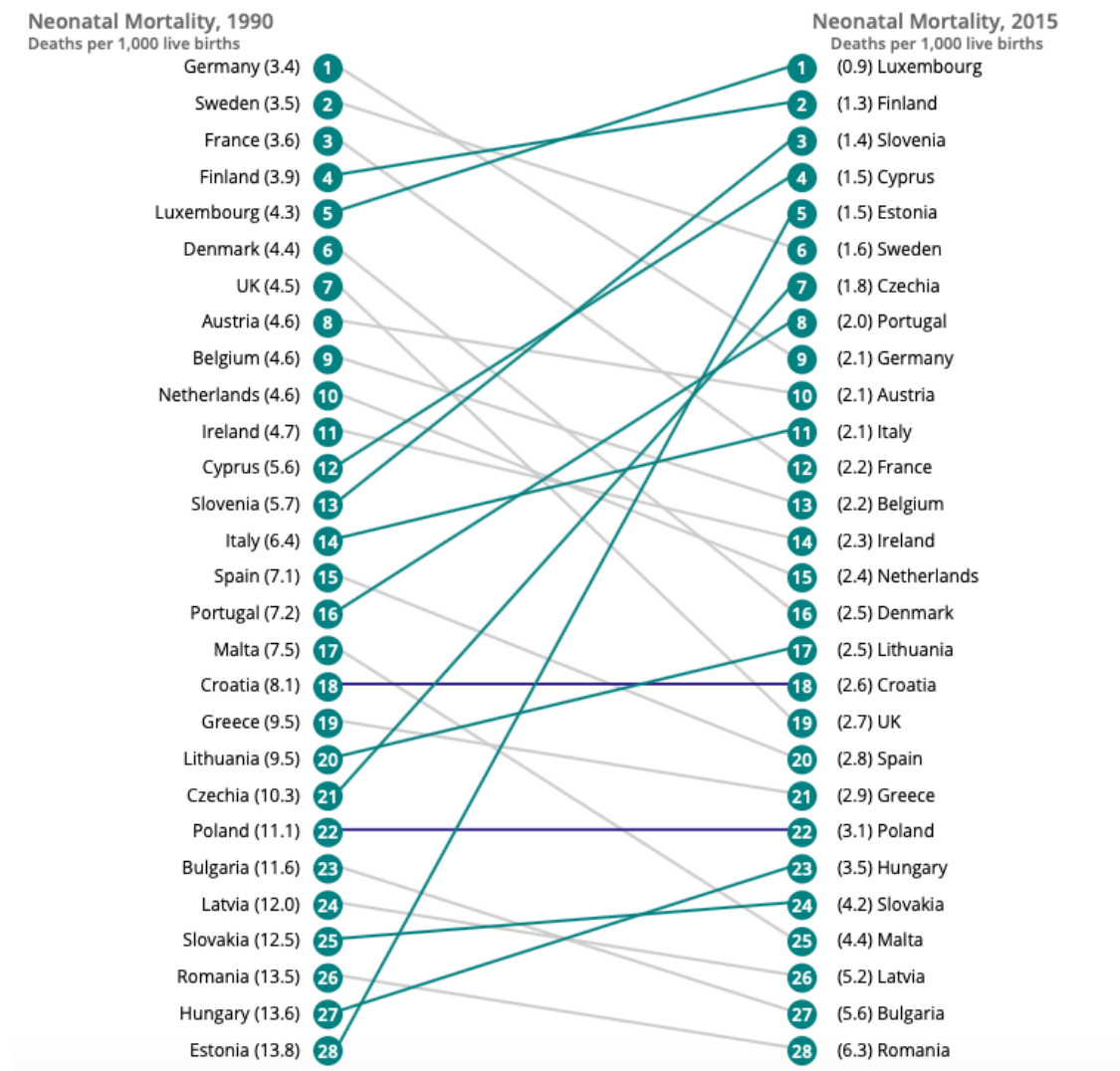


Figure 8: Neonatal mortality rankings, European countries 1990-2015¹³⁷

The purpose of presenting the variance and instability found in maternal and infant mortality between countries is to demonstrate the potential to improve. That said, recommendations put forward to enable reductions in mortality rates differ significantly depending on context, this is discussed in detail later in this chapter. As regional and global rates tend to mask the large disparities within countries the next section will discuss the reproductive health inequalities seen within high income countries, in particular the UK. The focus is expanded to include perinatal outcomes and women’s experiences of maternity care in relation to social risk factors associated with low socioeconomic status.

The large disparities found within high income countries reflects their socioeconomic gradient, with mortality rates closely linked to disadvantages related to poverty, ethnicity, age and other social factors ^{127,138–142}. The maternal mortality rate is disproportionality high for African American and Hispanic women (at rates 3–4 times the rates for white women)¹⁴³, Black and

minority ethnic women in the UK ^{127,144,145}, Aboriginal and Torres Strait Islander women in Australia ¹⁴⁶, and refugee and migrant women in Europe ^{147,148}. It is difficult to summarise the impact of specific social risk factors on inequalities in birth outcomes due to the nature of intersecting factors, and the accumulation of risk associated with poverty and ethnicity. Table 2 below has been designed to provide an overview of social risk factors that are associated with poor birth outcomes and exacerbate health inequalities in high income countries. It should be kept in mind that women rarely experience these risk factors in isolation, and the lower a women’s socioeconomic status, the more likely she is to be experiencing multiple risk factors. They have been divided into two groups depending on need, although these will likely overlap for the vast majority of women experiencing these social risk factors.

Table 2: Social risk factors associated with poor perinatal outcomes and experiences of maternity care

Women who find services hard to access	Women needing multi-agency services
Black and Minority ethnicity	Mental health
Socially isolation	Safeguarding concerns
Poverty/Deprivation/Homelessness	Substance and/or alcohol abuse
Refugees/Asylum seekers	Physical/emotional and/or learning disability
Non-native language speakers	Female genital mutilation
Victims of abuse	HIV positive status
Sex Workers	
Young Mothers	
Single Mothers	
Travelling community	

Pregnancies of women with these social risk factors are over 50% more likely to end in stillbirth or neonatal death, and are associated with increased rates of miscarriage, termination, premature birth, low birth weight, caesarean section, and maternal death ^{126,127,134,144,149–157}. These women are also more likely to receive increased obstetric intervention, poor experiences of care, and struggle to access and engage with maternity services ^{158–165} Moreover, as socio-economic deprivation increases, women are more likely to report they were not treated respectfully, not spoken to in a way they could understand during their maternity care, and that their concerns were not listened to ^{163,164,166–168}.

Preterm birth, defined as livebirth before 37 weeks’ gestation ¹⁶⁹, is a particularly interesting outcome, with stark differences according to women’s race, ethnicity and migrant status. There is a consistently higher risk of preterm birth among some racial/ethnic groups despite

socioeconomic status ¹⁷⁰. Although the mechanisms behind these disparities are poorly understood it is thought that they are caused by the lasting effects of disadvantage and discrimination rather than genetic and physiological/biological causes ¹⁷¹. In addition to this, those living in areas of higher pollution such as urban environments where the population is more likely to be multi-ethnic and of lower socioeconomic status, are at further risk of preterm birth and poor pregnancy outcomes ^{172,173}.

Reproductive health inequalities are often explained by variations in how maternity care is organised and delivered, including access to free, high quality antenatal care. An interesting case study of this is found in the United States' (US) disproportionately expensive healthcare system where maternal and infant mortality, preterm birth and low birth weight rates are significantly high compared with other high-income countries. Figure 9 shows the variation in maternal mortality for the 34 Organisation for Economic Co-operation and Development (OECD) countries, with the stark difference in the US rate highlighted. In the US the majority of women receive antenatal care from a private physician or obstetrician, who will usually supervise the labour and birth. Payment for maternity care is often through private insurance and supplemented by savings. This payment system leads to overmedicalisation and unnecessary intervention, and inequities in access and birth outcomes, particularly for poorer and black and minority ethnic women ¹⁷⁴. However, these inequalities are not unique to countries with privatised healthcare systems, nor are they fully explained by socioeconomic gradients.

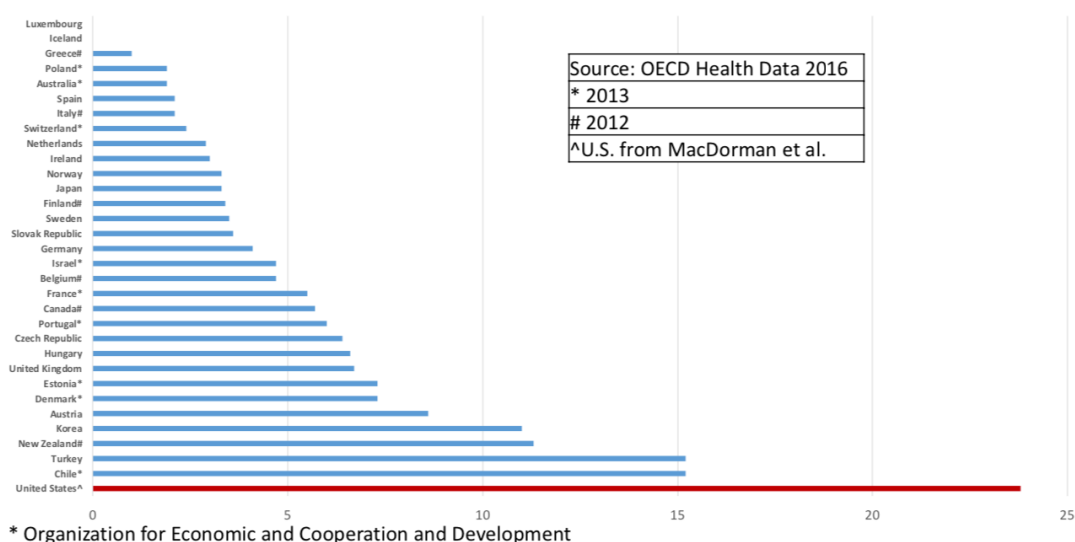


Figure 9: Maternal mortality ratios for OECD countries 2016 ¹⁷⁵

The UK ranks 22nd in the maternal mortality figure above for OECD countries ¹⁷⁶, and as previously highlighted, 19th for infant mortality in Europe ¹³⁷. This is despite a health service that is free at the point of contact for women considered to be ‘ordinarily resident’ in the UK, or EEA nationals who are insured by another state ¹⁷⁷. These relatively low rankings highlight underlying health inequalities that are specific to the UK context, and manifest in other forms of morbidity for women, particularly those from ethnic minority groups, and with low socioeconomic status and other social risk factors. Looking more specifically at London, where this research is based, the findings of the London maternal mortality thematic review ¹²⁶ painted a similar, yet more pronounced picture. Over half of the 22 women who died in London in 2017 were from a Black or minority ethnic background. Many of the women who died had multiple complex social, medical and mental health factors, including social service involvement, domestic violence, homelessness, reluctance to access services as no recourse to funding, drug and alcohol misuse and social isolation. The review found that for the majority of maternal deaths there were missed opportunities to correctly diagnose and treat complications due to barriers across the maternity care pathway. The reviews recommendations are in line with the World Health Organisations stance on improving maternal health through maternity services: *‘To improve maternal health, barriers that limit access to quality maternal health services must be identified and addressed at both health system and societal levels’* ¹¹⁵. More recently, a review ¹⁷⁸ of maternal deaths in the UK between March - May 2020 linked to SARS-Cov-2, or Covid 19 infection, highlighted these health inequalities: Of the ten women who died with a positive SARS-Cov-2 test, eight (88%) were from Black and minority ethnic groups, four died by suicide (three during pregnancy or up to six weeks postnatal, and one within a year of giving birth) and two women died as a result of domestic violence. The report states that *‘overall the women who died had 18 children from previous births, thus a total of 30 motherless children remain’* Knight et al, 2020 p4. These stark findings are an example of the unjust and avoidable consequences of health inequalities in the UK.

The most recent RCPCH ‘State of Child Health in the UK’ report ¹⁷⁹ brings together data on 25 measures of the health of UK children, ranging from specific conditions such as asthma, diabetes and epilepsy, risk factors for poor health such as obesity and low breastfeeding rates, to child deaths. The report highlighted that child poverty has increased for those in working families and many health inequalities, including infant mortality, have increased for those living in the poorest areas of the UK. Children living in the most deprived areas are much more likely to be in poor health, be overweight or obese, have asthma, poorly managed diabetes, mental health problems, and die early. The authors state ‘Poor health in infancy, childhood, and young adult life will ultimately mean poor adult health, and this in turn will mean a blighted life and poor economic productivity.’ Despite some improvements in the health of UK children over the last few decades, there is clear disparity with Europe, and major cause for concern. Three of the measures

identified directly relating to maternity practice include infant mortality, maternal smoking in pregnancy and low breastfeeding rates and are summarised in Table 3 below:

Table 3: Findings of the RCPCH State of Child Health Report

- There is a strong association between deprivation and mortality, for example IMR is more than twice as high in the lowest compared with the highest socio-economic groups.
- The prevalence of smoking during pregnancy in the UK is higher than in many European countries (for example 5% in Lithuania and Sweden, compared with 19% in Scotland, 16% in Wales and 15% in Northern Ireland). There is marked variation in smoking in pregnancy across the UK with a strong association with deprivation
- Breastfeeding in England and Scotland has shown minimal improvement since data recording commenced in 1975, with no improvement over the last five years, and remains lower than many other comparable high-income countries. At 6 months, only 34% of babies in the UK are wholly or partially breastfed, compared to 71% in Norway. Across the UK, 46% of mothers in the most deprived areas breastfed compared with 65% in the most affluent areas.

The next section will go on to discuss how these maternal and newborn health inequalities are associated with how maternity care is organised and delivered, and what aspects of care are known to reduce the vast disparities in different contexts.

1.3 Maternity Care Context

Antenatal Care

As a core component of maternity care across the globe, the adequacy of antenatal care is measured by the timing of antenatal care access and the number of antenatal appointments attended¹⁸⁰. The routine functions of antenatal care include health promotion, screening and diagnosis, disease prevention for all women, and additional care for women at higher risk. When these functions are of high quality and antenatal care provision is well attended, it makes a crucially important contribution to the reduction of health inequalities at birth, in infancy, childhood and across the whole of an individual's life-course, as well as reductions in the cost of intrapartum care^{181–183}. Subsequently, the World Health Organisation (WHO)¹⁸⁴ recommend a minimum of eight antenatal appointments to reduce perinatal mortality and improve women's experience of maternity care. There is however, a growing evidence base demonstrating poor antenatal care uptake for women from lower socioeconomic and minority groups in high, middle and low income countries^{185–187}.

The care received by pregnant women, including how it is organised, who it is delivered by, and its quality and content varies widely across the globe. Whether in high or LMIC, appropriate access to adequate maternity services during pregnancy significantly improves both maternal and infant mortality rates ¹⁸⁰. This is due to the, often simple, interventions known to prevent or manage the most common causes of maternal and infant death- haemorrhage, sepsis, hypertension/eclampsia, unsafe abortion, premature birth and intrauterine growth restriction ¹⁸⁸⁻¹⁹⁰. Accessing health services during pregnancy can also identify and treat other causes of mortality and morbidity, promote healthy behaviours and address emotional and social issues. ^{191 192}.

In 2016, the World Health Organisation ¹⁸⁰ responded to the unacceptably high rates of maternal and infant mortality in LMIC's by recommending an increased number of contacts between women and healthcare professionals from four to eight. An international group of experts ¹⁹³ led this change by presenting evidence showing that the 4-visit model was inadequate at reducing the maternal and infant mortality rate in line with the 75% Millennium Development Goal ²⁴. Whilst 86% of women in low- and middle-income countries will access at least one antenatal appointment with a healthcare professional, only 62% access at least four antenatal appointments. In low income countries where maternal mortality is the highest, particularly sub-Saharan Africa and parts of Asia, this percentage drops to around 50% ¹⁹⁴. An analysis of data from LMIC found that the wealthiest women were on average four times more likely to report good quality care than the poorest ¹⁹⁵. In an attempt to understand why women were not accessing antenatal care a meta-synthesis of qualitative studies in LMIC's ¹⁸⁶ found that for many women, perceptions of antenatal services were not in line with the aims of the service. Women felt that pregnancy is a normal, healthy event, so accessing services is unnecessary. This belief was often compounded by the context of poverty, the location of available services, and other family members control over women's choice. A review of barriers and facilitators of high quality midwifery care in India found that the barriers often fell within the realms of the healthcare infrastructure with a lack of a high quality midwifery workforce available, particularly to those women with the lowest socioeconomic status ¹⁹⁶. This evidence represents 'syndemics' in action- multiple factors interacting to worsen the health outcomes experienced by particular populations, discussed in further detail in Chapter 2. In order to tackle health inequalities in a systematic way, all of these factors, and how they interact, need to be considered when planning models of care for pregnant women in their individual contexts.

The global maternal health community has made progress in terms of improving access to care but understanding the causes of maternal and neonatal mortality and morbidity and improving

the quality of care women experience remains a major challenge. This challenge is complex and often contrasting, for example under-intervention in low and middle income countries and over-intervention (or medicalisation) in high income countries - 'too little too late', and 'too much too soon'¹⁹⁷. This is not to say that increased antenatal care in high income countries leads to poor outcomes, but rather the quality of care and medicalisation of low risk pregnancy in obstetric settings can lead to harm. This might include the use of non-evidence-based interventions, or interventions that may be life-saving when used appropriately (for example caesarean section, induction of labour and fetal monitoring), but harmful when applied routinely or overused¹⁹⁷.

There is a strong evidence base that good quality midwifery care leads to improved outcomes for women and children and the demedicalisation of birth in high income countries^{182,198}. The Lancet Series on Midwifery concluded that "national investment in midwives and in their work environment, education, regulation, and management ... is crucial to the achievement of national and international goals and targets in reproductive, maternal, newborn, and child health"¹⁹⁹.

In high income countries antenatal care coverage is consistently high and correlates with relatively low maternal and infant mortality rates when compared to the LMIC's²⁰⁰. Despite this overall success there are marked inequalities in access to services, health outcomes and women's experiences. The number of face to face antenatal contacts varies between five and fourteen in HIC's with wide variation within those countries^{165,195}. Both Sweden and the Netherlands have the highest number of visits for women at low risk of complications, correlating with low maternal and neonatal mortality and morbidity^{180,201,202}- refer back to figures 9 and 10 for examples. Swedish antenatal care coverage is high despite being the country being sparsely populated with women travelling long distances from remote islands and mountainous areas and having one of the highest birth rates²⁰⁰. Midwives provide the vast majority of maternity care to women, with shared care between midwives and obstetricians for those women with high risk pregnancies. In comparison, access to midwifery care in the USA is markedly lower than other high-income countries with midwives representing a small percentage of healthcare professionals²⁰³, correlating to high maternal and neonatal mortality²⁰⁴. Despite the broad racial disparities seen in the US, and midwifery care being linked to improved birth outcomes for women in diverse populations²⁰⁵, little is known about black and minority ethnic women's access to midwifery care²⁰⁶. A qualitative study²⁰⁷ of 22 black midwives across the US gave some insight, proposing the 'contemporary midwife problem' that describes a predominantly white maternity system, institutionalised racism within that system, and black women's underutilisation of midwives due to lack of access, knowledge and cultural discordance. This is an example of candidacy, defined as 'the ways in which people's eligibility for medical attention and intervention is jointly negotiated between individuals and health services'²⁰⁸. Goode's study²⁰⁷ also provides

an example of this through a maternity system that does not reflect the needs of black women, and actively works against women's perception of candidacy through institutional racism. This theoretical perspective will be discussed in Chapter 2 to provide more insight and create a theoretical approach for the new empirical research undertaken for this thesis.

Another high-income country with a very low maternal mortality rate is Australia, where women receive care through one of four models: private maternity care, combined maternity care, public hospital care and shared maternity care (see Appendix A for definitions)²⁰⁹. There is a strong emphasis and increasing demand for continuity of care in Australia, whereby a woman is able to develop a trusting relationship with a known healthcare professional, often a midwife, throughout her pregnancy journey. In the past decade there has been a radical reform of maternity care in many high-income countries, including the UK, with increased policy focus on improving midwife-led continuity and specialist models of care^{210 211 212}. This will be discussed in more depth, particularly around improving outcomes for women with social risk factors, in the section on 'Evidence of models of maternity care'.

The purpose of antenatal care in the UK is to 'optimise maternal and fetal health, to offer women maternal and fetal screening, to make medical or social interventions available to women where indicated, to improve women's experience of pregnancy and birth and to prepare women for motherhood whatever their risk status'²¹³. Poor antenatal care attendance in the UK is associated with social risk factors including ethnicity, language and cultural barriers, immigration status, age, multiparity, comorbidities, and socioeconomic status^{161,164,214–218}. Lindquist et al's¹⁶⁴ secondary analysis of the United Kingdom's National Maternity Survey showed that the most deprived women (defined by postcode) in the United Kingdom were 60% less likely to have received any antenatal care when compared to the least deprived women. A number of reasons have been put forward for this disparity in engagement despite universal access to antenatal maternity services. Rowe and Garcia's¹⁶¹ work suggests delays between seeing a general practitioner and a 'booking' appointment with maternity services. A 'booking appointment' is the first pregnancy related appointment with maternity services, often undertaken by a midwife, to discuss social, mental and physiological health status, offer lifestyle and pregnancy related advice, screening tests, and referrals to multidisciplinary services as necessary²¹³. Government policy has tried to overcome this by offering direct access to maternity care through self-referral, but it is unclear how many women use this, or are even aware of this option at present. Reviews of maternal and neonatal deaths have found that women with social risk factors present real challenges for maternity services, with communication lapses between hospitals and the community health care setting^{139,142,152,219}. A synthesis of the literature focusing on the initiation of antenatal care by black and minority ethnic groups in the United Kingdom²²⁰ identified a

range of barriers experienced by women including; inadequate interpretation services, a lack of cultural sensitivity, and impersonal care. A more recent review of the literature on how women with social risk factors experience maternity care in the UK, presented in Chapter 4 collated other possible reasons for late access to antenatal care such as; denial of services based on a lack of documentation, fear of disclosure to immigration services, language and financial barriers, cultural differences, unfamiliarity with the UK system, a lack of trust in professionals, and a perception that maternity services act as a system of surveillance rather than support ²²¹. That said, little is known about what works to improve access and engagement with maternity services for women with low socioeconomic status, social risk factors, and women from black and minority ethnic groups ²²².

Intrapartum and postnatal care

A wealth of evidence suggests that in most high-income countries more than 90% of all births benefit from the presence of a trained midwife, doctor or nurse. However, fewer than half of all births in many low and middle income countries are assisted by these skilled health professionals ¹¹⁹. In most LMIC women are encouraged to give birth in medical settings including hospitals and local clinics where they may have received antenatal care. Their care is provided by a 'skilled birth attendant' (SBA) such as a midwife, doctor, or a nurse who is trained in normal pregnancy and childbirth ²²³. Although most women are now giving birth in these facilities the improvement in health outcomes predicted by health policy researchers have not been met ²²⁴. This is thought to be due to the wide variation in the quality of care, the birthing environment and the level of training, skills, and attitudes of SBAs ²²⁵. A review of women's experiences of facility-based intrapartum care in LMIC found that disrespectful care and abuse is a powerful deterrent to access these facilities and is thought to be a greater barrier than geographical and financial obstacles ²²⁶. Evidence suggests that this is due to maternity care that is institution-centred, rather than woman-centred, with birth situated as a medical event that is controlled by professionals and technology ²²⁷. Compared with antenatal and intrapartum care in these settings, access to postnatal care tends to be relatively low with a marked variation in socioeconomic status and between women living in urban and rural settings ²²⁸. Two examples of this are the Democratic Republic of the Congo, where approximately 93% of pregnant women receive at least one antenatal contact by a SBA, but only 35% receive any postnatal care ²²⁹; and Ethiopia, where fewer than 20% of women use postnatal care services ²³⁰. Increasing coverage of postnatal services in LMIC's to identify, refer and manage potentially life-threatening postpartum complications has been prioritised in an effort to improve the high maternal and infant mortality rates ²³¹.

The vast majority of women in high income countries give birth in obstetric settings with a small percentage choosing to give birth at home, and an increasing trend towards the use of midwife-led birth centres for those with low risk pregnancies. Although strong evidence has demonstrated the safety and benefits of midwife-led birth centres ^{232,233}, access varies from country to country. In the USA only around 0.5% of women give birth in a midwife-led birth centre, compared to over 10% in the Netherlands, New Zealand and the UK ²³³. The model of maternity care received by women appears to influence their decision on where to give birth, with those receiving continuity of care models more likely to report being given a choice in place of birth, and give birth at home or in a midwife-led birth centre ²³⁴. Conversely, women who receive standard/traditional maternity care are more likely to give birth in an obstetric led unit, and less likely to know the midwife caring for them in labour. Other factors that determine where women give birth in high income countries is thought to be affected by sociocultural factors, the role and status of midwives in different countries, regulations and insurance, funding, policy drivers, and the extent of integration between midwife led and obstetric led units ^{235,236}. Although now dated, a literature review found that women accessing midwife led birth settings were more likely to be white and better educated than those accessing standard maternity care ²³⁷. Again, this could be an outcome of underlying ‘candidacy’ at play.

Although the postnatal period is a time of increased risk for maternal and infant mortality, it is an under-researched area of maternity care with most of the research focusing on pregnancy and birth ²³⁸. Postnatal care varies widely across the globe in terms of who provides, how it is organised, where it is delivered and the content and quality of care. In high-income countries most women have access to some degree of postnatal care, often through home visits delivered by midwives and health visitors ²⁰⁰, but countries often lack consistent guidelines for routine postnatal care. In fact, postnatal services have been described by healthcare researchers as *‘inconsistent across jurisdictions, fragmented across disciplines and sectors, and currently do not adequately meet the needs of the population’* ²³⁹. In Australia, women accessing public services are contacted by a midwife or a child and family health nurse within ten days of birth via phone or a home visit. Those accessing private care are seen at around six weeks after birth by their obstetrician, often with no prior scheduled contact by a healthcare professional ²⁴⁰. In the UK, guidelines developed by the National Institute of Clinical Excellence ²⁴¹ recommends a minimum of three home postnatal contacts by a healthcare professional. Despite these efforts, reviews of women’s experiences of postnatal care in Australia, the UK, and the USA have consistently found poor satisfaction, fragmented care, concerns about physical and mental health not being listened to, and inconsistent advice on infant feeding ^{242–244,245}.

Countries such as Norway, Sweden, the Netherlands, and Taiwan, provide more intensive postpartum support including home care (including support with the infant and older children, physical and mental health, and housework) and maternity centres offering hotel like accommodation for families. These services are under-evaluated and often do not promote integration with antenatal and intrapartum maternity services, impacting on continuity of care. There have been few improvements made to the provision of care in recent years, despite evidence and policy focus for extending continuity of care to the intrapartum and postnatal period. This is thought to be due to financial barriers and cut backs to postnatal services ²³⁸. Further research on the implementation and sustainability of appropriate, safe, cost effective services across the antenatal, intrapartum and postnatal period is required, particularly for black and minority ethnic women and those with low socioeconomic status and social risk factors.

1.4 Evidence around what works to reduce maternal and newborn health inequalities

This section of the chapter will address the inequities reported in the previous sections by providing an overview on what models of maternity care are known to work at improving women and children's health outcomes and experiences of care. Again, the different contexts between LMIC's and HIC's will be described as aspects of interventions in each setting can be relevant to the other and unearth possible mechanisms that lead to improvements.

To date, initiatives to tackle the unacceptably high maternal and infant mortality rates in LMIC's have focused on centralised, public provision of antenatal and intrapartum care to screen risk factors and manage life threatening conditions ²⁴⁶. Although this has been successful for some women with declining rates of mortality and morbidity, there remains significant disparity and inequity of service use and health outcomes. Finlayson and Downe ^{185,186} suggest that this top-down approach to the provision of maternity care marginalises women by not taking into account the local context, for example women's beliefs, attitudes and cultural norms. As discussed earlier, when women do access these centralised services they often experience disrespectful care and abuse. Health policy researchers suggest that in order to improve access to maternity services, policy makers and service providers must align services with the needs, practical constraints, and cultural practices of local communities. This includes ensuring that once women access services they are treated with dignity, respect and compassion ¹⁸⁶. Models of maternity care evaluated in both Nepal, Cambodia and Eritrea aimed to integrate local cultural context into the planning and delivery of maternity care by involving local women and

community leaders. The studies found significant improvements in access and a reduction in maternal and infant mortality ²⁴⁷⁻²⁴⁹. Involving women and the local community in planning models of maternity care does not only ensure services are culturally appropriate and more aligned to their needs, but also empowers the voices of those seldom heard. Finlayson and Downe ¹⁸⁶ concluded that if models of maternity care are not aligned with local contexts then they will remain underused by some local pregnant women, despite good quality care and easy access.

To address the further inequalities for those women with lower socioeconomic status in LMIC's, there is also a need to improve trust and collaboration between healthcare workers, women and their families. Again, this means reversing the 'top-down', utilitarian approach to designing models of maternity care. Montagu ²²⁴ emphasizes this by recommending a restructure of maternity services that focuses on facility infrastructure, scaling up midwifery and specialised models of care to promote patient-centred support. A study of a midwife-led continuity model of care in the West Bank, Palestine improved access across the pregnancy continuum and quality indicators of maternity services ²⁵⁰. Further research is needed on the practicality, acceptance and effectiveness of this model of care across low- and middle-income settings, but the available evidence should not be dismissed as irrelevant to HIC's, and vice versa. Mechanisms that lead to improved outcomes may be generalisable across different settings, particularly when they centre around human relationships and place-based care.

The recommendations in the Lancet series on Midwifery ²⁵¹ alongside the use of the evidence based framework for quality maternal and newborn care (QMNC) shown in Figure 10 below ¹⁸² can inform the development of models of maternity care that are sustainable, achievable, and have the potential to significantly improve maternal and infant mortality and morbidity ²⁵². These are also important factors to consider in high income countries where a disparity in access to maternity services is seen. The model has been used to evaluate women's experiences of different models of maternity care, finding positive experiences of each category associated with continuity of care models ²⁵³

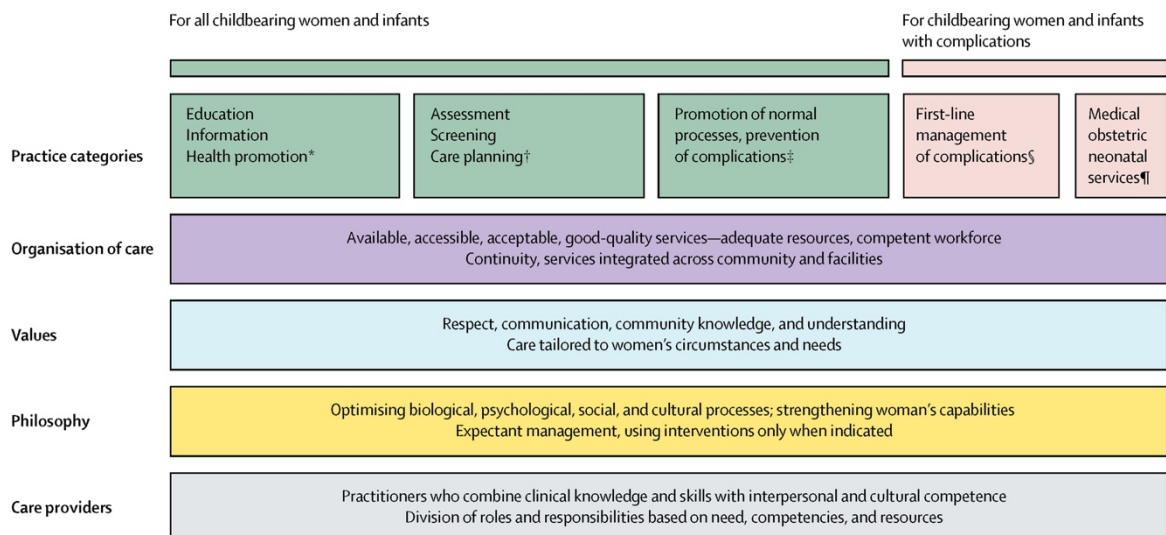


Figure 10: The framework for quality maternal and newborn care: maternal and newborn health components of a health system needed by childbearing women and newborn infants ¹⁸²

Continuity of care has been associated with improved health outcomes not only for maternity care but also in the broader healthcare research arena. In 2002 the Canadian Health Services Research Foundation commissioned a report to develop a common understanding of the concept of continuity of care for patients with chronic conditions ²⁵⁴. The report defined the different levels of continuity and highlighted that the research at the time concentrated on how to increase continuity of care, rather than its impact and mechanisms. Since then a vast amount of research across general practice, maternity, paediatrics, mental health, palliative and cancer care among other disciplines has focused on the impact of relational continuity finding improvements in the patient experience and cost effectiveness, as well as physical, emotional and social outcomes ^{234,255–260}. There is a general lack of testing of the hypothesised mechanisms for these improvements in care, but they are thought to centre around the development of a trusting relationship between the patient and healthcare provider, improved follow-up, a knowledge of patients medical and social history, and increased holistic care.

There is a strong evidence base documenting improved birth outcomes and experiences for women who receive continuity models of midwifery care. Midwife-led continuity of care is defined as when "the midwife is the lead professional in the planning, organisation and delivery of care given to a woman from initial booking to the postnatal period" ²⁶¹. Care from a known healthcare professional enables the development of a trusting relationship with numerous benefits that are summarised in Table 4.

Table 4: Summary of evidence on continuity of midwifery care models

Women who received models of midwife led continuity of care:

- were seven times more likely to be attended at birth by a known midwife, 19% less likely to lose their baby before 24 weeks', 15% less likely to use regional analgesia in labour, 24% less likely to experience pre-term birth, and 16% less likely to have an episiotomy ²³⁴
- reported higher rating of maternal satisfaction with information, advice and explanation, more choice in (and positive experience of) place of birth and pain relief, were more likely to feel in control in labour and proud of themselves, and less anxious ^{234,262}
- had higher levels of satisfaction with the antenatal, intrapartum and postnatal maternity care they received. ²⁶³
- experienced reduced intervention rates including more spontaneous vaginal delivery, and less caesarean section, epidural analgesia, and episiotomy. Infants were less likely to be admitted to neonatal intensive care. No infant outcomes favoured standard care and the reduction of interventions seen in continuity of midwifery care models did not appear to jeopardise infant health. ^{264 265}
- were more likely to disclose potentially harmful behaviours and situations and be prepared to trust advice and accept ongoing referrals ²⁶⁶

Women with low socioeconomic status and social risk factors who received midwifery led continuity of care:

- experienced improved birth outcomes including less intervention and caesarean section, lower rates of admission to the neonatal unit, and more referrals to support services ^{267,268}
- experienced reduced risk of preterm birth due to increased access and engagement with services, disclosure of risk factors, acceptance of support, greater emotional resilience, ideal gestational weight gain, less smoking/drug use, and fewer untreated genito-urinary infections ²⁶⁹
- reported positive experiences of maternity care ²⁷⁰⁻²⁷³

Models of midwife led continuity of care are also associated with other benefits:

- Cost reduction appears to be achieved through reorganisation of maternity services to increase group practices and continuity of care models care. This is thought to be due to shorter hospital stay for mother and baby, fewer tests and interventions, and increased flexibility to match input of midwives' time to women's needs, especially in labour and birth ^{234,265}
- Mitigating the effects of high levels of stress and anxiety experienced by women in the context of a natural disaster on postnatal mental health ²⁷⁴

The Cochrane review of models of midwifery care during pregnancy, birth and early parenting found that women who received continuity of care from a known midwife experienced fewer clinical interventions, reported higher satisfaction, and had significantly fewer preterm births, fetal loss and neonatal death than those receiving standard maternity care ²³⁴. There were no LMIC based trials included in the review, highlighting the need for high quality research into models of maternity care in such settings. A recent review by Michel-Schuldt et al ²⁷⁵ analysed the provision of midwife led care in LMIC's and found that although continuity of midwife led care

is provided across many LMIC's the quality of care is varied and often hindered by education, regulation, and the enabling environment. The review suggested further research into implementation and sustainability of these models across all settings.

The Cochrane review of models of midwifery care ²³⁴ does not report on whether outcomes differed for socially women with low socioeconomic status and social risk factors but recommended that future research should explore this population. It also recommended that future research addresses the underlying mechanisms of the improved outcomes, whether the observed benefits can be attributed to continuity, a midwifery philosophy, the quality and degree of relationship between the midwife and woman, or other factors such as place of care. Some findings presented in Table 4 differed from the findings of the Cochrane review ²³⁴, for example reduced caesarean section rates experienced by women receiving continuity models ^{264,267}. This might be due to differences in definitions of continuity of care models, or the context of the study. For example the COSMOS trial ²⁶⁴ included a large proportion of primiparous women compared to the trials included in the Cochrane review, and the baseline caesarean section rate was higher to begin with. Another explanation could be that continuity models of care have a bigger impact on women with social risk factors and those at higher risk of poor birth outcomes because the potential for improvement is widened.

A recently published realist evaluation ²⁷⁶ explored the implementation of continuity models of midwifery care in Scotland. The evaluation concluded that trusting relationships were the key mechanism that triggered midwives commitment to provide high quality care associated with improved outcomes. These trusting relationships were across all organisation levels and only enabled in the context of strong leadership and both top down and bottom up change management during the implementation of such models. Another important finding was that continuity of care enabled midwives to use their full skillset that in turn changed their perspective of their own practice and the needs of pregnant women ²⁷⁶. These findings support Allen et al's ²⁶⁹ research findings that effective continuity models of care consist of midwives with specific personal attributes, and appropriate institutional infrastructure and support. They labelled this as 'optimal caseload midwifery' and concluded that these mechanisms led to 'Synergistic Health Engagement' between midwives and young women, that is increased access and use of antenatal care, disclosing risk factors and accepting support.

Despite the limited evidence, specialist models of maternity care are increasingly aimed at those women who are more likely to experience poor outcomes, including those with social and medical risk factors. As presented in Table 4, an observational study in one London based

hospital ²⁶⁷ found that women with socially risk factors who received continuity of care experienced improved birth outcomes, less clinical intervention, shorter hospital stays, fewer neonatal unit admissions, and increased referral to multidisciplinary support services. Another retrospective analysis of data from women accessing a continuity model in an area of high social disadvantage in London also found improved birth outcomes and reduce mortality and morbidity. Both studies had high proportions of women from black and minority ethnic groups, those with social risk factors and high medical risk factors. This is important information in terms of safety but does not explain how and why these outcomes come about, or how women with low socioeconomic status or social risk factors perceive these models of care.

Other specialist models of maternity care, for example group antenatal care such as ‘centring pregnancy’ and ‘pregnancy circles’, and family nurse partnerships have promising but limited generalisable evidence, current trials are going ahead to explore their impact on pregnancy outcomes for women with social risk factors ^{277–281}. It is hypothesised that culturally competent and community-based models of care which adopt a life course approach might help to reduce maternal health inequalities, enhance care coordination with maternity services and improve the outcomes and experiences of women living socially complex lives ^{273,282,283}. This impact of place based maternity care is poorly understood and under researched, particularly in the UK context and for women with social risk factors who are more likely to be socially isolated and struggle to integrate with their local community.

A systematic review ²⁸⁴ found that despite antenatal care being thought of as an essential part of maternity care, the effectiveness of specific antenatal care programmes to reduce infant mortality for socioeconomically disadvantaged women has not been rigorously evaluated. A further synthesis of literature on the initiation of UK antenatal care by BAME groups (Hollowell et al, 2012), identified a range of barriers experienced by women including; unfamiliarity with the system, inadequate interpretation services, a lack of cultural sensitivity and impersonal care. The review suggested interventions to overcome these barriers such as continuity of care, improved resources, and education, but concluded that existing specialist models of care should be fully evaluated before they are implemented into the wider NHS. There are a small number of example services across the UK providing specialist care to women with social risk factors, but they are under evaluated and are often vulnerable to organizational restructuring ²⁸⁵.

1.5 Policy to reduce maternal and newborn health inequalities

Health policies, in the private and public sector, are a set of strategic decisions made by policy makers relating to the planning, implementation, monitoring and evaluation of services. Part of this process involves resource allocation, timeline for implementation and budgeting of services²⁸⁶. Marmots' review of the social determinants of health encourages the development of partnerships, with those affected by social inequities working with their health providers¹⁵.

Central to this approach is the development of a system that empowers women to have a real say in decisions that affect their lives, and that recognises their fundamental human rights²⁸⁷. These values are echoed in the UK's National Institute for Clinical Excellence (NICE) guideline for women with complex social factors which called for a reorganisation of maternity services to improve antenatal care for this population.

The model of care offered to women is dependent on a country's health system infrastructure. One health system can have multiple models of maternity care integrated into its services. Despite the differences in infrastructure there is a common goal of global maternity policy for care to be organised around women's needs and preferences, and that women should be in control of how their care is organised. Respectful and clinically competent care refers to individualised, culturally and contextually appropriate humane care, delivered with respect for women's fundamental rights and based on individual care plans responding to changing needs¹⁹⁷. Women value appropriate clinical interventions, as well as information and support so they can maintain control and dignity^{253,288}. Many policies in HIC's recommend women should be offered continuity of midwifery care as it improves pregnancy and postnatal outcomes for mother and babies with no identified adverse effects, as described in the section above.

Globally, midwives are increasingly recognised as an indispensable workforce for improving the experiences and outcomes of women and babies^{180,182}. Midwifery has the potential to avoid approximately 80% of all maternal deaths, neonatal deaths and stillbirths¹⁹⁸. In addition to this, the midwife-led model of care has been shown to be a cost-effective and cost-saving model of care. Consequently, the WHO recommended midwife-led continuity of care (MLCC) models to support women, in settings where there are appropriately trained midwives that are educated to international standards. This shifts the dynamic of responsibilities from medics to midwives²⁸⁹. In LMIC countries, like Cambodia, without well-established nor regulated midwifery education^{248,290}, it would not be appropriate to implement a MLCC model of care. However, the drive towards a solely medical model of care to reduce the rate of mortality and improve access to care can lead to the overmedicalisation of maternity care, subsequently increasing interventions like

caesarean-section ²⁹⁰ . This highlights the necessity and the impact a midwifery model of care can have on a population, therefore, consideration of scale up of high-quality midwifery care with a focus on continuity and community-based settings is recommended. Midwife-led and shared care (between midwifery and obstetric services) models of care are common in HIC countries such as, Australia, New Zealand, The Netherlands, and the United Kingdom, whereas medical models are common in the US, with continuity models of midwifery care rarely available ^{291–293}.

Recommendations from national maternal health policies vary depending on the context of the country or region. Table 5 outlines key policy recommendations from the UK, Australia and Cambodia, illustrating these different requirements. In areas with well-established health systems, economic stability and regulation of health professionals, policy aims focus on improving the experiences of their population groups and outcomes of those most at risk of health inequalities. However it is interesting to note that cultural competency was not part of the UK policy in contrast to Australia. On the other end of the spectrum, lower income settings such as Cambodia establish broad aims to meet the globally acceptable standards of health, such as reducing the maternal mortality ratio (MMR), and investing in quality research to create a body of evidence to inform future policies based on their socio-political context.

Table 5: Key maternity policy recommendations from the UK, Australia and Cambodia

United Kingdom	Australia	Cambodia
National Maternity Review: Better Births ²⁹⁴	National Maternity Services Plan ²¹¹	National strategy for reproductive and sexual health ²⁹⁵
<ul style="list-style-type: none"> • Personalised care for women and families • Continuity of carer • Safer care with a culture of safety • Better postnatal and perinatal mental health care • Multi-professional working • Commission services to support choice and specialist care • A fair payment system 	<ul style="list-style-type: none"> • Increase access for women and families, including rural and remote areas through high quality care • Increase access by expanding the range of models of care available • Cultural competency within maternity care services for Aboriginal and Torres Strait Islander women and families • Develop appropriate services for those vulnerable due to medical, socioeconomic and other risk factors • Plan and resource for appropriately trained and qualified maternity workforce, including an Aboriginal and Torres Strait Islander maternity workforce • Support rural and remote maternity workforces • Interdisciplinary teams 	<ul style="list-style-type: none"> • Reduce the national MMR • Increase the rate of deliveries performed by skilled birth attendants • Deliver equitable access with the long-term aim of universal access • Improved policies and resources to meet reproductive and sexual health aims • Improvement in the availability of health centres providing quality care • Public health education in communities to increase antenatal contact visits and increase the rate of breastfeeding • Comprehensive local and national auditing to improve health data • Expand evidence-base to inform policy and development of strategic aims

It is hypothesised that a lack of access and engagement is directly linked to poor maternal and neonatal outcomes for women with social risk factors ^{184,252,296,297}. Therefore policies to tackle reproductive health inequalities often focus on improving access to maternity services. Following the evidence provided in the section above, recent UK policy has focused on improving access to continuity models of maternity care, particularly for women with social risk factors and those from black and minority ethnic groups ^{294,298}. The increase in continuity of care models across England will be targeted towards women from BAME groups and those living in deprived areas. This policy initiative poses important research questions. The association between ethnicity, socio-economic status, and birth outcomes is poorly understood and international evidence is

limited by varying definitions of outcomes, socio-economic status and ethnicity^{299–302}. The extent to which socio-economic deprivation contributes to the disproportionate poor outcomes experienced by Black and Asian women living in the UK remains unclear. Although the current evidence base demonstrates the role of ethnicity as a predictor of socioeconomic deprivation, black and minority ethnic women who are not socially deprived still appear to experience worse outcomes than their white counterparts. This may be due to ineffectual measures of deprivation, such as the commonly used IMD score, that overlook determinants such as wealth, class, isolation, and social capital. Understanding the impact that these measures have on birth outcomes for Black and Asian women will enable maternity providers to optimise proportionate universalism by targeting women who are most at risk of poor birth outcomes without stigmatising those who are not.

The National Maternity Review (NHS England, 2016) aims to increase the proportion of women receiving continuity of carer by 20% a year from the start of the national roll out in 2018. Supporting this aim, the NHS Long Term Plan³⁰³ was published by the UK government to guide how the NHS will develop over the next decade and included an aim for ‘most women’ (at least 51%) to be offered continuity of care throughout their pregnancy, during birth, and postnatally by March 2021. This is currently a far cry from the reality of a fragmented UK maternity system. A large, national survey³⁰⁴ reported 63% of the 17,151 women surveyed did not see the same midwife every time during their antenatal check-ups and 72% did not see the same midwife during their postnatal care. Only 16% said that any of the midwives who cared for them during labour had been involved in their antenatal care and 9% of women said that at least one of the midwives who cared for them postnatally had also been involved in both their labour and antenatal care. More than one in ten women (12%) said the midwives caring for them were not aware of their medical history. The survey reflected a need to improve levels of continuity of care that focuses on the individual woman and her family to improve safety and experiences of care.

1.6 Gaps in knowledge

Despite this compelling evidence that continuity models of midwifery care improve childbirth outcomes, there is a significant knowledge gap around the mechanisms of these improvements, and their impact on clinical outcomes and experiences for women with social risk factors. It is not known why some models of maternity care seem more effective than others, or if the positive outcomes are experienced by black and minority ethnic women, those with low socioeconomic status and social risk factors. It is not known if these models of care improve access and engagement for this population, if women with social risk factors are more likely to be

offered these models of care over their more affluent peers, or how models of care can impact long term outcomes associated with low socioeconomic status for example; breastfeeding, parenting skills and attachment, help seeking behaviours and social cohesion. It is not known how acceptable these models of care are for these populations of women, whether they are seen as supportive, stigmatizing, or potentially isolating.

An expert panel in maternal and newborn health research, including service user representatives, identified 30 research topics based on an analysis of gaps in the evidence presented in the 2014 Lancet Series on Midwifery²⁵². The panel set research priorities for infant and childhood conditions, reduction of maternal and perinatal mortality, and preterm birth and stillbirths. The top research priorities included ‘the evaluation of the effectiveness of midwifery care on access to family planning services, and rates of neonatal death, preterm birth and low birthweight’. The lack of evidence around the exact mechanism that influences women’s outcomes means the development of robust, effective services is difficult. Evaluating different models of care and identifying the impact of factors such as midwives’ characteristics and sense of autonomy, or of trust and support within the midwife-mother relationship will help inform the organisation of future services for this ‘at risk’ population. Therefore, new empirical research undertaken for this thesis will focus on examining the context, mechanisms and outcomes of different models of maternity care for women with low socioeconomic status and social risk factors, in order to advance theoretical and practical understanding of the conditions required to increase the positive impact of care for this population.

Summary

This chapter has provided a brief overview of health inequalities including definitions of factors that contribute to those inequalities, and the current context of maternity care across the globe. The vast differences in the care available and experienced by women in LMIC and high-income countries has been highlighted and discussed in relation to maternal and neonatal mortality and morbidity. There is a clear correlation between a lack of maternity care and unacceptably high maternal morbidity, and regardless of what country a woman lives in, she is still at greater risk depending on her socioeconomic status and ethnicity. The gaps in knowledge have been highlighted to inform the aims and objectives of this thesis. ‘Syndemic care’ has been put forward as a way of considering these interactions when designing health services and has been described in the models of care highlighted earlier in the chapter. For example, continuity of care models for women with identified social risk factors have been shown to reduce the health inequalities seen in this group. This may be because interacting contexts are being addressed in a

more holistic manner than they would be in a medical, fragmented model of care. The theoretical perspectives of syndemics and candidacy will be explored in greater detail in the next chapter and used as a theoretical frameworks for the methodology and analysis of data in this thesis.

Chapter 2: Theoretical perspectives

In order to structure and make sense of the research undertaken for this thesis, two overarching social science theories have been identified; Syndemics and Candidacy. Each theory relates to a different aspect of the thesis, but both interconnect and help us to understand the health inequalities experienced by pregnant women, and how maternity services can perpetuate or remedy those inequalities. The significance of these theories became apparent through extensive background reading of health inequalities and complex systems outlined in the introduction of this thesis, and the analysis of the realist synthesis findings in Chapter 4. The theories incorporate a number of concepts and relevant theories, for example the section on Syndemics will provide an overview of theories commonly used to explain health inequalities, the importance of the life course perspective, and how syndemic theory relates to the literature on intersectionality. The section on Candidacy will discuss the concept of trust and relationships between patients and healthcare providers, the inverse care law and street level bureaucracy. This chapter will conclude by presenting how these theories and concepts relate to the research questions put forward to address the gaps in knowledge.

Each theory will be introduced and dissected in this chapter and referred to throughout the thesis. The findings of this thesis will contribute further depth and insight into the literature on Syndemics' and Candidacy theory. **Error! Reference source not found.** below details how the study methods and measures used in this thesis explore the relevant concepts, and how those concepts and other theories interact and contribute to the overall theoretical approach. It should be noted that the life course data collection aspect refers to future work to which participants have consented.

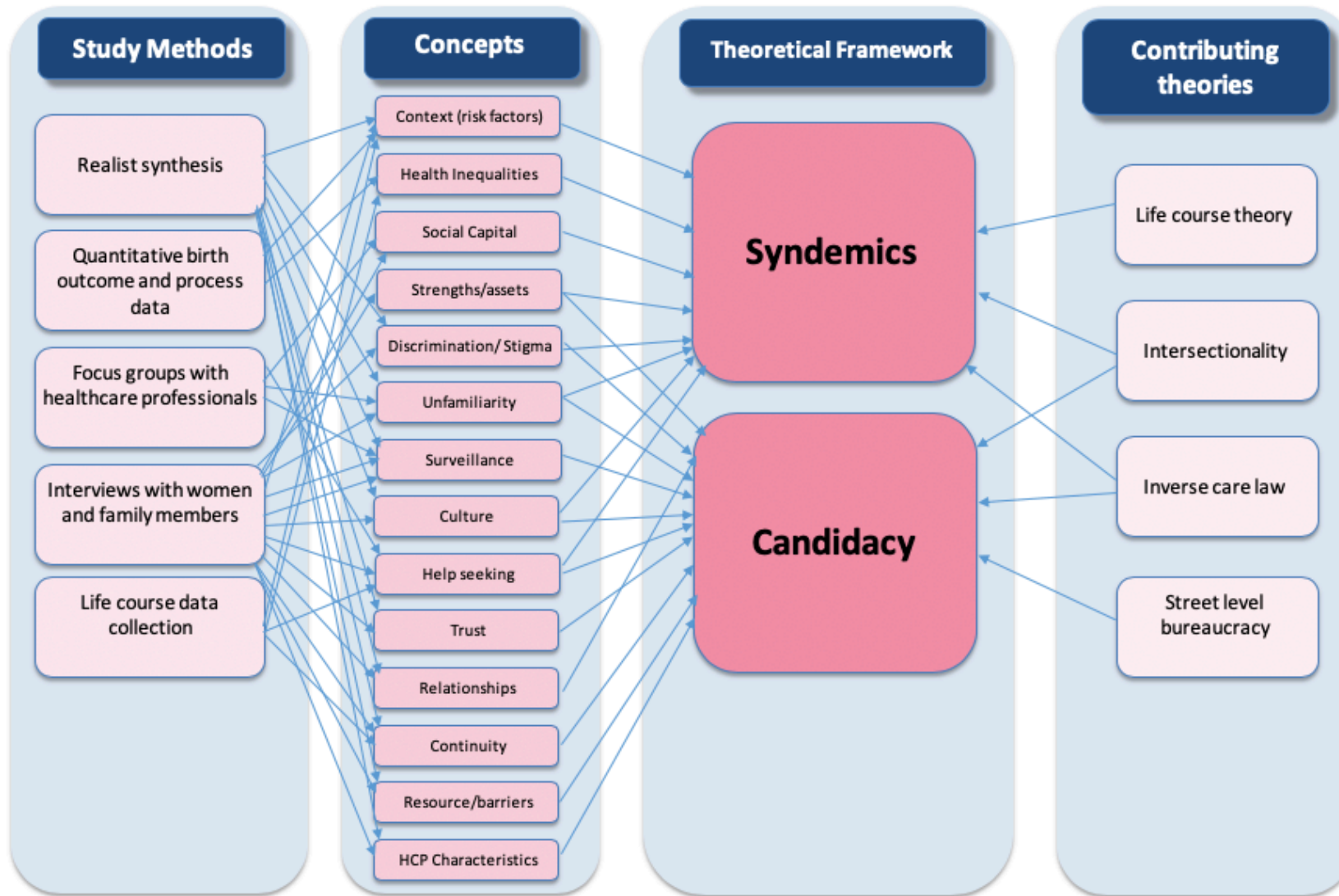


Figure 11: Theoretical framework

1.7 Syndemics

*‘Although there may be little that clinical practitioners and public health interventionists can do about the presence of social and political circumstances that might negatively affect health, the syndemic framework allows for the potential to mitigate those effects by appreciating the complex nature of certain diseases and conditions and for addressing the array of factors that give rise to them. In the pursuit of practising more socially conscious medicine, syndemics suggest that context is key.’*³⁰⁵p881

Singer³⁰⁶ first coined the terms ‘syndemics’ to describe synergistic epidemics and defined it as ‘The co-occurrence of multiple psychosocial and health conditions that contribute to health disparities’. By recognising women have different, co-occurring needs and that those needs are heavily influenced by their geographical and social context, health and wellbeing it becomes clear that there is no ‘one size fits all’ model of maternity care. This complexity can be further understood through the ‘Syndemic lens’- that examines how disease, social, environmental, and economic factors interact and worsen the effect of one another, resulting in reinforced health inequalities³⁰⁷. With this interaction in mind it is important to understand that there are components of maternity care that are known to reduce health inequalities in clinical outcomes and experiences. Those designing services should consider these evidence-based components alongside more flexible aspects of a service that meet the needs of the local context and population.

Syndemic theory was initially applied to the recognition and care needs of those with HIV, finding barriers to healthcare for black men and providing evidence for interventions that recognized intersecting factors faced by black men to overcome these barriers³⁰⁸.

Epidemiological data highlighted the numerous psychosocial factors that contribute to the burden of HIV for black men including sexuality, poverty, low education, substance abuse, depression, stigma and racism³⁰⁹³¹⁰. Qualitative work went on to explore the healthcare experiences of HIV infected black men, providing an insight into how to design services that improve engagement with healthcare³⁰⁸. This led the way to the concept of ‘syndemic care’, that recognises intersecting psychosocial factors and comorbidities, and aims to reduce disparities in access and engagement with healthcare and subsequent health outcomes. Another example is Mendenhall’s³⁰⁷ work on diabetes and multimorbidity’s in LMIC’s, finding associations between diabetes, HIV, tuberculosis and depression. The research concluded with locally relevant, context specific recommendations for designing care that addresses how social and medical conditions interact. For example, care that incorporates early detection and treatment of HIV and screening

for diabetes would lead to lower incidence of infections such as tuberculosis and detection of often stigmatized mental health issues.

The evidence base around syndemic maternity care is sparse, but the lack of specifically named ‘syndemic approaches’ overlooks many relevant interventions that in fact could be described as syndemic models of care. For example, many interventions aimed at women with specific social or medical risk factors aim to address the holistic needs of women, including common comorbidities. For example, the PrePare team in Edinburgh is a multi-agency service for pregnant women who misuse substances ²⁹⁷. The service offers antenatal and postnatal maternity care from midwives, addiction nurses, health visitors, social workers and nursery officers, with an aim of providing holistic support to meet the multifaceted needs of these women who are often experiencing poverty, housing issues, and other ill health exacerbated by their social circumstances and substance misuse. This is one of the many examples of syndemic maternity care that has been established in the UK, most of which are under evaluated and vulnerable to system restructure and service cuts. In addition to the lack of evaluation of syndemic care, this theoretical lens is yet to be empirically tested, particularly outside of the literature on men who have sex with men. Evaluating the underlying causal mechanisms behind interventions will challenge the critique that although syndemic studies use the language of ‘synergistic interaction’, many fail to test for synergistic relationships in their methods ³¹¹. The evaluation of such interventions, particularly for marginalised groups, will lead to a clearer understanding of the mechanisms of syndemic care in order to scale up effective, sustainable services that meet local need.

1.7.1 Intersectionality

Intersectionality is primarily a legal term, first coined in 1989 by professor Kimberlé Crenshaw as a tool to analyse and describe how individual characteristics “intersect” with one another and overlap to perpetuate inequality, oppression and discrimination ⁶³. Since then the theory has been used as a critical lens in the wider research arena, not least in the study of health inequalities ³¹². In the same way that syndemic theory recognises that ill health and disease does not occur in isolation and can reinforce one another, intersectionality recognises power relationships along the axes of gender, ethnicity, class and sexual identity, to be mutually defining and mutually reinforcing rather than distinct systems of oppression ³¹³. Intersectionality has been suggested as a useful theoretical framework in advancing understanding of marginalising characteristics and power relations in health inequalities ^{314–317}. Examples can be seen in many feminist studies of women’s reproductive health and maternity care. Perera et al ³¹⁸ used an intersectional framework in the analysis of qualitative data of women’s experience of obstetric violence. This method

highlighted the intersecting systems of power and oppression and how they contribute to inequalities in women's experiences of maternity care. Women in the study were more likely to experience obstetric violence if they were younger, poorer or did not speak the native language. These groups were also least likely to report their experiences to authorities and often sought maternity care elsewhere in subsequent pregnancies. There is also an argument amongst academics that racist and sexist movements led to the medicalisation of birth in many high income countries in order to control and oversee women's reproductive rights ³¹⁹. The intersectional perspective is put forward as a way of understanding how this change took place over time, and how professional institutions and systems continue to hold power over pregnant women's bodies and choices, particularly Black and ethnic minority women.

Combining syndemics and intersectionality allows for the consideration of how health, wellbeing, and experiences are shaped by multiple forms of disease, social, environmental, and economic factors, as well as by multiple forms of oppression ^{320,321}. This approach may be particularly insightful when studying the experiences of women with low socioeconomic status who are experiencing multiple social risk factors, particularly those from BAME groups who experience disproportionate levels of oppression. One example of this use of a combined framework is Ferlatte et al's ³¹⁶ study of the health inequalities experienced by gay men in Canada. The researchers used multivariate regression modelling to identify characteristics of those experiencing a syndemic of two or more issues. The sample was then stratified by men's sexuality using an intersectionality framework. This method revealed specific syndemics were unevenly distributed; men were more at risk of comorbidities if they identified as gay, were single, under 30 years old, and had a low level of education and income. This form of stratification by subgroups has been used in other epidemiological studies to explore the multiple and intersecting effects of identity and social position on health outcomes ³²². Ferlatte et al theorised that although both the syndemic and intersectionality literature tends to focus on oppression and disparities experienced by marginalised groups, it may be useful for researchers to consider the strengths held by these populations, for example resilience and social capital. This consideration could yield important insights when developing effective, targeted interventions that aim to utilise and foster these strengths.

1.7.2 Life Course Theory

Another relevant theoretical perspective that allows for the fluctuating nature of socioeconomic status and power relations is life course theory. Built on the pioneering longitudinal studies of child development in the 1920 and 1930's ^{323,324}, life course theory seeks to understand the structural, social and cultural contexts that shape people's lives from birth to death. Janet et al ³²⁵

define the life course as ‘a sequence of socially defined events and roles that the individual enacts over time’. This theory enables researchers to explore issues that may lay hidden when taking a one-dimensional view, or snapshot, of an individual or groups experience. Figure 12 demonstrates Giele and Elder’s ³²³ work on the four key factors that are thought to influence human development and experience. Although life course methodology is not used in thesis, these overarching factors give us insight into the context of women’s lives across the lifespan. This allows us to consider how women’s and newborns health and wellbeing is influenced by the ever changing historical and social context, and how the development of maternity care can take account of these wider issues.

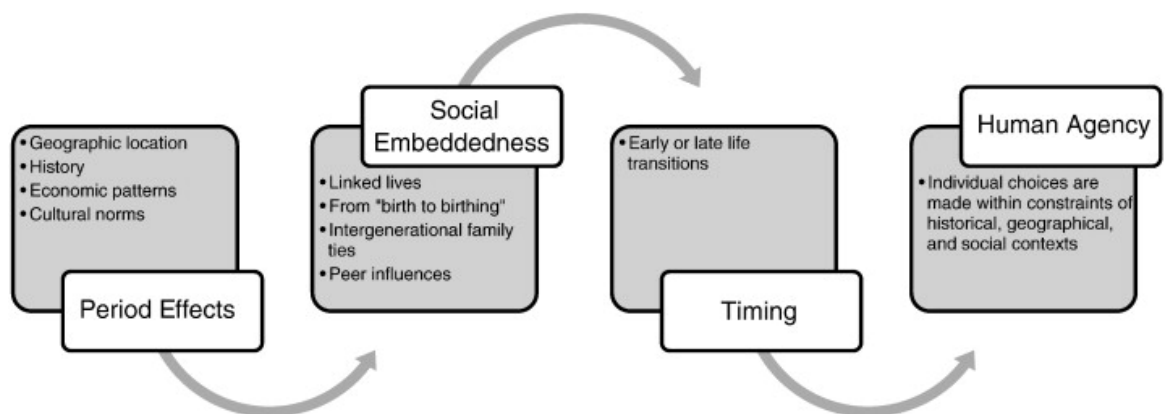


Figure 12: Four key elements of the life course paradigm ³²³

Robert Merton, a trailblazer for the use of theory in empirical research, also founded the life course theory of cumulative disadvantage that states; “social systems generate inequality, which is manifested over the life course via demographic and developmental processes.” ³²⁶. Supporting this theory, during the Dutch famine of 1944 a birth cohort study found that the children born during or after the famine had a greater risk of diabetes, cardiovascular disease and obesity ³²⁷. This was the beginnings of fetal programming, developed in the 1980’s by David Barker. The Barker hypothesis, or the ‘Thrifty Phenotype’ states that if the fetus is exposed to poor nutrition it will adapt to environment causing metabolic alterations that ensure survival but lead to metabolic syndrome in situations with normal or high nutrition ³²⁸. Contributions to the theory and science of fetal programming over recent decades have highlighted that inequalities caused not only by nutrition but also hormonal influences and toxins, start before conception, are followed by childhood disadvantage and inequalities accumulate throughout life leading to poor adult health and low life expectancy ^{11,329–331}. Life-course approaches emphasize the accumulated effects of experience across the life span in understanding the maintenance of health and the onset of disease. The economic and social conditions – the social determinants of health – under which individuals live their lives have a cumulative effect upon the probability of developing any number of diseases including heart disease, diabetes, and poor reproductive health ^{332,333}.

There are a range of life course studies that have highlighted health inequalities and put forward effective interventions to mitigate the effects of low socioeconomic status and marginalization. The initial UK birth cohort studies have been collecting longitudinal data on education and employment, family and parenting, physical and mental health, social attitudes, and cognitive test results since as early as 1946^{334–337}. These have been hugely influential in UK health and social policy, for example poverty and social exclusion policy; gender differences in pay and employment; and increased maternity leave. In the 1990's a group of more localised life course studies across Europe were implemented including the Avon Longitudinal Study of Parents and Children³³⁸. This contributed to the knowledge on environmental, as well as genetic factors leading to poor health and inequalities. The more recent, and largest example of life course research is the UK based 'Born in Bradford' study that tracks the lives of over 30,000 people living in Bradford, a city with high levels of ethnic diversity and ill health³³⁹. Following popular life course methodology, the study recruited over 12,500 pregnant women between 2007-2010 and has provided insight into how genetics, intrauterine life, health behaviours, environment and the services women and children access impacts on their health and wellbeing. Examples of findings stemming from the Born in Bradford cohort include ethnic inequalities in the treatment of perinatal mental health issues³⁴⁰, differences in socioeconomic position, lifestyle and health-related pregnancy characteristics³⁴¹, and the psychological distress experienced during pregnancy in a multi-ethnic community³⁴². These findings have been used to generate and test hypotheses, or interventions, that have the potential to improve outcomes for the most disadvantaged not only at the local level, but internationally.

1.8 Candidacy

As access and engagement with services is hypothesised to be key in improving maternal and infant health inequalities^{184,252,296,297}, it is imperative that this thesis is informed by a theoretical approach that considers how and why women do and do not engage with maternity services. Candidacy theory was developed by Dixon-Woods²⁰⁸ through a critical interpretative synthesis of the literature on access to healthcare by vulnerable populations. The theory is defined as the outcome of the ways in which 'people's eligibility for medical attention and intervention is jointly negotiated between individuals and health services'²⁰⁸. This 'joint negotiation' includes complex, intersecting factors such as an individual's recognition of symptoms requiring medical attention, negotiating access to care, healthcare providers judgment on the eligibility to access care, and the 'permeability', or the ease with which people gain access to care²⁰⁸. Being a suitable 'candidate' for maternity services may not be a given for many women with low socioeconomic status and social risk factors, particularly if services are perceived to be unsafe spaces, unfamiliar, or put

women at disproportionate risk of harm. Following a literature analysis to test whether or not the theory is a useful concept to understand how vulnerable populations access and engage with healthcare services, Mackenzie developed seven stages of candidacy, emphasizing the cyclical nature of these stages, particularly when accessing a fragmented service- see Table 6

Table 6: The seven stages of the Candidacy Framework ³⁴³

Stages	Description
1. Identification of candidacy	Process in which a person comes to appraise their issue as needing medical help which legitimises them as a candidate for particular health services.
2. Navigation of services	Knowledge of services provided, and appraisal of the practicalities involved in making contact with and accessing services. Includes barriers to accessing services such as needing transport, convenience of appointment times and accumulated costs of attending services.
3. Permeability of services	The ease with which a person can use health services. Includes levels of gatekeeping within a service, the complexity of its referral processes, and the 'cultural alignment' of services with the person's needs and values.
4. Appearance at services	The person's ability to assert their candidacy by presenting at services, articulating their issue and articulating their 'need' for care.
5. Adjudication by healthcare professionals	A person's candidacy is judged by healthcare professionals, subsequently influencing the person's progression through services and access to care. Adjudication may disadvantage certain people by perceiving them as either 'deserving' or 'undeserving'.
6. Offers of, resistance to services	A person may refuse offers at multiple stages in their journey to treatment including resisting offers for appointments, referral, and treatment.
7. Operating conditions and local production of candidacy	Incorporates factors at societal and macro levels which influence candidacy, such as the availability of local resources for addressing candidacy, and relational aspects which develop between the healthcare provider and patient over multiple visits.

Candidacy theory has been used in the analysis of help-seeking behaviours and experiences of accessing services, particularly for vulnerable groups such as asylum seekers, sex workers, prisoners, elderly patients with long-term conditions, those with mental health issues, learning difficulties, and domestic abuse ³⁴³⁻³⁵¹. To date, there is no published literature that uses the theory in the exploration of women's experiences of maternity care.

Interestingly, Mackenzie et al's ³⁴⁸ literature review used both candidacy and intersectionality perspectives as a joint framework to explore how women experiencing domestic abuse seek help and utilise services, and the response they receive from healthcare professionals. The researchers

concluded that both perspectives offered a nuanced understanding of women's experiences and constraints, enhancing knowledge about how political contexts become enacted in women's personal experiences. Another study using candidacy as a theoretical framework aimed to explore why patients experience gaps in care from their GP and how to overcome discontinuation of care ³⁵². Many patients interviewed described 'falling through gaps' because of difficulties establishing their candidacy for care when gaps occurred. This relates back to Mackenzie et al's ³⁴³ point of the cyclical nature of negotiating candidacy in a fragmented system. Relational continuity of care was put forward as a potential solution to overcome patients experiences of 'falling through gaps', particularly at transition points in care. This is particularly important when exploring how women with complex social risk factors experience maternity care in the UK that is often described by women as fragmented ³⁰⁴.

During the introduction chapter the psychological effects of relative poverty were briefly discussed. These may contribute to women's sense of candidacy, particularly in relation to Festinger's ³⁵³ psychosocial comparison theory. This perspective considers whether people compare themselves to others and how these comparisons affect health and wellbeing. The social comparison approach holds that the social determinants of health play their role through individuals' interpretations of their standings in the social hierarchy ³⁵⁴. At the individual level, the perception of one's status in unequal societies may lead to increased stress and anxiety through negative psychological experiences such as: shame, uncertainty and envy, plus fears about crime and violence, low self-esteem and powerlessness ³⁵⁵. These stressors can lead to harmful effects upon neuro-endocrine, autonomic and metabolic, and immune systems ^{354,356}. These experiences contest the notion of a person's ability to assert their candidacy without a joint effort from the system in which they are unequal. Marmot's influential Whitehall studies ³⁵⁷ that investigated the social determinants of health among British civil servants supported this theory by explaining the linear relationship between social position and life expectancy through the concept of hierarchy. Comparisons to those of a higher social class can also lead to attempts to alleviate such feelings by overspending, taking on additional employment that threatens health, and adopting health-threatening coping behaviours such as overeating and using alcohol and tobacco ³³. It should be kept in mind however, as Wilkinson ³⁵⁸ stresses, that eating the 'wrong' food or consuming cigarettes, alcohol or illegal drugs are the symptoms of these stressors not the main causes of health inequalities.

Before summarising this chapter two additional theories will be briefly described as they relate to how women with social risk factors might experience and negotiate their candidacy to maternity services.

1.8.1 Inverse care law

Inequalities in health arise, not only from variations in access to health services, but also variations in the quality of health care from area to area. And of course, variations in factors outside the control of the NHS - wealth, lifestyle, genetic and environmental considerations - will all affect people's health status. There is considerable evidence that many populations, particularly those living in areas of high socio-economic deprivation, suffer on all three counts: they use poor quality services, to which they have relative difficulty securing access and they suffer multiple external disadvantage. ³⁵⁹

Tudor-Harts ³⁶⁰ 'Inverse care law' describes the antithesis of the aim to reduce health inequality through proportionate universalism. Where proportionate universalism seeks to provide care at a level that is proportionate to the needs and levels of disadvantage of a population ³⁶¹, the inverse care law describes the phenomenon of those most in need of health care being the least likely to receive it. Conversely, those with least need of health care tend to use health services more (and more effectively) ³⁵⁹. This has been described throughout the introduction chapter with inequalities seen in the access and utilisation of maternity care relative to the socioeconomic gradient of the population, whether at a local, national or international level. As described in the quote above, Tudor-Hart argued that healthcare is not the main determinant of mortality and morbidity, and that standards of nutrition, housing, working environment, education, and the presence or absence of war are more closely related. Although he did not provide hard evidence to support his theory, there has been a wealth of high quality evidence and NHS surveys and performance indicators to support it ³⁶²⁻³⁶⁶.

In a recent editorial reflecting on the social determinants of health, Michael Marmot posed that the Inverse care law remains as relevant now as it was in 1971 ³⁶⁷. That said, Tudor-Hart's seminal paper was primarily concerned with the effects of market forces on the National Health Service and it is argued that the paper is no longer sufficient to describe and explain this problem ³⁶⁸. There are of course still significant issues around the privatisation of NHS services, but inequalities remain even when financial barriers are removed – for example the wide variation in access to NHS antenatal care depending on women's socioeconomic status and ethnicity ¹⁶⁴, pointing to other mechanisms at work. Many of the hypothesised mechanisms have been tested by comparing service use in affluent and deprived areas, for example the inequity in quality of care, time with healthcare professionals, disproportionate waiting times, GP caseloads, the level of education and expertise of healthcare professionals, unfamiliarity, cultural differences and an individual's lack of self-esteem and confidence ^{33,105,206,344,367,369,370}. The premise of the inverse care law and the evidence that has gone on to test it will be taken into consideration in the methodology and analysis of this thesis project by asking not only how do different models of

care impact on outcomes, but also *are* women with low SES and social risk factors being offered specialist, or enhanced maternity care over their more affluent counterparts?

1.8.2 Street level bureaucracy

A key aspect of the seven stages of Candidacy theory, detailed in **Error! Reference source not found.**, is the ‘adjudication by healthcare professionals’, that refers to healthcare professionals response to a patients help-seeking. Developed by Lipsky in 1971, Street-level bureaucracy is a sociological theory that seeks to explain the ‘working practices and beliefs of front-line workers in public services and the ways in which they enact public policy in their routine work’. The theory focuses on the workplace of public services and how workers overcome practical dilemmas. Lipsky poses that the actions of front-line workers (street level bureaucrats can often contrast with the official aims of the service. He goes on to give three explanations:

- 1) Demand from clients will always outstrip supply due to finite resources (cost, time, or service access). Most clients are unable to obtain similar services elsewhere (such as private alternatives to state organisations). As a result, ‘employees’, in this care healthcare professionals, must resort to ‘mass processing ‘of excessive client, or patient, caseloads.
- 2) Extensive personal discretion is a critical component of the work of many front-line public sector employees, particularly those who undertake private, face-to-face interaction with clients to assess the credibility of cases. Employees must use their personal discretion to become ‘inventive strategists’ by developing ways of working to resolve excessive workload, complex cases, and ambiguous performance targets.
- 3) Employees compromise the quality of their work by ‘creaming off’ cases that are likely to be straightforward or to have a positive outcome. Alternatively, workers may act as an ‘advocate’ for clients who are perceived as being at the tip of an iceberg of social vulnerability. Because workers are unable to offer all services to every individual they may be forced to ‘deny the basic humanity’ of other clients.

As with Tudor-Harts Inverse care law, the explanations given for street level bureaucracy can be used to give insight into how health inequality plays out but are not impossible to overcome. For example, how healthcare professionals negotiate excessive workloads and the imbalance between supply and demand might be eased through interventions aimed at matching time given to patients based on their need, rather than a ‘one size fits all’ model. This is a particularly pertinent topic in today’s context where government policy is driving transformation in the way that

maternity services are organised, whilst healthcare professionals have the same pressures of working within a bureaucratic system. Finlay and Sandall's ²⁶⁶ evaluation of a continuity model of maternity care based in the UK context demonstrates this conflict between the needs of the organisation and the needs of women. The study found that the flexible nature of the continuity model of care can help street level bureaucrats, in this case midwives, shift their allegiance from the organisation to the woman resulting in a more personalised, responsive service. The authors concluded that future research should take into account unintended consequences of this model of care to strengthen the implementation of services that meet women's needs. The use of this theory will compliment Candidacy theory by exploring the views, experiences and actions of healthcare professionals providing maternity care for women with social risk factors.

Summary

This chapter has provided an overview of the aims and objectives of the thesis project to address the knowledge gaps identified in the introduction and advance understanding of how models of maternity care can improve outcomes for women with low SES and social risk factors. A theoretical approach has been presented that identifies relevant theories and concepts to the context of the study and provides a 'blueprint' for the development of the research methodology, conceptualisation of the realist synthesis findings in Chapter 4, and the analysis of the evaluation findings presented in Chapters 7, 8 and 9. Syndemics and candidacy theory have been described in detail as the overarching theories, but when exploring other theories through reading the literature around health inequalities it became apparent that intersectionality, life course, the inverse care law and street level bureaucracy theory could provide another layer of critical thinking and strengthen the use of the overarching theories. Figure 15 was developed to demonstrate how each theory relates to particular aspects of the study. The next chapter will go on to describe the research methodology used to address the aim of the research, and how the philosophical underpinnings of Pawson and Tilley's ³⁷¹ scientific realism complement this theoretical approach.

Chapter 3 Design and Methodology

This chapter presents the research aim, objectives and the methods used to address them. It will also explore the philosophical underpinnings of the research methodology by exploring the paradigm of scientific realism and its relevance to the research aims. The key aspects of realist synthesis and evaluation will be defined and critiqued throughout this chapter under four headings: 1) Outlining the paradigm of scientific realism, 2) Situating scientific realism in a wider discussion, 3) Describing Pawson and Tilley's ³⁷¹ principles of realist methodology, and 4) Detailing how realist methodology has been used to evaluate models of maternity care for women with low socioeconomic status and social risk factors. Examples and metaphors are given throughout the chapter to illuminate concepts.

1.9 Research aim and objectives

Aim

The aim of this study was to identify what model of care works in improving outcomes for women with low socioeconomic status and social risk factors, and how it works.

This was achieved by addressing the following specific research questions:

- 1) How do specialist models of care aim to meet the needs of women with complex social risk factors?
- 2) How do women with social risk factors experience maternity care in the UK?
- 3) What do healthcare professionals who work within specialist models feel are the mechanisms that lead to a positive experience or clinical outcome?
- 4) Are women with social risk factors more likely to be offered specialist models of care or continuity of care over their more affluent peers and if so, do they find this acceptable?
- 5) Do specialist models of care affect:
 - Access and engagement with maternity services? If so, for whom, in what context, and how?
 - The quality of relational continuity for women experiencing different models of care.
 - Maternal and neonatal birth outcomes and reduce the need for pharmacological analgesia and obstetric intervention?

- Women’s antenatal admissions to hospital and the length of their postnatal stay?
 - The support women receive during pregnancy, their social integration and longer-term outcomes?
 - Women’s ability to disclose sensitive information including social risk factors?
 - Women’s experience of discrimination, stigma and paternalistic care when accessing maternity services?
- 6) What are the fundamental aspects of a feasible, safe, specialist model of care to test in a future trial?

These questions will be addressed using realist methodology; a form of theory driven inquiry with explicit philosophical underpinnings used to uncover the ‘black box’ of programmes, or interventions ³⁷¹. It has become increasingly popular in the field of health service research following a wealth of literature demonstrating its ability to identify hidden explanations to programme outcomes ^{372–375}. This methodology is particularly suited to evaluating healthcare interventions as it enables evaluators to understand how and why interventions work, or do not work, when applied in complex settings such as the UK’s National Health Service ³⁷⁶. The approach is typically method neutral but often involves mixed methods to guide an iterative process beginning with the development of initial programme theories, followed by the testing and refinement of those theories by systematically moving from the specific to the abstract ³⁷⁷. This process has been described as ‘climbing the ladder of abstraction’ ³⁷⁸ and aims to provide an in-depth understanding of the explanatory processes for programme outcomes as well as in the identification of implicit and explicit mechanisms underlying them. This allows for the development and implementation of effective programmes in different contexts that consider local need ³⁷⁹.

3.10 Scientific Realism

Outlining the Paradigm of Scientific Realism

‘Things exist and act independently of our descriptions, but we can only know them under particular descriptions. Descriptions belong to the world of society and of men: objects belong to the world of nature... Science, then, is the systematic attempt to express in thought the structures and ways of acting of things that exist and act independently of thought.’ (Bhaskar, 1975 ³⁸⁰)

Bhaskar’s sentence above is an insightful description of the aim of scientists; to attempt to align the explanations of reality, epistemology, with reality itself, ontology. There are several ontologies and epistemologies that exist and combine to form research ‘paradigms’, on each end of the spectrum is positivism: the belief that there is one single reality that can be measured, and constructivism: the belief that there are multiple realities and that knowledge needs to be interpreted to discover the underlying meaning³⁸¹. Realist perspectives are grounded in a theoretical belief that our knowledge of reality is imperfect and that we can only know reality from our perspective of it. Figure 13 demonstrates how realism overlaps with positivism and constructivism through its key concepts of one, mind independent reality, the consideration of context, and it’s use of ‘retroduction’, that is the activity of uncovering causal mechanisms. Retroduction is different from the deductive approach of positivism and the inductive approach of constructivism. On the one hand retroduction involves theory testing, on the other it acknowledges the of social construction of knowledge and places importance on context. So although realism agrees that there is one singular reality, it does not completely align with the positivist belief that research can lead to one truth. For example, a 5 years old perception of a parent is likely to be very different to a 35-year olds perception of the same person- realism asserts that both realities are valid, and useful in gaining a more objective insight of the parent.

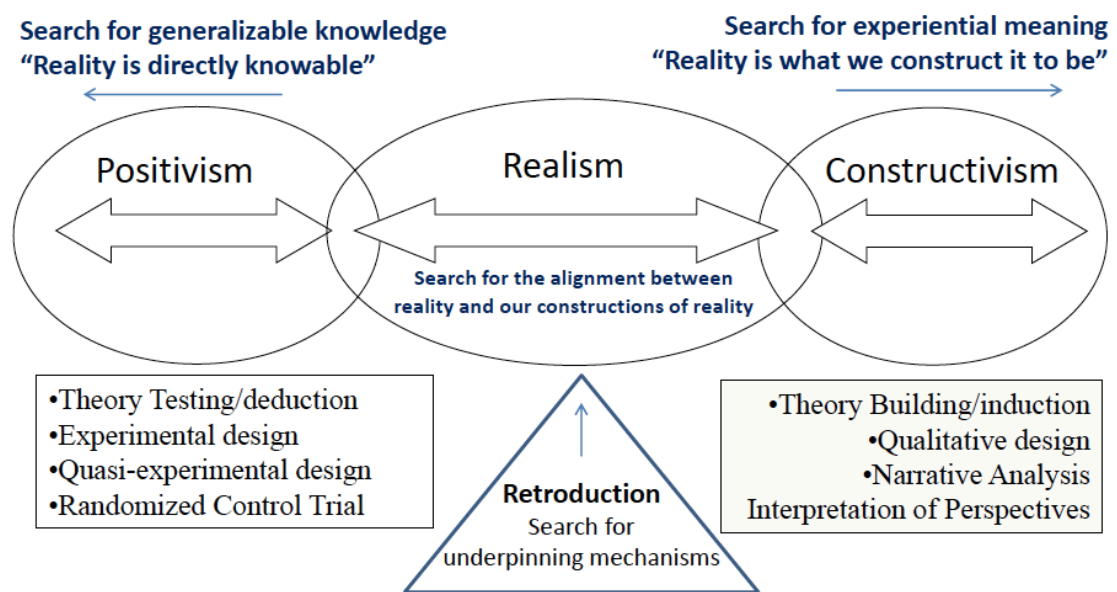


Figure 13: The philosophical basis of realist inquiry.³⁸² Inspired by: Sayer, A (2000). Realism and Social Science, Sage: London

The key philosophical principles underpinning this approach include that firstly; the manifested world is ‘mind independent’, that is that the world exists independent of our perception of it. A

common analogy of this is that the falling tree does make a sound if no one is there to hear it. This leads on to the second philosophical underpinning that mechanisms are responsible for causing things to manifest and can be hidden, latent or dormant. These non-manifested mechanisms are part of reality- because the falling tree *could* have been heard, the latent mechanism is there in its potential to make a sound. Another key principle is that thoughts and feelings are 'real' and can be understood 'objectively' in the sense that they have real effects. This is referring to the idea that programmes do not create outcomes, people do, therefore realist methodology often uses mixed methods to explore the human response to a programme or intervention to explain how outcomes occur. Lastly, as shown through the analogy of the layers of the iceberg (the observable, the non-observable and the latent) in Figure 14 below, realist philosophy states that reality is stratified in three layers, often referred to as stratified ontology or ontological depth ³⁸⁰.

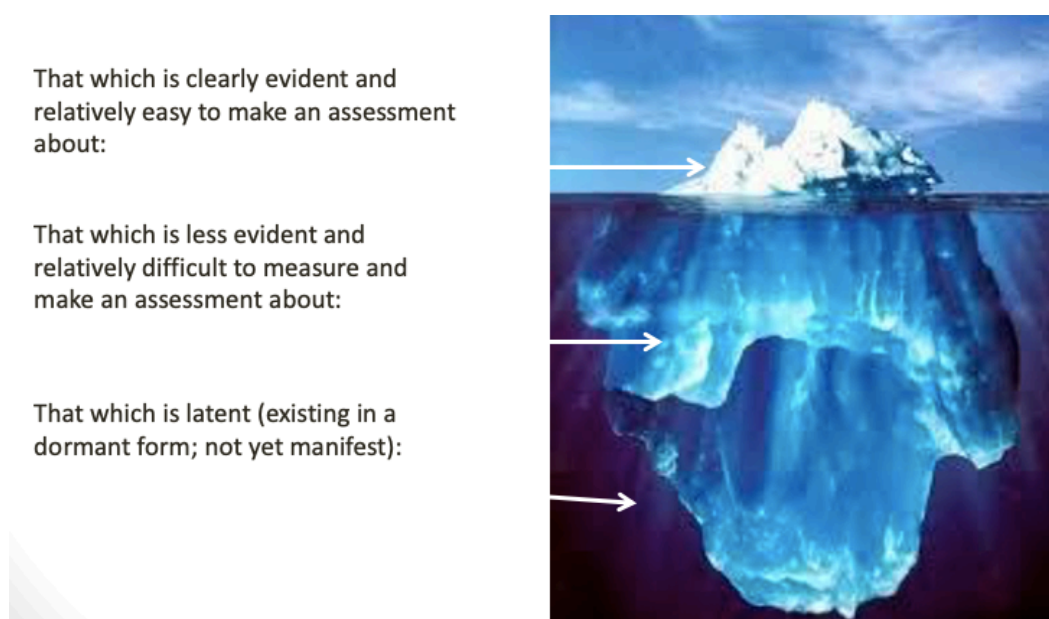


Figure 14: An iceberg metaphor for ontological depth ^{383,384}

Situating Scientific Realism in a wider discussion

There are commonalities and differences between the paradigms of Bhaskar's critical realism and scientific realism. Essentially, critical realism is philosophy driven, whereas scientific realism takes realist principles and applies them to scientific practice. The emphasis is on hypothesis testing in addition to only theorizing. Whilst they both differ from the purely positivist or constructionist positions, they share the understanding that the world consists of a mind independent reality, the totality of which is unknown to us, and both develop theories to explain the world around us. There is an overall agreement between the two approaches that the human mind constructs

reality, but an acceptance that the human mind is also fallible. Critical realism addresses this ontology to issues of social activity and has a broad philosophical approach. Scientific realism is a more strategic, or pragmatic approach directed at smaller areas of social interaction and aims to test theories in a scientific manner for example hypothesis testing which incorporates a variety of perspectives to incorporate ontological depth to the scientific process. Drawing on the work of Karl Popper and Robert Merton and the idea of 'piece meal research'- scientific realism focuses on smaller analysis of study to overcome the unmanageable evaluation of whole populations. It underpins realist synthesis and evaluation, methodologies developed by Pawson and Tilley for the assessment of services, programmes, interventions and policy. These methodologies go beyond the positivist aim of 'does it work?', or 'what works on average?' to instead ask 'what works, for whom, under what circumstances, and how?'. Mechanistic thinking is an indispensable approach to this.

Although critical and scientific realism have been the most prominent forms of realism in the social sciences, there are many more forms. A wide range of terms have been used for these different forms including experiential, subtle, emergent, constructive, to name just a few. Although they often differ in their assumptions of epistemology, for example; subtle realism leans towards the constructivist assumption by asserting that we can only know reality from our perspective of it, whereas the critical realist assumption is that our epistemology is imperfect and our claims about reality should be critically examined, they share a distinctive feature. All of the forms of realism mentioned above deny that we can have any objective, or certain, knowledge of the world, and accept the possibility of alternative perceptions of the same reality. All knowledge is partial, incomplete, and fallible, and this is not seen as a failing. Lakoff³⁸⁵ states this acceptance of alternative perceptions:

'Scientific objectivism claims that there is only one fully correct way in which reality can be divided up into objects, properties, and relations. . . . Scientific realism, on the other hand, assumes that "the world is the way it is," while acknowledging that there can be more than one scientifically correct way of understanding reality in terms of conceptual schemes with different objects and categories of objects.' (Lakoff, 1987)

Naïve realism, on the other hand, a branch of social psychology refers to the human tendency to believe that we see the world around us objectively, and that people who disagree or put forward an alternative perspective must be uninformed, irrational or biased³⁸⁶. This discordant standpoint highlights the importance of objectivity and subjectivity and how the realist paradigm seeks to make use of multiple perspectives to bring epistemology closer to the truth.

Objectivity and subjectivity in scientific realism

We all have a constructed reality, and perhaps multiple perspectives can help us to become more objective, for example embracing mixed methods research and using it to inform our understanding of how something works. Objectivity is the ability to gain a closer alignment of our knowledge to the reality itself, in recognising that reality has depth, realism asserts that reflective subjectivity is required to go deeper or understand the bigger picture. In other words, subjectivity can lead to a broader objectivity. Gathering multiple subjective perspectives, describing all the hidden components of the programme allows a more objective view of the causal equation/programme. The objective architecture of the programme is tested through the subjectivity of other people in their individual contexts. To use a metaphor to attempt to bring this concept to life: If a dark wood represents an unknown reality or programme, a map represents the quantitative data or the evidence base of the wood, then giving those walking through the dark wood (people's subjective knowledge) a torch (qualitative data collection) will lead to insight depending on the individual's personal experience of walking through the wood. Ontologically deep understanding of programmes is going into deep reactions/mechanisms of people. The more people you have with the torch, and the brighter their light (insight), the closer the researcher is to being objective about the programme.

Generative causation and mechanisms

Scientific realism is based on the logic of generative causation. Generative causation is concerned with explanatory power, opening up the 'black box' and understanding reality of a programme at a much deeper level, it asks 'why is the world the way it is?' Realists argue that it is not enough to simply know if A leads to B (successionist causation), in order for the knowledge we seek to be useful and transferable we need to ask does A lead to B, and if so, what is it about A that leads to B? why and how does A lead to B? The 'why and how' explain the generative causation, it is generative because it makes clear that there is a process, something needs to happen, or be generated, in order to produce a result, or outcome. When we theorise what mechanism it is that needs to be generated, and how this is generated, we are able to make inference to other contexts. It is important to refer back to the realist paradigm at this point to remember that scientific realism endeavours to find *transferable* causal mechanisms, rather than generalisable-realism expects everything to work differently in different contexts ³⁸².

Retroduction and abduction

As referred to earlier in the chapter, retroduction is the name given to the activity of unearthing mechanisms in order to find generative causation of a programme or intervention ³⁸⁷. Similar to the positivists method of deduction, abduction and retroduction require the researcher to move between theory and data. However, data that are not in keeping with the initial theoretical framework become significant to the realist researcher and are analysed rather than put aside, this process is referred to as ‘abduction’ ³⁸⁸. In other words, abduction involves the analysis of data that falls outside of the expected, or theoretical framework, or perhaps something that has not been accounted for in past theorising of similar programmes. Retroduction is the method of conceptualising mechanisms that exist in the deeper layers of reality but without which the concept cannot exist ³⁸⁸. The method of retroduction entails the idea of going ‘back from, below or behind observed patterns, or regularities, to discover when produces them’ ³⁸⁹. Perhaps one of the most famous examples of retroductive theorizing is Darwin’s ‘Origin of Species’, as it went beyond that which is observable, the first layer of reality. Harre and Bhaskar proposed that this process overcomes the deficiencies of the ‘flat’ logic of induction and deduction in its offer of depth and causal explanation ³⁹⁰.

The Context + Mechanism = Outcome configuration

Exploring the overt and hidden resources a programme offers, and how people respond to those resources, leads to an understanding of the ‘why and how’. In this sense, a potential mechanism is treated as an ontological object, realists do not wait for mechanism to manifest before presenting and testing them. An example of this found in the realist research around smoking cessation- the possibility that smokers want to quit is treated as a latent, or non-manifested mechanism ^{391,392}. We know when a mechanism has manifested when it produces an outcome. Another example of this is fear, a latent mechanism that is triggered in particular contexts, leading to observable outcomes such as shaking, sweating and trembling. Where biomedical sciences work to uncover mechanisms and outcomes through the creation of micro-conditions of context, retroductive theorizing to understand generative causation of outcomes (O) in the social sciences requires a study of the interaction between context (C) and mechanism (M): $C+M=O$. Figure 15 below presents these basic ingredients of realist causal explanation. Scientific realism argues against the notion that this lab design approach is the ‘gold standard’ when used in social sciences as randomisation makes an assumption that context can be controlled. Realists propose that it is more useful to study and describe context variabilities and how those variabilities alter the generative causation, leading to different outcomes.

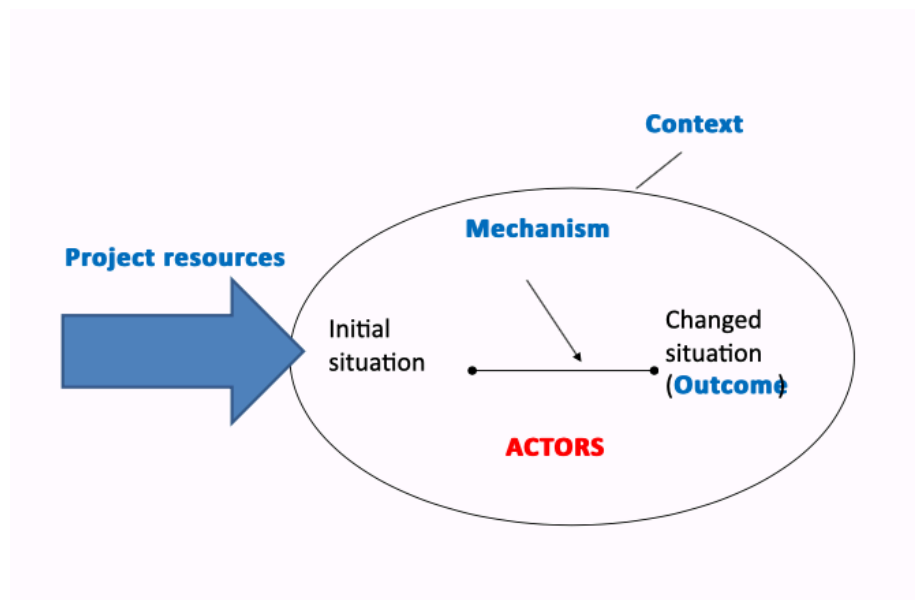


Figure 15: Context + Mechanism = Outcome Configuration ³⁸⁷

Retroductive and abductive theorizing of why a programme or intervention works, or does not work, involves the development and testing of programme theories that are explicit in their causal understanding of how the programme functions. Middle range theories are sought to increase the explanatory power of causal claims, and then Context-Mechanism-Outcome configurations are used as a frameworks to flesh out details and maintain a focus on generative causation. The next section of this chapter will describe this approach using Pawson and Tilley's ^{379,387} principles of scientific realist methodology, adapted from much of the principles of realism described above but with a focus on theory testing.

The principles of Pawson and Tilley's Realist Methodology

Evaluating programmes, interventions, services and policies is vital to determine whether or not they work, to enable the refinement of their delivery and to provide evidence for their continuation. Evaluation does not only demonstrate the effectiveness of a programme but helps to determine its suitability to a target population and any unintended consequences of the programme ^{393 379}. That said, evaluating complex programmes in complex contexts can be difficult and messy because it is hard to separately assess the effects of various components, this can affect the transferability or generalizability of the findings of many healthcare evaluations ³⁹⁴. It is important to note here that because the fundamental interest in realist methodology is to find out what works, in what contexts, and how, recommendations that arise from one evaluation will not be generalisable. The results, or CMO configurations, are theoretically transferrable, and ready to test in different context ³⁹⁵

If we refer back to the contradicting evidence between the Cochrane review of midwife-led models of continuity of care with more recent RCT's or non-randomised evidence, there is a clear knowledge gap of what components (resource mechanisms) of the intervention impact on what outcomes, and for what population? How does context impact on outcomes? And what are the specific response mechanisms of continuity of care models that enable generative causation?

Realist synthesis and evaluation attempts to overcome these deficiencies of positivist research methods such as the Cochrane systematic review or randomised control trial to evaluate complex programmes. An underpinning assumption of this methodology that enhances its specificity is that an intervention works (or not) because actors make particular decisions in response to the intervention (or not). It is the 'reasoning' of the actors in response to the resources or opportunities provided by the intervention that causes the outcomes ³⁷⁹. Given that these mechanisms are not directly observable, they are identified for testing through the development of initial programme theory, that is, the specific idea about how a programme causes the intended or observed outcomes ³⁷⁶.

The development of clear and relevant initial programme theories is a crucial part of the realist process as they become the object of the inquiry and provide a structure to examine and synthesise diverse evidence ^{395,396}. The researcher is, in effect, theorizing the unseen architecture of an entire programme. Although a significant collaborative project 'RAMESES' ^{397,398} has produced practical guidance for realist synthesis and evaluation, publication standards and critiques of realist informed research, there is no step-by-step methodological template for conducting such research. This is due to the general agreement amongst realist experts that the iterative and cyclical nature of realist research is not compatible with rigid instructions ^{399,400}. However, Shearn et al ³⁷⁶ contributed to the field with a method for building initial programme theories to increase transparency in the methodological process, this method has been followed in this thesis project and will be described in more detail in the next section of this chapter. There are numerous sources to explore when developing initial programme theories including 1) existing theories used to inform current or comparable programmes, 2) concepts from abstract theories such as those detailed in Chapter 2, 3) implied theories about what is working and why from the evidence base of similar programmes, and 4) stakeholders and experts who may be embedded in the intervention or use their own experiential or professional knowledge. Once theories have been extracted they are often configured into an 'if..., then....' Statements to make the causal claim explicit and testable, although this is not a publication requirement ³⁹⁷. The statement should however include specific context, mechanism and outcomes, with a clear connection between each, this specificity increases the retroductive capacity of the realist researcher ⁴⁰¹. Rival theories are another important aspect of Pawson and Tilley's doctrine of the

scientific realist paradigm and its application as a methodology for evaluation ³⁷¹. 'Rivalry' in this sense is the juxtaposition of two or more causal claims that appear to be in contradiction with each other, at least initially. They demonstrate how a programme could work one way or on one setting but fail or backfire in another way or setting. Rival theories might also reveal how multiple mechanisms lead to the same outcome or have unintended consequences for some populations. In other words, developing sensitivity to rivalry in theoretical assertions allow for a more ontologically deep understanding of how programmes work, for whom, and in which contexts. To add some context to this argument an insightful example is given below:

Initial programme theory: *If* parents and carers of infants use anti-microbial soap in handwashing, *then* infants will be exposed to a lesser amount of harmful microbial exposure. This will support infant and child health and prevention of early childhood diseases or mortality.

Rival Theory: *If* parents and carers of infants abstain from using anti-microbial soap, *then* the infant will be exposed to a diversity of viruses and bacteria, providing the immune system an opportunity to adapt and develop' (Jagosh, 2018 ³⁸⁴)

This appears similar to counterfactual analysis that enable those evaluating programmes or interventions to attribute cause and effect by considering and testing what would have happened in the absence of the intervention, typically involving 'what if' statements ⁴⁰². However White's debate on impact assessment ⁴⁰³ dubbed 'what works, nothing works!', describes and debates the differences between the two approaches. Where White advocates for the logic of counterfactual analysis – the difference between the outcome with the intervention and without the intervention, Stame argues ⁴⁰⁴ for the definition of impact provided by the OECD-DAC that more closely reflects that of scientific realism; 'positive and negative, primary and secondary long-term effects produced by a development intervention, directly or indirectly, intended or unintended'. Whilst White believes that counterfactual analysis fulfils the most urgent task of providing commissioners straightforward answers around what works and what doesn't, Stame argues that it ignores the importance of context, the 'black box' between intervention and effect, and that anticipated effects can be both positive and negative, as can unanticipated effects. In another debate on impact evaluation Scriven criticised counterfactual analysis by maintaining that causal connections can only be inferred (statistically) and not observed ⁴⁰⁵. He advocates for the use of the 'general elimination method' that describes the testing of rival explanations, and contests the use of randomised control trials as they are entirely situation dependent, ignoring context and hidden rival theory ⁴⁰⁶.

Pawson and Tilley ³⁸⁷ put forward the argument that programmes are 'theories incarnate', that is all programmes or interventions have an underlying theory, regardless of whether or not that

theory is made explicit through its aims or philosophy. Here, they are referring to ‘middle range theory’, defined as ‘theory that is not abstract to the point of being disconnected from the on-the-ground workings of programs, yet not so specific to pertain to one program.’³⁷⁴ or theories that ‘lie between the minor but necessary working hypotheses that evolve in abundance during day-to-day research, and the all-inclusive systematic efforts to develop a unified theory’⁴⁰⁷. They are often established after initial programme theories have been defined and aim to explain generative causation at a more abstract and generalisable level. Hypothesizing middle range theory can help to order the more granular programme theories and conceptualise complex reality so that empirical testing of the initial programme theories becomes possible and transferable to the wider literature base³⁹⁹. Shearn et al suggest that abstraction and conceptualisation of middle range theory is often necessary in advance of programme theory testing as it ensures a clear framework, hence the identification of the theoretical perspectives put forward in Chapter 2 of this thesis based on the literature cited in the introduction. The theories described in Chapter 2 are known as ‘formal middle range theories’ as they have a broad applicability to understanding the nature of the human social condition³⁸⁴.

Although there are several methods for eliciting programme theory and middle range theory, as described earlier in the chapter, Pawson and Sridharan⁴⁰⁸ urge realist evaluators to diagrammatically model the processes through which programmes or interventions are thought to achieve outcomes. Many realist evaluations have responded to this through the use of a logic model to identify initial hypothesis and to outline how the programme is thought to work according to those implementing it. Ebnoso et al⁴⁰⁹ reflected on the use of a logic model in realist evaluation, they concluded that although the logic model was useful in addressing the complexity of a programme and exploring different assumptions and contexts, the logic model is never linear always imperfect and should be used as an iterative tool to accumulate learning over time. The next section of this chapter will present the development of a logic model with these reflections in mind.

A final concept to address before going on to describe how realist methodology was used in this thesis, is the demi-regularity. This describes a semi-predictable outcome or pattern and has relevance to the fundamental principles of Pawson and Tilley’s realist evaluation, particularly around developing context-mechanism-outcome configurations and middle range theory³⁸⁷. The term was first coined by critical realist Lawson⁴¹⁰ who asserted that human choice or agency manifests in a semi-predictable manner- ‘semi’ because the variation in patterns of behaviours can be partly attributed to contextual differences from one setting to the other. Instead of looking for regularities, or universal laws that explain manifested reality, realists accept that everything that manifests is conditioned by its context and has some variation to it, and that both

patterns and variation are *expected* in society and open systems. The RAMESES collaboration agreed that this notion is pertinent to the evaluation of programme effectiveness and stated, ‘what should not be anticipated [from realist research] is the discovery of intervention panaceas, nor will outcomes be completely haphazard, there will be some patterning.’ They concluded that realist evaluation offers broad lessons on for whom, in what circumstances, and in what respects a programme is likely to succeed, when it is based on these demiregularities’⁴¹¹. For example, realist evaluation of models of maternity care that consider demi regularity might result in the researcher concluding that typically a model of care works in a certain way, but that might not always be the case because of variations in context that trigger different mechanisms. Those variations are explained by the demi regularity concept that tries to account for the patterns and the fluctuations we see in the world. This is a sophisticated concept when we use it to explain empirical outliers that would usually be seen as problematic and exclude as to not skew data in positivist research. From a realist perspective an outlier loses relevance when the underpinning mechanism for its position is uncovered⁴¹². This can be demonstrated by referring back to the work of Wilkinson and Pickett²³, see Figure 16 below for a scatter plot of infant mortality in relation to income inequality in high income countries. Singapore is a clear outlier with the lowest number of infants deaths and widest gap in income between its rich and poor. This paradox has been largely explained by its young population (the younger population of reproductive age are more likely to be at the higher end of the income spectrum) and research in health economics and the cost effectiveness of different technologies: Singapore’s government has invested in relatively cheap interventions such as the provision of basic primary care for all women, antenatal education, breastfeeding and nutrition advice. In doing so it cut back on expensive interventions aimed at high risk neonates that require advanced technology, highly skilled human resources and save fewer lives⁴¹³.

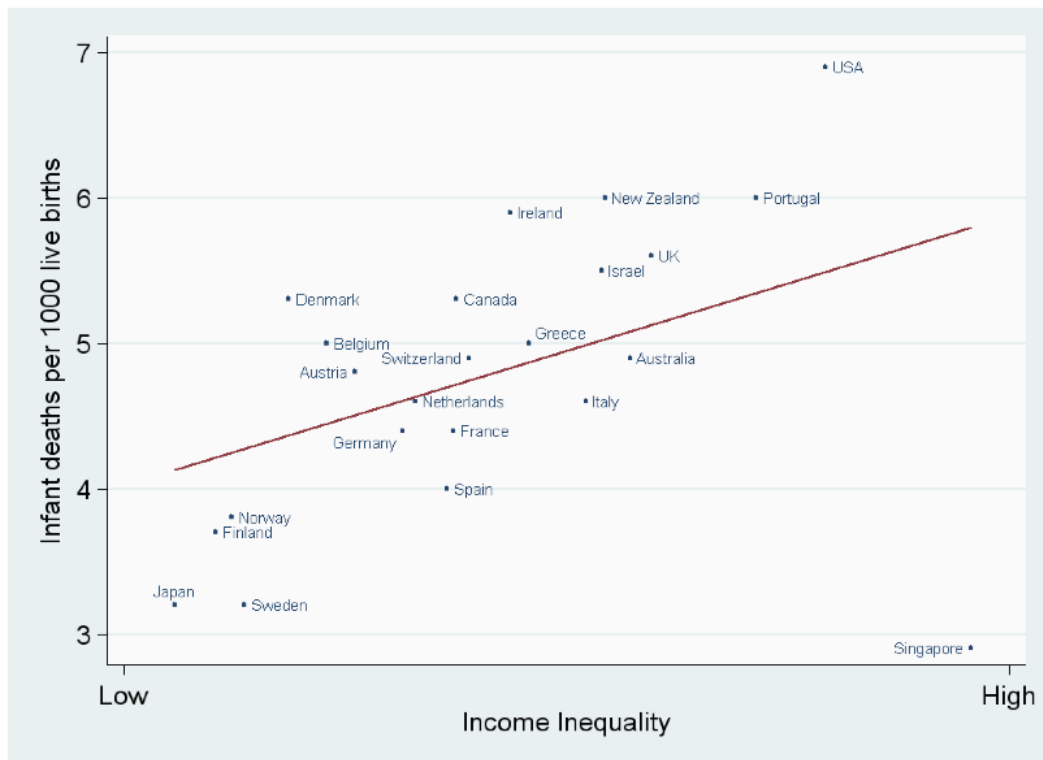


Figure 16: Infant mortality and its relation to income inequality in high income countries

This demonstrates that the unearthing of the causal mechanisms to explain this outlier can contribute to the overall programme theory; the demiregularity has replaced the concept of an outlier to test theory and explain patterns and variation ⁴¹². Demiregularities are a core aspect of this thesis due to its focus on an ‘outlier population’; as it seeks to explore what models of maternity care work, for different populations, with different needs, in different settings, the demiregularities will form an important part of the analysis.

The final section of this chapter will describe how realist methodology and the concepts described above was used to address the research aim and objectives of this thesis project.

Using realist methodology to evaluate models of maternity care for women with low socioeconomic status and social risk factors

The Medical Research Council’s (MRC) framework for developing and evaluating complex interventions recommend evaluations are based not only on *if* an intervention works, but emphasis should be placed on *why* ⁴¹⁴. Therefore realist methodology, although still in its relative infancy, is an appropriate approach for the evaluation of NHS based programmes to meet the requirements outlined by the MRC ⁴¹⁵. Maternity services are complex and often involve multiple contexts and factors that can activate a range of different decisions and responses for both the

healthcare professional and the women accessing the service. These decisions and responses are conceptualised as generative mechanisms, and are either constrained or activated leading to a particular outcome depending on context⁴¹⁶. Therefore the methods used in this thesis aimed to collect and analyse data that focus on uncovering the relationship between multiple contexts and human responses to the resources a programme or intervention presents, in this case specialist models of maternity care.

The aim and objectives set out at the beginning of this chapter were addressed through the three broad stages of realist methodology set out by Pawson and Tilley³⁸⁷:

Stage 1: A realist synthesis of qualitative literature with a focus on women's perspectives and experiences (Chapter 4), A description of the context of each aspect of the research, setting and participants (Chapter 5) and the development of a logic model identified and formalised 'programme theories' (Appendix C). These theories were generated from existing literature, academic and clinical experts, and key stakeholders of models of care, and a patient involvement group of women with social risk factors. The resulting theories acted as a hypotheses for how the model of care is expected to work, for who, in what circumstances and to produce what outcomes. These hypotheses were in the form of context (C), mechanism (M), and outcome (O) configurations.

Stage 2: Using the CMO configurations from stage 1 as a framework, qualitative and quantitative data was gathered from two specialist models of maternity care for women with low socioeconomic status and social risk factors. One model of care took a local approach and was placed within an area of significant health inequality. The other model was based within a hospital setting and provided care for women based on an inclusion criteria of social risk factors. This stage consisted of researcher immersion in both study sites and the following methods:

- **Focus groups** were carried out with the midwives working within each specialist model of care being evaluated to explore their insights, understand the resources they provide and develop additional programme theories to test. The findings and new programme theories are presented in Chapter 6.
- **Quantitative measurements** were collected from 500 women's birth records at each service. Their access and engagement with services as well as birth outcomes from routinely collected computerised data at each trust was analysed using multinomial regression and adjusted for confounding factors to explore what works, for whom. This data analysis is presented in Chapter 7.

- **Semi-structured longitudinal interviews** were carried out with 20 women and families with low socioeconomic status and social risk factors to explore how they experienced the specialist model of care. The interviews focused on feelings of safety, trust and candidacy, access and engagement with services, referral and coordination with support services, choice, advocacy, and engagement with the local community, and discrimination and stigma. This data analysis is presented in Chapter's 8 and 9.

Stage 3: The CMO configurations developed in the synthesis were tested through rigorous analysis of the data gathered at phase two. These analyses were aimed at testing if the proposed theory (context + mechanism) explained the observed outcomes. The original programme theories were then refined in light of the data generated in the testing phase, giving way to middle-range theories. These more generalisable theories indicate how programmes activate mechanisms among whom and in what conditions to bring about different outcomes. They provided a framework for the development of a theoretically and empirically informed model of care for women with low socioeconomic status and social risk factors. The refined CMO configurations and are presented according to their relevance to the theoretical perspective of candidacy in Chapter 8, and syndemic care in Chapter 8.

The research questions presented at the beginning of this chapter are mapped to their corresponding chapter, methodology and resulting contribution to knowledge in Table 7 below:

Table 7: Research questions mapped to chapter, methodology and contribution to knowledge

Research Question	Chapter and methodology	Contribution to knowledge
How do specialist models of care aim to meet the needs of women with complex social risk factors?	Chapter 3 Preliminary work with those designing, implementing, using and working within the model including stakeholders, advisory panel, PPI group and healthcare professionals (HCP's).	Development of a logic model highlighting underlying assumptions about how the specialist model is thought to work by. This logic model informed the design of the realist synthesis and evaluation.
How do women with social risk factors experience maternity care in the UK?	Chapter 4 Realist Synthesis - Qualitative data from women with social risk factors who have experienced standard or specialist maternity care models in the UK. PPI group insights. Development of programme theories and conceptual middle range theories	Highlighting underlying problems faced by women with complex social factors that specialist models of care aim to ameliorate. Theoretical understanding of the likely process of change, for whom, in what context, and how Programme theories will be tested in the realist evaluation of specialist models of care

<p>What do healthcare professionals who work within specialist models feel are the mechanisms that lead to a positive experience or clinical outcome?</p>	<p>Chapter 5 Realist evaluation of two specialist models of care- The context (description, setting and participants)</p> <p>Chapter 6 Focus Groups with HCP's working in two specialist models of care- one community based, the other hospital based</p>	<p>Testing programme theories developed in realist synthesis and exploring the gaps in knowledge to gain deeper insight into the resources provided by the model of care and it's underlying mechanisms. Additional theories developed to inform evaluation.</p>
<p>Are women with social risk factors more likely to be offered specialist models of care over their more affluent peers, and if so, do they find this acceptable?</p>	<p>Chapter 7 and 8 Analysis of quantitative measurements of 1000 birth records of women attending different models of care.</p> <p>Longitudinal qualitative interviews throughout pregnancy and the postnatal period with women with low SES and social risk factors who received a specialist model of care</p>	<p>Establish whether the aims of the specialist models- to reach women with low SES and social risk factors, are being met, and if they are deemed acceptable or potentially stigmatizing for women.</p>
<p>Do specialist models of care affect (and if so, for whom, in what circumstances, and how?):</p> <p>Access and engagement with maternity services?</p> <p>The quality of relational continuity for women experiencing different models of care?</p> <p>Maternal and neonatal birth outcomes and reduce the need for pharmacological analgesia and obstetric intervention?</p> <p>Women's antenatal admissions to hospital and the length of their postnatal stay?</p> <p>The support women receive during pregnancy, social care</p>	<p>'What works, for whom?':</p> <p>Chapter 7 Analysis of quantitative measurements of 1000 birth records of women attending different models of care. Multinomial regression analysis that adjusted for women's characteristics, the service and the place of antenatal care.</p> <p>'In what circumstances, and how?':</p> <p>Chapters 8 and 9 Longitudinal qualitative interviews throughout pregnancy and the postnatal period with women with low SES and social risk factors.</p>	<p>Refinement of programme theories using findings from focus groups, quantitative and qualitative data analysis. These refined theories are grouped into refined CMO configurations that highlight the casual mechanisms of the specialist models of care under particular contexts.</p> <p>The refined CMO configurations present the prioritisation of key aspects of specialist models of care that contribute to improved outcomes. Examples include resources offered by the programme, referral processes, mechanisms for a sense of control and reduction of stigma and discrimination.</p>

involvement, social integration and longer term outcomes?

Women's ability to disclose sensitive information including social risk factors?

Women's experience of discrimination, stigma and paternalistic care when accessing maternity services?

What are the fundamental aspects of a feasible, safe, specialist model of care to test in a future trial?	Chapter 8, 9 and 10 Development of a model of care using findings from the synthesis, qualitative and quantitative data and resource analysis Refined CMO configurations An infographic outlining key aspects of an evidence-based model of care.	Development of a model of care through the refined CMO configurations designed to improve outcomes for women with low socioeconomic status, and social risk factors, with an evidence-based explanation of how it will work.
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1.11 Identifying initial programme theory

The first task was to extract initial programme theory to be able to test in the evaluation of two models of care set within different service providers geographical locations, that provided maternity care to women with low socioeconomic status and social risk factors. The aim was that this process would culminate in the collection of potential generative mechanisms that explain what works, for whom, in what circumstances, and how³⁷¹. As described by Shearn et al³⁷⁶ this process took on many forms. Firstly, an advisory group and patient and public involvement (PPI) group was set up to discuss initial thoughts and gain the perspectives of a number of different experiences and opinions of maternity care for women with low socioeconomic status and social risk factors. These groups, although constantly evolving, gave input into the design, ethics process, synthesis of literature, data collection tools, and data analysis and prioritisation of findings throughout the project. The advisory group included the supervisory team, international experts in socially disadvantaged population, health inequalities, maternity care and realist methodology, as well as stakeholders at each service provider including the heads of midwifery, community, continuity and safeguarding leads, and healthcare professionals working within specialist models of care outside of the evaluation case studies.

Patient and public involvement

The patient and public involvement (PPI) group consisted of women whose personal circumstances reflected the population of interest. Six women from ethnically diverse backgrounds, all of whom were experiencing significant poverty and at least one social risk factors, made up the initial group. Despite a drive to improve PPI in health and social care ^{417,418} the difficulties in involving groups from socially disadvantaged or marginalised backgrounds are well recognised ⁴¹⁹⁻⁴²². Over time the members of this group changed as women moved away or were no longer contactable, although three of the women were involved in the process from beginning to end and remain keen to have involvement of the dissemination of the research. In order to overcome the difficult nature of involving 'hard to reach groups', local patient and public groups were attended, for example a young mums group and an Arabic speaking women's groups. Annual PPI events were facilitated to encourage women from the local community to have a say in the design of research and implementation of healthcare services at their local trust. See Appendix F for a log of PPI involvement.

Positionality

Referring back to the earlier discussion around objectivity and subjectivity, it was important that I acknowledged my own positionality in relation to this research. The realist paradigm assumes that we cannot separate ourselves from what we know. The realist researcher and the object of investigation are linked such that who we are and how we understand the world is a central part of how we understand ourselves, others and the world ³⁷⁹. As a midwife, and perhaps crucially a midwife who has previously worked within one of the models of care being evaluated, a mother and a service user who has experienced relational models of maternity care I often questioned how I overcome any bias I might have held during the research process. Through reading and training in realist methodology I realised that I am able to overcome any personal bias through working with realistic evaluation concepts to reveal rival theories, test those theories through advisory and PPI groups, and the use of robust research methods. I also came to realise that my inside knowledge about the casual mechanism of maternity care, and knowledge of the current evidence base enables a robust, objective approach to the research. The logic model presented in **Error! Reference source not found.** was developed iteratively through my own knowledge and the numerous conversations and meetings held with the supervision team, stakeholders, advisory board and PPI groups.

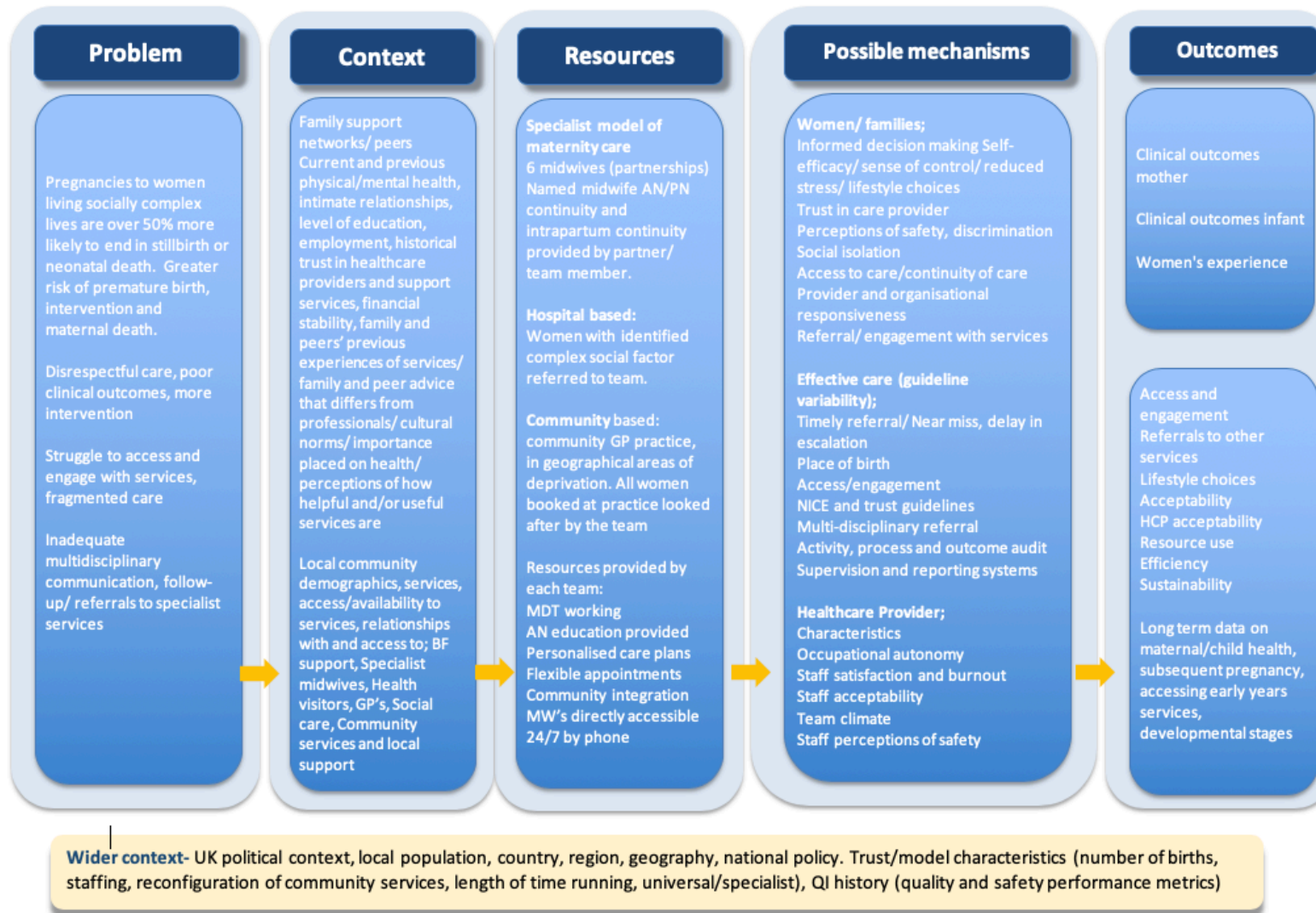


Figure 17: Logic Model

Although the process of constructing the logic model was insightful and presented new ideas and concepts, the result was very much 'listed' and lacked ontological depth. It did however present a framework and helped to identify gaps in knowledge. One of the clear barriers that was identified, particularly by stakeholders trying to improve outcomes and reduce inequalities, was the lack of knowledge around how women with social risk factors experience maternity services. The stakeholders described feeling as if they were taking a 'stab in the dark' when adapting services to meet their needs. The PPI group responded to this through the description of varied experiences throughout their journeys through maternity and early years services. The subsequent realist synthesis was therefore designed to give insight into how women with social risk factors experienced maternity care in the UK, with a focus on generative causation. This process, detailed in Chapter 4, resulted in the development of initial programme theories and middle range theories to test in the evaluation.

The initial programme theories and middle range theories arising from the realist synthesis were presented to both the advisory and PPI groups for feedback, prioritisation of theories to test, and identification of gaps in knowledge. This process led to the development of 8 overarching CMO configurations ready for testing and refinement in the evaluation of the two specialist models providing maternity care to women with low socioeconomic status and social risk factors. However, there was an overall agreement that the findings of the synthesis, and the CMO configurations, lacked the insight of the healthcare professionals providing these interventions to women with social risk factors. Whilst it was clear that women had varied experiences of maternity care, had an overall lack of trust in the service and valued relational continuity, it was unclear what this 'relational continuity' provided. This lack of insight into the inner workings of different models of care impacted on the ontological depth and ability to retroductively and abductively theorise the generative causation of the programme. Therefore focus groups were undertaken with midwives providing care for women with low socioeconomic status and special risk factors at each case study site. Although this aspect of the evaluation was planned to test the initial programme theories, it was felt that it was more insightful to use the opportunity to extract additional initial programme theory that might allow for deeper understanding of the hidden mechanisms of the programme. This process is detailed in Chapter 5 along with the additional programme theories and their contribution to the CMO configurations tested in the realist evaluation.

Theory testing

As described above, there are three broad phases to realist evaluation³⁷¹. the first phase encompassed the findings of the realist synthesis (Chapter 4) that sought to identify and

formalise 'programme theories'. The findings of the synthesis presented context, mechanism and outcome (CMO) configurations describing how women with social risk factors respond to aspects of their maternity care and how those responses might lead to the outcomes of interest. These configurations were prioritised and refined to present the commonly referred to themes, but also the demiregularities, prioritising the hidden and interesting ⁴¹². For example the tensions between maternity services being for the woman or for safeguarding the unborn, and how these tensions impact on human responses for example trust and willingness to engage. This process acknowledges that the exposure of tensions within a programme can lead to focus on or resourcing specific aspects of a programme, that can lead to increased impact of the programme ³⁸⁴. A clear example of this is Graham and McAleer's ⁴²³ realist evaluation of simulation based education for medical students revealing that although the intervention was highly valued, the timing of the course (context) took place before the students examinations, resulting in students not prioritising the course (response mechanism)- thus the context prevented the mechanism of learning from firing that adversely affected the desired outcome.

The second phase consisted of the data collection aspect of the evaluation of two different specialist models of maternity care for women with low socioeconomic status and social risk factors. This included focus groups with midwives working in the models (Chapter 6), quantitative birth outcome and process data for women receiving different models of care (Chapter 7), and longitudinal interviews with women who received the specialist model of care. The discussion sections of both the realist synthesis and focus group study are presented alongside the findings within the chapter rather than the final discussion (Chapter 9) to highlight how these research methods identified and contributed to the programme theories before they were tested. In the third and final phase, the initial CMO configurations are interrogated through the analysis of the data gathered at phase two (Chapters 8 and 9). Testing the theory in two sites with differing approaches, using mixed methods, allowed for the testing and refinement of specific programme theories to explain how women respond to these specialist models of maternity care, and how that response may lead to improved maternal and neonatal health outcomes. The refined CMO configurations expose specific generative mechanisms that lead to both positive and negative outcomes, and more abstract middle-range theories. They highlight how similar programmes might activate mechanisms among whom and in what conditions to bring about different outcomes. These final CMO configurations informed the development of a transferable, theoretically informed model of care for women with low socioeconomic status and social risk factors. To summarise this process, an overview of the research plan, including a structure of the thesis is detailed in Figure 18 below:

Stage 1: Identify programme theories

Chapter 1: Introduction

Chapter 2: Theoretical perspectives

Chapter 3: Design and Methodology

Chapter 4: Realist synthesis

Stage 2: Data Collection

Chapter 5: Context

Stage 3: Analysis and refinement

Chapter 6: Focus group findings

Chapter 7: Outcomes

Chapter 8: Mechanisms relating to
syndemic care

Chapter 9: Mechanisms relating to
candidacy

Chapter 10: Discussion

Present background information, international and local contexts and gaps in knowledge

Development of logic model with key stakeholders and PPI group

Realist synthesis: How women with social risk factors experience maternity care in the UK

Development of initial programme theories to test in realist evaluation

Service A

-Focus groups with 6 midwives
- Quantitative data collection of 500 women's pregnancy and birth outcomes
-Qualitative interviews of 10 women with social risk factors

Service B

-Focus groups with 6 midwives
- Quantitative data collection of 500 women's pregnancy and birth outcomes
-Qualitative interviews of 10 women with social risk factors

Thematic analysis of focus group data to refine and identify new programme theories

Statistical analysis of quantitative data collection to identify context and outcomes

Thematic framework analysis of qualitative data to identify outcomes and mechanisms

Testing and refinement of initial programme theories and CMO configurations to provide practice and research recommendations

Figure 18: Structure of thesis with research plan

The specific methods used in each aspect of the stage 2 evaluation including the focus group study, the quantitative data collection and the longitudinal qualitative interviews follow the recommended reporting guidelines for realist evaluation (RAMESES II)³⁹⁷ and will be described in detail below.

1.12 Focus Group Methods

Sampling, Recruitment, Setting and Participants

Purposive sampling was used to recruit midwives who were working in the models of care being evaluated as part of the evaluation. The two models of care were chosen on the basis they had been implemented in areas with significant health inequalities⁴²⁴ to provide care to women with social disadvantage. Many of the women accessing the two models of care have social care involvement. Social care in England is defined as ‘the provision of social work, personal care, protection or social support services to children or adults in need or at risk, or adults with needs arising from illness, disability, old age or poverty’⁴²⁵. See Table 8 for brief descriptions of the two specialist models of maternity care, these are further described in Chapter 5- Context.

Table 8: Description of each model of care

Community based model of care (CBM)	A team of 6 midwives provide continuity of care to women located in an area of social deprivation. Not all women under their care will have social risk factors. The midwives are based in a local community health centre and offer antenatal, intrapartum and postnatal care in the home, community or hospital setting.
Hospital based model of care (HBM)	A team of 6 midwives provide continuity of care to women with social risk factors only. Women living within the hospital’s geographical boundary with one or more significant social risk factor are referred to the team. The midwives are based on the hospital site and offer antenatal, intrapartum and postnatal care in the home or hospital setting.

The study inclusion criteria required the midwives to be working in the model at the time of the evaluation to enable all evaluation data to capture a similar time-point.

Data Collection

Focus groups were considered the most appropriate method of gaining the insight of midwives working in specialist models of care as not only do they seek opinions, values, and beliefs in a

collective context, but they can also highlight mechanisms of complex behaviours and motivations ⁴²⁶. Two focus groups were carried out, one per each specialist model of care being evaluated. These are referred to as the hospital-based model (HBM) and the community-based model (CBM). Full definitions of the models are care are found in appendix A. The focus groups were held in the clinical setting of each team and lasted up to two hours with six midwives in one (HMB), and five in the other (CMB). They were conducted by the lead researcher (HRJ) and facilitated by an academic colleague (ZK) who took notes on who was speaking, main topics or insights, and general time keeping. Using Manzano's ⁴²⁷ guide to realist interviews, and the programme theories developed in the realist synthesis of women's experiences of maternity care in the UK ⁴²⁸; a realist informed interview guide was prepared to elicit specific mechanisms of how each model of care was thought to work (see Appendix D). The term 'programme' has been changed to 'service' in the interview questions to reflect the language of the participants. Open questions were also used to clarify content or context, gain a deeper understanding of the midwives' perspectives, and to stimulate the flow of discussion.

Analysis

Data from the two focus groups were analysed using thematic analysis ^{429,430}. This analytic approach to qualitative data involves inductive coding practices, which are both consultative and initially open ⁴³¹. NVivo 12 was utilised for data management and analysis which followed Braun and Clarke's six-phase approach to thematic analysis ⁴²⁹. In brief, these phases include familiarisation with the data, generation of initial codes, the searching for and review of themes, naming and offering explanations for each theme, and lastly producing a report. All data were coded by the lead researcher, with a proportion coded by an academic colleague for consistency. All codes and themes were subsequently ratified by the supervision team.

Themes were generated with a central organising concept to both explain and hold together each supporting quotation within each theme ⁴³². Regular discussions were held between all researchers to deliberate and, when required, revise aspects of the analysis, coding, or themes. This also helped ensure analytic rigour. When discrepancies occurred between researchers, these were debated until all were satisfied themes were fully explained and robust. Existing models of sample size sufficiency ⁴³³, data adequacy ⁴³⁴ and thematic concordance ⁴³⁵ were utilised to assess data quality and theme saturation – all of which were assessed to be excellent.

1.13 Quantitative Birth Outcome Data Collection Methods

Sampling, Recruitment, Setting and Participants

A power calculation was based on Lindquist's analysis of antenatal care utilisation in the UK¹⁶⁴ and research carried out on metrics for monitoring local inequalities in access to maternity care at the same service evaluated in this research⁴³⁶. We calculated that with 250 women in each group (those receiving standard maternity care and those receiving group practice or a specialist model of care), we will have 90% power to detect a 15% difference in timely access to antenatal care between the different models of care (defined as the gestation at which they receive their first appoint) with 500 anonymised birth records accessed at each trust. A 15% difference between those in the higher and lower deprivation deciles was expected to reflect Lindquist's findings on timing of access to maternity care.

Data collection

Routinely collected pregnancy and birth outcome data were collected from computerised records at each service provider. Data collection was prospective, meaning that the demographics of the first 500 women booking for maternity care with each service provider in January 2019 were collected, with their pregnancy and birth outcomes collected later in the year when all women had been discharged from maternity care.

Table 9 below presents the outcomes collected for all women in the quantitative sample, and the chapter it is reported in. These outcomes were chosen based on what was available across both service providers to allow for comparisons. See Appendix A for full definitions of all outcome variables. As the vast majority of these outcomes require an input from the healthcare professional recording the outcomes, there were small numbers of missing data for each variable, total numbers are presented in each outcome table.

Table 9: Outcomes collected and corresponding chapter

Outcome variable	Chapter 5: Context – Models of care and women’s characteristics	Chapter 7: Outcome- What works, for whom?
Characteristics		
Reason if sample drop out	x	
Deprivation score	x	
Maternal age	x	
Ethnicity	x	
Parity	x	
Social risk factors (listed)	x	
No.of social risk factors	x	
Medical risk status at booking	x	
Medical risk status at onset of labour	x	
Service use		
Model of care received	x	
Gestation at booking appointment		x
No. of antenatal appointments		x
Missed antenatal appointments		x
Antenatal inpatient admissions		x
No. of appointments with a known HCP		x
Care in labour by known midwife		x
Place of birth		x
Neonatal unit admission		x
Length of postnatal stay		x
Birth outcomes		
Mode of birth		x
Induction of labour		x
Monitoring (CTG in labour)		x
Perineal trauma req suturing		x
Estimated blood loss		x
Analgesia		x
Obstetric emergency		x
Maternal death		x
Neonatal Outcomes		
Sex		x
Gestation at birth		x
Weight		x
Stillbirth/neonatal death		x
Apgar scores		x
NNU Admission		x
Skin-to-skin		x
Feeding method		x
Discharge information		
Date discharged home		x
Social care involvement		x
Baby discharged home with parents/ LAC		x
Referrals to support services		x

Analysis

The quantitative data were analysed using Stata v.16 to generate descriptive and inferential statistics. Firstly, women's social risk factors, ethnicity, socioeconomic status and medical characteristics were described in Chapter 5 using descriptive statistics and stratified by the hospital they attended to enable us to compare differences in the samples between each hospital. Variables were tested for bivariate association using chi-square tests and *t*-tests, for dichotomous and continuous variables, respectively. Chi-square analysis were also performed to test for associations between socio-economic position by IMD decile, social and medical risk factors, and service use. Given that the power calculation allowed for 20% drop out (see section 1.24 in Chapter 5), it was still powered to detect a 15% difference in timely access to antenatal care between the different models of care.

Secondly, a multinomial logistic regression model was conducted using the model of care received as the independent variable to estimate relationships between model of care and the outcome variables. This was repeated using place of antenatal care as the independent variable. It was decided to merge the two service providers outcome data for ease of interpreting the findings. With this in mind the first regression model controlled for ethnicity, age, parity, deprivation score, social risk factors and medical risk status, (see Appendix A for definitions). The second regression model then adjusted further for the service that women attended to consider differences in organisation guidelines, processes and culture. The third regression models were run with place of antenatal care (hospital versus community-based care) as the independent variable. This structured model allowed us to explore the association between access and engagement with services depending on the model of care received, whilst accounting for interactions between independent variables to predict the dependent variable. Risk ratios and 95% confidence intervals are presented. All statistically significant outcomes are highlighted in bold for ease of reading.

1.14 Qualitative Longitudinal Interview Methods

Sampling, Recruitment, Setting and Participants

Semi-structured, longitudinal interviews with 20 women with low socioeconomic status who were receiving specialist models of care at one of the two service providers were carried out throughout the pregnancy and postnatal period. The women's family members and friends were also invited to participate in the interviews about the women's journey through maternity care

and experiences of the specialist model of care to give additional insight into potential generative mechanisms.

Women were identified by the midwives providing their care if they met the following inclusion criteria:

- Low socio-economic status (calculated by an Indices of Multiple Deprivation (IMD) score ⁵⁴ of higher than 30 AND/OR secondary school as the highest level of education attained.

The IMD score was calculated using the woman's postcode to give a composite measure using routine data from seven domains of deprivation presented in Chapter 1 to identify the most disadvantaged areas in England. Level of education was self-reported and categorised into three groups: no completed education or completed only primary school; completed secondary school; and completed tertiary (university or college). The highest level of education attained has been chosen as an indicator of deprivation as it has a clear influence on occupational opportunities and earning potential ⁴³⁷. Other advantages of using education to predict socioeconomic status compared with income or occupation, is that educational attainment is specific to an individual, relevant for women who may not be working to look after children. In the wider literature educational attainment is a stronger predictor of mortality and morbidity mortality than either income or occupation ⁴³⁸. Indicators measuring life course socioeconomic position, for example income, housing, relationship and occupation, and any social risk factors were also collected and reported.

Social risk factors were not included in the criteria as the evaluation aimed to explore whether or not women are more likely to disclose social risk factors during their pregnancy if they received care from the specialist model.

Data collection

Using Manzano's ⁴²⁷ guide to realist interviews, and the programme theories developed in the realist synthesis of women's experiences of UK maternity care ²²¹ and the focus groups with midwives in the specialist models ⁴³⁹ a realist informed interview guide was prepared to elicit specific mechanisms of how each model of care might improve women's access and engagement with services- See Appendix D for the interview guides. The term 'programme' has been changed to 'service' or 'care' in the interview questions to reflect the language of the participants. The interviews were carried out in a setting of the woman's choice at around 28- and 36-weeks' gestation, and 6 weeks after birth. The interview guides aimed to explore how women experience their care in relation to access and engagement with services and the local community, referral

and coordination with support services, feelings of safety and trust, behavioural change, advocacy, and engagement with the local community.

Analysis

The qualitative data were coded using NVIVO v.12 and analysed using a thematic framework approach. This method allowed us to organise a large qualitative dataset into a coding framework developed using previously constructed programme theories^{221,439}, and uncover new emergent theories. It also allowed us to see the differences in women's experiences depending on their individual contexts⁴⁴⁰. Two members of the research team read and re-read each transcript thoroughly and assigned sections of the text to the programme theories, similar codes (or programme theories), were grouped under higher order categories to unearth middle range theories. These higher order categories were used as CMO configuration headings. In order to find meaning behind the results of the quantitative data analysis, we used an iterative approach to identify, check and clarify emerging codes and themes around access and engagement with services. We utilised existing models of sample size sufficiency, data adequacy, and thematic concordance⁴³³⁻⁴³⁵ to assess acceptable data quality and theme saturation. Women receiving the community-based specialist model of care are identified using a pseudonym followed by 'CBM', and those receiving the hospital-based specialist model 'HBM'.

This chapter has presented an overview of scientific realism methodology by describing its philosophical underpinnings, main tenets and concepts such as mind independent reality, retrodution, mechanisms, generative causation, and objectivity and subjectivity. It aimed to situate the scientific methodology within a wider philosophical discussion through discussing the commonalities and differences between forms of realism and approaches to ontology and epistemology. Finally, the chapter described how a mixed methods design has been used to integrate quantitative and qualitative findings in order to test the initial programme theories and ultimately address the aims of the research. The next chapter outlines the realist synthesis, undertaken to formally and systematically identify programme theory ready to test in the realist evaluation.

Chapter 4 How do women with social risk factors experience United Kingdom maternity care? A realist synthesis

This chapter presents the aims, objectives, methods, findings and discussion of the realist synthesis conducted to explore how women with social risk factors experience UK maternity care. The findings are presented using eight CMO configurations to be tested in the realist evaluation that follows. This was published in a peer reviewed journal, the full publication version is provided in Appendix G.

1.15 Aims and objectives

The aim of this realist synthesis was to uncover the mechanisms that impact on women's experiences of maternity care and develop programme theories to be tested in a subsequent realist evaluation.

The objectives were to:

1. Identify and review relevant qualitative research on how women with social risk factors experience maternity care in the UK.
2. Uncover the realist contexts (C) and mechanisms (M) that lead to positive or negative experiences of maternity care/outcomes (O) in each included paper.
3. Develop initial programme theories using the CMO configurations.
4. Synthesise the initial programme theories to a set of middle range theories/core principles to test in a subsequent realist evaluation of specialist models of maternity care for women living socially complex lives.

1.16 Methods

Realist methodology attempts to understand what works, for whom, under what circumstances, and how. It focuses on how people respond to interventions using contexts, mechanisms, and outcome configurations ⁴⁴¹, for example, how women in a particular context respond to an aspect of their maternity care (the mechanism), and what is the outcome of this response. This was thought to be the most appropriate methodology for the synthesis question posed as it not only recognizes the complexity of social risk factors and maternity services, but also allows the structured development of program theories to break these complex phenomena down into more manageable hypotheses to test what works in improving women's experiences of maternity

care. The synthesis focused on qualitative evidence only to shift the focus from what works, to why it works by unearthing the mechanisms of maternity care that lead to particular outcomes. Qualitative synthesis can also highlight what outcomes are important to patients, and explores how acceptance, feasibility, meaningfulness, and implementation are crucial to the refinement of future interventions ⁴⁴².

This synthesis was undertaken through regular collaboration with a patient panel consisting of recent maternity service users with social risk factors, and a panel of international experts in health inequalities and maternity care. Both panels advised on the review aims, search criteria, data extraction process, analysis, and identified gaps in the literature.

Literature search

This realist-informed, systematic synthesis of qualitative primary studies focused on the maternity care experiences of women with social risk factors using Pawson's 5 stages of a realist synthesis ⁴⁴¹. Two independent researchers reviewed 1830 papers by title and abstract according to the search strategy and inclusion criteria see **Error! Reference source not found.** below, and Table 11 for the search sources and results. Fifty-two full-text papers were reviewed and 22 papers included, see the Prisma flow diagram presented in Figure 19 and Table 12 Characteristics of included studies for the characteristics of the final 22 included papers.

Table 10: Search strategy parameters and inclusion criteria

Facet	Definition	Search terms
Intervention	<p>Included- UK based maternity care, including standard, routine care and specialist models providing antenatal, intrapartum and/or postnatal maternity care for women with social risk factors.</p> <p>Excluded- education programmes, support groups, doula services, additional staff training, interventions/models of maternity care in any country other than the UK.</p>	<p>Pregnant*, maternity, maternity care, maternity model, pregnancy care, model of care, maternal health service*, midwif*, obstetric*, healthcare, profession*, HCP, continuity, specialist, antenat*, intrapartum, postnatal, perinatal, team, intervention, birth.</p>
Population	<p>Women with low socio-economic status and/or social risk factors identified in the working definitions (see Appendix A)</p>	<p>Social complex*, social Factor*, vulnerab*, socioeconomic, socioeconomic status, SES, depriv*, poverty, poor, disadvantage*, level of education, low education, low prestige, social class, disparit*, inequalit*, inequit*, discriminat*, impoverish*, low income, social* exclu*, social isolat*, homeless*, refuge*, immigra*, asylum*, non-native language, language barrier*, minority ethnic*, ethnic*, black and minority ethnic, BME, sexual* abuse*, abuse*, domestic abuse*, domestic violence, intimate partner violence, IPV, physical abuse*, emotional abuse*, victim of abuse, sex worker*, adolescent*, young mother*, teenage*, single mother*, traveller*, travelling community, roma*, mental health, perinatal mental health, safeguard*, social care, social service*, child protection, substance abuse, drug abuse, addict*, alcohol*, alcohol abuse, disabil*, physical disabil*, learning disabil*, emotional disabil*, Female genital mutilation, FGM, Female circum*, HIV Positive status, HIV.</p>
Methodology	<p>Included- qualitative literature, or the qualitative data within mixed methods research was included.</p> <p>Excluded- Any literature published prior to 2010 was excluded to reflect the response to recommendations of the NICE (2010) maternity service guideline for women with complex social factors.</p>	<p>Experien*, encounter, perception, view*, feel*, felt, remember*, recollect*, access*, engage*, communicat*, trust*, comfort*, uncomfort*.</p>

Table 11 Search sources and results

List of sources searched:	Date of search	Search strategy used, including any limits	Total number of results found	Number included
MEDLINE, EMBASE, CINAHL, PsycINFO, Maternity and Infant Care Database MIDIRS, Social Policy and Practice, Social Science Citation Index	28/02/2018	2010-present	2153 (1741 after duplicates removed) 38 full texts reviewed	18 Included
Cochrane Library and database of systematic reviews, PROSPERO	24/02/2018		11	0 included
Web of Science	2/3/2018		70	0 included
Grey literature (databases OpenGrey and Copac)	05/03/2018		3	1 included
Hand searching of key journals, citations in included studies, websites, and local and national guidelines	7/3/2018		6	3 included

Figure 19 PRISMA Flow Diagram

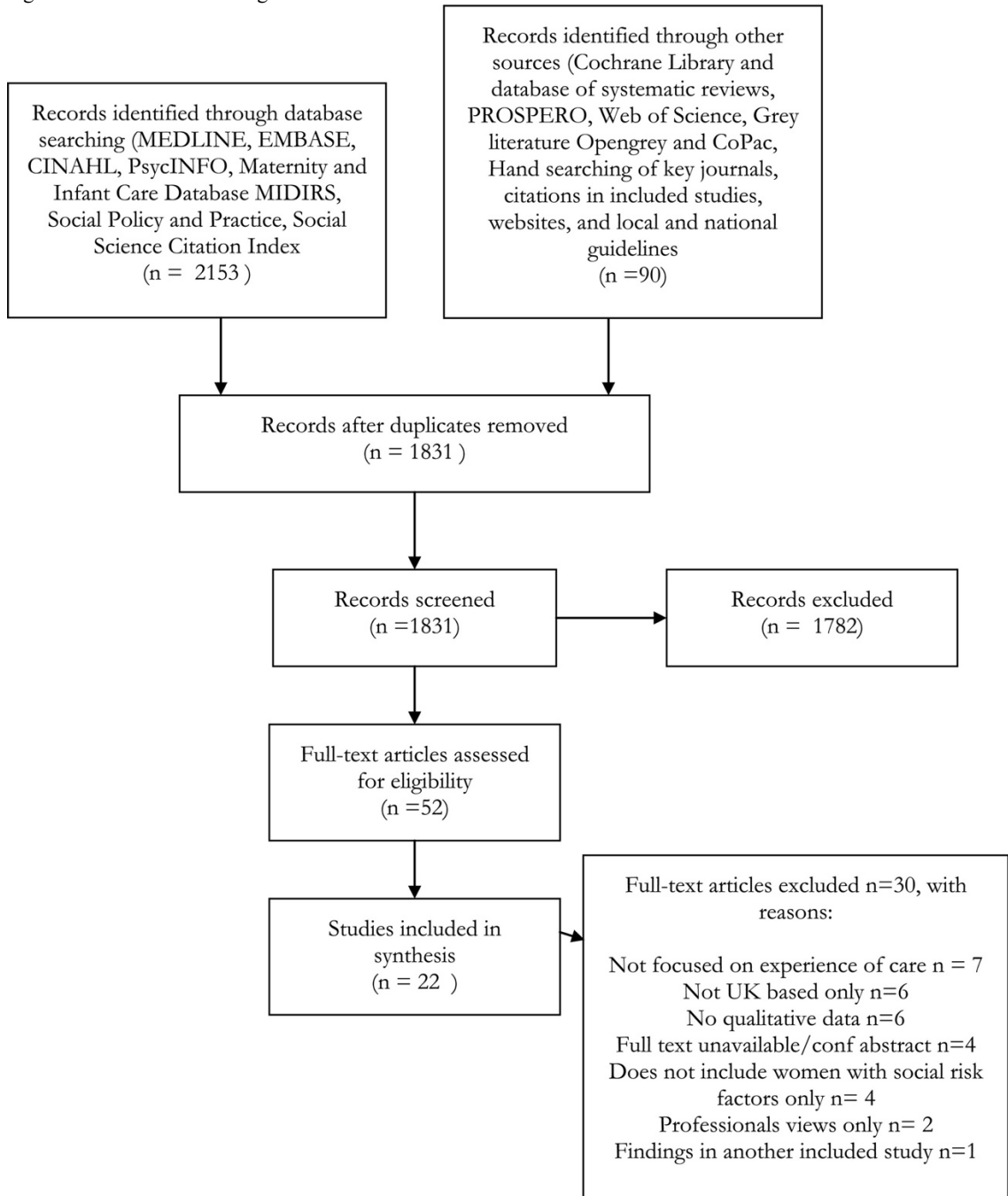


Table 12 Characteristics of included studies

First Author, date	Aim and methodology	Participants and setting
1 Alshawish, 2013 ⁴⁴³	To investigate access to and use of health services, particularly maternal and child health care, in the UK by Palestinian women. In-depth interviews	22 Palestinian women, residing in Manchester, who had experienced maternity care in the UK.
2 Balaam 2018 ⁴⁴⁴	To explore vulnerable/marginalised women's views and experiences of receiving targeted support from a specialist midwifery service and/or a charity. Mixed-methods involving analysis of routinely collected birth outcome data and in-depth interviews.	11 women who received additional targeted support from specialist midwifery services or a charity due to issues such as: poor mental health, homelessness, substance use, social isolation, domestic abuse, having children in care, or being asylum seekers or refugees. North London, UK.
3 Beake, 2013 ⁴⁴⁵	To evaluate caseload midwifery in a relatively deprived and ethnically diverse inner-city area. Semi-structured interviews	24 women from diverse ethnic backgrounds, 12 of whom had received caseload care and 12 women from an adjacent area who had received conventional maternity care in a large inner-city maternity unit.
4 Bick, 2017 ⁴⁴⁶	To explore health care needs, service use and challenges among women who became pregnant while in the trafficking situation in the UK and clinicians' perspectives of maternity care for trafficked persons. Cross-sectional survey and qualitative interviews	28 pregnant trafficking survivors and 9 maternity clinicians and family doctors
5 Binder, 2012 ⁴⁴⁷	To gain a deeper understanding of the multiethnic care setting and the roles that ethnicity and language play between immigrant women and their western obstetric care providers. In-depth individual and focus group interviews using semi-structured, open-ended questions	39 immigrant Somali, 11 Ghanaian, and 10 White British women, who had had at least one child within the British health care system. 62 obstetric care providers with professional affiliation as a doctor or midwife at five hospitals.
6 Bradbury-Jones, 2015 ⁴⁴⁸	To identify how disabled women who are affected by domestic abuse approach maternity care services, their expectations of services and whether they are able to get the type of care that they need and want. A qualitative, Critical Incident Technique study	5 women who: had seen a health professional in relation to pregnancy; had experienced domestic abuse; and lived with a health condition or impairment (physical, mental health, sensory or intellectual)
7 Callaghan, 2011 ⁴⁴⁹	To contribute to reducing the gap in the knowledge about 'late booking' for maternity care with a detailed exploration of such women's own accounts and perspectives on their relationship with NHS pregnancy care. Semi-structured, in-depth interviews.	20 women. Attempts were made to recruit women representing differing social backgrounds and ethnic characteristics for instance, women from BME groups, particularly Black African and Bangladeshi women, teenagers and those living in socially deprived circumstances

8 Docherty, 2012 450	To determine whether pregnant women's perception of antenatal provision differed in relation to their socioeconomic deprivation ranking. Longitudinal, qualitative study with comparative antenatal case studies.	9 primigravida women from 'least deprived', and 12 from 'most deprived' geographical areas within one local authority in Scotland.
9 Feldman, 2013 451	To investigate the health impact of dispersal and relocation on pregnant women and new mothers seeking asylum. Face-to-face structured interviews with women experiences from women who had been dispersed in pregnancy.	20 women, most had been dispersed or relocated during a pregnancy in the previous three years. 2 women whose dispersal was stopped on medical grounds, and 1 woman who was not dispersed but was being kept in Initial Accommodation. UK.
10 Goodwin, 2018 452	To explore midwife–woman relationships for migrant and minority ethnic women in the UK. A focused ethnography including semi-structured interviews with, fieldwork in the local migrant Pakistani community and local maternity services, observations of antenatal appointments, and reviews of relevant media.	9 migrant Pakistani participants and 11 practising mid- wives in South Wales, UK.
11 Hatherall, 2016 369	To explore the factors which influence the timing of the initiation of a package of publicly-funded antenatal care for pregnant women living in a diverse urban setting qualitative study involving individual interviews focus groups	Individual interviews were conducted with 21 pregnant and postnatal women and focus group discussions were conducted with a total of 26 health service staff members (midwives and bilingual health advocates) and 32 women from four community groups (Bangladeshi, Somali, Lithuanian and Polish).
12 HESTIA, 2018 453	To shine a light on the most serious and overlooked aspects of modern slavery in London today. Mixed methods including in-depth interviews	10 women who were victims of modern slavery and gave birth whilst their case was considered in the National referral mechanism (NRM). Supported by HESTIA. London, UK.
13 Jomeen, 2013 167	To explore Black and minority ethnic (BME) women's experiences of contemporary maternity care in England. A secondary analysis of open-ended questionnaire responses from a UK wide survey.	368 women who self-identified as BME responded with open text.
14 Lephard, 2016 454	To explore the maternity care experiences of local, pregnant, asylum-seeking women, to inform service development. Phenomenological approach using semi-structured interviews	6 women seeking asylum who had used UK maternity services in the preceding year. Four of the six women were from sub-Saharan Africa and two were from Eastern Europe.
15 Malouf, 2017 455	To explore the lived experiences of pregnancy, childbirth, prenatal and postnatal care and services received by women with learning disabilities in the UK, including their expressed information and support needs relating to maternity care. In-depth semi structured interviews	9 women with learning disabilities who were pregnant or had given birth within the last 3 years in the UK

16 McLeish, 2019 166	To explore the maternity care experiences of mothers with multiple disadvantages	40 mothers with multiple disadvantage
17 Montgomery, 2015 ⁴⁵⁶	To inform practice by exploring the impact that childhood sexual abuse has on the maternity care experiences of adult women. Narrative study from a feminist perspective using in-depth interviews.	9 women who were sexually abused in childhood and accessing maternity care in one unit in South East England.
18 Moxey, 2016 ⁴⁵⁷	To explore how Somali women exposed to female genital mutilation experience and perceive antenatal and intrapartum care in England. A descriptive, exploratory qualitative study using face-to-face semi structured interviews.	10 Somali women residents in Birmingham, who had accessed antenatal care services in England within the past 5 years.
19 Phillips 2015 ⁴⁵⁸	To explore and gain insight onto the expectations and experiences of women with a pre-existing diagnosis of mental illness, of their first booking appointment. Semi-structured interviews	12 participants with mental illness were selected from one antenatal clinic and one perinatal mental health service.
20 Phillimore 2016 217	To explore the reasons new migrant women, book late to maternity care and do not attend antenatal follow-up appointments. Questionnaire with qualitative and quantitative response and in-depth interviews.	82 questionnaires were completed by recent migrant women. 13 new migrants, women accessing care in the West-Midlands, UK, were interviewed.
21 Puthussery, 2010 ⁴⁵⁹	To explore the maternity care experiences and expectations of United Kingdom (UK)-born ethnic minority women. Qualitative in-depth interviews	34 UK-born mothers of Black Caribbean, Black African, Indian, Pakistani, Bangladeshi and Irish descent, recruited mainly from nine National Health Service maternity units in England.
22 Thomson, 2013 460	To offer a critical discussion from a public health perspective of service user's experiences of antenatal care services. A qualitative, descriptive study using group and individual semi-structured interviews	92 participants with 'social vulnerabilities' were recruited from organisations/groups who work with vulnerable populations and/or community groups were consulted in the North West of England.

Included studies were quality-appraised using a validated checklist⁴⁶¹ and generally assessed as high quality, see Table 13. Although it was important to report on the quality of the studies, they were not weighted according to quality during the analysis as the purpose of this synthesis was to collate program theories and CMO configurations ready to test in a subsequent realist evaluation.

Table 13 Quality assessment of included papers

Was there a clear state	Is a qualitative method	Was the research	Was the recruitment	Was the data collect	Has the relation ship between	Have ethical issues been	Was the data analysi	Is there a clear state	How valuable is the
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	ment of the aims of the research?	ology appropriate?	design appropriate to address the aims of the research?	strategy appropriate to the aims of the research?	ed in a way that addressed the research issue?	n research and participants been considered?	taken into consideration?	s sufficiently rigorous?	ment of findings?	research?
Alshawish, 2013	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Baalam, 2018	Y	Y	Y	Y	Y	N	Y	Y	Y	Y
Beake, 2013	Y	Y	Y	Y	N	N	Y	Y	Y	Y
Bick, 2017	Y	Y	Y	Y	Y	N	Y	Y	Y	Y
Binder, 2012	N	Y	Y	N	Y	N	Y	Y	Y	Y
Bradbury-Jones, 2015	Y	Y	Y	Y	Y	N	Y	Y	Y	Y
Callaghan, 2011	Y	Y	Y	Y	Y	N	Y	Y	Y	Y
Docherty, 2012	Y	Y	Y	Y	Y	N	N	Y	Y	Y
Goodwin, 2018	Y	Y	Y	Y	Y	N	Y	Y	Y	Y
Feldman, 2013	Y	Y	Y	N	Y	N	N	N	N	Y
HESTA, 2018	N	Y	N	N	Y	N	N	N	N	Y
Hatherall, 2016	Y	Y	Y	Y	Y	N	Y	Y	Y	Y
Jomeen, 2013	Y	Y	Y	Y	Y	N/A	Y	Y	Y	Y
Lephard, 2016	Y	Y	Y	Y	Y	N	Y	Y	Y	Y
Malouf, 2017	Y	Y	Y	Y	Y	N	Y	Y	Y	Y
McLeish, 2018	Y	Y	Y	Y	Y	N	Y	Y	Y	Y
Montgomery, 2015	Y	Y	Y	Y	Y	N	Y	Y	Y	Y
Moxey, 2016	Y	Y	Y	N	Y	Y	Y	Y	Y	Y
Phillimore, 2016	Y	Y	Y	Y	Y	N	Y	Y	Y	Y
Phillips, 2015	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Puthussery, 2010	Y	Y	Y	Y	Y	N	Y	Y	Y	Y
Thomson, 2013	Y	Y	Y	Y	Y	N	Y	Y	Y	Y

Key: Yes: Y No: N Not applicable: N/A

1.16.1 Data Extraction

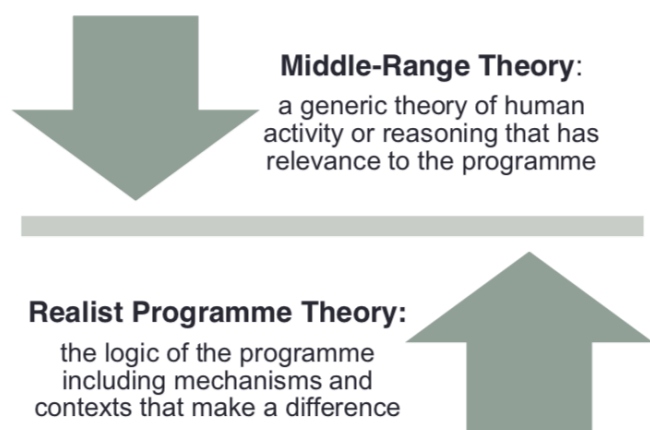
A data extraction tool (see Appendix B) was devised and completed for each paper to identify explanatory contexts (C), mechanisms (M), and outcomes (O), and to develop programme theories arising from these configurations. Programme theories were constructed using ‘*if...then...*’ sentences. For example: ‘migrants who arrived in the country late in their pregnancy or had re-located or been re-dispersed from elsewhere in the UK (C), were unable to register with a

GP in sufficient time to access maternity services before birth (O).’ was converted into the following programme theory: ‘*If* women who arrive in the country late in their pregnancy or have been re-located or re-dispersed from elsewhere in the UK are able to book maternity care directly with a midwife, *then* barriers to early access will be overcome and those who have difficulty registering with a GP will not be excluded.’

This process ensured transparency in converting findings into tangible, testable hypotheses, or ‘programme theory’. A total of 354 programme theories were constructed from the findings of the 22 included studies. This collected the voices of 936 women with various social risk factors. Programme theories were organised using data analysis software ⁴⁶² to uncover themes and develop middle range theories as recommended by Forster and colleagues ⁴⁶³ to increase transparency in decision making. This process enabled similar theories to be condensed, the extraction of theories specific to certain social risk factors, and the identification of conflicting theories. These conflicting theories give insight into what works in different contexts and for different populations ³⁷⁹. Once all papers had been classified according to the social risk factors included and the model of maternity care received and similar programme theories condensed, 85 programme theories remained (45 general theories and 40 that are specific to different social risk factors). These final theories were grouped into the most commonly occurring themes and further refined into 8 CMO configurations.

Merton described middle range theories as those that ‘lie between the minor but necessary working hypotheses (programme theories) that evolve in abundance during day-to-day research, and the all-inclusive systematic efforts to develop a unified theory’ ⁴⁰⁷. They help conceptualise complex reality so that empirical testing of the more specific programme theories becomes possible and generalisable see Figure 20 below. Shearn et al ³⁷⁶ propose that for social reality in particular, abstraction and conceptualization may be necessary in advance of realist programme theory testing. This will ensure a clear framework to inform the subsequent realist evaluation of models of maternity care for women living socially complex lives, for example in the development of the interview schedule.

Figure 20 Middle range theory and programme theory

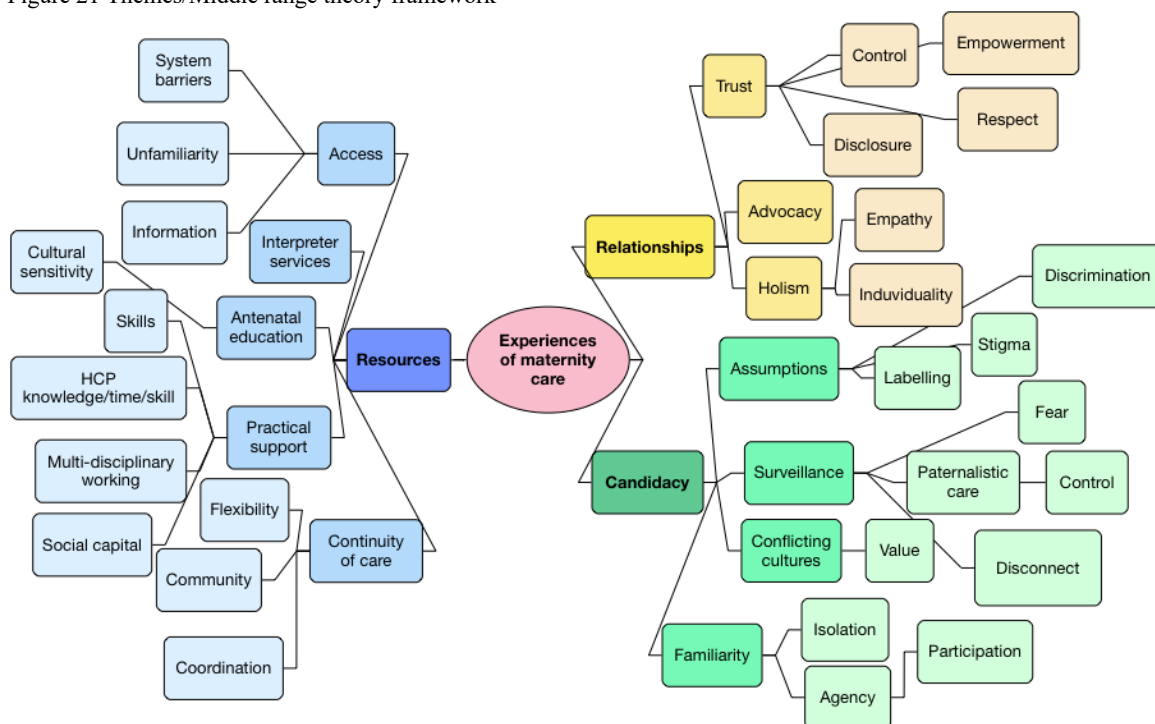


1.16.2 Synthesis

To address calls for more transparency in realist methodology, work was undertaken by Forster et al ⁴⁶³ to assess the feasibility of using computer assisted qualitative data analysis software, such as NVivo. Although it was found to be challenging in terms of time commitments in becoming familiar with the software, it was seen to be an effective way of organising data and increasing transparency in decision making. As this review includes qualitative data only, NVivo was thought to be an appropriate way of organising and coding the programme theories, and well as providing an audit trail of the data synthesis process.

The final 354 programme theories were coded to possibly relevant themes or ‘middle range theories’ using data analysis software, see Figure 21 below for a framework of the middle range theories . This process revealed both common themes and gaps in knowledge. Data analysis software ⁴⁶² also enabled coding of contexts, for example specific social risk factors and models of care were classified into cases, thus enabling us to see what mechanisms and outcomes were unique to these contexts. Once all papers had been classified according to the social risk factors included and the model of maternity care received, 40 programme theories were grouped into the most commonly occurring themes (system resources, relationships, and candidacy), and further refined into CMO configurations. A full list of initial programme theories, including those specific to individual risk factors is detailed in Appendix B.

Figure 21 Themes/Middle range theory framework



1.17 Results

The full findings of this synthesis are detailed in 85 programme theories (45 general theories and 40 that are specific to different social risk factors) and referenced to relevant included studies to demonstrate transparency (see Appendix C). For the purpose of presenting a concise overview, the programme theories were refined into 8 overarching CMO configurations under three thematic headings (see Table 14 below): System Resources, Relationships, and Candidacy. The CMO configurations are not ordered in relation to importance as all are thought to be important in impacting outcomes depending on the specific contexts identified. Quotes from women are included to add meaning and illustrate findings in the included studies.

Table 14 Thematic headings

Theme	CMO Configuration mechanisms
Resources/Barriers	1- Access 2- Interpreter services 3- Antenatal education 4- Practical support 5- Continuity of care
Relationships	6- Trust
Candidacy	7- Overcoming assumptions 8- Surveillance

Theme 1: Resources/Barriers

CMO Configuration 1- Access

Context

Women who are unfamiliar with the NHS system, do not speak English, and/or do not have a permanent UK address, asylum seekers, refugees, trafficked women, those experiencing domestic abuse.

Mechanisms

Written information (in a woman's preferred language) about how to access health services.

Direct access to maternity services rather than referral from a general practitioner (GP).

The ability to access antenatal care without extensive documentation and without fear of disclosure to agencies or individuals who might put them at risk (for example border agencies or embassies)

Early access to maternity care (from conception/confirmation of pregnancy)

Ability to rebook missed appointments with ease and without reproach.

Outcomes

Earlier access to services, avoidance of denial of service, increased candidacy, increased autonomous choice through early access to safe abortion and family planning services.

When I was 4–5 months pregnant. . . I snuck out of the house and went to the local GP [family doctor] practice. When I arrived, they told me I needed a passport and proof of address. I explained that I didn't have this documentation and they turned me away' ⁴⁴⁶

When we go to register in our nearest GP, the women in reception ask us... you have to bring... bills. And I told her, we don't have bills, we are in NASS [National Asylum Support Service] accommodation... "So, you're not working?"... And I feel like... I didn't choose to not work!... I'm forbidden to... till my case... And I feel... very bad.' ⁴⁵⁴

"They said to me, until we are sure that it's safe you see, to carry on with the pregnancy, then you can have a booking" ³⁶⁹

CMO Configuration 2- Interpreter services

Context

Women who do not speak English and those who have difficulties communicating (learning or physical disabilities).

Mechanisms

Uncomplicated telephone access to interpreter services, or online provision to register with services, arrange or reschedule appointments, organise travel to appointments and to access advice from a healthcare professional.

Access to properly translated, language appropriate materials.

Choice of interpreter, for example a female, an anonymous, or a trusted interpreter.

Access to interpretation services throughout antenatal, intrapartum and postnatal period, including emergency admissions.

Outcomes

Earlier access to services, avoidance of denial of service, improved safety, flexibility, inequity in information received, increased confidence in help seeking and self-disclosure.

I asked them, "[Can] we cancel the meeting until we get an interpreter... I didn't understand you and you didn't understand me." She said, "No, it's OK, we can go on—you understand English." ⁴⁵⁴

*'The problem we asked about an interpreter but unfortunately I didn't see her during my pregnancy ..9 months'*⁴⁴³

CMO Configuration 3- Antenatal Education

Context

Women who may have limited education, unfamiliar with the system, language barriers, learning difficulties, caring responsibilities, no support, engage in 'risky behaviours'.

Mechanisms

Culturally sensitive antenatal education (for example child friendly settings and classes without the presence of men), with an opportunity for women to openly discuss cultural beliefs and advice received elsewhere.

Understandable, evidence-based information, that is well translated, about maintaining a healthy pregnancy, the impact of risky behaviours, routine procedures, and help/support seeking.

Outcomes

Increased candidacy, engagement with services, knowledge, choice, informed consent, help seeking and lifestyle/behaviour change.

*I never attended the antenatal class, because no one takes care of [my] other two kids. Where [can I leave] them?*⁴⁴³

*Not enough information provided they give you leaflets and tell you some risks, but I would have liked to have talked to someone. It is different reading it than talking to someone and sometimes you don't understand the leaflets .so talking is better*⁴⁶⁰

CMO Configuration 4- Practical support

Context

Women with a lack of resources/money/support, unfamiliarity with UK culture and systems, frequent dispersal, socially isolated, learning disabilities, drug/alcohol abuse, undergoing child protection assessments.

Mechanisms

Provision of new skills/resources for example: infant feeding support, provision of breast pumps, bottles and storage bags, reassurance, and motivation to abstain from illegal substances HCP's knowledge, time and skill to coordinate and facilitate practical support to meet women's wider needs, for example: providing information about statutory procedures, contacting social workers, writing letters on women's behalf, coordinating and attending meetings with other statutory agencies (e.g. Social care, Housing departments, Home Office).

HCP's knowledge of maternity benefits and local support available to enable the provision of advice around practical matters such as housing, employment, education and care of other children and family members.

Outcomes

Women better prepared and supported for the challenges of parenthood and able to demonstrate their ability in parenting assessments, evidence of care and empathy from HCP's, increased agency, value in engaging with services, avoidance of further financial hardship, distress, and isolation. Development of a supportive network.

*'[They] came to meetings when Social Services came to see us on the ward. They'd chat to us before and afterwards. They'd give us private rooms . . . to go and talk in if we needed to, away from the ward. They were fantastic emotionally, they were really supportive.'*⁴⁴⁴

CMO Configuration 5 – Continuity of care

Context

Women living chaotic lives who struggle to access and engage with current, fragmented maternity services, social isolation, lack of resource, frequent dispersal, temporary accommodation, lack of support, complex social and/or medical history, disempowered, previous trauma or adverse experiences with services.

Mechanism

Access to a known midwife or small team of midwives 24/7 via a phone call, text message or free technology (freephone number, WhatsApp, skype etc)

Continued supportive presence throughout pregnancy and the perinatal period, with a known midwife, GP or other HCP who will coordinate communication across different trusts and services such as GP, gynaecology, maternity services, social care and mental health services HCP's work in a small geographical area where they are visible and become known by other members of the community, religious networks and other 'gatekeepers', local charities, food banks, befriending programmes and support services.

Flexible, needs-led care, where the time and place of appointments is co-planned (for example at home, community or a hospital setting, not at school times for single mothers, outside of working hours for women working illegally).

Outcomes

Personalised, holistic care, increased engagement, trust, agency, candidacy, empowerment, sense of control, support, community integration, safety. Women are less likely to have to repeat their history and experience a variation of responses/advice, fragmentation/disassociation between services, and reduce stress/anxiety.

*Every time I saw the midwife during pregnancy and labour, I felt that I was just being processed, there was no opportunity to develop a relationship.*⁴⁵³

*Have one midwife—I think it would be much better for me. You understand ... so I can ... because the midwives there is different, and I don't know how to open to them. I can't be open up to a lot ... every different people. When it's one person, then you can open up*⁴⁴⁹

Theme 2: Relationships:

CMO Configuration 6- Relationship/ Trust building

Context

Women with previous and/or current experience of trauma, abuse, and discrimination, perceptions of previous manipulation and coercion by professionals, social isolation, lack of resources and support, limited education, unfamiliarity with systems and processes, complex social and/or medical history, disempowered, lack of sense of control, social care involvement/parenting assessments.

Mechanism

Development of a trusting relationship with a known HCP through continuity, open discussion and story sharing, and the provision of meaningful, relevant information.

Provision of advocacy through known HCP attendance at meetings, and other forms of emotional support during interactions with social care.

Women are informed of their right to choice through education and provision of the evidence-based information required to exercise that choice.

The perception of a healthcare professional to be respectful, understanding, kind, and helpful.

Outcomes

Meaningful interactions, self-disclosure, increased perceptions of trust, empowerment, control, support, self-confidence, shared decision making, knowledge of unfamiliar processes. Restore previously broken trust in systems/services and quash the belief that accessing care equates to relinquishing control and feeling violated.

Avoidance of labelling women or making assumptions about their needs based on a perceived cultural background.

Conflicting theory: it is more important that the whole service is perceived as safe, respectful, understanding, and kind, rather than one trusted HCP in a wider toxic environment.

*'I had built a relationship with her, I felt looked after and I had confidence in who was providing my care'⁴⁶⁰
I would ask why was that and they were like, 'Ob, it's our choice. It's our decision.' And just felt like we didn't
*have a say in in how...we could have our son...felt like we were invisible really...no need for us to even be there
because they'd already made a decision.'*⁴⁵⁵*

Theme 3: Candidacy

CMO Configuration 7- Overcoming assumptions

Context

Women who experience disadvantage, discrimination, stigma and stereotyping based on their race, class, ability, age and other sources of oppression.

Mechanisms

HCP's recognition of strengths and assets held by women and communities and respect for women's expertise of their own body, needs and baby.

Recognition that women with social risk factors are more likely to experience paternalistic care, as passive recipients.

Women are encouraged to raise concerns in an easy and confidential manner and escalate those concerns if they are not satisfied with the response.

HCP's work within a community where they are immersed in local cultures and acknowledge the importance of culture and the influence of family members on women's experience of pregnancy.

Outcomes

Women will not feel their cultural needs are being disregarded in favour of the western medical model and inequities in access, engagement, the uptake of screening, and antenatal education will be reduced. Increased perception of being cared for on a personal level and involved in decision making. Avoidance of disempowerment, feelings of being pressurised, ignored and excluded, long lasting psychological trauma, and increased control, bonding between a mother and her baby, improved self-confidence, and potential adverse outcomes could be avoided.

'I were drip grey, my veins were closing up, and [the doctor] said, 'Right, we'll break your waters now.' I said, *'There's no way you can break my waters now, I need to go on a glucose drip, I'm really quite poorly, 'and he said, 'Ob, are you a doctor now?'... And I said, 'No I'm not a doctor, but I have lived with this condition since I were 15,' and he actually looked at me and said, 'What condition?''*¹⁶⁶

Sometimes there is quite a lot of jargon and when I go to my appointments you know when I'm being measured and stuff like that and they're checking for the foetal position and stuff they're not really telling back to me, I've got to come back and check my notes. ⁴⁵⁰

CMO Configuration 8– Surveillance

Context

Women who fear judgement of healthcare professionals or perceive maternity services as a system of surveillance rather than support, for example: those with immigration issues who are worried that they can be tracked by authorities and their babies removed if they registered with services, trafficked women, young mothers, those with disabilities, women experiencing abuse, drug and alcohol abuse, known to social care/undergoing parenting assessments.

Mechanisms

HCP's knowledge about reporting mechanisms for women with immigration issues, including processes of payment as a non-UK resident, and ability to signpost women to confidential advice.

HCP's ability to explain the reasoning behind reporting safeguarding concerns, the process of assessment, and discussion of what 'meaningful support' means to the woman.

Women's involvement in the process of reporting safeguarding concerns in an open manner that encourages them to identify their needs.

Processes are in place that protect the woman from being put at risk of harm, for example women whose abusers or traffickers may control or observe access to services are given the opportunity to self-disclose in safe environment and disclosures are followed up safely and sensitively.

Outcomes

Increased access and engagement, self-disclosure, trust, safety, development of meaningful support networks, improved long term outcomes for mother and child. Decreased intergenerational vulnerability, discrimination, disconnectedness, fear and anxiety.

I was a little bit reluctant to share my history and everything that I knew was relevant, but at the same time I didn't want to open myself up... They ask you questions in their questionnaire, "Have you been involved in domestic abuse? Have you done this and this and this?" and it's kind of like a piece of paper, and you check off all the problems that you have with yourself... why do they even want to know all this stuff? And I really feel – and I might be just jaded or cynical about it, but I really do feel it's because they want to judge you about what kind of decisions you can make for yourself.' ⁴⁴⁸

I thought if you said something how you's exactly feeling, and if you was feeling a bit down that particular day, that they would use that against you' ⁴⁵⁵

It is safer not to ask for help, you'd better Google rather than ask midwives . . . I didn't want them thinking, 'Oh, she can't do it' ¹⁶⁶

1.18 Discussion

This synthesis systematically identified qualitative literature that focused on the experiences of maternity care in the UK for women with social risk factors and used realist methodology to uncover the contexts and mechanisms that led to positive or negative experiences. These contexts and mechanisms were coded and developed into CMO configurations, providing a set of programme theories to test and compare women's experiences in future research and evaluation of services. The findings contribute to knowledge by providing detailed insight into how different social risk factors impact on women's ability and willingness to access and engage with services. The realist methodology takes the findings of the twenty-two included papers deeper by unearthing potential mechanisms that may improve or worsen experiences.

Twenty of the twenty-two included studies reflected the views of standard maternity care in the UK reflecting the availability of specialist models of care for women with social risk factors. The included studies covered a range of social risk factors that were often multiple and overlapping. Black and minority ethnicity, and asylum seeker/refugee status were the risk factors most commonly focused on, and although the vast majority of the studies found that the participants were socially deprived, only four of the twenty-two papers used social deprivation in their inclusion criteria. By focusing on single social risk factors when designing research or services, the complexity of social deprivation and oppression may be overlooked and deficits within the system disregarded. For example, the growing body of literature on the 'healthy migrant' phenomenon shows that many first-generation immigrants often have better physical and mental health than the indigenous populations of many developed countries ^{464,465}. This suggests that it is not that a person is not native to a country that puts them at risk of health inequalities, it is growing up in a place where that person might be perceived as different that has a greater bearing. This synthesis found that for black and minority ethnic women, asylum seekers and refugees, it was the language barrier and unfamiliarity of the UK system that had the biggest impact on how they accessed, engaged and experienced their maternity care. This leads us onto the concept of intersectionality, that although wasn't explicitly discussed in the included studies, became a clear factor in how women experience maternity care. Oppressive institutions of racism, sexism, ableism, classism etc, are interconnected, impact on health inequalities ³¹⁴ and

cannot be separated when trying to understand why some women experience maternity care differently to others. One example of this is found in Bradbury-Jones' study⁴⁴⁸ where the women felt that not only were they perceived as less able to make decisions due to their disability, but that this was compounded by healthcare professionals' judgements about the domestic abuse they had experienced.

Five of the eight CMO configurations related to system resources: access, interpreter services, education, practical support and continuity of care. This closely reflects the findings of Hollowell et al's²²⁰ review of black and minority ethnic women's experiences of maternity care. A frequent finding in both papers was the importance of community-based care, allowing women and midwives to integrate with the local community, and ease access to services for women who lack resources or are not able to travel far to hospital appointments.

The importance of relationships was so apparent in the programme theories that it became a key middle range theory. There is a wealth of literature on the benefits of continuity of care on women's outcomes^{220,234,268,466}. This synthesis found that for women whose trust has previously been broken, either through interactions with professionals, or previous trauma and abuse, the development of a trusting relationship with a health care professional results in increased confidence, safety and empowerment. It also reduced women's perception of discrimination, manipulation and coercion by people in power. Although 'relationships' was found to be an occurring theme in this synthesis, the concept of trust was tied in closely to this. Women described the impact of trust in health care professionals and trust in the system as a whole. Literature on the theoretical perspectives of trust describe these two aspects, suggesting that trust in a person can act as a moderator/mediator when there is distrust in a system^{467 468}. However, this protective factor is vulnerable to the trusted person not being there. A conflicting programme theory identified that for some women, particularly those with social care involvement, it was more important that the whole service is perceived as safe, respectful, understanding, and kind, rather than one trusted professional in a wider toxic environment. The data from women who expressed this was linked to perceptions of surveillance, which may explain why the thought of one known health care professional might be perceived as intimidating, and building a relationship may be viewed as an invasion of privacy. It should be noted that the vast majority of included papers reflected standard maternity care, and that those women who had experienced a form of continuity did not report negative perceptions of surveillance and valued the relationship they had with their health care provider/support person. Dismantling the belief that accessing health care services equates to relinquishing control may have long lasting consequences on women's social interactions, help-seeking, and parenting.

Conversely, if women with social risk factors, particularly those that contribute to disempowerment, experience paternalistic care through being denied choice and perceive HCP's as lacking warmth, patronising, arrogant, and stigmatising, then they will remain disempowered, feel undervalued and their low self-confidence will increase.

Candidacy, defined as 'the ways in which people's eligibility for medical attention and intervention is jointly negotiated between individuals and health services'²⁰⁸, was the umbrella concept for two CMO configurations titled 'assumptions' and 'surveillance'. The concept suggests that a woman's 'candidacy' for maternity services is materially, culturally and organisationally constructed. For example, it is well known that more deprived women access preventative health care services less than more affluent women^{164,215}, and have higher use of emergency services⁴⁶⁹. Candidacy is thought to be at play here, with factors such as help-seeking in response to crisis symptoms rather than to prevent poor health, the normalisation and acceptance of poor health, and fear of blame from health care professionals apparent across many of the included studies. Again, these factors were found in Hollowell et al's review²²⁰, with barriers to initial access, lack of interpreter services, discrimination/disrespectful care, and health care professionals lack of cultural knowledge affecting how women perceived their candidacy for services. The findings of this synthesis extend these findings further by proposing that if the value of accessing maternity services for the purpose of monitoring, prevention and support is communicated across the communities in which women live, through community-based services and relationship building, then women would not view the purpose of the service as simply the treatment of ill health, and access care earlier in pregnancy.

Strengths, limitations and gaps in literature

Overall, the studies included in the synthesis were assessed to be of high quality and they reported on studies conducted with women with a range of different social risk factors. However, the number of studies reporting women's socioeconomic status was limited. Only two of the studies reported specialist models of care, with the remaining studies reflecting the experiences of standard maternity care. This meant that the development of programme theories for what works in improving women's experiences were often drawn from negative experiences and inverted to a positive programme theory. To test those theories a full evaluation of how women experience specialist models of care is required.

A further limitation of the synthesis is the cut-off date of 2010 in the inclusion criteria potentially restricting the depth of the findings. This criterion aimed to reflect the NICE²⁹⁷ guidance for women with social complex factors, and to compare findings with previous systematic reviews of women's experiences of antenatal care^{220,284}. With these limitations in mind, the findings of this

synthesis add depth and detail in what works, for whom, in what circumstances, and how, to existing recommendations from the international wider literature ^{164,220,284,296,355,470,471}

There were some themes that were expected to be reported but were not. These included the recognition of women's personal strengths and assets, and the impact of their community. This may be because the women interviewed felt these were not important, because the research approach did not explore these themes, or because they were not included in final published work. The assumption of deficit- that people are a burden on the state rather than a resource, regarding poverty, asylum seekers, refugees and migrants was sometimes apparent in the reported experiences of women but was not made explicit in the studies discussion chapters. In addition to this, despite the growing body of evidence into the 'healthy migrant effect', the papers included in the synthesis did not explore inequities in health service utilisation, experiences and outcomes for second or third generation descendants. Tudor Hart's ³⁶⁰ 'inverse care law' - the principle that those most in need of care are the least likely to receive it- was also evident in the findings of many included studies but not discussed. For example, do health care professionals 'do more' for more affluent women? Do women with lower socioeconomic status have lower expectations of maternity services? Further research, using qualitative realist evaluation methodologies with all stakeholders will help to answer these questions and test the programme theories put forward in this synthesis.

Conclusion

The findings of this synthesis provide both an underlying theory and practical guidance on how to develop safe, person-centered maternity services for women with social risk factors that encourage early access, meaningful engagement and reduce the discrimination and fear this group of women often experience. The synthesis contributes to knowledge by identifying how women with different social risk factors experience care in different ways, resulting in specific programme theories tailored to more individualized need. The CMO configurations developed will be tested in a realist informed evaluation of two specialist models of care (one community based, one hospital based) within areas of significant health inequity in London, UK. The synthesis also highlights potentially significant gaps in the literature, such as the impact of discrimination on outcomes and experiences, potentially stigmatising service provision, or the protective factors of community and family support. These knowledge gaps should be explored in future research and considered when panning services for this vulnerable population.

Chapter 5 Realist Evaluation Part 1 ‘Context’: Characteristics of the models of care, midwives and women

This chapter presents the characteristics of the participants included in the focus groups, quantitative cohort and longitudinal qualitative aspects of this research that make up the realist evaluation. A description of the different services and models of care women received is also presented. The characteristics of the focus group sample, quantitative sample and qualitative sample have been presented separately for clarity, although the findings will be intergrated in the final testing and refinement of the programme theories. The setting and models of care are presented first to define the different contexts.

1.19 Setting and models of care

Two inner city NHS maternity service providers in the UK that provide maternity care to a multi-cultural, socioeconomically diverse population were selected purposively. As current literature on improving maternal and neonatal health inequalities recommends relational continuity of care ^{234,268,428,472}. NHS service providers were selected that have established specialist models of care that aim to provide continuity throughout the antenatal, intrapartum and postnatal period. Selecting well established specialist models that have withstood organisational change over many years allowed us to focus on testing the programme theory against the evidence ⁴⁷³. In addition to this, it was important to test how the quality of continuity of care, and location of the model of care impacts on women’s outcomes and experiences. To do this data was collected on women with and without low socioeconomic status and social risk factors accessing the different models of care in different locations at each trust. This allowed testing in different contexts of care and increased the potential transferability of the refined theories.

Table 15 provides an overview of the two service provider settings and the models of care that women experience at each:

Table 15: Definitions of the different models of care received by women at the two service providers researched

<p>Service A</p>	<p>Standard Care: Depending on medical risk factors women receive antenatal and postnatal care as set by NICE guidance ²¹³ in either the community setting or hospital setting. For low risk women care is usually provided by a community midwife in a GP surgery or local children’s centre. For women at high medical risk care is provided at the hospital and shared between midwives and obstetricians. Although women may be assigned a ‘named’ healthcare professional, there is no emphasis on the provision of continuity of care.</p> <p>Group practice: Women are seen in either the community or hospital setting depending on their medical risk status. There is an aim to provide antenatal and postnatal continuity of care. Women have a named midwife who aims to see them for the majority of their antenatal and postnatal appointments. Intrapartum care is covered by the hospitals labour ward or birth centre staff. Women planning a homebirth will be looked after by on-call midwives, but this may be from a team not known to the woman.</p> <p>Specialist model: - Community based [CBM] A team of 6 midwives provide continuity of care to women located in an area of social deprivation. Not all women under their care will have social risk factors. Each woman is assigned a named midwife who coordinates all care, multi-disciplinary communication, and referrals. The named midwife aims to provide the vast majority of clinical care, with others in the team providing care when s/he is not on duty. The midwives are based in a local community health centre and offer antenatal, intrapartum, and postnatal care in the home, community, or hospital setting.</p>
<p>Service B</p>	<p>Standard Care: Depending on medical risk factors women receive antenatal and postnatal care as set by NICE guidance ²¹³. If women do not live within the geographical catchment areas of the group practices (see definition below), care is usually provided at the hospital and shared between midwives and obstetricians. Although women may be assigned a ‘named’ healthcare professional, there is no emphasis on the provision of continuity of care.</p> <p>Group practice Women are seen in different settings depending on their medical risk status but there is an aim to provide antenatal and postnatal continuity of care. For the majority of women who live within the hospital’s geographical catchment area, care is provided in the community setting, often out of children’s centres to prevent women from having to travel to the hospital for appointments. Postnatal care is provided at home and in postnatal clinics in the community. Women have a named midwife who aims to see them for the majority of their antenatal and postnatal appointments. Intrapartum care is covered by the hospitals labour ward or birth centre staff. Women planning a homebirth are looked after by a team of midwives providing on call care, with the aim for the midwives to have met the woman before.</p> <p>Specialist model: - Hospital based [HBM] A team of 6 midwives provide continuity of care to women with social risk factors only. Women with one or more significant social risk factors (see Appendix A for inclusion criteria) are referred to the team and assigned a named midwife who coordinates all care, multi-disciplinary communication, and referrals. The named midwife aims to provide the vast majority of clinical care, with others in the team providing care when she/he is not on duty. The midwives are based at the hospital site and offer antenatal, intrapartum, and postnatal care in the home or hospital setting.</p>

1.20 Focus Group Cohort Context

Eleven out of a possible 12 midwives participated, five from a community-based continuity model of care [CBM] within an area of deprivation in London, and six from a specialist, hospital-

based continuity model [HBM] for women with social risk factors in London. See Table 16 for data on the number of years each participant had been a registered midwife, and how long they had been working in the model.

Table 16: Participants time spent working within the model of care

Participant	Number of years as a registered midwife	Time spent working in model of care
HBM1	8 years	<1 year
HBM2	6 years	2 years
HBM3	3 years	<1 year
HBM4	28 years	9 years
HBM5	5 years	<1 year
HBM6	25 years	4 years
CBM1	13 years	13 years
CBM2	<1 year	<1 year
CBM3	6 years	3 years
CBM4	4 years	<1 year
CBM5	6 years	<1 year

1.21 Quantitative Cohort Context

See Figure 22 for the data collection flowchart. Two hundred and one sets of birth outcome data were missing due to sample drop out, that is that those women stopped receiving care at the service and were therefore excluded from the final analysis. Reasons for sample drop out are given where recorded.

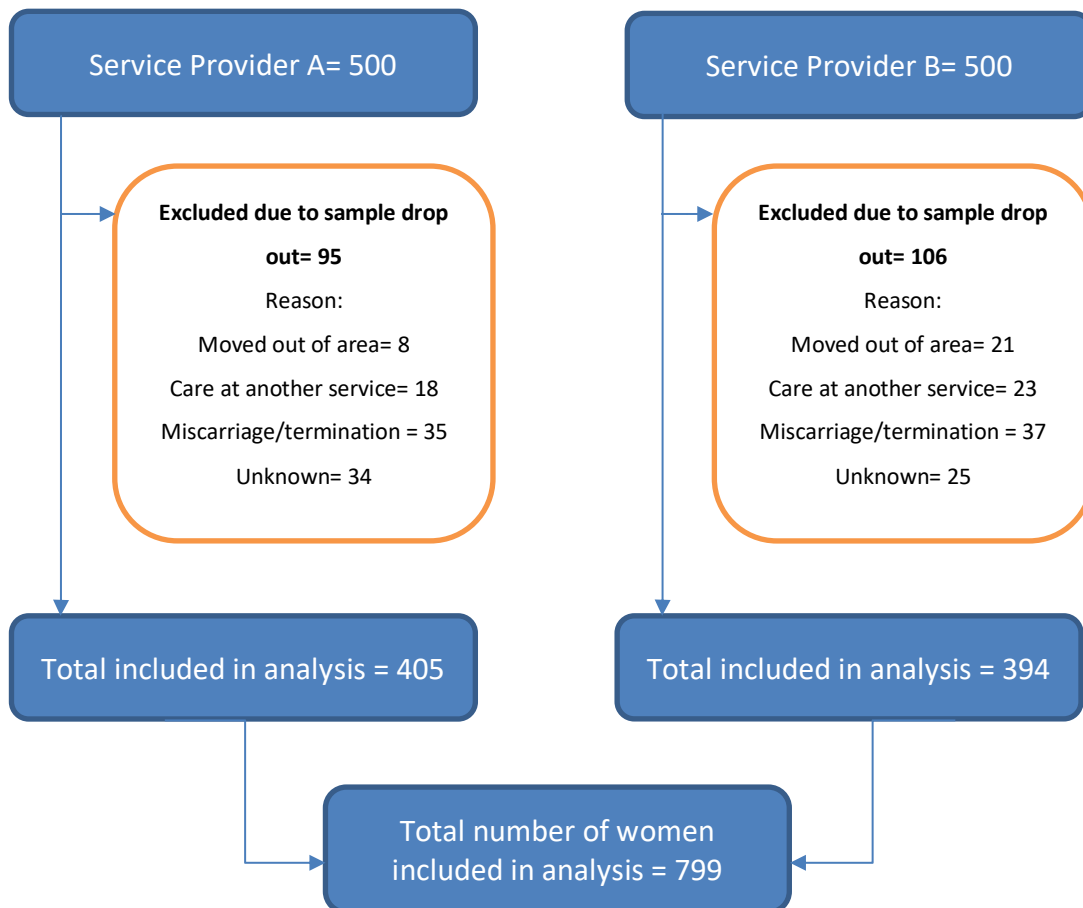


Figure 22: Data collection flowchart

Characteristics of women in quantitative data sample (n=1000)

The section below describes the characteristics of the women in the quantitative sample. The women who were excluded due to drop out are presented first to explore differences between the two service providers and deprivation groups. Deprivation deciles, calculated using the 2019 English Indices of Deprivation ⁴⁷⁴ were grouped into four groups of sufficient numbers to enable comparisons between groups of similar numbers. These groups will be used throughout the findings chapters and are as follows:

- 1) Most deprived- 1st and 2nd deciles

- 2) 3rd and 4th deciles
- 3) 5th and 6th deciles
- 4) Least deprived- 7th, 8th, 9th and 10th deciles

P values are presented to show statistical significance between the characteristics of women accessing maternity care at both providers. Where pregnancy and birth outcomes are presented risk ratios and confidence intervals will be used to demonstrate statistical significance as well as the direction and strength of the effect ⁴⁷⁵.

Missing Data

Table 17 below shows that of the first 1000 women who had an appointment to book for maternity care in 2019, 201 did not go on to receive pregnancy care with the service. Therefore these women are not included in the quantitative data analysis that follows. The total numbers of women with missing outcome data at each hospital did not differ significantly. Although not statistically significant, when reasons for missing outcome data were given (71%), they varied slightly across the two service providers; Women at service B were more likely to have moved out of the area, although there were more women at service A recorded as ‘unknown’. Miscarriage or termination of pregnancy (TOP) were similar across both service providers.

Table 17: Missing data reason across each service				
Reason outcome data missing	Service A n(%) <i>Total missing data = 95</i>	Service B n(%) <i>Total missing data= 106</i>	TOTAL n(%) <i>Total missing data=201</i>	χ ² p value
Moved out of area	8(8)	21(20)	29(14)	
Care at other hospital	18(20)	23(22)	41(20)	
Miscarriage/TOP	35(37)	37(35)	72(36)	
Unknown	34(36)	25(24)	59(29)	
				<i>Pr 0.063</i>

When merging the data for the two service providers and analysing the reasons given for missing outcome data depending on the women’s deprivation score- see Table 18, we can see that the women in the least deprived deciles (7th-10th) were more likely to have moved out of the area or booked for maternity care at another hospital. Although not statistically significant, women in the more deprived deciles (1st-6th) were slightly more likely to have experienced a miscarriage or termination of pregnancy. This may have become significant with a larger sample size to reflect the literature that shows a social gradient for both spontaneous miscarriage and termination of pregnancy rates ^{149-151,156,157}.

Table 18: Missing pregnancy and birth outcome data by deprivation

Reason outcome data missing	Least deprived (7th, 8th, 9th +10th) Total=49	5th and 6th deciles Total=42	3rd and 4th deciles Total=77	Most deprived (1st +2nd deciles) Total=33	Total n(%) N=201	X² p value
Moved out of area	12(24)	5(12)	10(13)	2(6)	29(14)	
Care at other hospital	12(24)	9(21)	15(19)	5(15)	41(20)	
Miscarriage/TOP	11(22)	20(48)	28(36)	13(39)	72(36)	
Unknown	14(29)	8(19)	24(31)	13(39)	59(29)	
						Pr 0.154

Demographics of women included in the quantitative data analysis

The tables below outline the demographics of women who continued their pregnancies and gave birth at the two service providers. Definitions for all demographics and social risk factors are given in Appendix A. Table 19 shows that the 799 women who continued their pregnancies and gave birth at the two services were largely similar in demographics. There were small numbers of women in the least deprived groups across both services, closely reflecting their individual area demographics and local maternity dashboard data ^{474,476}. Statistically significant differences between the service providers were found for ethnicity and deprivation. More women at service A were recorded as ‘white British’, and more women at service B were recorded as ‘white other’. Ethnicity was more likely to be recorded as ‘unknown’ at service A, and service B had higher rates of most deprived women and lower rates of least deprived women than service A.

Table 19: Women's demographics at each hospital				
Demographic variable	Service A n(%) Total data = 405	Service B n(%) Total data= 394	TOTAL n(%) Total data=799	X ² p value
Ethnicity				Pr 0.000
Asian	37(9)	53(13)	90(11)	
Black African	31(8)	46(12)	77(10)	
Black Caribbean	23(6)	16(4)	39(5)	
Black other	8(2)	14(4)	22(3)	
Mixed	12(3)	7(2)	19(2)	
White British	98(24)	58(15)	156(20)	
White other	80(20)	139(36)	219(27)	
Unknown	116(29)	61(15)	177(22)	
Age				Pr 0.356
≤20	6(1)	4(1)	10(1)	
21-24 years	19(5)	32(8)	51(6)	
25-29 years	63(16)	56(14)	119(15)	
30-34 years	134(33)	125(32)	259(32)	
≥35 years	183(45)	177(45)	360(45)	
Parity				Pr 0.167
Primiparous	212(52)	187(47)	399(50)	
Multiparous	193(48)	207(53)	400(50)	
IMD Quintile (2019)				Pr 0.035
Most deprived (1 st +2 nd deciles)	92(23)	114(29)	206(26)	
3 rd and 4 th deciles	160(40)	126(32)	286(36)	
5 th and 6 th deciles	72(18)	86(22)	158(20)	
Least deprived (7 th , 8 th , 9 th +10 th)	81(20)	68(17)	149(19)	

Table 20 below shows a number of significant differences in the social and medical risk factors recorded for the 799 women at the two services. Women at service B were more likely to have at least one social risk factor recorded, have common mental health issues, drug and/or alcohol abuse, financial and/or housing issues, be non-English speaking, unsupported, and have disclosed female genital mutilation (FGM). These differences could of course be due to a lack of recording risk factors at service A or highlight differences in women’s disclosure. Interestingly, women at service B were also significantly more likely to have high medical risk status at the onset of labour. This is despite a similar number of those with high medical risk at the booking appointment at service A.

Table 20: Women's risk factors at each hospital				
Risk Factors	Service A n(%) Total data = 405	Service B n(%) Total data= 394	TOTAL n(%) Total data=799 X ² p value	X ² p value
Social Risk Factor				
Domestic abuse	23(6)	17(4)	40(5)	Pr 0.377
Common mental health	4(1)	34(9)	38(5)	Pr 0.000
Severe mental health	2(<1)	8(2)	10(1)	Pr 0.051
Non-English speaking	16(4)	48(13)	64(8)	Pr 0.000
Social care involvement	27(7)	29(7)	56(7)	Pr 0.701
Drug/alcohol abuse	1(<1)	10(3)	11(1)	Pr 0.005
Unsupported/single	1(<1)	11(3)	12(2)	Pr 0.003
Financial/housing	15(4)	31(8)	46(6)	Pr 0.012
Learning disability	6(2)	5(1)	11(1)	Pr 0.797
Sexual abuse/trafficked	4(2)	5(1)	9(1)	Pr 0.677
AS/Refugee	8(2)	7(2)	15(2)	Pr 0.836
FGM	0	11(3)	11(1)	Pr 0.001
No recourse to public funds	6(1)	0	6(1)	Pr 0.015
No of social risk factors				Pr 0.003
None	337(83)	279(70)	616(77)	
1	43(11)	61(15)	104(13)	
2	13(3)	26(7)	39(5)	
3	6(1)	15(4)	21(3)	
4	5(1)	9(2)	14(2)	
≥5	1(<1)	4(1)	5(1)	
Medical risk factors				
High risk at booking	118(29)	106(27)	224(28)	Pr 0.496
High risk at onset of labour	152(38)	223(57)	375(47)	Pr 0.000

When merging data for the two service providers and analysing social and medical risk factors in relation to women’s deprivation score, we found a statistically significant relationship between deprivation score and the number of social risk factors women were experiencing- see Table 21

below. This is important as it reflects the literature showing the lower a woman's socio-economic status, the more likely she is to be experiencing one of more social risk factors ⁴⁷⁷⁻⁴⁸¹. This adds validity to the use of the deprivation score for identifying pregnant women at greater risk, and the assumption that deprivation is a marker of increased social risk in pregnancy.

Table 21: Social and medical risk factors by deprivation						
Risk Factors	Least deprived (7 th , 8 th , 9 th +10 th) Total=149	5 th and 6 th deciles Total=158	3 rd and 4 th deciles Total=286	Most deprived (1 st +2 nd deciles) Total=206	Total n(%) N=799	X ² p value
Social Risk Factors						Pr 0.000
None	133(89)	132(84)	212(74)	139(67)	616(77)	
One	10(7)	17(11)	50(17)	27(13)	104(13)	
Two	5(3)	4(3)	10(4)	20(10)	39(5)	
Three	1(1)	2(1)	10(4)	8(4)	21(3)	
Four or more	0	3(2)	4(1)	12(6)	19(2)	
Medical Risk						
High at booking	37(25)	46(29)	85(30)	56(27)	224(28)	Pr 0.743
High at onset of labour	62 (42)	79(50)	138(48)	96(47)	375(47)	Pr 0.475

Table 22 below shows similar numbers of women experience standard care and private (Non-NHS) care at both service providers. However, more women at service B received the group practice model, and more women at service A received specialist models of care. More women at service B experienced standard care in the hospital setting whereas more women at service A experience standard care based in the community setting. This is reflective of differences in the aims of the service and how maternity care is structured at the two service providers; service A aims to provide more specialist models that involve continuity of care throughout the antenatal, intrapartum and postnatal period in the community for women living in deprived areas. Service B aims to provide more group practices to women in deprived areas of the community and a specialist model based in the hospital for women with significant social risk. The following findings chapters go on to explore whether women with low socioeconomic status and social risk factors are more or less likely to receive specialist models of care, how, and why. Women receiving private care will not be included in the analysis as private care does not relate to the aims of the evaluation, it is not a realistic option for women with low socioeconomic status, and numbers were too small in this group to gain generalisable learning.

Table 22 Model of care received at each service				X ² p value
Model of care	Service A n(%) Total = 405	Service B n(%) Total = 394	TOTAL n(%) Total= 799	
Name of model of care				Pr 0.000
Standard Care	256(63)	213(54)	469(59)	
Group Practice	77(19)	144(37)	221(28)	
Specialist	59(15)	21(5)	80(10)	
Private Care	13(3)	16 (4)	29(4)	
Place of model of antenatal care				Pr 0.000
Standard model in hospital	100(25)	212(54)	312(39)	
Standard model in community	156(40)	1(0)	157(20)	
Group practice in community	40(10)	94(24)	134(17)	
Group practice in hospital	37(9)	50(13)	87(11)	
Specialist model in community	59(15)	2(1)	61(8)	
Specialist model in hospital	0	19(5)	19(2)	
Private Care	13(3)	16(4)	29(4)	
By place of antenatal care only*				Pr 0.000
Hospital based	137(35)	281(74)	418(54)	
Community based	255(65)	97(26)	352(46)	

*Excludes private care

The next section will present the characteristics of the 20 women receiving specialist models of care who were interviewed throughout their pregnancy. These women are not included in the quantitative data sample. Their insights will be presented alongside the quantitative data to explore the 'black box' of mechanisms behind the specialist models of care and link these mechanisms to specific context and outcomes. This will be particularly useful in finding meaning in both significant and non-significant findings and address the question of why and how specialist models of care improve women's outcome and experiences in some contexts, and not in others.

1.22 Qualitative Cohort Context

Characteristics of the women interviewed

Table 23 below presents the characteristics of the women interviewed in this study. Twenty pregnant women with low socio-economic status and at least one social risk factor were recruited to this study. Eight of those were first time mothers and the other twelve had between one and eight children. Of the multiparous women, for five this was their first pregnancy in the UK. All twenty women were under the care of a specialist maternity model that aimed to provide antenatal, intrapartum and postnatal continuity of care. Based on the 2019 IMD scores 95% of the participants were in the 1st or 2nd most deprived deciles, with the remaining 5% in the 3rd and 4th decile. Of the total participants, 60% of the participants were born outside of the UK, and 45% did not speak English and required an interpreter. All were experiencing between 1 and 7 social risk factors including; domestic abuse, mental health issues, drug/alcohol abuse, no support, single motherhood, financial and housing problems, learning disability, sexual abuse, trafficking, female genital mutilation and no recourse to public funds. The table also shows that 25% of the participants were seeking asylum, had refugee status, or had had an asylum claim refused and 45% of women had social care involvement during their pregnancy. In addition to these risk factors some participants had experienced other highly traumatic events including fleeing from a war-torn country, the death of a child, the kidnap of a close family member, held in an immigration detention centre, dispersal, had children removed from their care, and childhood sexual abuse.

Table 23: Characteristics of women interviewed

Characteristic	Community based model (CBM) n=10	Hospital based model (HBM) n=10	TOTAL n(%) n=20
Ethnicity and migration status			
Born outside the UK:	7	5	12(60)
Asian	0	2	2(10)
Black African	3	0	3(15)
Black Caribbean	0	1	1(5)
White	4	2	6(30)
Asylum seeker/refugee*	2	3	5(25)
Born inside the UK:	3	5	8(40)
Asian British	1	1	2(10)
Black British	2	1	3(15)
White British	0	3	3(15)
Age			
18-24	0	3	3(13)
25-29	1	1	2(2)
30-34	5	5	10(50)
>34	4	1	5(25)
Parity			
Primiparous	5	3	8(40)
IMD Decile (2019)			
Most deprived 1 st +2 nd	9	10	19(95)
3 rd and 4 th	1	0	1(5)
Least deprived 5 th -10 th	0	0	0
No of social risk factors			
1	3	0	3(15)
2	0	2	2(10)
3	2	0	2(10)
4	1	1	2(10)
≥5	4	7	11(55)
Level of education			
Secondary school only	5	6	11(55)
Completed college	4	3	7(35)
Completed university	1	1	2(15)
Occupation Status (NS- SEC)			
8 (long term unemployed)	6	8	14(70)
7 (routine occupations)	0	2	2(15)
6-3 (semi-routine)	4	0	4(20)
High medical risk at booking	7	5	12(60)

*Including women whose asylum claim had been refused.

This chapter has presented the characteristics of the participants included in the focus groups, quantitative cohort and longitudinal qualitative aspects of this research that make up the realist evaluation that follows. The two different services and the models of care they provide has also been described in detail, highlighting differences in the aims of both. These differences were reflected in the characteristics and service use of the quantitative cohort. A key finding from the quantitative data cohort was the significant relationship between deprivation score and social risk factors, giving validity to the use of the IMD score to reach women with increased social risk. The description of the qualitative cohort gives some insight into the level of complexity and hardship faced by the 20 women who participated in the research. The next chapter presents the first aspect of the evaluation; focus groups with midwives working in the specialist models of care, and builds on the theory established in the realist synthesis.

Chapter 6 – Realist Evaluation Part 2: Focus groups to explore midwives’ insight into the specialist models of care

This chapter presents the aim, findings and discussion of the focus group research conducted to explore the views of midwives working within the specialist models of care being evaluated. This research adds to the knowledge base by exploring how midwives provide care to women with complex needs, and what they believe works, for whom, in what circumstances. The findings enabled the refinement of the hypotheses - or programme theories - developed in Chapter 4, and provided practical guidance for those developing maternity services aimed at reducing health inequalities. The discussion is included in the chapter to demonstrate the iterative process of theory building and how the new or refined theories were developed for testing in the chapters that follow. This aspect of the research was published in a peer reviewed journal, the full publication version is provided in Appendix G.

1.23 Aim

To explore the insights of midwives working in specialist models of care for women with social risk factors in order to understand the resources they provide, and how the model of care can improve women’s outcomes.

This study was informed by the realist paradigm that assumes one external reality which can be explained through contexts, mechanisms, and outcomes, but that this reality is subject to change and volition which should be pursued by the evaluator³⁷⁹. The findings of the realist synthesis⁴²⁸, and potential gaps in knowledge, formed the focus group interview guide (see Appendix D) that aimed to highlight this change and volition in how the model of care works. Methodology is described in Chapter 3.

1.24 Findings

Three main themes were identified: ‘Perceptions of the model of care, ‘Tailoring the service to meet women’s needs’, ‘Going above and beyond’. Each theme is broken down into three subthemes to reveal specific resources or mechanisms the midwives felt might have an impact on women’s outcomes, and how women with different social risk factors respond to these mechanisms- see Table 24 below. Quotations from the midwives in each model of care have been given to add meaning and help identify differences and similarities between the two different models of care.

Table 24: Overview of main themes and subthemes

Main Theme	Subthemes
1.0 Perceptions of the model of care	1.1 Variation in the perception of the aim of the model of care 1.2 Belief the model of care is working 1.3 Emotional investment
2.0 Tailoring the service to meet women's needs	2.1 Holistic care (Multi-disciplinary working) 2.2 Flexible working (early access and chasing) 2.3 Community integration
3.0 Going above and beyond	3.1 Advocacy and disclosure 3.2 Counteracting mistrust and fear of the system 3.3 Trying to build relationships with those resistant to help

Perceptions of the model of care

Variation in the perception of the aim of the model of care

Midwives in both models of care gave varied answers when questioned about the aim of the model of care before discussing their uncertainty around a specific aim. Rather than give particular health outcomes they discussed social outcomes and the importance of being able to engage women in their maternity care and the impact this can have on long term outcomes such as parenting. They acknowledged that this was something that they felt was important and not an official 'aim' or 'key performance indicator'.

'...better engagement with services. Trying to get you know, addicts off their, their, you know, life. Giving them the opportunities to see if they can parent, to be able to parent their children. Keep their children, if possible.' (HBM6)

'I don't know, 18 years ago [when the service was set up] I don't know what they would have been thinking. I think for us now I think a lot of it is engagement.' (CBM2)

Some midwives indicated uncertainty around the specific mechanisms thought to improve women's outcomes.

'So, my understanding is that its continuity of care for vulnerable women because vulnerable women have poor birth outcomes, we know continuity of care gives better outcomes so therefore stick those two together and hopefully we get better outcomes for vulnerable women. Less stillbirths.' (HBM2)

Belief the model of care is working

Despite the variation discussed around the aim of the model of care, the midwives in both models were confident that their care has a positive impact on women.

'I really do truly believe that we make a massive difference to people's social outcomes, I really really do.' (CBM5)

'I have three women who lost babies [removed from parents to care of social services] in the past, I managed, you know, the care they received they were given an opportunity to keep their babies.' (HBM6)

Midwives in both models of care revealed specific mechanisms thought to improve outcomes by highlighting the differences in how women experienced the continuity model compared to standard or traditional maternity care. These mechanisms included early recognition of abnormalities, and more disclosures of women's concerns

'...getting them into the hospital sooner, and a plan made sooner, and, and a safety plan and maybe a delivery if that's what's needed. Whereas another lady [receiving standard care] like, who wouldn't realise her symptoms, had no one she could contact, or felt she could contact, didn't really go, missed an appointment, got sent a letter for two weeks later, by that point pre-eclampsia [worsens]' (HBM3)

'Because we have slightly longer appointments than traditional teams, we are able to talk to women for longer so might be able to find things that they need referrals for that other teams might not have the time to dig into.' (CBM4)

Emotional investment

Midwives in the community-based model discussed the emotional investment they had in their women's wellbeing and how this motivates them to sustain their investment in the women they care for.

'I think we also have that like emotional insight as well... I feel like we, as a team, we are quite invested in our women, and we do do a lot for them and I think, when you have that investment in someone that you want to push for them and you want their outcome to be good.' (CBM1)

'...I think the fact that we see a lot of the women, you know repetitively throughout pregnancy we know them really well. And it just gives you that element of, like I want this to work for you.' (CBM5)

Tailoring the service to meet women's needs

Holistic care (including multi-disciplinary working)

Holism was referred to throughout each focus group. The midwives from both models of care were very clear about the importance of holistic, including culturally sensitive, care in comparison to the medical model of standard maternity care. The midwives described practical issues that women with social risk factors often face and how they spend time supporting and advising women on practical issues far wider than pregnancy or maternity care:

'And it was even simple things of, because she's been illiterate, you know she was given a bank card from the no recourse to public funds team from social services, but does she know how to use a bank card? Does she know how much things cost and things because she can't read? And so there's been quite a lot of other thinking outside the box that if someone were under a mainstream system of midwifery care ... But also, being more just aware of kind of her general needs and what we're thinking that she's going to be needing after we've gone, as well. She was medicated. So that was a challenge, trying to make sure she knew which medicine to take because she couldn't read the box.' (CBM1)

Both models of care reported having good relationships with their obstetric colleagues and named consultant. They felt that this relationship led to a level of respect that promoted multi-disciplinary working.

'...And I think it's really great that if we have just a general query about something, um, that comes up within an appointment...we can just email and, um, the named consultant will respond with whatever advice she would advise.' (CBM4)

The midwives in the hospital-based model also spoke about their presence at women's obstetric appointments, and how this presence impacts on the obstetrician being able to provide more holistic care and encourage understanding of why women might make certain decisions:

'I think that by knowing them [the teams named obstetrician] then they help work with us.....to give the women the best care and the best, and maybe the, you know, the decisions they make are looking at the woman as a whole rather than just the obstetric concerns, they're understanding the social impact of why she chooses.... I dunno, they can understand the whole picture, because we helped deliver that' (HBM2)

Flexible working (early access and chasing)

Flexibility was discussed by the community-based midwives as an essential means of engaging women who struggle to attend appointments due to social factors such as caring responsibilities, financial and geographical barriers, unfamiliarity with the service, and mistrust.

'And it works for the women. Like if you've got a woman that can only ever see you at 5 or 6pm then I can do that one day and then come in late the next day or whatever, like you have that flexibility' (CBM1)

'And I also think a lot of our women now, our particularly vulnerable women, really wouldn't travel to the hospital for their appointments.' (CBM3)

'We didn't really stick to much of a pattern in terms of meeting her we could meet her when we could so there was a bit of a patch when we didn't see her for a few weeks. Um, not necessarily like through want of not trying but like just door-knock her and she was moving between properties, so it was just a lot more difficult...but that could have ended very differently' (CBM3) '...she could have entirely fallen off the radar.' (CBM1)

The hospital-based midwives discussed flexibility in terms of early access to pregnancy care and how this can impact social care outcomes. They also felt that women with social care involvement are given a chance to demonstrate their ability to parent through referrals to parenting and rehabilitation programmes, whereas if they were going through the standard maternity care pathway, they may not have been referred to these programmes in time.

'We see them quite early on [in pregnancy], we can recognise their needs and then send them to the relevant departments. So, when it gets to the time that we do go to core group meetings or strategy meetings, we've already referred them to relevant departments, we can already encourage our women to attend, or to be compliant with these programmes, erm, and once they've reached, the social services' sort of decision about the care of their unborn, we can already demonstrate that these women have been involved in some sort of rehabilitation programmes for their care, where they probably wouldn't have had that before (HBM3)

Midwives in the community-based model of care discussed the time they spent chasing women and encouraging them to come to their appointments. They felt that this had an impact on the women's engagement, outcomes and overall safety. Neither model of care had administrative support for this aspect of care.

'...we spend hours and hours and hours chasing people, and I think actually other services don't perhaps know that we need to know things...it's like other people's awareness of what midwifery actually is and like safeguarding other children, because we seem to do a lot' (CBM5)

'So I think instead of them feeling like they might just be in a system of hundreds of women...they're going to have to tell their stories again and again, um, whether it's that aspect that they don't, that they feel like they can engage with better. Or just kind of us having the capacity to almost ... push people to come to their appointments and go to their scans' (CBM2)

Community integration

When the midwives were asked about how engaged they felt to the local community there was a clear difference between the two models of care. Where the community-based model discussed a 'learning curve' they still felt they were well integrated into the community and knew about local services. They described a comprehensive but complex system of community support services that they have knowledge of through referrals and communication.

'...she was a late booker, very little support, or no support really for her. Um, living in very precarious situation when we met her. Um, and I think we were just able to, kind of build a bit of a team around her. (CBM2)

'...although it's been a massive learning curve with all these women coming through, and I know we've all learnt a lot about what's available locally and what happens locally.' (CBM3)

The hospital-based team midwives did not share this feeling- this did not seem to be solely based on their location and the size of their geographical area, but also cutbacks in services. They spoke about the enormity of the community, different cultures across the multi-ethnic geographical patch, and how this created difficulty in integrating women into local community support services.

'There's just too many communities. and it's a very big catchment area, with very many different communities, multi-diverse, that actually sometimes it's very hard to... get to know them all' (HBM2)

'...when I was a community midwife where I lived, I was known as the [name anonymised] clinic midwife, and when I'd go to the local high street they'd say hello to me and acknowledge me because they all, most of them had seen me in the clinic. But here, with the diversity and complexity of all the different ethnic communities that are going on, you just couldn't integrate into them, it's just impossible to do that because you can't be everything to everyone, so you just have to be quite single in your care' (HBM1)

'I think it's a shame that, you know the erm, children's centres, that's shrunk, a lot. And I think that's a real shame because when I very first started I felt we were more integrated into the children's centres, and that's gradually got less and less and less' (HBM4)

'They (health visitors) are very short (staffed) and its very difficult to get one very quickly'(HBM6)

Midwives in the community-based model of care discussed how immersing themselves in the community setting enables them to integrate women. This in turn helps women to feel supported and cared for by their local community.

I'm working with a young girl with learning difficulties at the moment and all of these incredible services have just come to light that I didn't even know existed... Um, like we're working with a support service for young people and people with learning difficulties, and they'll like go round help them clean their flat, do a food shop, take them to their appointments, like it's amazing what's available, but I had no idea until this case came up.' (CBM2)

'...we use the Children's centres a lot more now... and they'll [outreach teams] see a lot of our families that just need a bit of help integrating into the community. So they'll get them engaged in local services, get them coming along to the group sessions, meeting other parents' (CBM3)

I think this, this location is what gets our women to engage and I hope that we set women and families up to actually believe that they deserve more. And that actually we've not been the only ones that care about them but actually the community cares about them, and I hope that we can make them feel that way about themselves. I think that's important.' (CBM3)

Going above and beyond

Advocacy and disclosure

The midwives in both models spoke about advocating for women by guiding them through a complex and often unfamiliar system. Advocacy was described in many examples of how the midwives supported women and their families and tried to give them a voice. This was discussed by midwives in both models in terms of the social care system, but only by the hospital-based team in terms of clinical care.

We've had quite a few interesting cases recently where social services have not deemed there to be a concern, whereas where we're having really regular contact with these women we are seriously concerned. And we push and push and re-refer and get a safeguarding lead involved from the hospital until we feel that, that that family is safe. And I think having the time to do that, definitely as a traditional midwife you wouldn't have the time to do that. Um, so we are massively advocating for the safety of these families I think.' (CMB5)

We attend the meetings. The social service meetings, the strat [strategic] meetings, the core group meetings, professional meetings. We're there, and we are the ones that will go and represent our ladies, or the women in our care, so we know them personally rather than any midwife just turning up just with notes who doesn't know them.' (HBM1)

'...we can navigate women through the process, through the system. It's quite a scary system and I think by being here, by the relationships we've built around and between like the doctors and our medical colleagues and multi-professional teams, then we can kind of signpost and navigate a woman through easier, we will get her seen by a doctor early, so we know that she'll be seen first and won't have a 3 hour wait that other women might have and just to make it as kind of smooth as possible.' (HBM2)

The midwives in the community-based model gave insight into how the trust they had built with women had impacted on women's disclosure of sensitive information.

We've definitely had a, um, a few women that we've thought are not really a concern, like they might have come to us because of mild mental health, and that's all we know about their history. And then actually it's not until 25, 28 sometimes later weeks that they say, 'Actually I'm in this really abusive relationship, or, 'Actually I am technically homeless,'. I think it's the, the building of trust...I think by then they feel maybe comfortable enough to disclose what they feel they need to. (CBM3)

'..it was all very routine and everything was normal, and I was thinking, oh like it's a really quick appointment compared to normal, so I said to her, 'How's everything? Like how's your housing going, um, how's everything at home?' and then she opened up about having a, quite a volatile relationship with her mum. And so that's then opened another, you know, can of worms that I wouldn't have discussed if, um, I'd had a 20 minute appointment... because she hadn't disclosed it to me and we'd asked at booking and she'd said it was fine.' (CBM4)

This last quote demonstrates not only the impact of flexibility with the length of appointments, but also how repeated contact with a known healthcare professional enables the development of a trusting mother-midwife relationship.

Counteracting fear and mistrust of the system

Midwives in both models of care felt that fear is the most common underlying reason behind women's resistance to help, particularly if they feel social care will become involved. They identified particular social situations where this fear contributed to the lack of trust and disengagement with services:

I think domestic violence can be a tricky one...there's that level of fear and distrust I think of what will happen if the professionals get involved, if they do disclose, what will the outcome be?' (CBM5)

'because they are... scared. I think that underneath they are scared, they're terrified' (HBM2)

They revealed that often this fear can be overcome through a trusting relationship and an ability to communicate how social care can provide practical support:

'...I think for a lot of these women it's the first time they've actually ever had someone take a proper interest in their lives, and be able to manage them for over a period of time and make sure they've got a plan going forward. Um, whereas that initially was a really difficult situation she then came to really understand and feel safer and more protected' (CBM5)

When asked if the model of care works for all women, and if not, who does it not work for and why, the midwives in both models identified situations where they felt it was difficult to gain trust with women. Again, this lack of trust was often associated with social care involvement and women's perceptions of the aim of social care services. The midwives felt this had a direct impact on the woman's level of engagement and openness:

'I've got at the moment who is terrified of social workers because she's got two friends who've had a baby taken away... and now I'm trying to get a social worker involved and she's having none of it. But I want it for support, I don't want her baby [to be removed], but she doesn't understand that, she can't' (HBM6)

'...they think that that means their baby's going to be removed just like that, and actually it's more of an assessment and, yeah so I think that they have different views of what it is.' (CBM4)

Midwives in both models tried to overcome this mistrust through various, innovative ways. The community-based midwives described having a 'good cop, bad cop' technique whereby the woman's 'named midwife' will provide midwifery care, and another midwife from the team will coordinate referrals to social care and attend child protection meetings. They felt that this preserved the trust between the woman and her named midwife.

'We do have tactics that we use, so if someone has to break news to a woman about referring to social services or what the plan is, then we might make that maybe not, you know not the regular midwife they see.' (CBM3)
'Good cop bad cop. (CBM1). 'Yeah, sometimes that works to keep them engaged.' (CBM3)

The hospital-based midwives described advocating social care to the women through explaining how they can provide practical support and give women an opportunity to demonstrate their parenting abilities. They felt that this has led to a reduction in the number of babies removed by social care.

'So we also advocate social services to, to them, as well as for them to social services. Because as soon as someone says 'social care', 'social services' they immediately have this picture 'they're going to remove my baby', but it, when

we talk to them and say 'we'll be there, we'll be there with you, we'll make sure they're, you know, they're there to help and support you' and they then actually start to engage a lot better..so, as in HBM6's case women are managing to keep their babies, where before they didn't engage, they fought against them [social services], and they lost their babies but by working with them they've kept their babies.' (HBM1)

Midwives in the hospital-based model also described a level of apprehension of the model of care for some women and reflected on one particular woman who felt like she was being stigmatised after being referred to the team. Again, they described ways of trying to overcome this through communicating the positive aspects of the model of care with women, but that for some women this doesn't work:

I think they can be quite apprehensive about it (the specialist model of care), but, I think if they realise they have to have a midwife anyway, having a midwife they know who will come to their house, who will be flexible with timings, who will work with their needs, and who will be there to support them, then I think it turns...it becomes a better experience. Because there's a lot of women who don't want full stop, any professionals involved, they kind of don't even want to go into hospital, they're going to do their own thing whatever' (HBM2)

I did have one woman who declined our services because she felt that we were singling her out for special treatment and stigmatising her, so she didn't want that' (HBM1)

This concept was not discussed in the community-based model.

Trying to build relationships with those resistant to help

When exploring the issue of women who are more difficult to engage, the midwives from both models of care gave specific examples of social circumstances that led to a resistance to be helped:

'Some of these cases though, you just aren't ever going to win and that's, well it feels like that. So some people are totally just going to disengage and no matter what we try, um, so they're, I think it's knowing that some we probably aren't always going to help.' (CBM1)

'Because like some women just see us as pests and that we're interfering and ... [Some agreement], I don't know, they don't want us so it, it would be impossible to ... that's the women rather than our service' (CBM4)

'Some women have their own agenda, and no matter what you do or how you try, they will not ... waiver from that. They have their own agenda, this is what they want and some of them will... will play you for what you want, for what they want, and to get what they want...'(HBM1)

One midwife described how some women access the model of care thinking that they ‘play the system’ to continue using drugs or alcohol:

‘and sometimes is actually the reason why they’ve come to us, so they may be dependent on, on drugs, or alcohol, and don’t want to get off of it, but will play the system, so they can remain using, or drinking, and still have their baby.’ (HBM3)

1.25 Discussion

Midwives working in both models of care were asked about how they provide care to women with social risk factors, and what aspects of their care they felt contributed to improved outcomes. There were many overlapping themes and similarities between the teams, but also some significant differences in how the teams worked and how midwives perceived the model to be working for different groups of women. It is important to bear in mind that although there was confusion around the aim of the models, all midwives believed the model of care they worked in was beneficial to most women and improved both clinical and social outcomes. As expected, the quality of the midwife-mother relationship and importance of trust was often discussed theoretically and demonstrated through real life examples. As Hunter et al ⁴⁸² highlight, the way in which maternity care is organised has a profound impact on midwives’ ability to form meaningful relationships with women. Continuity models of care have long been associated with increased trust between a woman and midwife, whereas fragmented, industrialised models of maternity care are far from conducive for the development of trust. Perhaps more interestingly though, this topic did not dominate the discussion and the midwives put forward a catalogue of other resources they employ to engage and support women with social risk factors. These resources often involved advocacy and guiding women through a fragmented and often unfamiliar system and using the flexible nature of the model of care to coordinate other professionals and agencies. This demonstrates that although the midwife-mother relationship is clearly integral to the model, a more complex system of mechanisms takes place ‘behind the scenes’, with midwives often planning care and orchestrating support for women when they are not physically with them. Insights such as this, raised throughout the discussion, have been formulated into programme theories to test in the wider evaluation of this model of care- see Table 25 below.

Table 25: Additional programme theories for testing in realist evaluation

Programme Theories

If midwives are able to work flexibly, then they are able to meet women's individual needs and increase safety through spending time care planning and coordinating support that may not be available on demand (for example during an allocated appointment time in the standard maternity care model).

If midwives advocate social care to women through explaining their role and how they can provide practical support, then women's perception of surveillance may lessen leading to engagement, and child protection outcomes and maternal infant-bonding improve.

If the midwife-mother relationship is 'two way', that is the midwife also has trust in the woman then the many known benefits of the trusting relationship will be enhanced.

If models of care are based in the hospital setting or have large catchment areas, then midwives are less likely to have the knowledge and familiarity of niche support services that may benefit the women they care for.

If midwives are placed in the community setting, then they will be better able to place the individual needs of women before institutional norms because they are not submerged/blinded? in the system.

If women do not have the time to form a trusting relationship with a midwife, then they are unlikely to disclose sensitive information and seek support for issues that may have long-term detrimental consequences for themselves and their families.

If women who remain resistant to help throughout their pregnancy despite continuity of care are known/handed over to primary care and early years services, then they will have a support network in place and will be more likely to be able to regain trust in the system over time.

Advocacy was discussed specifically and in more nuanced ways, but overall reflected the literature around its importance for this vulnerable population of women, particularly those with safeguarding concerns ^{483,484}. Midwives in both models spoke about advocating for social care services as well as for the women, in order to ease women's reluctance to engage with a service they may perceive as a form of unhelpful surveillance. This contributes to the hypotheses put forward by Rayment-Jones et al ⁴²⁸ that continuity of care mitigates this perception and helps women regain a sense of control. Whereas it was assumed that trust was the mechanism to improve women's engagement with social care, engagement may also be enhanced by how a trusted midwife conveys information and advocates the service to them. Lewis's ⁴⁸⁵ longitudinal qualitative work with pregnant women also identified the intricacies of the midwife-mother relationship, with trust being interwoven with women's agency and the importance 'two-way trust' that includes the midwives trust in the woman. This reveals a level of trust and belief in the woman and a desire to extend this trust to other professionals. Trust as a generative mechanism

may impact on far more than a woman's experience of maternity care. Dahlberg and Aune⁴⁸⁶ described how women who perceived a trusting relationship with their midwife felt that this led to personal growth and development. Long term outcomes such as these are particularly significant for women who may lack trust in both the system and their own abilities as a mother. Although this 'two-way trust' was not explicit in this study it was alluded to when discussing how women with social care involvement can be encouraged to demonstrate their ability to parent by engaging with the system. This has the potential for improved maternal-infant bonding and a longer-term impact on social outcomes. This concept was also discussed by⁴⁸⁷, who found that socially disadvantaged pregnant women did not feel safe to engage in discussions with midwives regarding choice or to seek control of their care. This resulted in midwives perceiving a lack of responsibility from the women and increased surveillance.

Midwives from the community-based model discussed multi-disciplinary working in terms of both hospital-based and community-based services. They described community services as comprehensive and complex, they were constantly learning what was available, but that it was within their remit to communicate with services if they felt it would be beneficial for women. The hospital-based midwives on the other hand spoke about multi-disciplinary working in terms of their hospital-based, obstetric services. They reported a lack of community resources and short-staffed health visitor services. It was hypothesised that they may perceive a lack of community services due to the enormity of their catchment area. If the community-based midwives reported challenges in getting to know what is available locally, it would make sense that knowing and communicating with niche, local services is an impossible task for the hospital-based midwives with a much larger catchment area. In addition to this point, both the hospital-based, and the community-based midwives reported strong, effective working relationships with their named obstetric consultants that involved frequent communication. Being based away from the hospital did not seem to impact on this. These are important points to consider when planning services to meet the needs of women with social risk factors who are often socially isolated. Midwives in the CBM felt that their community location impacted on how well looked after women felt and demonstrates how their community cares for them, this 'candidacy' concept was discussed in Rayment-Jones et al's⁴²⁸ findings of how women experience maternity care. 'Candidacy' theory suggests that how a person interacts with health services is structurally, culturally, organizationally and professionally constructed²⁰⁸, and can give us insight into why women with social risk factors make less use of maternity services than their more affluent peers. This concept is described in Ebert et al's^{487,488} qualitative work with socially disadvantaged women in Australia, which found that without appropriate information and choice women

believed they were outsiders to the maternity care culture. This resulted in women handing over their autonomy to those who do belong in the culture: midwives.

Hyde and Roche-Reid ⁴⁸⁹ have reported conflicting communication ideologies between women and midwives, with midwives believing their role was empowering women, but in fact their communication reflected their employing institutions values. This study explored how this allegiance can shift in a continuity of care model, with midwives demonstrating how they aim to place the needs of the woman before the systems norms. This shifting of allegiance and different ideologies has been explored in the continuity of care literature over the past decade, with continuity of care being associated with a sense of obligation and responsibility towards the woman rather than the system ⁴⁹⁰⁻⁴⁹². In the current study, this seemed more apparent in the community-based model of care when midwives discussed holistic care, calling to question how the location of midwifery services might impact on midwives ideologies and communication methods. McCourt and Pearce's ⁴⁹³ work with minority ethnic women found that those receiving standard maternity care in the hospital setting had poorer experiences and felt that their care was not focused on them as a person. This calls to question if midwives are immersed in the hospital environment are they more loyal to the needs and norms of the system than if they were on the 'outside' looking in alongside the woman?

The midwives in the community-based model gave insight into how the trust they had built with women had impacted on women's disclosure of sensitive information. Women they were caring for who may have been referred to the team for one particular social risk factor, often disclosed more complex and serious risks as they began to trust the midwives and understand their role. This in turn leads to referrals to support services and more individualised care plans. This insight begs the question how much are midwives working in standard maternity care models missing? To what extent do women hold important information back through fear of disclosure to a system they do not trust? What are the long-term consequences of this on the woman, the child and future children?

Perhaps the most insightful aspect of this study was the emerging theme of 'who can be helped?' as it unpicked some of the complexity of looking after women who often live difficult lives with long-standing social, physical, psychological issues and mistrust in the system. The midwives in both models of care identified domestic violence, substance abuse and social care involvement as particularly challenging factors in engaging women and building trust. Fear of the system was seen to be the main barrier and although midwives practised different techniques to try to remedy this, there was a general feeling that some women were too resistant to help for the

model of care to have any effect. This demonstrates that continuity models of care are not a panacea for all poor health and social outcomes, and that the problems these women face are deep rooted and require more long-term multi-sector intervention. That said, continuity of care provides an opportunity to begin to focus on this resistance and work with primary care and early years services to ensure a support network is in place.

Strengths and limitations

When discussing the limitations of this study it should be taken into account that this method of theory building, and refining will be tested in the wider realist evaluation of the models of care using in depth qualitative and quantitative data from women with social risk factors. The ‘fragments of information’ gained during realist-informed qualitative methods ⁴⁹⁴ will be re-tested to contribute to the interpretation and explanation of how the model might affect women’s physical, emotional and social outcomes.

The focus groups were undertaken by a realist-interview trained academic using Manzano’s ⁴²⁷ approach to generate data demonstrating the effectiveness of the model of care. This method helps to refine programme theory and improve rigour through the ‘teacher-learner’ relationship. In this case the interviewer presented theories extracted from a realist synthesis ⁴²⁸ and asked the midwives to confirm, falsify, explain and refine the theories. The midwives insights are not considered to be constructions, but ‘evidence for real phenomena and processes’ ⁴⁹⁵ that contribute to the overall evaluation of the programme’s effectiveness. The realist-informed interview guide allowed for both the testing of pre-constructed theories, and new programme theories to emerge (table 4).

Potential limitations of the study include the fact the participants knew this study is part of an evaluation of their service. These factors might have created a sense of being tested/assessed and therefore impacted on how the participants responded to demonstrate the success of the model of care. In the analysis however, less effective aspects of the models of care were apparent. Again, these insights will be tested in the wider evaluation of the model to increase rigour. A further limitation of this study is that it is urban based only, rural and remote models of care should be evaluated as the context is significantly different.

1.26 Conclusion and implications for practice

Overall the midwives in both models of care felt that the service was beneficial to women and had a positive impact on their outcomes. It was thought that the trusting relationships they had built with women enabled them to guide them through a fragmented, unfamiliar system and

respond to their individual physical, emotional and social needs, and ensure follow up of appointments and test results. They felt that for women the impact of a trusting relationship impacted on how much information they disclosed, allowing for enhanced needs led, holistic care. Interesting mechanisms were identified when discussing women who had social care involvement with midwives revealing techniques they used to advocate for women and help them to regain trust in the system and demonstrate their parenting abilities. This has the potential to reduce the number of newborns removed from their mothers and greatly improve long term outcomes for the child.

Differences in how each model provided care and its impact on women's outcomes were considered with the community-based midwives reporting how their location enabled them to help women integrate into their local community and make use of specialist services. The midwives in the hospital-based model described their extensive catchment area and location as a barrier to this. This has important implications for women with social risk factors who are often socially isolated and lack support. Midwives in both models of care discussed how some women are more difficult to engage, with specific social risk factors intensifying their mistrust in the system. This should be taken into account when developing inclusion criteria for continuity models of care and midwives workload. The study demonstrates the complexity of these models of care, with midwives using innovative and compassionate ways of working to meet the multifaceted needs of this vulnerable population

Chapter 7: Realist Evaluation Part 3 ‘What works, for whom?’

Quantitative birth and process outcome data

This chapter will present the clinical outcomes, and level of service use of the women in the quantitative sample. The purpose of focusing on these outcomes first is to identify ‘what works’, that is what models of care are associated with improved outcomes, and is there a relationship between the specialist models of care and improved outcomes for women with low socioeconomic status and social risk factors. This will facilitate testing of the programme theories and refinement of the CMO configurations in the following chapters using both the quantitative and qualitative data to identify underlying mechanisms that might lead to the outcomes. The findings presented in Chapters 7, 8 and 9 will be discussed and concluded in Chapter 10.

1.27 Aims

The findings presented in this chapter aim to address the following research questions:

- 1) Do women with low SES and social risk receive more or less access to specialist models than their more affluent, less socially complex counterparts?
- 2) Compared to standard maternity care and group practice models, do specialist models of care affect:
 - Access and engagement with maternity services? If so, for whom, in what context, and how?
 - The quality of relational continuity for women experiencing different models of care?
 - Maternal and neonatal birth outcomes and reduce the need for pharmacological analgesia and obstetric intervention?
 - Women’s antenatal admissions to hospital and the length of their postnatal stay?
 - The support women receive during pregnancy, their social integration and longer-term outcomes?

The place, or setting of antenatal care will also be analysed for each outcome to explore underlying mechanisms related to improved outcomes and appropriate service use. To do this different models are presented that adjust for the model of care, and place of antenatal care, in order to test the impact of each factor whilst adjusting for the other.

1.28 Findings

Access to maternity services - Analysis 1- Model of care

Firstly, the quantitative data was analysed to test the hypothesis that the specialist model of care has an impact on the timing of access to model of care, known as the ‘booking appointment’. Table 26 below, shows that no relationship was found between the model of care received and the gestation at which women attended their first ‘booking’ appointment. The base outcome was set for less than 10 weeks’ gestation at the booking appointment to reflect the NICE guidance for women with complex social factors ²⁹⁷. When adjusting for women’s characteristics (see appendix E for fully adjusted outcome data tables) primiparous women (RR 1.79 CI 1.02-3.12), those with social risk factors (RR 1.93 CI 1.03-3.62), and those with high medical risk status at the booking appointment (RR 2.49 CI 1.18-5.25) were more likely to book for maternity care later than 20 weeks. These are important findings considering women in the full continuity model were more likely to have low socioeconomic status and social risk factors (See Chapter 6). Despite the differences in demographics between those accessing specialist models and those accessing standard care, there is no significant relationship between the gestation at booking and the model of care received, thus the inequality in access to antenatal care appears to have been mitigated by the model of care. To test this theory further a subgroup analysis of the ‘most at risk’ women was carried out (presented at the end of this chapter) and although results were not statistically significant a trend was seen with women receiving standard (RR 1.63 CI 0.54-4.89) and group practice (RR 1.46 CI 0.43-4.86) being more likely to book for maternity care after 20 weeks gestation.

Table 26: Gestation at booking appointment in relation to the model of care received

Gestation at booking	Model of Care	Number of women (%)	Unadjusted RR (95% CI)	Model 1 Adjusted RR (95% CI) *	Model 2 Adjusted RR (95% CI) **	Model 3 Adjusted RR (95% CI) ***
<10 weeks	Standard	197(62)	Ref	Ref	Ref	Ref
	Group	87(27)	Ref	Ref	Ref	Ref
	Specialist	35(11)	Ref	Ref	Ref	Ref
10-12	Standard	166(58)	1.01(0.59-1.73)	0.91 (0.52-1.61)	0.77(0.42-1.40)	0.76(0.42-1.38)
	Group	90(32)	1.24 (0.70-2.12)	1.18 (0.65-2.16)	1.09(0.59-2.02)	0.86(0.46-1.63)
	Specialist	29(30)	Ref	Ref	Ref	Ref
13-20	Standard	53(61)	0.94 (0.43-2.02)	1.14 (0.50-2.61)	0.88 (0.37-2.09)	0.89(0.37-2.13)
	Group	24(28)	0.96 (0.41-2.22)	1.14 (0.47-2.77)	1.04 (0.42-2.56)	0.75(0.29-1.94)
	Specialist	10(11)	Ref	Ref	Ref	Ref
> 20 weeks	Standard	53(68)	1.56 (0.62-3.92)	2.19 (0.82-5.80)	1.29(0.46-3.60)	1.27(0.45-3.56)
	Group	19(24)	1.27 (0.46-3.45)	1.75 (0.61-4.99)	1.29 (0.43-3.82)	1.15(0.38-3.44)
	Specialist	6(8)	Ref	Ref	Ref	Ref

* Model 1: Adjusted for demographics ethnicity, age, parity, IMD score, any social and medical risk factors at booking and onset of labour

** Model 2: Model 1 + Adjustment for place of antenatal care (community or hospital)

*** Model 3: Model 2 + Adjustment for service provider attended (A or B)

Analysis 2- Place of antenatal care

As ‘place of antenatal care’ is a key question in this evaluation and significant relationships were found in Chapter 7, Table 27 Table 27 Table 27 was formatted to present the relationship to timing of access to maternity care, again adjusting for women’s characteristics and service differences. A significant relationship was found between place of antenatal care and booking later than 20 weeks’ gestation. Despite the model of care receive and service attended, women attending their booking appointment after 20 weeks’ gestation were significantly more likely to be receiving hospital-based antenatal care (RR 2.51 CI 1.33-4.70). This level of retrodution, the activity of uncovering causal mechanisms, informed the analysis of the qualitative data to explore why this outcome was different for place of antenatal care, primiparous women, and those with high medical risk status and social risk factors.

Table 27: Gestation at booking appointment in relation to the place of antenatal care (NICE QS, 2010²⁹⁷)

Gestation at booking	Place of antenatal care	Number of women (%)	Unadjusted RR	Model 1 Adjusted RR (95% CI) *	Model 2 Adjusted RR (95% CI) **	Model 3 Adjusted RR (95% CI) ***
<10	Hospital	154(48)	Ref	Ref	Ref	Ref
	Community	165(52)	Ref	Ref	Ref	Ref
10-13weeks	Hospital	154(54)	1.25(0.91-1.73)	1.19(0.85-1.66)	1.30(0.91-1.86)	1.00(0.67-1.49)
	Community	131(46)	Ref	Ref	Ref	Ref
13-20	Hospital	54(62)	1.75(1.07-2.84)	1.59(0.95-2.66)	1.66(0.97-2.87)	1.05(0.54-2.01)
	Community	33(38)	Ref	Ref	Ref	Ref
> 20 weeks	Hospital	56(72)	2.72(1.58-4.67)	2.89(1.65-5.10)	2.81(1.56-5.06)	2.51(1.33-4.70)
	Community	22(28)	Ref	Ref	Ref	Ref

* Model 1: Adjusted for demographics ethnicity, age, parity, IMD score, social risk and medical risk factors

** Model 2: Model 1 plus adjusted for model of care

*** Model 3: Model 2 plus Adjusted for service provider attended

Access to specialist models of care

Analysis 1- Model of care

The quantitative data was used to test the hypothesis that women with low socioeconomic status and social risk factors are most likely to receive specialist models of care. Table 28 below, shows a statistically significant relationship across all outcomes. Women receiving specialist models of care were more likely to be in the more deprived deciles even after adjusting for women’s characteristics,

the service provider attended and the place of antenatal care. These findings suggest that the aims of the specialist models- to reach the most deprived women, are being met.

Table 28: Model of care received by level of deprivation

IMD Decile	Model of Care	Number of women (%)	Unadjusted RR	Adjusted RR (95% CI) *	Adjusted RR (95% CI) **	Adjusted RR (95% CI) ***
Least Deprived 7 th -10 th Deciles	Standard	81(54)	Ref	Ref	Ref	Ref
	Group	43(29)	Ref	Ref	Ref	Ref
	Specialist	3(2)	Ref	Ref	Ref	Ref
5 th and 6 th Deciles	Standard	98(62)	0.22 (0.06-0.80)	0.22(0.06-0.83)	0.25(0.06-0.95)	0.25(0.06-0.94)
	Group	41(26)	0.17 (0.04-0.65)	0.17(0.04-0.67)	0.18(0.04-0.71)	0.14(0.03-0.57)
	Specialist	16(10)	Ref	Ref	Ref	Ref
3 rd and 4 th Deciles	Standard	163(57)	0.17(0.52-0.59)	0.21(0.06-0.73)	0.29(0.08-1.04)	0.28(0.08-1.03)
	Group	85(30)	0.17 (0.05-0.60)	0.19(0.05-0.67)	0.21(0.05-0.78)	0.19(0.05-0.69)
	Specialist	34(12)	Ref	Ref	Ref	Ref
Most Deprived 1 st and 2 nd Deciles	Standard	127(62)	0.17(0.05-0.59)	0.23(0.06-0.82)	0.29 (0.08-1.07)	0.29 (0.07-1.07)
	Group	52(25)	0.13 (0.03-0.47)	0.15(0.04-0.58)	0.17 (0.04-0.64)	0.12 (0.03-0.48)
	Specialist	27(13)	Ref	Ref	Ref	Ref

* Model 1: Adjusted for demographics ethnicity, age, parity, any social and medical risk factors at booking and onset of labour

** Model 2: Model 1 + Adjustment for place of antenatal care (community or hospital)

*** Model 3: Model 2 + Adjustment for service provider attended (A or B)

Analysis 2- Place of antenatal care

Table 29 below shows a significant relationship was found between the place of antenatal care and the model of care received, with women in the highest deprivation deciles attending hospital based antenatal care being less likely to be cared for by the specialist model (RR 0.40 0.22-0.72). When adjusting the model for women's characteristics Black African women were more likely to receive the specialist model of care (RR 8.75 CI 2.24-34.18), possibly reflecting their socioeconomic status.

Table 29: Place of antenatal care by level of deprivation

IMD Decile	Place of antenatal care	Number of women (%)	Unadjusted RR	Adjusted RR (95% CI) *	Adjusted RR (95% CI) **	Adjusted RR (95% CI) ***
Least Deprived 7 th -10 th Deciles	Hospital	82(65)	Ref	Ref	Ref	Ref
	Community	45(35)	Ref	Ref	Ref	Ref
5 th and 6 th Deciles	Hospital	91(59)	0.78(0.48-1.26)	0.76(0.46-1.25)	0.79(0.47-1.35)	0.62(0.34-1.10)
	Community	64(41)	Ref	Ref	Ref	Ref
3 rd and 4 th Deciles	Hospital	134(48)	0.49(0.32-0.76)	0.46(0.29-0.74)	0.48(0.29-0.78)	0.42(0.25-0.71)
	Community	148(52)	Ref	Ref	Ref	Ref
Most Deprived 1 st and 2 nd Deciles	Hospital	111(54)	0.64(0.40-1.01)	0.60(0.36-0.98)	0.59(0.34-0.99)	0.40(0.22-0.72)
	Community	95(46)	Ref	Ref	Ref	Ref

* Model 1: Adjusted for demographics ethnicity, age, parity, social risk and medical risk factors

** Model 2: Model 1 plus adjusted for model of care

*** Model 3: Model 2 plus Adjusted for service provider attended

Engagement with maternity services

Analysis 1- Model of care

Engagement with services is tested through the number of antenatal appointments women attended, and the number of missed appointments. Table 30 demonstrates that after adjusting for service provider attended there was no significant relationship between the model of care received and the number of antenatal appointments attended. Interestingly, women with any social risk factor were significantly more likely to have more than 15 antenatal appointments than those with no social risk factors (RR2.57 CI1.30-5.07), as did women with medical risk (RR 2.70 CI 1.21-6.03). This does not tell us how long women spent with healthcare professionals but highlights that despite having more social risk factors, women accessing specialist models of care do not experience more appointments. This might be due to having longer appointments or telephone access to a known midwife, thus reducing the need for more frequent visits. This will be explored in terms of the specialist models potential to mitigate feelings of surveillance in Chapter 9. Women attending service provider B were less likely to have more than 15 appointments (RR 0.29 CI 0.14-0.61) than those attending service provider A (see Appendix E).

Table 30: Number of antenatal appointments attended in relation to the model of care accessed

Number of antenatal appointments	Model of Care	Number of women (%)	Unadjusted RR	Model 1 Adjusted RR (95% CI) *	Model 2 Adjusted RR (95% CI) **	Model 3 Adjusted RR (95% CI) ***
1-6	Standard	173(63)	0.58 (0.31-1.09)	0.64 (0.35-1.30)	0.86 (0.44-1.69)	0.87(0.44-1.70)
	Group	63(23)	0.41 (0.21-0.80)	0.42 (0.22-0.93)	0.43 (0.21-0.86)	0.55(0.25-1.15)
	Specialist	37(14)	Ref	Ref	Ref	Ref
7-9****	Standard	135(61)	Ref	Ref	Ref	Ref
	Group	70(31)	Ref	Ref	Ref	Ref
	Specialist	17(8)	Ref	Ref	Ref	Ref
10-14	Standard	120(64)	0.94(0.45-1.95)	1.13(0.53-2.42)	0.80 (0.36-1.78)	0.82(0.37-1.81)
	Group	52(28)	0.78 (0.36-1.70)	0.90(0.40-2.02)	0.82 (0.36-1.86)	0.97(0.42-2.24)
	Specialist	16(8)	Ref	Ref	Ref	Ref
≥15	Standard	38(46)	0.47 (0.20-1.13)	0.68 (0.26-1.74)	0.43 (0.16-1.17)	0.43(0.16-1.14)
	Group	35(42)	0.85 (0.35-2.05)	1.25 (0.47-3.28)	1.02 (0.38-2.75)	1.28(0.47-3.45)
	Specialist	10(12)	Ref	Ref	Ref	Ref

* Model 1: Adjusted for demographics ethnicity, age, parity, IMD score, any social and medical risk factors at booking and onset of labour

** Model 2: Model 1 + Adjustment for place of antenatal care (community or hospital)

*** Model 3: Model 2 + Adjustment for service provider attended (A or B)

**** Set as base as WHO recommends 8 antenatal appointments¹⁸⁰

Analysis 2- Place of antenatal care

Given the previous significant differences in place of care and outcomes relating to access the number of antenatal appointments attended depending on the place of antenatal care- hospital or community was analysed. Table 31 shows a significant relationship between the number of antenatal appointments attended and the place of antenatal care. Women receiving hospital-based care were less likely to have the recommended number of appointments set by the WHO¹⁸⁰ and NICE guidelines^{213,297} (RR0.61 CI 0.38-0.99) than those receiving community based care, and much more likely to have over 15 appointments after adjusting for risk factors (RR4.90 CI2.50-9.61).

Table 31: Number of antenatal appointments attended in relation to the place of antenatal care

Number of antenatal appointments	Place of antenatal care	Number of women (%)	Unadjusted RR	Model 1 Adjusted RR (95% CI) *	Model 2 Adjusted RR (95% CI) **	Model 3 Adjusted RR (95% CI) ***
1-6	Hospital	106(39)	0.53(0.37-0.77)	0.56(0.38-0.82)	0.47(0.31-0.71)	0.61(0.38-0.99)
	Community	167(61)	Ref	Ref	Ref	Ref
7-9****	Hospital	120(54)	Ref	Ref	Ref	Ref
	Community	102(46)	Ref	Ref	Ref	Ref
10-14	Hospital	130(69)	1.90(1.26-2.86)	2.22(1.44-3.41)	2.27(1.43-3.58)	2.70(1.62-4.49)
	Community	58(31)	Ref	Ref	Ref	Ref
≥15	Hospital	60(72)	2.21(1.28-3.83)	2.92(1.59-5.34)	3.36(1.80-6.25)	4.90(2.50-9.61)
	Community	23(28)	Ref	Ref	Ref	Ref

* Model 1: Adjusted for demographics ethnicity, age, parity, IMD score, social risk and medical risk factors

** Model 2: Model 1 plus adjusted for model of care

*** Model 3: Model 2 plus Adjusted for service provider attended

**** Set as base as WHO recommends 8 antenatal appointments ¹⁸⁰

Missed appointments

Analysis 1- Model of care

The quantitative data was analysed to test the hypothesis that the specialist model of care reduced the number of appointments women miss, or do not attend. Table 32 shows that no significant relationship was found between model of care and the number of missed appointments. When adjusting for women's characteristics multiparous women were 4 times more likely (RR 4.50 CI 1.13-17.82) to miss 4 or more appointments, and the older a woman was the less likely she was to miss 4 or more appointments (RR0.03 CI 0.00-0.55). Black African women (RR 12.85 CI 2.42-68.07), and women with social risk factors (RR2.26 CI 1.14-4.47) were

more likely to miss two or more appointments. Women attending service provider B were more likely to miss two or more appointments (RR14.19 CI 4.76-42.26). These findings should be viewed with caution due to the wide confidence intervals.

Table 32: Number of missed appointments in relation to model of care received

Number of missed appointments	Model of Care	Number of women (%)	Unadjusted OR	Model 1 Adjusted RR (95% CI) *	Model 2 Adjusted RR (95% CI) **	Model 3 Adjusted RR (95% CI) ***
None	Standard	352(63)	Ref	Ref	Ref	Ref
	Group	147(26)	Ref	Ref	Ref	Ref
	Specialist	62(11)	Ref	Ref	Ref	Ref
1	Standard	62(56)	1.36 (0.62-2.99)	1.58 (0.67-3.67)	1.46 (0.61-3.48)	1.44(0.61-3.49)
	Group	40(37)	2.10 (9.33-4.76)	2.41 (1.01-5.77)	2.38 (0.99-5.72)	1.97(0.80-4.84)
	Specialist	8(7)	Ref	Ref	Ref	Ref
2	Standard	37(67)	1.62 (0.56-4.73)	2.27 (0.72-7.13)	1.79(0.54-5.84)	1.81(0.53-6.19)
	Group	14(26)	1.47 (0.46-4.66)	1.83 (0.54-6.20)	1.79 (0.52-6.14)	0.86(0.22-3.33)
	Specialist	4(7)	Ref	Ref	Ref	Ref
3	Standard	14(52)	1.23 (0.27-5.55)	2.71 (0.33-22.0)	2.01 (0.23-17.2)	2.02(0.22-18.4)
	Group	11(41)	2.31 (0.49-10.7)	4.54 (0.54-37.9)	4.41 (0.51-37.6)	2.03(0.25-23.6)
	Specialist	2(7)	Ref	Ref	Ref	Ref
≥4	Standard	4(24)	0.17(0.42-0.72)	0.20 (0.04-0.98)	0.22 (0.04-1.14)	0.23(0.04-1.22)
	Group	9(53)	0.94(0.28- 3.19)	0.94 (0.22-4.02)	0.94 (0.21-4.05)	0.49(0.08-2.71)
	Specialist	4(23)	Ref	Ref	Ref	Ref

* Model 1: Adjusted for demographics ethnicity, age, parity, IMD score, any social and medical risk factors at booking and onset of labour

** Model 2: Model 1 + Adjustment for place of antenatal care (community or hospital)

*** Model 3: Model 2 + Adjustment for service provider attended (A or B)

Analysis 2- Place of antenatal care

Given the previous significant differences in place of antenatal care and outcomes regarding access we also analysed the relationship between the number of missed appointments and the place of antenatal care- hospital or community. Table 33 shows no significant relationship was found between the number of missed appointments and the place of antenatal care except for women receiving care in the hospital being twice as likely to miss two appointments compared to women receiving care in the community. This appeared to be driven by the women attending service provider B (RR14.19 CI 4.76-42.26).

Table 33: Number of missed appointments in relation to place of care

Number of missed appointments	Place of Care	Number of women (%)	Unadjusted OR	Model 1 Adjusted RR (95% CI) *	Model 2 Adjusted RR (95% CI) **	Model 3 Adjusted RR (95% CI) ***
None	Hospital	292(52)	Ref	Ref	Ref	Ref
	Community	269(48)	Ref	Ref	Ref	Ref
1	Hospital	64(58)	1.28 (0.84-1.93)	1.11 (0.71-1.72)	1.21 (0.76-1.94)	0.95(0.56-1.62)
	Community	46(42)	Ref	Ref	Ref	Ref
2	Hospital	38(69)	2.06 (1.13-3.74)	2.07 (1.12-3.88)	1.96 (1.01-3.78)	0.64(0.26-1.58)
	Community	17(31)	Ref	Ref	Ref	Ref
3	Hospital	18(67)	1.84 (0.81-4.17)	1.82 (0.74-4.46)	2.18 (0.83-5.67)	1.02(0.32-3.20)
	Community	9(33)	Ref	Ref	Ref	Ref
≥4	Hospital	6(35)	0.50 (0.18-1.38)	0.48 (0.15-1.48)	0.77(0.23-2.51)	0.36(0.08-1.55)
	Community	11(65)	Ref	Ref	Ref	Ref

* Model 1: Adjusted for demographics ethnicity, age, parity, IMD score, social risk and medical risk factors at booking

** Model 2: Model 1 plus adjusted for model of care

*** Model 3: Model 2 plus Adjusted for service provider attended

The quality of relational continuity

Analysis 1- Model of care

Table 34 shows a significant relationship between the number of appointments with a known healthcare professional and the model of care women receive. This was recorded as the name of one healthcare professional (HCP) conducting more than one appointment, if more than one HCP conducted an appointment numerous times the highest number of appointments with one named HCP was recorded. . The aim of both the group practice and specialist models of care appear to be being met with women more likely to receive more antenatal appointments with a known healthcare professional if they experienced one of these models. Conversely, women accessing standard maternity care are more likely to have no or less appointments with a known healthcare professional. When adjusting the model for women's characteristics Black African women (RR0.17 CI 0.03-0.82) and those in the most deprived deciles (RR3.89 CI 1.07-14.06) were less likely to see a known healthcare professional more than 5 times.

Women receiving care in the specialist model were more likely to be looked after in labour by a known healthcare professional compared to the group practice model. After adjusting for the service provider attended, we found that women in the group practice models were the least likely group to

know the person looking after them in labour. This is unsurprising given that these models of care are often set in the community with midwives not working in intrapartum settings.

Table 34: Number of appointments and support in labour by known healthcare professional

Number of antenatal appointments with a known professional	Model of Care	Number of women (%)	Unadjusted OR	Model 1 Adjusted RR (95% CI) *	Model 2 Adjusted RR (95% CI) **	Model 3 Adjusted RR (95% CI) ***
None	Standard	313(69)	Ref	Ref	Ref	Ref
	Group	84(19)	Ref	Ref	Ref	Ref
	Specialist	53(12)	Ref	Ref	Ref	Ref
2	Standard	108(73)	6.09(1.86-19.9)	4.43(1.30-15.0)	2.75(0.78-9.67)	2.12(0.57-7.87)
	Group	36(24)	7.57(2.21-25.8)	7.30(2.05-26.0)	6.81(1.89-24.5)	1.81(0.44-7.45)
	Specialist	3(2)	Ref	Ref	Ref	Ref
3	Standard	36(47)	0.76(0.33-1.72)	0.69(0.27-1.77)	0.47 (0.17-1.29)	0.34(0.11-1.06)
	Group	32(42)	2.52(1.08-5.89)	3.33(1.27-8.75)	3.15 (1.18-8.38)	0.82(0.24-2.75)
	Specialist	8(11)	Ref	Ref	Ref	Ref
4	Standard	7(15)	0.29(0.83-1.04)	0.23 (0.05-0.89)	0.16(0.03-0.67)	0.10(0.02-0.53)
	Group	34(76)	5.36(1.80-15.9)	5.99(1.78-20.1)	5.19(1.62-18.7)	1.72(0.39-1.47)
	Specialist	4(9)	Ref	Ref	Ref	Ref
>5	Standard	5(10)	0.76(0.02-0.23)	0.05(0.01-0.19)	0.03 (0.00-0.13)	0.02(0.00-0.11)
	Group	35(68)	2.00(0.93-4.29)	2.50(0.96-6.49)	2.38 (0.90-6.32)	0.82(0.23-2.94)
	Specialist	11(22)	Ref	Ref	Ref	Ref
Looked after in labour by known midwife	Standard	235(63)	0.41(0.24-0.71)	0.44(0.24-0.82)	0.62 (0.32-1.19)	0.59(0.30-1.17)
	Group	81(23)	0.24(0.13-0.42)	0.23 (0.12-0.44)	0.24 (0.12-0.47)	0.44(0.21-0.92)
	Specialist	53(14)	Ref	Ref	Ref	Ref

* Model 1: Adjusted for demographics ethnicity, age, parity, IMD score, any social and medical risk factors at booking and onset of labour

** Model 2: Model 1 + Adjustment for place of antenatal care (community or hospital)

*** Model 3: Model 2 + Adjustment for service attended (A or B)

Analysis 2- Place of antenatal care

A significant relationship remained when modelling for the number of appointments with a known healthcare professional and the place of antenatal care. Table 35 shows that after adjusting for women's characteristics, the service provider attended and model of care received, women receiving antenatal care based in the hospital were less likely to see a known healthcare professional for their antenatal appointments. However this decrease was only seen after adjusted for service attended.

There appeared to be a relationship between the place of care and the number of women cared for in labour by their named midwife. However this relationship was insignificant once the model adjusted

for the service attended due to significantly less women at service B being cared for by their named midwife compared to those attending Hospital A (RR0.08 CI 0.05-0.14).

Table 35: : Number of appointments with a known healthcare professional in relation to place of care

Number of antenatal appointments with a known professional	Place of antenatal care	Number of women (%)	Unadjusted OR	Model 1 Adjusted RR (95% CI) *	Model 2 Adjusted RR (95% CI) **	Model 3 Adjusted RR (95% CI) ***
None	Hospital	215(48)	Ref	Ref	Ref	Ref
	Community	235(52)	Ref	Ref	Ref	Ref
2	Hospital	109(74)	3.15 (2.08-4.76)	2.44(1.56-3.83)	2.71(1.63-4.50)	0.24(0.10-0.59)
	Community	38(26)	Ref	Ref	Ref	Ref
3	Hospital	45(59)	1.59 (0.97-2.61)	1.23(0.71-2.13)	2.25(1.19-4.25)	0.23(0.08-0.62)
	Community	31(41)	Ref	Ref	Ref	Ref
4	Hospital	20(44)	0.87 (0.47-1.62)	0.61 (0.31-1.22)	2.02 (0.92-1.47)	0.30(0.11-0.83)
	Community	25(56)	Ref	Ref	Ref	Ref
>5	Hospital	28(55)	1.33 (0.74-2.39)	0.70 (0.35-1.39)	2.66 (1.24-5.70)	0.35(0.12-0.96)
	Community	23(45)	Ref	Ref	Ref	Ref
Looked after in labour by named midwife	Hospital	153(41)	0.34(0.25-0.46)	0.46(0.33-0.64)	0.39(0.27-0.57)	0.89(0.59-1.36)
	Community	216(59)	Ref	Ref	Ref	Ref

* Model 1: Adjusted for demographics ethnicity, age, parity, IMD score, social risk and medical risk factors

** Model 2: Model 1 plus adjusted for model of care

*** Model 3: Model 2 plus Adjusted for service attended

Maternal birth outcomes

Analysis 1- Model of care

The data presented in Table 36 tests the hypothesis that the specialist model of care has an impact on maternal birth outcomes. In terms of inequalities, no difference suggests a positive outcome as it demonstrates a levelling of inequality. No significant relationship was found between the model of care received and women's birth outcomes, including mode of birth, blood loss, perineal trauma requiring suturing, and obstetric emergencies, after adjusting for women's characteristics and service differences. This is an important finding considering women in the specialist model were more likely to have low socioeconomic status and social risk factors (See Chapter 6), and therefore more likely to experience poor maternal birth outcomes such as caesarean section and obstetric emergencies ^{141,158-160}. Despite the differences in characteristics

between those accessing specialist models and those accessing standard care (more social risk factors and higher deprivation scores), there is no significant relationship between the maternal birth outcomes presented and the model of care received, thus the model of care appears to mitigate the effects of inequality in this case. To test this theory further a subgroup analysis of women deemed 'most at risk' is presented at the end of this chapter.

The reference group throughout the analysis was set as the 'preferred' outcome, or one that is seen as the highest standard of care. To analyse mode of birth, spontaneous vaginal delivery was set as the base outcome, or 'reference group', in order to compare the other modes of birth. When adjusting for women's characteristics, null parity was found to be a significant predictor of increased emergency caesarean section (RR4.96 CI 3.09-7.94) and instrumental delivery (RR 8.06 CI 4.71-13.79). These individual adjusted outcomes are not presented in the table below due to the sheer size of the full data outcome tables, but important to consider in light of 'what works, for whom?'- See Appendix E for the complete data outcome tables presenting subgroup categories for fully adjusted outcomes. Unsurprisingly, women at high medical risk at booking (RR 5.52 CI 2.20-13.83) and at the onset of labour (RR 2.66 CI 1.47-4.81) were also more likely to have an elective or emergency caesarean, and instrumental delivery compared to women with low medical risk. When the model adjusted further for service differences (the service provider attended and place of antenatal care) the significant relationship between model of care and elective caesarean section shown in the first adjusted model was found to be driven by women at service B being much more likely to have an elective caesarean section (RR 3.21 CI 1.47- 6.98). This reflects the differences seen in women's medical risk status at the onset of labour between the two service providers presented in chapter 6. Primiparous women were more likely to have a postpartum haemorrhage (PPH) (RR 3.23 CI 2.32-4.50), perineal trauma requiring suturing (RR 2.30 CI 1.67-3.17) and experience an obstetric emergency (RR1.94 CI 1.34-2.79). Women with high medical risk status at the onset of labour were also more likely to have a postpartum haemorrhage (PPH) (RR 1.84 CI 1.26-2.69), other obstetric emergency (RR1.77 CI 1.15-2.75), and less likely to have perineal trauma requiring suturing (RR 0.47 CI 0.32-0.69). Interestingly, a significant relationship was found between women with any social risk factor and massive obstetric haemorrhage (MOH) (RR 1.99 CI 1.03-3.83). Women attending service B were more likely to have a PPH (RR 1.77 CI 1.14-2.75). Maternal death was not included in the analysis as numbers were too small to detect a relationship (n=1).

Table 36 Maternal birth outcomes in relation to the model of care received

Birth outcome	Model of Care	No. of women (%)	Unadjusted RR (95% CI)	Model 1 Adjusted RR (95% CI) *	Model 2 Adjusted RR (95% CI) **	Model 3 Adjusted RR (95% CI) ***
Spontaneous vaginal birth	Standard	209(54)	Ref	Ref	Ref	Ref
	Group	132(34)	Ref	Ref	Ref	Ref
	Specialist	44(12)	Ref	Ref	Ref	Ref
Instrumental delivery	Standard	82(67)	1.91(0.89-4.10)	1.75(0.75-4.09)	1.59(0.66-3.81)	1.60(0.67-3.83)
	Group	32(26)	1.18(0.40-1.45)	1.23(0.49-3.04)	1.20(0.48-2.98)	1.18(0.46-2.99)
	Specialist	9(7)	Ref	Ref	Ref	Ref
Emergency caesarean section	Standard	91(59)	1.00(0.55-1.81)	0.97 (0.48-1.95)	0.91(0.44-1.86)	0.91(0.44-1.88)
	Group	44(29)	0.77(0.40-1.45)	0.33 (0.33-1.46)	0.68(0.32-1.44)	0.65(0.30-1.40)
	Specialist	19(12)	Ref	Ref	Ref	Ref
Elective caesarean section	Standard	87(81)	2.28(1.03-5.06)	2.28(0.94-5.51)	1.91(0.77-4.72)	2.00(0.80-4.99)
	Group	13(12)	0.54(0.21-1.39)	0.47(0.16-1.33)	0.43(0.15-1.24)	0.36(0.12-1.05)
	Specialist	8(7)	Ref	Ref	Ref	Ref
Blood loss>500mls (PPH)	Standard	249(64)	1.25(0.77-2.01)	1.07(0.63-1.82)	1.02(0.59-1.76)	1.02(0.59-1.76)
	Group	102(26)	0.94 (0.56-1.58)	0.91(0.51-1.61)	0.90(0.51-1.59)	0.76(0.42-1.37)
	Specialist	38(10)	Ref	Ref	Ref	Ref
Blood loss>1000mls (MOH)	Standard	40(65)	0.73(0.34-1.58)	0.88(0.38-2.03)	1.00(0.42-2.36)	0.99(0.41-2.34)
	Group	13(21)	0.49(0.20-1.20)	0.57(0.22-1.48)	0.59(0.22-1.54)	0.69(0.26-1.83)
	Specialist	9(15)	Ref	Ref	Ref	Ref
Perineal trauma req suturing	Standard	199(60)	1.22 (0.75-2.00)	1.17(0.68-2.02)	1.11(0.63-1.95)	1.11(0.63-1.94)
	Group	101(31)	1.40 (0.83-2.36)	1.47(0.82-2.64)	1.45(0.81-2.61)	1.38(0.76-2.51)
	Specialist	30(9)	Ref	Ref	Ref	Ref
Obstetric emergency	Standard	119(63)	1.17(0.66-2.07)	1.14(0.62-2.10)	1.20(0.64-2.25)	1.21(0.65-2.25)
	Group	53(28)	1.09(0.59-2.02)	1.19(0.62-2.29)	1.22(0.63-2.34)	1.29(0.66-2.51)
	Specialist	18(9)	Ref	Ref	Ref	Ref

* Model 1: Adjusted for demographics ethnicity, age, parity, IMD score, any social risk factor and medical risk factors at booking and onset of labour

** Model 2: Model 1 + Adjustment for place of antenatal care (community or hospital)

*** Model 3: Model 2 + Adjustment for service provider attended (A or B)

Analysis 2- Place of antenatal care

A second analysis was run on the impact of place of antenatal care on birth outcomes. Maternal birth outcomes were analysed depending on whether their antenatal care was based in either the hospital or community setting. This analysis included adjusting for model of care to explore the impact of both place of care and model of care. Table 37 shows that, after adjusting for potential confounders, there was no significant relationship between place of antenatal care and maternal birth outcomes.

Table 37: Maternal birth outcomes in relation to the place of antenatal care

Birth outcome	Place of antenatal care	Number of women n(%)	Unadjusted RR (95% CI)	Model 1 Adjusted RR (95% CI) *	Model 2 Adjusted RR (95% CI) **	Model 3 Adjusted RR (95% CI) ***
Spontaneous vaginal birth	Hospital	187(49)	Ref	Ref	Ref	Ref
	Community	198(51)	Ref	Ref	Ref	Ref
Instrumental delivery	Hospital	69(56)	1.34(0.89-2.02)	1.43(0.90-2.26)	1.27(0.78-2.07)	1.24(0.74-2.10)
	Community	54(44)	Ref	Ref	Ref	Ref
Emergency caesarean	Hospital	88(57)	1.38(0.95-2.02)	1.27(0.82-1.97)	1.19(0.75-1.89)	1.12(0.68-1.83)
	Community	66(43)	Ref	Ref	Ref	Ref
Elective caesarean	Hospital	74(69)	2.26(1.43-3.55)	2.10(1.26-3.48)	1.61(0.92-2.80)	1.06(0.56-2.01)
	Community	34(31)	Ref	Ref	Ref	Ref
PPH (Blood loss>500mls)	Hospital	227(58)	1.37(1.03-1.82)	1.16(0.84-1.60)	1.11(0.79-1.55)	0.92(0.64-1.33)
	Community	162(42)	Ref	Ref	Ref	Ref
MOH (Blood loss> 1L)	Hospital	30(52)	0.77(0.46-1.30)	0.76 (0.43-1.34)	0.71(0.39-1.30)	0.88(0.46-1.69)
	Community	30(48)	Ref	Ref	Ref	Ref
Perineal trauma req suturing	Hospital	155(47)	0.92(0.69-1.23)	1.08(0.78-1.49)	1.15(0.82-1.61)	1.08(0.75-1.56)
	Community	175(53)	Ref	Ref	Ref	Ref
Obstetric emergency	Hospital	89(47)	0.91(0.66-1.27)	0.89(0.62-1.27)	0.85(0.58-1.24)	0.91(0.61-1.37)
	Community	101(53)	Ref	Ref	Ref	Ref

* Model 1: Adjustment for demographics ethnicity, age, parity, IMD score, social risk and medical risk factors at booking and onset of labour

** Model 2: Model 1 + adjustment for model of care

*** Model 3: Model 2 + adjustment for service provider attended

Analgesia in labour and obstetric interventions

Analysis 1- Model of care

Table 38 shows that the only statistically significant relationship to model of care across all unadjusted and adjusted models was the use of water in labour. Women receiving the specialist model of care were most likely to use water to relieve pain during labour, with those receiving standard care being least likely (RR 0.11 CI 0.02-0.62).

When adjusting for women's characteristics those with high medical risk status at onset of labour (RR4.57 CI 2.97-7.503) and those over 34 years old (RR 5.85 CI 1.39-24.55) were significantly more likely to have an epidural. Primiparous women were most likely to have an epidural (RR 0.55 CI 0.37-0.82) and opioid analgesia (RR 4.81 CI 1.19-19.35), and least likely to have used no analgesia or Entonox in labour (RR0.55 CI 0.37-0.82). Differences seen in the number of women having a CTG in labour was largely driven by primiparous women (RR1.68 CI 1.06-2.64), those

with high medical risk status at the onset of labour (RR3.06 CI 1.94-4.83) and those attending Hospital B (RR 49.54 CI 23.73-103.42), again reflecting the larger number of women being classed as high risk at the onset of labour. Qualitative results in chapters 8 and 9 will explore this phenomenon of medicalisation further. The wide confidence intervals should be taken into consideration when making sense of this analysis.

Table 38: Use of analgesia in labour and obstetric interventions in relation to the model of care received

Analgesia in labour/ Intervention	Model of Care	Number of women (%)	Unadjusted RR (95% CI)	Model 1 Adjusted RR (95% CI) *	Model 2 Adjusted RR (95% CI) **	Model 3 Adjusted RR (95% CI) ***
Epidural/ CSE/GA	Standard	306(64)	1.30(0.80-2.11)	0.99(0.56-1.73)	1.01(0.57-1.80)	1.01(0.57-1.80)
	Group	123(26)	0.89(0.53-1.49)	0.72(0.39-1.32)	0.73(0.40-1.33)	0.71(0.38-1.31)
	Specialist	47(10)	Ref	Ref	Ref	Ref
Opioid analgesia	Standard	9(60)	0.76(0.16-3.59)	0.55(0.10-2.89)	0.54(0.09-3.17)	0.51(0.87-3.05)
	Group	4(27)	0.71(0.12-4.00)	0.56(0.08-3.53)	0.56(0.08-3.53)	0.29(0.03-2.51)
	Specialist	2(13)	Ref	Ref	Ref	Ref
No analgesia or Entonox	Standard	90(53)	0.62(0.36-1.07)	0.70(0.38-1.29)	0.74(0.30-1.38)	0.73(0.39-1.37)
	Group	57(34)	0.96(0.51-1.62)	1.00(0.52-1.90)	1.01(0.53-1.93)	1.15(0.59-2.22)
	Specialist	22(13)	Ref	Ref	Ref	Ref
Water in labour	Standard	3(23)	0.09(0.02-0.41)	0.10(0.02-0.53)	0.14(0.02-0.72)	0.11(0.02-0.62)
	Group	5(38)	0.34(0.09-1.23)	0.48(0.10-2.22)	0.50(0.10-2.31)	0.65(0.14-3.06)
	Specialist	5(38)	Ref	Ref	Ref	Ref
CTG in labour	Standard	168(60)	2.28 (1.27-4.07)	1.17(0.86-3.39)	0.96(0.45-2.02)	0.92(0.38-2.19)
	Group	97(34)	3.15(1.71-5.80)	2.69(1.31-5.48)	2.84 (1.34-6.01)	0.80(0.32-2.01)
	Specialist	16(6)	Ref	Ref	Ref	Ref
Induction of labour	Standard	203(60)	0.89(0.55-1.43)	0.89(0.52-1.52)	1.10(0.63-1.91)	1.10(0.63-1.91)
	Group	97(29)	0.90(0.54-1.51)	0.85(0.48-1.51)	0.90(0.50-1.61)	1.01(0.56-1.83)
	Specialist	37(11)	Ref	Ref	Ref	Ref

* Model 1: Adjusted for demographics ethnicity, age, parity, IMD score, any social and medical risk factors at booking and onset of labour

** Model 2: Model 1 + Adjustment for place of antenatal care (community or hospital)

*** Model 3: Model 2 + Adjustment for service provider attended (A or B)

Analysis 2- Place of antenatal care

Table 39 below shows there was no significant relationship between the place of antenatal care and use of analgesia. However a significant relationship was found for women receiving antenatal care in the hospital being less likely to experience an induction of labour, despite model of care received or care provider attended (RR0.65 CI 0.45-0.95). The differences in the use of water for pain relief in labour were driven by the significant relationship with the model of care received.

Table 39: Use of analgesia in labour and obstetric intervention in relation to the place of antenatal care

Analgesia/ Intervention	Place of antenatal care	Number of women (%)	Unadjusted RR (95% CI)	Model 1 Adjusted RR (95% CI) *	Model 2 Adjusted RR (95% CI) **	Model 3 Adjusted RR (95% CI) ***
Epidural/CSE/ GA	Hospital Community	271(57) 203(43)	1.33(0.99-1.78) Ref	1.00(0.71-1.41) Ref	0.93(0.65-1.33) Ref	0.90(0.61-1.32) Ref
Opioid analgesia	Hospital Community	8(53) 7(47)	0.96(0.34-2.68) Ref	0.93(0.31-2.80) Ref	1.01(0.29-3.52) Ref	0.59(0.12-2.93) Ref
No analgesia or Entonox	Hospital Community	76(45) 93(55)	0.62(0.43-0.87) Ref	0.79(0.54-1.16) Ref	0.87(0.58-1.28) Ref	1.01(0.66-1.54) Ref
Water in labour	Hospital Community	3(23) 10(77)	0.24(0.06-0.90) Ref	0.28(0.06-1.15) Ref	0.42(0.09-1.94) Ref	0.70(0.14-3.52) Ref
CTG in labour	Hospital Community	73(26) 210(74)	3.88(2.81-5.36) Ref	2.83(1.95-4.09) Ref	4.18(2.70-6.49) Ref	1.08(0.61-1.92) Ref
Induction of labour	Hospital Community	171(51) 166(49)	0.76(0.57-1.01) Ref	0.60(0.43-0.84) Ref	0.57(0.40-0.80) Ref	0.65(0.45-0.95) Ref

* Model 1: Adjustment for demographics ethnicity, age, parity, IMD score, social risk and medical risk factors at booking and onset of labour

** Model 2: Model 1 + adjustment for model of care

*** Model 3: Model 2 + adjustment for service provider attended

Place of birth

Analysis 1- Model of care

As the literature shows a strong relationship between improved birth outcomes for women who give birth in a midwifery led setting ^{232,496,497}, the analysis also tested the hypothesis that the specialist model of care had an impact on where women gave birth. Table 40 shows that overall, there was no significant difference between the model of care and place of birth. The unadjusted model found that women receiving standard care were more likely to give birth on the obstetric led labour ward. However once the model adjusted for women's characteristics, the service attended and place of antenatal care this relationship became insignificant. Reflecting the literature ²³², this change was appropriately driven by women with high risk status at the onset of labour (RR 12.74 CI 6.34-25.60) and those attending Hospital B (RR 4.16 CI 2.47-7.02) being more likely to give birth on an obstetric led labour. Women who gave birth before arriving at the hospital, or unplanned homebirth, were not included in the analysis as numbers were too small to detect a relationship (standard care n=5, group practice and specialist models n=0).

Table 40: Place of birth in relation to the model of care received

Place of birth	Model of Care	Number of women (%)	Unadjusted RR (95% CI)	Model 1 Adjusted RR (95% CI) *	Model 2 Adjusted RR (95% CI) **	Model 3 Adjusted RR (95% CI) ***
Birth Centre/midwife led setting	Standard	119(57)	Ref	Ref	Ref	Ref
	Group	61(29)	Ref	Ref	Ref	Ref
	Specialist	28(14)	Ref	Ref	Ref	Ref
Labour ward/obstetric led setting	Standard	343(62)	1.64(0.99-2.74)	1.41(0.77-2.58)	1.08(0.58-2.02)	1.11(0.58-2.12)
	Group	157(29)	1.47(0.84-2.55)	1.29(0.67-2.49)	1.19(0.61-2.31)	0.76(0.38-1.53)
	Specialist	49(9)	Ref	Ref	Ref	Ref
Home	Standard	2(25)	0.15(0.02-0.98)	0.13(0.01-0.99)	0.16(0.01-1.41)	0.16(0.01-1.45)
	Group	3(38)	0.45(0.08-2.42)	0.39(0.05-2.67)	0.43(0.06-2.99)	0.34(0.03-2.99)
	Specialist	3(38)	Ref	Ref	Ref	Ref

* Model 1: Adjusted for demographics ethnicity, age, parity, IMD score, any social and medical risk factors at booking and onset of labour

** Model 2: Model 1 + Adjustment for place of antenatal care (community or hospital)

*** Model 3: Model 2 + Adjustment for service provider attended (A or B)

Analysis 2- Place of antenatal care

The hypothesis that place of antenatal care has an impact on where women give birth was also tested. Table 41 below shows there was no significant relationship between place of antenatal care and place of birth once the model adjusted for the service attended. Women attending service provider B were significantly more likely to give birth on the labour ward (RR 4.15 CI 2.46-7.00).

Table 41: Place of birth in relation to place of antenatal care

Place of birth	Place of antenatal care	No of women (%)	Unadjusted RR (95% CI)	Model 1 Adjusted RR (95% CI) *	Model 2 Adjusted RR (95% CI) **	Model 3 Adjusted RR (95% CI) ***
Birth Centre/midwife led setting	Hospital	75(36)	Ref	Ref	Ref	Ref
	Community	133(64)	Ref	Ref	Ref	Ref
Labour ward/obstetric led setting	Hospital	340(62)	2.86(2.05-3.99)	2.06(1.40-3.01)	2.06(1.38-3.07)	1.31(0.85-2.02)
	Community	209(38)	Ref	Ref	Ref	Ref
Home	Hospital	2(25)	0.59(0.11-3.00)	0.40(0.06-2.55)	0.74(0.09-5.60)	0.58(0.07-4.70)
	Community	6(75)	Ref	Ref	Ref	Ref

* Model 1: Adjustment for demographics ethnicity, age, parity, IMD score, social risk and medical risk factors at booking and onset of labour

** Model 2: Model 1 + adjustment for model of care

*** Model 3: Model 2 + adjustment for service provider attended

In summary to the question 'do specialist models and place of antenatal care affect maternal birth outcomes, place of birth, and reduce the need for pharmacological analgesia and obstetric

intervention?', the only statistically significant relationship related to the model of care across all adjusted models was seen in the increased use of water for pain relief in labour for women receiving the specialist models. The only statistically significant relationship related to place of antenatal care across all adjusted models was seen in the decreased rate of induction of labour in women who received care in the community setting. This will be further explored through subgroup analysis at the end of this chapter, and testing of the initial programme theories in chapter 8.

The findings presented above demonstrate the model may mitigate the effects of inequality for these outcomes given that women receiving the specialist model of care are at higher risk of adverse birth outcomes due to their social risk factors and high deprivation scores. The analysis will now address the health outcomes for neonates.

Neonatal outcomes

Analysis 1- Model of care

Testing the hypothesis that specialist models of care improve neonatal outcomes of women with low socioeconomic status and social risk factors, Table 42 shows that for most neonatal outcomes there was no significant relationship between the model of care received and premature birth, low birthweight, Apgar scores, and admissions to the neonatal unit. These outcomes were adjusted for ethnicity, age, parity, IMD score, any social and medical risk factors at booking and onset of labour, followed by place of antenatal care and then the service attended.

When adjusting for women's characteristics (see appendix E for outcomes tables) neonates of primiparous women were significantly more likely to have low birth weight (RR 1.85 CI 1.07-3.20), as were neonates of women with high medical risk status at the onset of labour (RR 2.83 CI 1.43-5.61). Women with any social risk factor (RR 2.52 CI 1.02-6.17), and black Caribbean women (RR 1.86 CI 1.23-2.63) were more likely to have a low Apgar score (<8 at 5 minutes), although CI's were wide. Neonates of women attending service provider B were less likely to have a low Apgar score than those attending service provider A (RR 0.29 CI 0.09-0.90), although there was no difference between service providers when analysing neonatal unit admissions (RR 0.94 CI 0.44-1.99). Neonatal unit admissions were more likely for black African women (RR 3.99 CI 1.37-11.64) and those with high medical risk status at the onset of labour (RR 4.06 CI 2.10-7.84). Neonatal death and stillbirth was not included in the analysis as numbers in each model of care were too small to detect a relationship (specialist model n=0).

Table 42: Neonatal outcomes in relation to the model of care received

Neonatal outcome	Model of Care	No. of women (%)	Unadjusted RR (95% CI)	Model 1 Adjusted RR (95% CI) *	Model 2 Adjusted RR (95% CI) **	Model 3 Adjusted RR (95% CI) ***
Gestation <37 weeks at birth	Standard	52(61)	1.12(0.51-2.46)	1.11(0.47-2.62)	0.81(0.33-1.99)	0.80(0.33-1.98)
	Group	25(29)	1.14(0.49-2.66)	1.08(0.43-2.68)	0.96(0.38-2.43)	0.98(0.38-2.50)
	Specialist	8(10)	Ref	Ref	Ref	Ref
Birthweight <2500g***	Standard	45(63)	1.59(0.61-4.14)	1.60(0.57-4.45)	1.16(0.40-3.36)	1.16(0.40-3.36)
	Group	21(30)	1.57(0.57-4.32)	1.49(0.50-4.36)	1.24(0.41-3.73)	1.30(0.43-3.93)
	Specialist	5(7)	Ref	Ref	Ref	Ref
Apgar <8 at 5 minutes	Standard	19(59)	0.80(0.26-2.42)	1.44(0.40-5.23)	1.49(0.40-5.46)	1.46(0.39-5.37)
	Group	9(28)	0.80(0.24-2.69)	1.20(0.30-4.81)	1.22(0.30-4.84)	1.42(0.35-5.71)
	Specialist	4(13)	Ref	Ref	Ref	Ref
Neonatal unit admission	Standard	50(61)	1.78(0.69-4.63)	1.67(0.60-4.69)	1.31(0.45-3.80)	1.31(0.45-3.81)
	Group	27(33)	2.08(0.77-5.62)	1.77(0.60-5.22)	1.58(0.53-4.71)	1.59(0.53-4.80)
	Specialist	5(6)	Ref	Ref	Ref	Ref
Neonatal death/ Stillbirth	Standard	5(63)	-	-	-	-
	Group	3(37)	-	-	-	-
	Specialist	0	-	-	-	-

* Model 1: Adjusted for demographics ethnicity, age, parity, IMD score, any social and medical risk factors at booking and onset of labour

** Model 2: Model 1 + Adjustment for place of antenatal care (community or hospital)

*** Model 3: Model 2 + Adjustment for service provider attended (A or B)

Analysis 2- Place of antenatal care

By analysing neonatal outcomes in terms of the place of antenatal care we can interrogate the findings from the wider literature on continuity of care by exploring other mechanisms such as place-based care. Table 43 shows no significant relationship between the place of antenatal care and neonatal Apgar score, stillbirth or neonatal death in the adjusted model.

A significant relationship was found between place of antenatal care and preterm birth, low birth weight, and neonatal unit admissions. Women receiving antenatal care in the hospital were more likely to have a preterm birth than those receiving antenatal care in the community setting (RR 2.38 CI 1.32-4.27). This relationship was statistically significant across all models after adjusting for women's characteristics, including their medical risk status, model of care received, and hospital attended. A significant relationship was also found for infants with low birth weight (less than 2500g) whose mothers had attended antenatal care in the hospital setting across all models (RR 2.31 CI 1.24-4.32).

Although no relationship was found between the place of antenatal care and stillbirth or neonatal death, the adjusted tables in appendix E highlight the significance for women with any social risk

factor being more likely to have a stillbirth or neonatal death (RR 6.82 CI 1.10-42.15). This was the only confounder associated with an increase. Given the small numbers and findings for preterm births and neonatal unit admissions this warrants further investigation of the relationship between place of antenatal care and stillbirth or neonatal death in future research.

Table 43: Neonatal outcomes in relation to the place of antenatal care

Neonatal outcome	Place of antenatal Care	No. of women (%)	Unadjusted RR (95% CI)	Model 1 Adjusted RR (95% CI) *	Model 2 Adjusted RR (95% CI) **	Model 3 Adjusted RR (95% CI) ***
Gestation <37 at birth	Hospital	62(73)	2.45(1.48-4.05)	2.18(1.28-3.72)	2.26(1.29-3.95)	2.38(1.32-4.27)
	Community	23(27)	Ref	Ref	Ref	Ref
Birthweight <2500g*	Hospital	51(72)	2.26(1.31-3.87)	2.20(1.23-3.92)	2.15(1.18-3.92)	2.31(1.24-4.32)
	Community	20(28)	Ref	Ref	Ref	Ref
Apgar <8 at 5 minutes	Hospital	17(53)	0.89(0.43-1.83)	0.91(0.42-2.01)	0.82(0.36-1.85)	1.25(0.51-3.08)
	Community	15(47)	Ref	Ref	Ref	Ref
NNU admission	Hospital	57(70)	1.98(1.20-3.26)	1.77(1.04-3.02)	1.72(0.99-2.99)	1.74(0.97-3.11)
	Community	25(30)	Ref	Ref	Ref	Ref
Neonatal death	Hospital	4(50)	0.84(0.20-3.39)	0.65(0.14-2.90)	0.60(0.12-2.99)	0.98(0.20-4.72)
	Community	4(50)	Ref	Ref	Ref	Ref

* Model 1: Adjusted for demographics: ethnicity, age, parity, IMD score, social risk and medical risk factors at booking and onset of labour

** Model 2: Model 1 plus adjusted for model of care

*** Model 3: Model 2 plus Adjusted for service provider attended

Infant care

Analysis 1- Model of care

The hypothesis that specialist models of care impact on the method of infant feeding at discharge from hospital and skin to skin contact after birth was tested. Table 44 below shows there was no significant relationship between model of care and method of infant feeding at discharge from hospital. When the model adjusted for women's characteristics, women with high medical risk status were significantly more likely to be feed their infants artificially (RR2.80 CI 1.33-5.89) or mixed feed (RR 1.78 CI 1.13-2.81). Black Caribbean women were more likely to artificially feed (RR 12.67 CI 1.34-11.8) and those in the Black 'other' ethnic category were more likely to mixed feed (RR 4.26 CI 1.50-12.08).

For skin-to-skin contact between mother and infant after birth a significant relationship was found for model of care across all adjusted models. Overall, women were much less likely to have had skin-to-skin contact recorded if they received standard maternity care (RR 0.34 CI 0.14-0.80) and group practice care (RR 0.31 CI 0.13-0.74) compared to those receiving the specialist

model. Other women least likely to have had skin-to-skin contact with their infants were Black Caribbean women (RR 0.40 CI 0.16-1.00), those with any social risk factor (RR0.59 CI0.38-0.92), women with high medical risk status (RR 0.32 CI 0.21-0.50) and those attending service provider B (RR 0.39 CI 0.22-0.68).

Table 44: Feeding method and skin-to-skin in relation to model of care

Feeding method and skin-to-skin	Model of Care	Number of women (%)	Unadjusted RR (95% CI)	Model 1 Adjusted RR (95% CI) *	Model 2 Adjusted RR (95% CI) **	Model 3 Adjusted RR (95% CI) ***
Breastfeeding at discharge	Standard	309(61)	Ref	Ref	Ref	Ref
	Group	147(29)	Ref	Ref	Ref	Ref
	Specialist	52(10)	Ref	Ref	Ref	Ref
Artificially feeding at discharge	Standard	32(55)	1.07(0.40-2.89)	1.89(0.63-5.63)	1.69(0.55-5.17)	1.69(0.55-5.14)
	Group	21(36)	1.48(0.53-4.14)	2.10(0.67-6.50)	2.03(0.65-6.35)	2.47(0.78-7.78)
	Specialist	5(9)	Ref	Ref	Ref	Ref
Mixed Feeding at discharge	Standard	125(63)	0.91(0.53-1.55)	1.10(0.60-1.94)	1.12(0.61-2.05)	1.12(0.61-2.04)
	Group	59(25)	0.75(0.41-1.35)	0.89(0.47-1.69)	0.91(0.48-1.72)	1.16(0.60-2.24)
	Specialist	23(12)	Ref	Ref	Ref	Ref
Skin-to-skin	Standard	348(61)	0.41(0.20-0.82)	0.28(0.12-0.63)	0.35(0.15-0.80)	0.34(0.14-0.80)
	Group	156(27)	0.34(0.16-0.70)	0.25(0.10-0.58)	0.26(0.11-0.61)	0.31(0.13-0.74)
	Specialist	70(12)	Ref	Ref	Ref	Ref

* Model 1: Adjusted for demographics ethnicity, age, parity, IMD score, any social and medical risk factors at booking and onset of labour

** Model 2: Model 1 + Adjustment for place of antenatal care (community or hospital)

*** Model 3: Model 2 + Adjustment for service provider attended (A or B)

Analysis 2- Place of antenatal care

Table 45 Table 45 shows that there was no relationship between method of infant feeding and place of antenatal care. For skin-to-skin contact after birth there appeared to be a difference, but when the model adjusted for organisational factors we see that the relationship was driven by women attending service provider A, with those attending service B being less likely to have had skin to skin contact (RR 0.39 CI 0.22-0.68).

Table 45: Feeding method and skin-to-skin contact in relation to place of antenatal care

Feeding method and skin-to-skin	Place of antenatal care	Number of women (%)	Unadjusted RR (95% CI)	Model 1 Adjusted RR (95% CI) *	Model 2 Adjusted RR (95% CI) **	Model 3 Adjusted RR (95% CI) ***
Breastfeeding at discharge	Hospital	276(53)	Ref	Ref	Ref	Ref
	Community	232(46)	Ref	Ref	Ref	Ref
Artificially feeding	Hospital	36(62)	1.29(0.73-2.27)	1.45(0.79-2.65)	1.37(0.73-2.57)	1.85(0.94-3.65)
	Community	22(38)	Ref	Ref	Ref	Ref
Mixed Feeding	Hospital	104(53)	0.93(0.67-1.30)	0.94(0.65-1.35)	0.90(0.61-1.31)	1.23(0.82-1.86)
	Community	93(47)	Ref	Ref	Ref	Ref
Skin-to-skin	Hospital	281(49)	0.42(0.29-0.59)	0.52(0.35-0.76)	0.53(0.35-0.80)	0.69(0.44-1.07)
	Community	293(51)	Ref	Ref	Ref	Ref

* Model 1: Adjusted for demographics ethnicity, age, parity, IMD score, social risk and medical risk factors

** Model 2: Model 1 plus adjusted for model of care

*** Model 3: Model 2 plus Adjusted for service provider attended

To summarise the above section and address the question ‘do specialist models of care improve neonatal outcomes?’ the findings have again presented how the model might mitigate for the effects of inequality for these neonatal outcomes, with no adverse outcomes seen for women accessing specialist models of care. The only outcome with a statistically significant relationship to model of care across all adjusted models was skin-to-skin contact between mother and baby after birth. However there was a statistically significant relationship between place of antenatal care and preterm birth (Gestation <37 weeks), low birth weight (<2500g), and neonatal unit admissions. This will be further explored through a subgroup analysis and testing the programme theories in chapters 8 and 9.

The analysis will now address women’s service use through the number of antenatal admissions and length of postnatal stay.

Service Use

Analysis 1- Model of care

Table 46 shows there was no significant relationship between the model of care received and the number of antenatal admissions to hospital, or the length of the postnatal stay.

Black Caribbean (RR 2.86 CI 1.11- 7.38) and 'Black other' women (RR 3.59 CI 1.15-11.17) were more likely to have one or more antenatal admissions. Once we adjusted for organisational factors, women at service B (RR 3.46 CI 1.84-6.50) those women with high medical risk (2.64 CI 1.67-4.18) were more likely to have one or more antenatal admissions. Women with high medical risk status were more likely to stay in hospital after giving birth for 4 or more days (RR3.91 CI 2.18-7.00). Multiparous women and younger women were more likely to have a shorter postnatal hospital stay.

Table 46: Women's service use in relation to the model of care received

Service use	Model of care	Number of women (%)	Unadjusted RR (95% CI)	Model 1 Adjusted RR (95% CI) *	Model 2 Adjusted RR (95% CI) **	Model 3 Adjusted RR (95% CI) ***
1 or more antenatal admissions	Standard	90(60)	1.02(0.56-1.88)	1.04(0.52-2.07)	0.90(0.44-1.84)	0.89(0.43-1.86)
	Group	46(30)	1.13(0.59-2.17)	1.10(0.53-2.29)	1.07(0.51-2.25)	0.81(0.37-1.76)
	Specialist	15(10)	Ref	Ref	Ref	Ref
Length of postnatal stay: 0-1 day	Standard	227(60)	Ref	Ref	Ref	Ref
	Group	116(30)	Ref	Ref	Ref	Ref
	Specialist	36(10)	Ref	Ref	Ref	Ref
2 days	Standard	118(66)	0.93(0.51-1.68)	0.88(0.45-1.70)	0.85(0.43-1.67)	0.85(0.43-1.68)
	Group	42(23)	0.65(0.34-1.24)	0.60(0.29-1.24)	0.60(0.29-1.23)	0.52(0.25-1.11)
	Specialist	20(11)	Ref	Ref	Ref	Ref
3 days	Standard	54(57)	0.85(0.40-1.83)	0.84(0.36-1.93)	0.90(0.38-2.13)	0.91(0.38-2.14)
	Group	30(32)	0.93(0.41-2.08)	0.83(0.34-2.00)	0.85(0.35-2.06)	0.86(0.35-2.14)
	Specialist	10(11)	Ref	Ref	Ref	Ref
4 or more days	Standard	70(60)	0.79(0.40-1.55)	0.61(0.29-1.31)	0.61(0.27-1.34)	0.61(0.28-1.35)
	Group	33(28)	0.73(0.35-1.51)	0.63(0.27-1.42)	0.63(0.27-1.43)	0.72(0.31-1.65)
	Specialist	14(12)	Ref	Ref	Ref	Ref

* Model 1: Adjusted for demographics ethnicity, age, parity, IMD score, any social and medical risk factors at booking and onset of labour

** Model 2: Model 1 + Adjustment for place of antenatal care (community or hospital)

*** Model 3: Model 2 + Adjustment for service provider attended (A or B)

Analysis 2- Place of antenatal care

Table 47 shows no significant relationship between the service use outcomes and place of antenatal care. Despite initial significance for the number of antenatal admissions in relation to

place of care, when the model adjusted for the service attended and model of care received the relationship was not significant. The earlier differences were driven by increased service use for Black Caribbean and 'Black other' women, those with high medical risk, social risk factors, and women attending Hospital B. No relationship was found between place of care and length of postnatal stay.

Table 47: Women's service use in relation to place of antenatal care

Service use	Place of antenatal care	Number of women (%)	Unadjusted RR (95% CI)	Model 1 Adjusted RR (95% CI) *	Model 2 Adjusted RR (95% CI) **	Model 3 Adjusted RR (95% CI) ***
1 or more antenatal admissions	Hospital	102(68)	2.00(1.37-2.91)	1.38(0.91-2.09)	1.46(0.94-2.26)	1.00(0.61-1.64)
	Community	49(32)	Ref	Ref	Ref	Ref
Length of postnatal stay: 0-1 day	Hospital	199(52)	Ref	Ref	Ref	Ref
	Community	180(48)	Ref	Ref	Ref	Ref
2 days	Hospital	105(58)	1.25(0.87-1.80)	1.15(0.77-1.71)	1.09(0.72-1.67)	0.93(0.58-1.48)
	Community	75(42)	Ref	Ref	Ref	Ref
3 days	Hospital	49(52)	0.97(0.62-1.53)	0.83(0.50-1.37)	0.83(0.49-1.40)	0.83(0.47-1.46)
	Community	45(48)	Ref	Ref	Ref	Ref
4 or more days	Hospital	65(56)	1.08(0.71-1.65)	0.85(0.60-1.52)	0.98(0.60-1.61)	1.14(0.68-1.93)
	Community	52(44)	Ref	Ref	Ref	Ref

* Model 1: Adjusted for demographics ethnicity, age, parity, IMD score, social risk and medical risk factors

** Model 2: Model 1 plus adjusted for model of care

*** Model 3: Model 2 plus Adjusted for service provider attended

Support services utilised

Analysis 1- Model of care

The quantitative data was analysed to test the hypothesis that the specialist model of care increased disclosure of social risk factors and, in turn, referrals to support services. Table 48 below shows a significant relationship between referrals to support services and model of care received. Overall, women receiving standard care were less likely to be referred to early/enhanced health visitor and family nurse partnership schemes, social care, and mental health services. After adjusting for women's characteristics, the service attended and place of antenatal care the relationship remained similar. Women with one or more social risk factors significantly more likely to be referred to all services. Women in the most deprived deciles were

more likely to be referred to social care (RR 12.21 CI 1.18-125.86), wide confidence intervals are presented in Appendix E.

Table 48: Referrals to support services in relation to the model of care received

Referrals to support service	Model of Care	Number of women (%)	Unadjusted OR	Model 1 Adjusted RR (95% CI) *	Model 2 Adjusted RR (95% CI) **	Model 3 Adjusted RR (95% CI) ***
Early HV/FNP	Standard	3(8)	0.02 (0.00-0.07)	0.02 (0.00-0.13)	0.02 (0.00-0.11)	0.02(0.00-0.11)
	Group	17(44)	0.26 (0.13-0.54)	0.43 (0.15-1.25)	0.42 (0.14-1.23)	0.43(0.14-1.24)
	Specialist	19(49)	Ref	Ref	Ref	Ref
Social care	Standard	10(24)	0.08 (0.03-0.18)	0.18 (0.06-0.53)	0.11 (0.03-0.38)	0.09(0.02-0.33)
	Group	15(36)	0.26 (0.12-0.57)	0.55 (0.19-1.62)	0.56 (0.19-1.63)	0.64(0.21-1.95)
	Specialist	17(40)	Ref	Ref	Ref	Ref
DV Advocacy	Standard	3(30)	0.16 (0.03-0.83)	0.88 (0.08-9.04)	0.57 (0.04-7.74)	0.27(0.00-9.61)
	Group	4(40)	0.47 (0.10-2.16)	2.86 (0.27-29.8)	3.76 (0.32-43.3)	6.67(0.38-116)
	Specialist	3(30)	Ref	Ref	Ref	Ref
Mental Health	Standard	9(23)	0.10 (0.04-0.24)	0.20 (0.07-0.58)	0.15 (0.04-0.46)	0.14(0.04-0.44)
	Group	17(44)	0.42 (0.19-0.93)	0.89 (0.32-2.43)	0.83 (0.29-2.39)	0.83(0.29-2.37)
	Specialist	13(33)	Ref	Ref	Ref	Ref
Financial/housing	Standard	0	(0)	(0)	(0)	(0)
	Group	5(50)	0.34 (0.09-1.23)	2.12 (0.28-15.0)	2.20(0.26-18.2)	2.09(0.26-16.5)
	Specialist	5(50)	Ref	Ref	Ref	Ref
Other support	Standard	10(32)	0.22 (0.08-0.61)	0.45 (0.14-1.38)	0.45 (0.14-1.41)	0.45(0.14-1.43)
	Group	14(45)	0.70 (0.27-1.81)	1.37 (0.46-4.07)	1.37 (0.46-4.07)	1.33(0.44-4.03)
	Specialist	7(23)	Ref	Ref	Ref	Ref

* Model 1: Adjusted for demographics ethnicity, age, parity, IMD score, any social and medical risk factors at booking and onset of labour

** Model 2: Model 1 + Adjustment for place of antenatal care (community or hospital)

*** Model 3: Model 2 + Adjustment for service provider attended (A or B)

Analysis 2- Place of care

When analysing the quantitative data on referrals to support services and place of care we found that women were more likely to be referred to social care and mental health services when attending hospital-based antenatal care regardless of model of care or the service attended- see Table 49 below.

Table 49: Referrals to support services in relation to place of care

Referrals to Support Service	Place of antenatal care	Number of women (%)	Unadjusted OR	Model 1 Adjusted RR (95% CI) *	Model 2 Adjusted RR (95% CI) **	Model 3 Adjusted RR (95% CI) ***
Early HV/FNP	Hospital	19(49)	0.79 (0.41-1.50)	1.09 (0.44-2.71)	2.14 (0.81-5.66)	2.52(0.82-7.76)
	Community	20(51)	Ref	Ref	Ref	Ref
Social care	Hospital	25(60)	1.25 (0.66-2.36)	2.18 (0.86-5.54)	4.07 (1.48-11.1)	7.39(2.20-24.78)
	Community	17(40)	Ref	Ref	Ref	Ref
DV Advocacy	Hospital	4(40)	0.55 (0.12-1.99)	2.05 (0.28-15.0)	4.51 (0.42-48.3)	33.51(0.81-138)
	Community	6(60)	Ref	Ref	Ref	Ref
Mental Health	Hospital	26(67)	1.73 (0.87-3.42)	2.53-(1.05-6.08)	3.61 (1.49-8.74)	4.43(1.63-12.0)
	Community	13(33)	Ref	Ref	Ref	Ref
Financial/housing	Hospital	4(40)	0.55 (0.55-1.99)	0.47 (0.10-2.18)	1.12 (0.16-7.72)	2.37(0.17-32.7)
	Community	6(60)	Ref	Ref	Ref	Ref
Other support	Hospital	15(48)	0.78 (0.38-1.60)	0.73 (0.32-1.65)	1.09 (0.43-2.33)	1.00(0.43-2.33)
	Community	16(52)	Ref	Ref	Ref	Ref

* Model 1: Adjusted for demographics ethnicity, age, parity, IMD score, social risk and medical risk factors

** Model 2: Model 1 plus adjusted for model of care

*** Model 3: Model 2 plus Adjusted for service provider attended

Social care involvement at discharge

Analysis 1- Model of care

Table 50 shows a significant relationship between social care involvement at discharge from hospital and the model of care received when models were adjusted for women's characteristics and organisational factors. Women receiving the standard model of care were less likely to have social care involvement at discharge than those in both the group and specialist models of care (RR0.15 CI 0.06-0.39), as were those attending service provider B (0.10 CI 0.03-0.31). Women in the most deprived deciles were significantly more likely to have social care involvement compared to all other deciles (RR6.87 CI 1.66-28.42). As expected, women with social risk factors were much more likely to have social care involvement (RR12.70 CI 5.72-28.17).

Table 50: Social care involvement at discharge in relation to the model of care received

Outcome	Model of Care	Number of women (%)	Unadjusted RR (95% CI)	Model 1 Adjusted RR (95% CI) *	Model 2 Adjusted RR (95% CI) **	Model 3 Adjusted RR (95% CI) ***
Social care involvement at discharge	Standard	15(24)	0.09(0.04-0.20)	0.20(0.08-0.47)	0.18(0.07-0.45)	0.15(0.06-0.39)
	Group	29(45)	0.45(0.23-0.85)	0.85(0.37-1.91)	0.81(0.35-1.86)	1.02(0.43-2.42)
	Specialist	20(31)	Ref	Ref	Ref	Ref

* Model 1: Adjusted for demographics ethnicity, age, parity, IMD score, any social and medical risk factors at booking and onset of labour

** Model 2: Model 1 + Adjustment for place of antenatal care (community or hospital)

*** Model 3: Model 2 + Adjustment for service provider attended (A or B)

Analysis 2- Place of antenatal care

Table 51 below shows a significant relationship between place of care and social care involvement, with women receiving antenatal care in the hospital more likely to have social care involvement at discharge from hospital (RR2.68 CI 1.21-5.93).

Table 51: Social care involvement at discharge in relation to the place of antenatal care

Outcome	Place of antenatal care	Number of women (%)	Unadjusted RR (95% CI)	Model 1 Adjusted RR (95% CI) *	Model 2 Adjusted RR (95% CI) **	Model 3 Adjusted RR (95% CI) ***
Social care involvement at discharge	Hospital	29(45)	0.65(0.38-1.09)	0.94(0.49-1.80)	1.27(0.65-2.48)	2.68(1.21-5.93)
	Community	35(55)	Ref	Ref	Ref	Ref

* Model 1: Adjusted for demographics ethnicity, age, parity, IMD score, social risk and medical risk factors

** Model 2: Model 1 plus adjusted for model of care

*** Model 3: Model 2 plus Adjusted for service provider attended

In summary, both model of care and place of antenatal care influenced whether or not women had social care involvement at discharge from maternity services. Women receiving standard care were significantly less likely to have social care involvement at discharge and those attending hospital based antenatal care were significantly more likely.

This findings of this chapter so far are summarised in Table 52 below, showing the significant findings in relation to either the model of care received, or the place of antenatal care, or both. Characteristics of women at disproportionate risk are also presented. Before this chapter concludes, the outcomes with significant effect in the table below will be analysed in a subgroup

analysis for those women who are at highest risk of poor birth outcomes to test whether or not the causal mechanism is transferable to women with multiple disadvantage.

Table 52: Overview of outcomes

Outcome variable	Characteristics of women at disproportionate risk when adjusting (Appendix E)	Significant effect of specialist model of care	Significant effect of hospital based antenatal care	Significant effect of service
Access and Engagement				
Late gestation at booking >20/40	Primiparous, High medical risk, social risk factors	=	↑	=
Access to specialist model	Most deprived, social risk factors, Black African	↑	↓	=
No of antenatal appointments	Social risk factors	=	↓/↑	B↓
Missed appointments	Multiparous, Black African, social risk factors	=	=	B ↑
Appts with known HCP	Black African and social risk factors (least likely to see a known HCP)	=	↓	B↓
Looked after in labour by a known HCP		↑	=	B↓
Maternal birth outcomes				
Elective caesarean section	High medical risk	=	=	B ↑
Emergency caesarean section	Primiparous High medical risk	=	=	=
Instrumental delivery	Primiparous High medical risk	=	=	=
Postpartum haemorrhage	Primiparous High medical risk	=	=	B ↑
Massive obstetric haemorrhage	High medical risk Social risk factor(s)	=	=	=
Perineal trauma	Primiparous	=	=	=
Obstetric emergency	Primiparous High medical risk	=	=	=
Epidural/CSE/GA in labour	Primiparous High medical risk Over 34 years old	=	=	B ↑
Opioid in labour	Primiparous	=	=	=

No analgesia or Entonox only in labour	Multiparous	=	=	=
Water for pain relief in labour	High medical risk Increased age	↑	=	=
Monitoring (CTG in labour)	Primiparous High medical risk	=	=	B ↑
Induction of labour	Primiparous High medical risk	=	↓	=
Place of birth- obstetric led	High medical risk	=	=	B ↑
Neonatal Outcomes				
Neonatal Outcomes	Characteristics of women at disproportionate risk when adjusting (Appendix E)	Significant effect of specialist model of care	Significant effect of hospital based antenatal care	Significant effect of service
Premature birth (<37/40weeks)	Primiparous	=	↑	=
Low birthweight (<2500g)	Primiparous High medical risk	=	↑	=
Apgar scores	Social risk factor(s) Black Caribbean	=	=	B ↓
Neonatal unit admission	Black African	=	=	=
Stillbirth/neonatal death	Social risk factor(s)	N/A	=	=
Artificially fed infant at discharge	High medical risk Black 'other' ethnicity	=	=	B ↑
Skin-to-skin contact	Black Caribbean Social risk factor(s) High medical risk	↑	=	B ↓
Hospital stay				
Antenatal admissions	Black Caribbean Black 'other' High medical risk	=	=	B ↑
Length of postnatal stay	Primiparous High medical risk	=	=	=
Support services and Social Outcomes				
Social care involvement at discharge	Most deprived <20 years old Social risk factor(s)	↑	↑	B ↓

↑ = Statistically significant increase (Pr < 0.05)

↓ = Statistically significant decrease (Pr < 0.05)

= No significant relationship detected

'A' and 'B' refer to services

Subgroup Analysis

Outcomes that were associated with a significant relationship to either the model of care received or the place of antenatal care attended were analysed for the ‘most at risk’ women only. This subgroup included:

- Women with IMD scores within the most deprived 3 deciles and/or
- Not white ethnicity and/or
- Any social risk factor

This subgroup accounted for 593 women, 59.30% of the sample. Despite small numbers, a significant relationship was found earlier in the chapter when analysing the whole cohort, with women accessing standard maternity care being less likely to use water for pain relief.

Analysis 1- Model of care

Table 53 below shows that of the 593 women with increased social risk, only 7 used water for pain relief in labour. The relationship to model of care was not seen for women with increased social risk. However, for skin to skin contact there remained a significant relationship, with women at increased risk who received the specialist model of care being more likely to experience this important bonding practice. The previously noted relationship between social care involvement at discharge from maternity care and the model of care received was also tested with the subgroup analysis. Table 53 also shows that women who receive standard maternity care were less likely to have social care involvement, this result was slightly more significant for women with increased social risk; RR0.19 CI 0.07-0.46 compared to whole sample; RR0.15 CI 0.06-0.39.

Table 53 Subgroup analysis by model of care received

Outcome	Model of Care	Number of women (%)	Unadjusted RR (95% CI)	Model 1 Adjusted RR (95% CI) *	Model 2 Adjusted RR (95% CI) **	Model 3 Adjusted RR (95% CI) ***
Water for pain relief in labour	Standard	3(43)	0.61(0.63-6.05)	0.55(0.41-7.50)	0.64(0.04-8.85)	0.45(0.02-6.98)
	Group	3(43)	1.35(0.12-13.3)	1.61(0.12-20.4)	1.67(0.13-21.3)	1.90(0.14-25.3)
	Specialist	1(14)	Ref	Ref	Ref	Ref
Skin-to-skin contact	Standard	216(59)	0.43(0.21-0.89)	0.28(0.13-0.64)	0.37(0.16-0.85)	0.32(0.13-0.77)
	Group	97(26)	0.39(0.18-0.85)	0.28(0.12-0.65)	0.29(0.12-0.69)	0.36(0.14-0.89)
	Specialist	54(15)	Ref	Ref	Ref	Ref
Social care involvement at discharge	Standard	13(22)	0.09(0.04-0.20)	0.18(0.07-0.45)	0.17(0.06-0.43)	0.13(0.05-0.36)
	Group	25(43)	0.47(0.23-0.93)	0.80(0.34-1.88)	0.77(0.32-1.84)	0.94(0.39-2.29)
	Specialist	20(35)	Ref	Ref	Ref	Ref

* Model 1: Adjusted for demographics ethnicity, age, parity, IMD score, any social and medical risk factors at booking and onset of labour

** Model 2: Model 1 + Adjustment for place of antenatal care (community or hospital)

*** Model 3: Model 2 + Adjustment for service provider attended (A or B)

Analysis 2- Place of antenatal care

The previously significant outcomes associated with place of antenatal care attended were also analysed for the ‘most at risk’ subgroup, see Table 54. When the rate of induction of labour was analysed for the subgroup the relationship between hospital and increased induction was no longer significant- this in an interesting finding suggesting that the women with less social risk attending hospital antenatal care are more likely to experience induction of labour. This will be explored in the qualitative data, particularly in terms of education and choice. Perhaps even more interesting are the findings for preterm birth. For the whole sample, women attending the hospital for their antenatal care are more likely to experience preterm birth (RR2.38 CI 1.32-4.27), but the risk increases for the ‘most at risk’ subgroup (RR 3.11 CI1.49-6.50). The same was seen with social care involvement at discharge, whereas for the whole sample attending the hospital for their antenatal care increased social care involvement (CI 2.68 CI 1.21-5.93), this was increased for those most at risk (RR 3.15 CI1.30-7.64).

The relationships between hospital based antenatal care and low birthweight remained significant but did not increase in the subgroup analysis.

Table 54: Subgroup analysis by place of antenatal care attended

Outcome	Place of antenatal care	Number of women (%)	Unadjusted RR (95% CI)	Model 1 Adjusted RR (95% CI) *	Model 2 Adjusted RR (95% CI) **	Model 3 Adjusted RR (95% CI) ***
Induction of labour	Hospital Community	118(52) 104(46)	0.86(0.60-1.23) Ref	0.92(0.63-1.34) Ref	0.88(0.60-1.31) Ref	0.87(0.55-1.37) Ref
Preterm Birth	Hospital Community	45(76) 14(24)	2.85(1.52-5.35) Ref	3.15(1.62-6.15) Ref	3.24(1.63-6.42) Ref	3.11(1.49-6.50) Ref
Low birthweight	Hospital Community	35(67) 17(33)	1.76(0.95-3.23) Ref	2.21(1.14-4.30) Ref	2.10(1.06-4.15) Ref	2.09(1.00-4.34) Ref
Social care involvement at discharge	Hospital Community	26(45) 32(55)	0.62(0.35-1.08) Ref	0.91(0.45-1.81) Ref	1.30(0.63-2.66) Ref	3.15(1.30-7.64) Ref

* Model 1: Adjusted for demographics ethnicity, age, parity, IMD score, social risk and medical risk factors

** Model 2: Model 1 plus adjusted for model of care

*** Model 3: Model 2 plus Adjusted for service provider attended

Chapter summary

To summarise this chapter, the clinical and social outcomes of women in the quantitative sample have been analysed using multiple logistic regression analysis, to begin to explore ‘what works, for whom, in what circumstances?’ Overall, the specialist model of care, and in some cases the group practice model appear to mitigate the effects of inequality through similar outcomes to standard care despite a higher number of women with social risk factors accessing them, some improved outcomes such as the use of water for pain relief and more skin-to-skin contact, and no adverse outcomes. The place of antenatal care was associated with different outcomes, particularly neonatal outcomes such as preterm birth and low birthweight, despite the model of care received. These findings require further analysis and will be explored in the next chapter alongside model of care. A table has been produced to present significant relationships and the characteristics women have that put them at disproportionate risk. These characteristics were often related to race, age, parity, medical risk status, socioeconomic status and social risk factors, and gave insight to develop a subgroup to further analyse the significant findings. The subgroup analysis found that for most outcomes there was little difference in effect compared to the whole cohort, but for preterm birth women attending the hospital based model who were at increased social risk were more likely to have premature birth. Again, this finding needs further exploration and will be prioritised in the uncovering of causal mechanisms and refinement of the CMO configurations in the following chapter.

Chapter 8- Realist Evaluation Part 4 ‘Why and How’? Longitudinal interviews with women exploring mechanisms relating to candidacy:

This chapter and the next will aim to explore further the ‘how’ and ‘why’ specialist models of care work, and do not work for women in different contexts. It will draw on the quantitative findings presented in Chapter 7 and use qualitative data to test the mechanisms described in the initial programme theories and overarching CMO configurations developed in the realist synthesis (Chapter 3) and focus groups with midwives (Chapter 4). Although there is natural overlap between the theoretical perspectives, this chapter focuses on the those mechanisms that relate to candidacy. Therefore the chapter will test and refine the CMO configurations titled ‘Access’, ‘Interpreter services’ and ‘Antenatal Education’ to explore how womens eligibility for maternity services was determined between themselves and the service.

1.29 Aims

As part of the process of testing and refining theory and the CMO configurations listed above, this chapter addresses the following questions:

In what circumstances, and how do specialist models of care influence:

- Access and engagement with maternity services?
- Womens antenatal admissions to hospital and the length of their postnatal stay
- women’s ability to disclose sensitive information including social risk factors
- Maternal and neonatal outcomes, and the need for analgesia and obstetric interventions?

The questions above were approached through consideration of the initial programme theories and CMO configurations constructed by Rayment-Jones et al ^{221,439} to gain further insight into how and why specialist models of care work, or do not work, for women with low socioeconomic status and social risk factors. Each initial CMO configuration was tested through a three-step process- see Figure 23 below for an explanatory diagram of the process:

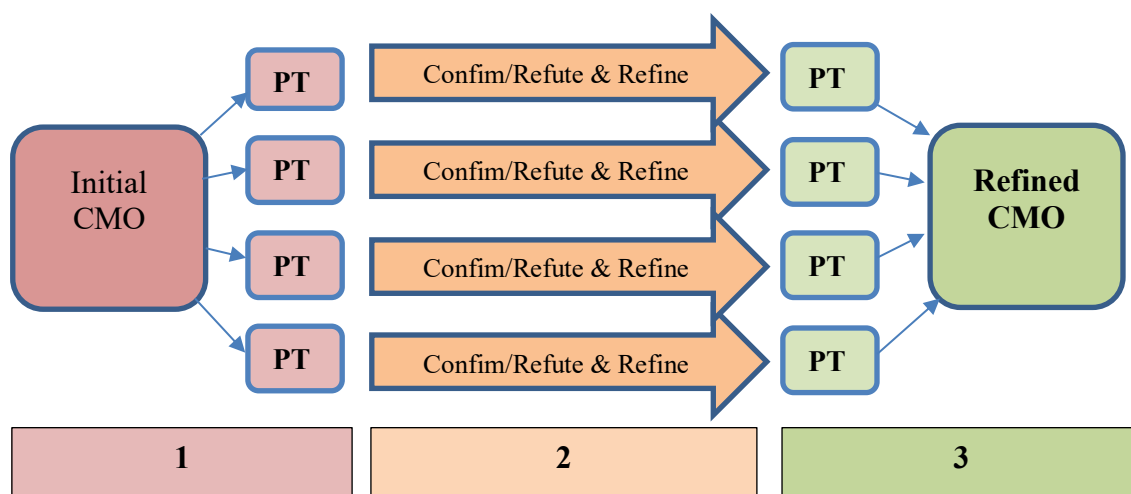


Figure 23: CMO configuration refinement process

This process is described below with the numbers correlating to the order of the diagram:

- 1) The initial CMO configuration is presented and broken down into smaller testable programme theories. Rival, or conflicting theories, and new theories are presented alongside these programme theories. These rival theories were identified throughout the project including the realist synthesis, focus groups with service providers, patient and public involvement group liaison, supervisory and advisory group discussions.
- 2) The programme theories are individually tested by drawing on the relevant quantitative data presented in Chapter 7, and qualitative longitudinal interview data to confirm or refute the programme theory before refining them to better reflect the findings.
- 3) The refined programme theories relating to the initial CMO configuration are compiled in a new, refined CMO configuration that represents the findings of the research.

The above three step process gives way to middle-range theories, indicating how the specialist model of care activates mechanisms amongst whom and in what conditions to bring about different outcomes. The refined CMO configurations will inform the development of a theoretically informed model of care for women with social risk factors.

1.30 Findings

Table 55 below provides an overview of the initial eight CMO configurations, the specific programme theories they are made up of, and the final six refined CMO configurations. The headings of each programme theory were derived from the qualitative framework analysis. These are presented in order of how they are tested in Chapters 8 and 9.

Table 55: Overview of CMO configurations and programme theories tested

Chapter 8		
Initial CMO configurations	Programme theories tested relating to candidacy	Refined CMO configuration title
Access to maternity care	<ul style="list-style-type: none"> • Women's preference for timing of antenatal care • Access to GP services • Referral pathways to maternity services • Referral pathways to the specialist model of care • Women who access care late in pregnancy 	Access to maternity care
Interpreter services	<ul style="list-style-type: none"> • Access to interpreter services • Choice of interpreter 	Interpreter services
Antenatal Education	<ul style="list-style-type: none"> • Cultural sensitivity • Evidence-based information • Exercising choice • Time with healthcare professionals • Perception of being a burden 	Education, Information and Choice
Chapter 9		
Initial CMO configurations	Programme theories tested relating to syndemic care	Refined CMO configuration title
Continuity of Care	<ul style="list-style-type: none"> • 24/7 access to a known midwife • Continued, supportive presence 	Relational continuity of care
Relationships and Trust	<ul style="list-style-type: none"> • Knowing women's social and medical history • Relationships and trust • Flexible, needs-led care • Missed appointments 	
Practical support	<ul style="list-style-type: none"> • Disclosure of sensitive information and social risk factors • Mental health support • Emotional support and advocacy • Intrapartum support services • Resources, knowledge and skills • Establishing support networks • 	Social, emotional and practical support
Surveillance	<ul style="list-style-type: none"> • Perception of surveillance and judgement • Stigma, discrimination and impersonal care 	Stigma, Discrimination, and Surveillance
Overcoming assumptions	<ul style="list-style-type: none"> • Active participation versus paternalistic care • Respecting women's expertise of their own bodies • Help-seeking and escalating concerns • Strengths and assets of community, culture and support 	

1.31 Access to maternity care

This section addresses the question ‘Do specialist models of care influence the timing of access to maternity services?’. The CMO configuration detailed in Figure 24 relates to women’s access to maternity services. Quantitative data presented in Chapter 7 that refers to the gestation at which women attended their first ‘booking’ appointment was used, as well as qualitative data from the 20 women accessing the specialist models to confirm or refutes the programme theories used to construct this CMO configuration. This processed identified new mechanisms that impact on access to maternity services that contributed to the refined CMO configuration.

Context	Mechanisms	Outcomes
Women who are: Unfamiliar with the NHS system Do not speak English Do not have a permanent UK address Asylum seekers refugees Trafficked women Experiencing abuse	<ol style="list-style-type: none"> 1) Written information (in a woman’s preferred language) about how to access health services. 2) Direct access to maternity services rather than referral from a general practitioner (GP). 3) The ability to access antenatal care without extensive documentation and without fear of disclosure to agencies or individuals who might put them at risk (for example border agencies or embassies) 4) Early access to maternity care (from conception/confirmation of pregnancy) 5) Ability to rebook missed appointments with ease and without reproach. 	<p>Earlier access to services Avoidance of denial of service Increased candidacy, Increased choice Early access to safe abortion and family planning services</p>

Figure 24 CMO Configuration- Access

The qualitative analysis explored how the programme theories differ for women in different circumstances, accessing models of care in different settings. Women’s preference of timing of access to maternity services is explored first:

Women’s preference for timing of antenatal care

Initial programme theory: If maternity care incorporated early pregnancy care (from conception/confirmation of pregnancy), then women would not view it as a package of care for viable and continuing pregnancies and therefore see value of accessing care early in pregnancy to seek support and advice regardless of whether or not they intend to continue the pregnancy

Rival PT: If maternity care incorporated early pregnancy care (from conception/confirmation of pregnancy), then women might perceive this as added surveillance and increased importance placed on the wellbeing of the fetus, this may result in less women accessing appropriately timed abortion services.

Testing using quantitative data: Table 26 and Table 27 in Chapter 7 found that the majority of women booked with maternity services later than 10 weeks' gestation, the recommended time at which to book, particularly those with social and medical risk factors^{201,297}. No significant relationship was found between the model of care and the gestation at which women attended the booking appointment. Women attending their booking appointment after 12 weeks were significantly more likely to be receiving hospital based care.

This data contributes to the testing of the theory by revealing the context that women with social and medical risk factors are not accessing maternity services early in pregnancy. The qualitative data will go on to explore if this is due to their preferences and behaviours or system barriers.

Testing using qualitative data: When interviewing women about when they accessed maternity care many spoke about wanting to be seen earlier in pregnancy, and the impact that late booking, particularly after 12 weeks, had on their emotional wellbeing.

I think the main take-away that I have from the whole experience is...the first ten weeks. That you don't have any support from anyone. Until you have your booking appointment. Like even information on who to call, someone to talk to, to advise what you eat, what not to eat, or what, to take like, answer some questions you might have before your booking appointment. (CBM1)

Husband- *In the beginning she was unhappy because she was telling me like, no one is caring about her...first three months. Woman - Yeah, there is no one. Husband- there is no services, nothing. No one called her. She didn't do a scan. Woman - No, no scan. Husband- After three months, [CBM midwife] came and everything happened. Before 20 weeks, it's different. Woman - Yeah it's different, yeah. Husband - Like you feel like they're not ready for someone who is pregnant before 20 weeks. (HBM6)*

'it's not really important now until I get to the 12 weeks, that's how I kind of felt about it. Like they weren't really too bothered but it was like, 'well, it's not really important till the 12 weeks and that's when we can start doing what we need to do'.'(HBM9)

The data confirms the initial programme theory and challenges the notion that women with social risk factors do not prioritise their maternity care ⁴⁹⁸. The qualitative data did not support the rival theory.

Refined PT (demonstrating CMO configuration): If maternity care provision commences when a woman accesses services (M) regardless of her gestation (C) , even if this is in the form of a phone number for advice (M), then women would not feel unsupported (O) , anxious (O), and that the service does not value them until they have a viable pregnancy (O). This might also improve early access to safe abortion and family planning services (O).

Another programme theory relating to accessing maternity services early in pregnancy concerns women's ability to register with GP services:

Access to GP services

Initial programme theory: If women are able to register with maternity services and GP's without extensive documentation or evidence of a permanent address, then they could access care earlier in pregnancy, reduce stress and fear of disclosure to agencies or individuals who might put them at risk. This will, in turn, improve early access to abortion services.

No rival theory was put forward to challenge this theory.

Testing using qualitative data: For women who booked later in pregnancy in both models of care, the delay in accessing maternity services was due to difficulties in registering with GP services. This resulted in some women having to access emergency early pregnancy services at the hospital.

I couldn't get a GP appointment because I'm still registered at my old GP, I went to my local walk-in centre and they couldn't see me because I was pregnant... I was like, 'Should I just go to [name of hospital]?' and they were like, 'It's just up the road, you'll be fine. Someone can see you.' So I saw a couple of people at the, is it the maternity urgent care centre there. (CBM9)

A family member also described the difficulties non-English speaking people face in registering with health services.

Husband - I'm a builder so I have like million friend, I ask them: they don't all speak English, they won't use the phone... there's some of my friends they don't have a GP. They are here for five years. They don't know how to open a GP. They don't know how to fill a form in. (HBM6)

The women in both models of care described varying degrees of difficulty in booking an appointment with their GP and felt that this impacted on the time it took to see a midwife.

[at 3 weeks gestation] I called the GP to book an appointment. to say that I'm pregnant, and they sent me... to buy a Clearblue to check it because the list is too long. But it take a very long time, to see the GP... to refer me to the midwife, I was waiting a long time...when I saw the midwife the first time, I think I was around 20 weeks. (CBM7)

Not easy at all. Not easy. You near enough have to be dying to get an appointment..it is ridiculous to get an appointment there. Sometimes it's just not even worth trying to ring up to make an appointment...you ring and ring, a doctor will ring you back. They won't make an appointment there and then, a doctor has to ring you back to find out what's going on and then they will decide whether they will see you or not and whether it's an emergency or whether you can wait the two or three weeks for an appointment. So yeah, it's very hard work. [HBM9]

The findings confirmed this initial programme theory, but before refining it the thematic framework analysis data relating to access to maternity services highlights additional underlying mechanisms:

Referral pathways to maternity services

Initial Programme Theory 1): If women receive written information (in their preferred language) about how to access maternity services and what their care will offer and are able to do this directly rather than through a GP (self-referral), then barriers around NHS administration and/or postal delays will be overcome and antenatal care will commence earlier in pregnancy.

Rival PT: If women self-refer to maternity services then they may not disclose previously known social risk factors and would therefore be allocated to standard maternity care, but if they access their GP first, then the referring GP can highlight those risk factors and request a specialist model of care.

Testing using quantitative data: Table 26 and Table 27 in Chapter 7 show that primiparous women, those with high medical risk, social risk factors and those attending hospital-based antenatal care were more likely to book for maternity care later than 20 weeks. This highlights an

inequity experienced by these groups of women, the mechanisms of which will be analysed using the qualitative data.

Testing using qualitative data: Women receiving specialist models described varied experiences when accessing maternity services. Most women contacted their GP (community based) before being referred to maternity services for their booking appointment. This seemed to be easier and quicker for women who went on to receive their care in the community than those needing to be referred from the community into the hospital:

‘And then they [GP based at community health centre] send me to the [CBM] midwife, they send me a letter to contact the midwife... Very easy.’ (CMB3)

‘With the midwife it’s easy, with the GP it’s also easy, because they organise appointments so you don’t have to call, you can do everything on the same day. They give you the appointment with the time, I think it’s easy because I don’t have to call anyone.’ (CBM5)

Women in the hospital-based continuity of care model described a more convoluted pathway to accessing the model of care often beginning with a GP referral to a community midwife, and then a referral from that community midwife to the continuity of care model. This is likely to impact on timing of access due to the number of referrals being made between community and hospital-based services.

‘I went straight to my doctor and went, ‘What do I do?’ Then I think I got seen by a community midwife close to me, and then she referred me to [caseload model of care].’ (HBM1)

‘[The GP] referred me to Children’s Centre...they’ve got a midwife section there. And from there they said to me because of my history of anxiety and depression that they were going to try and get me a sort of more one-to-one kind of thing with the [HBM] midwife.’ (HBM4)

For some women it appears there were delays in the referral process between the GP and the hospital. Self-referral seemed to be a quicker way of booking with hospital-based maternity services over the GP to hospital referral process.

‘I went to the GP. Um, it was horrible...they gave me a very long [late] appointment like up to one month, so all these things were not done, like I wouldn’t have done my scan or anything. Yeah, and then I talked to someone,

they said about self-referral. And then I self-referred myself, and then I saw the midwife at around 14 weeks. (HBM5)

This woman, who had no recourse to public funds, described her experience of accessing standard, hospital-based maternity care in a previous pregnancy, and then her experience of accessing the hospital-based specialist model in her current pregnancy.

Previous pregnancy under standard hospital care: *'We went to the GP when I was about six weeks pregnant, and then we couldn't get [maternity] appointment until I was about four months. So what I did was we went to private hospital to do the three-months checks ... the blood test and the scan checks. And then the first appointment I had here [at hospital] was when I was four months pregnant with a scan...I don't know maybe within GP to the hospital or the process maybe took long, but I remember phoning them and then asking them, 'When can I get an appointment and see a midwife?' and they said, 'No you can't see at the moment...there's no ready documentation and everything's not ready,' so and then we went to see private hospital. (HBM3)*

[This pregnancy under continuity of care model]: *I went to GP and they confirmed I was pregnant. And then I received call, or text, I can't remember maybe both, from [HBM midwife], saying that, 'I'm your midwife, can you come and see me on this day?'...Yes it was straightaway, easy process. (HBM3)*

Her experience of access appeared to have been improved through the referral being sent straight to the specialist model of care midwife. This will be explored and further tested in the following section 'Referral to the specialist models of care'.

The refined programme theory below contributes to the final CMO configuration relating to access and has been adjusted iteratively throughout the analysis process as it relates to other mechanisms and outcomes explored later in the chapter.

Refined PT (demonstrating CMO configuration): If models of maternity care are placed within local GP surgeries in the community (C), and women are made aware they are able to self-refer to them through written information or administrative staff at the first point of contact (M), Then difficulties trying to access a GP will be overcome (M), the time spent waiting for a GP appointment reduced, and long referral processes between primary and secondary services will be avoided (M). This will result in women having more time to get to know their midwife/team (O), and midwives and GP's will be able to communicate more effectively (M) about women's medical and social history, resulting in more personalised care (O).

To summarise this section and attempt to answer question 1) 'Do specialist models improve timing of access to maternity services?', the quantitative findings demonstrate a possible levelling of inequity in access to maternity care through the specialist model, with insightful barriers and mechanisms revealed in the qualitative data of those accessing the specialist model. The next section will build upon these underlying mechanisms for access to services through women's experience of access to the specialist models of care.

Referral pathways to the specialist models of care

This section will address the question ‘do women with low SES and social risk receive more or less access to specialist models than their more affluent, less socially complex counterparts?’ and unearth mechanisms that enable services to identify women most in need of specialist models of care. . The first programme theory explored is a new theory that emerged through the thematic framework analysis:

New Programme Theory: If women living in areas of deprivation are prioritised to receive continuity of care through community-based models then services are likely to identify women with social risk factors who have not previously disclosed these issues with professionals, and care is less likely to be disrupted during pregnancy when a disclosure is made. This may also avoid women feeling discriminated against due to specific social risk factors that they may feel do not place them at higher risk or may place them at a higher risk of increased surveillance.

Rival Theory: Placing specialist models of care that include increased levels of continuity in deprived communities does not protect those services from becoming used by more affluent women who are not at such high risk of poor outcomes and experiences and are able to coordinate the system. This would result in those women with low SES and social risk factors having to seek care elsewhere, perhaps outside of their local communities.

Testing using quantitative data:

Firstly, the quantitative data was used to test the hypothesis that women with low socioeconomic status and social risk factors are most likely to receive specialist models of care. The data presented in Table 28, Chapter 7 showed that women receiving specialist models of care were more likely to be in the more deprived deciles even after adjusting for women’s characteristics, the service provider attended and the place of antenatal care. These findings suggest that the aims of the specialist models- to reach the most deprived women, are being met. Chapter 6 demonstrated that women with low SES are more likely to have social risk factors. This further analysis shows that the specialist models of care based in areas of deprivation were indeed caring for more women with low SES and social risk factors, therefore refuting the rival theory.

However, Table 29 in Chapter 7 also highlighted a significant relationship between the place of antenatal care and the model of care received, with women in the highest deprivation deciles attending hospital based antenatal care being less likely to be cared for by the specialist model (RR 0.40 0.22-0.72). This supports the new programme theory that community-based models are more likely to identify women with low SES who are more likely to be experiencing social risk factors.

The qualitative data was then used to explore women's experiences of being referred to continuity models of care, focusing on the 'how' and 'why' women with low SES were more likely to receive specialist models at the two services evaluated, and why those with low SES were less likely to receive antenatal care in the hospital setting, despite model of care received.

Testing using qualitative data: Women reported different pathways into the specialist models including direct referrals from their GP, midwives working in other models, sexual health clinics, social workers, accident and emergency departments, and self-referral. This indicates the specialist models are known to local services and have open referral pathways. However, the qualitative findings suggest that most women in the hospital based model were not aware the model existed. When women were referred to the model of care by other healthcare professionals, they were often not aware why they had been referred, or what the aim of the model of care was:

'I didn't know what to do, usually in my country we book private doctors. I had a social worker and then she referred me' (HBM5)

'I think the hospital do, you always have your own midwife. No I don't think I had any choice, it's just based on your location, you will have your GP, and based on your GP you will have, er, nearby hospital based on your location. And then because of your hospital location you also have, um, nearby midwife. And that's it there's, I don't think there's any choice out there. Yeah, it's not given. (HBM3)

Women in the community-based specialist model (CBM) had a suspicion that the service was for women with specific needs, even though the model is universal and provides care for all women in a specified catchment area:

'I was just sent here. I think it's because of, I have specific needs, but I think he [GP] must have known what he was doing because...this is more like a special care for me rather than just normal midwife care, so I assume he did that knowingly...I do not recall a question, I mean like him asking me if this is what I wanted or not wanted. I wasn't aware that this was available to be honest' (CBM1)

'My understanding is I've ended up with them [CBM] for this reason, I've been in and out of things like CBT and talking therapies, I've been in like the service, kind of thing. Well I mentioned it to him [GP] and he was like, 'When you self-refer there will be part of the form that says, you know, "Are there any other additional concerns?' Um, so, I'm not sure, I don't think it's like they're a speciality team first, but they seem to get a lot of people who perhaps do have, um, perhaps that kind of background.' (CBM9)

I don't know if it's because I have these issues, only, or if it's the team or if it's the hospital or, I don't know, or the combination. I have no idea. But I'm super-happy and feeling lucky I ended up like having all this. like how many people get the support we get here? Is it just me because I have mental health?' (CBM10)

One woman commented on how this 'behind the scenes' referral process was actually a relief to her because she didn't have to fight the system:

'I think is because of my vulnerability, the mental health, um, issues that I have.... I was actually quite taken aback that, um, because I didn't have to do anything, I didn't have to chase anyone I didn't have to fight with anyone, it [the referral] was just done, when I got the letter. And, um, so obviously my doctor had done that. There must have been some sort of ... I don't know, either procedure on the system or they liaise with each other. But, I thought, thank God, because I felt like it was a moment of euphoria where I myself didn't have to fight. Didn't have to run around. It was just done. (HBM8)

Women who were aware of the model of care were not sure if they could self-refer, with one woman emailing the team on the 'off chance they would take her on':

I didn't know that, at the time I didn't know that I could just email them and say, 'Please!'..., I found an email address online...I had looked into it when I self-referred, and it didn't sound like I could self-refer to them, and I thought, oh maybe I can actually ask, so I thought, you know what? I'm just going to try. Worst case scenario they're going to say no.' (CBM6)

When women were asked if they have ever been treated differently from other people when accessing healthcare services, one woman commented on a feeling of discrimination due to the lack of transparency around the reason she was referred to the model of care:

I mean the fact that I'm seeing, um, you know [continuity of care team], I don't know if you want to class that as discrimination [laughs], because [midwife name]'s deals with so-called 'vulnerable women'. So you can look at that two ways. I was just referred. I received a letter, um, saying you know, 'You'll be seeing, um, er, a member of the [continuity of care team],' it wasn't kind of like disclosed on the paper you know. It's just something that I kind of gathered myself.' (HBM9)

As this new programme theory was developed as a result of the evaluation it should be tested further in future research to confirm or refute its validity. However, the qualitative and quantitative data appear to come to the same conclusion that community-based models of care in areas of deprivation are likely to identify women who are experiencing social risk factors that increase their chances of poor birth outcomes. The rival theory is therefore refuted in the context of this evaluation. Although the hospital-based model cared for women with at least once social risk factor, the data suggests that only those women who have a known social risk factor are cared for by the team, and these women are not necessarily in the highest deprivation centile. This may mean that the service is not identifying women who are at increased risk but are yet to disclose sensitive, often difficult social risk factors. This will be explored further in the testing of CMO configuration 'Practical support' that follows.

Another programme theory related to women who access care late in pregnancy is included in the analysis even though it was not relevant to the women in the qualitative sample as they did not book significantly late in pregnancy. The projects PPI group felt that the needs of women booking late for maternity care are often overlooked and therefore this was an important theory to consider regardless:

Women who access care late in pregnancy

Initial Programme Theory 4): If women registering late for maternity care are fast-tracked through the system to ensure an early antenatal appointment and time to build a relationship with a known midwife, then the potential impact of her late booking on birth outcomes can be minimised.

Rival theory: If women who book late for maternity care are included in criteria for the specialist model of care, then the primary aim of the model, that is to provide relational continuity, cannot be achieved in a short amount of time. This might lead to these models of care reaching capacity but not being able to improve women's outcomes due to a lack on time to build a relationship with the woman.

Testing using qualitative data: Testing of this theory was not possible as the sample did not include any women who had booked late for maternity care. However, barriers to accessing maternity care appear to lie with the service rather than women's help-seeking behaviour. That said, this was only relevant to this cohort of women who did not access care significantly late in pregnancy and should be considered in light of the quantitative data and existing literature around when women with low SES and social risk factors access antenatal care^{161,164,216}. Women

who book for maternity care significantly late in pregnancy are excluded from receiving the hospital-based model of care as it perceived that they will not have the opportunity to form a relationship with a midwife late in pregnancy. The findings of this evaluation point towards other mechanisms such as the development of a support network, flexibility and a point of contact that may benefit and protect women from harm, this suggests the inclusion criteria for those booking late in pregnancy should be reviewed.

To summarise this section and attempt to answer the question ‘do women with low SES and social risk receive more or less access to specialist models than their more affluent, less socially complex counterparts?’ the quantitative findings demonstrate that the models of care are reaching those with low socioeconomic status and social risk factors over more affluent women who are less likely to be experiencing multiple disadvantage. The overarching CMO configuration for ‘Access’ has been refined using the qualitative data and use of this analysis to test the programme theories see **Error! Reference source not found.** below. The context has been adjusted to add more detail, and the refined mechanisms and contexts are linked by number to show how the two interact. What is most interesting about this refined configuration is perhaps the outcomes that come about through improved access mechanisms, reach far beyond early access to services by focusing on improving disclosure, safety, and women’s emotional wellbeing. These CMO configurations, for example if the specialist models of care improve disclosure of social risk factors during pregnancy, will be tested and refined further in the findings sections that follow.

Refined CMO configuration – Access to maternity services

Context	Mechanism	Outcome
Women who struggle to access services and are at greater risk of booking for maternity care at a late gestation.	M1) If maternity care provision commences when a woman accesses services regardless of her gestation , even if this is in the form of a phone number for advice	O1) Then women would not feel unsupported, anxious, and that the service does not value them until they have a viable pregnancy. This might also improve early access to safe abortion and family planning services.
For example; women who are unfamiliar of the UK health system or have difficulties in registering with health services. These women are often experiencing social risk factors that might lead to chaotic lives, social isolation, lack of resource, lack of support.	M2) If women are made aware of the possibility and how to self-refer to maternity services and specialist models of care by administrative staff at the first point of contact	O2)Then difficulties trying to access a GP will be overcome, the time spent waiting for a GP appointment reduced, and long referral processes between primary and secondary services will be avoided.
	M3) If women are able to access a community-based service where GP's and midwives regularly communicate with each other	O3) Then the timing of access to a booking appointment with a midwife will be improved and convoluted referral pathways between community and hospital services avoided.
Primiparous women, those with any social risk factor, and high medical risk are more likely to book late for maternity care.	M4) If women living in areas of deprivation are prioritised to receive continuity of care through community-based models	O4) Then services are likely to identify women with social risk factors who have not previously disclosed these issues with professionals, and care is less likely to be disrupted during pregnancy when a disclosure is made.
	M5) If women are informed of the reasons why they have been allocated a continuity of care model or specialist service, or are able to self-refer to them if they feel they are eligible for their care	O5) Then the development of a trusting and open relationship with their healthcare provider will be enabled and feelings of suspicion and surveillance reduced. This transparency may also reduce feelings of discrimination for women in marginalised groups.
	M5) If women who book late for pregnancy care are eligible for specialist models of care where they have a named midwife or small team of midwives	O5) Then the benefits of these models of care and highlighted mechanisms may protect them from the disproportionately poor outcomes associated with late booking.

Figure 25: Refined CMO Configuration -Access

The next section of this chapter will focus on women's access to and experience of interpreter service and how this impacted on their access and engagement with services.

1.32 Interpreter Services

Testing of the CMO configuration shown in Table 43 draws on the qualitative data only as computerised records do not record women's use of interpreter services. Eight of the twenty women recruited to the qualitative aspect of this study did not speak English and required an interpreter. Analysis of their interview data provided detailed insight into how poor-quality interpreter services impact on their ability to seek help, disclose risk factors and communicate effectively with their healthcare providers. This is important in terms of models of maternity care as it should not be assumed that women with language barriers are protected by specialist models of care alone. During the qualitative interviews, a range of interpretation methods were used including professional telephone interpreters, family members, and other healthcare professionals or researchers who were able to speak the same language. These different methods over the course of the longitudinal interview schedule provided an opportunity for women to discuss their experience of different methods of interpretation openly as trust developed. Figure 26 presents the initial CMO configuration relating to interpreter services.

Context	Mechanisms	Outcomes
Women who do not speak English and those who have difficulties communicating (learning or physical disabilities).	<ol style="list-style-type: none"> 1) Uncomplicated telephone access to interpreter services, or online provision to register with services, arrange or reschedule appointments, organise travel to appointments and to access advice from a healthcare professional. 2) Access to properly translated, language appropriate materials. 3) Choice of interpreter, for example a female, an anonymous, or a trusted interpreter. 4) Access to interpretation services throughout antenatal, intrapartum and postnatal period, including emergency admissions. 	Earlier access to services, avoidance of denial of service, improved safety, flexibility, equity in information received, increased confidence in help seeking and self-disclosure.

Figure 26: CMO Configuration - Interpreter services

Access to interpreter services

Initial programme theory: If women have easy, immediate telephone access to interpreter services to register with maternity services, arrange or reschedule appointments, organise travel to appointments, and access to properly translated materials, then inequity in information

received and a key communication barrier will be overcome, and women will be better able to access and engage with services.

Rival theory: If women do not trust discussing personal matters with an interpreter, despite whether the interpreter was a stranger or someone from within their own social community, then language barriers will continue, and women will not disclose sensitive information.

Testing using qualitative data: Some of the women who did not speak English questioned how well professional interpreters were able to interpret what they were trying to relay to healthcare professional during appointments:

From my point of view I'm not happy, sometimes you know the interpreter they don't know what you say, you can see the difference...you can feel it because when you hear them, they didn't say what you say to them.. I'm not saying all, some of them they are really acting professional, they know what they are doing, some they don't know. They will say what you didn't say to them. Because [that's what] I have experienced, so that's why personally I don't like it, I stop it... it's not fair you see getting money, if he [interpreter] doesn't know the language, it's better to say, 'OK I can't deal with that one.' Because in order to get money, don't put somebody's life at risk. (CBM2)

I can't say that all interpreters say what you are really saying. I think about 60% of them are quite accurate and they are explicit in what you are saying, but about 40% of them are more, um, are more short, they are not really translating what you are saying... they just change your own words. (CBM5)

This appeared to be the case for women from some countries, particularly Black African women, highlighting that interpretation services do not guarantee a level playing field. Some languages are regularly disadvantaged:

Because the interpreter sometimes they don't know what you said, they don't speak ... as you said. The interpreter didn't say exactly what I did and I that's why I want to do my things myself. Because sometimes they make a mistake. Because of my French, there is French of Ivory Coast, French of the Congo, they speak it different. (CBM7)

Sometimes the interpreters don't really tell what you really feel, the way you tell it. It's so different. It can be so abstract. I tried using them in, not in my appointments, but doing my paperwork with the government and I had to stop him, and I tried to do it all myself because it's only me who can, you know, reach the words properly about how I feel and how things was. They can change just one Arabic word and the whole sentence is so different (HBM6)

Confidentiality was also identified as an issue, with women being suspicious about how confidential professional interpreter services are. One woman revealed that she was concerned about the opinions of the interpreter.

'is it really confidential? And then if they can resolve your problem when you speak to them as well sometimes, they will say confidential but if it's not confidential I don't feel comfortable to speak in front of the interpreter. Because I have a bad experience of the interpreter from Africa...I wasn't happy about what they were thinking.' (CBM2)

The ability to contact services to book or rearrange appointments or seek help over the phone was identified as a problem for some women.

I think contacting the GP it's more difficult usually because of the language barrier... it's truly my weakness here and it's easy if I don't have to call, and I can be just given the appointments. I'm much more comfortable that way. I haven't had any need to contact the midwife yet so far. If I have to contact her in the future I may just need to use a friend to help me to contact her (CBM5)

One woman revealed that although she hadn't been offered interpreter services she found it helpful that her named midwife could speak her native language:

No they don't offer it but if I really need it, yeah I will ask for them...The good thing about this is that [HBM midwife] speaks Spanish.... that was very helpful that she can explain, you know, because she speaks the same language as me. (HBM10)

These findings refuted the initial programme theory in light of the questionable quality of the interpreter services women experiences and appeared to more closely relate to the rival theory presented. This rival programme theory is incorporated into the refined CMO configuration.

Refined theory: If women have access to high quality interpreter services not only for appointments but also for making appointments and seeking help, and they are able to request a different interpreter or method of interpretation if they do not feel the interpretation is accurate or confidential, then women will be better able to communicate effectively with healthcare professionals, seek timely help, and disclose sensitive information.

Choice of interpreter

Initial Programme theory: If HCP's listen to women's choices about interpreter services, for example a female, an anonymous, or a trusted interpreter, then barriers to their use and effectiveness will be reduced and women would feel more comfortable discussing sensitive subjects and disclosing concerns with their healthcare provider, improving safety.

Testing using qualitative data:

For most of the women interviewed they preferred a family or friend to interpret for them as they could trust them. When this was not possible they discussed not having a choice in the interpreter they get, for example a female interpreter when discussing intimate details.

Most of the time I'm happy, my husband has been able to interpret for me. [When using professional interpreter services] I prefer to speak with...women rather than men but they didn't give me an option they would say, 'OK, we have this interpreter,' that's it and they will call anybody, they didn't give me any other options. For me I don't like it, the only I like it if my husband or my close family. (CBM2)

it's not always possible and people is working but yes I do rather prefer to have a family member or a friend. Perhaps it will be useful to have physical interpreters, just the person being there with you, um, rather than online, telephone interpreters. I think it's more useful, you have the person just next to you, you can see, you can talk, and it just inspires more security and trust, than the telephone line. (CBM5)

This woman also described an experience when an interpreter did not listen to her, resulting in her not being told information at an ultrasound scan appointment:

there was an interpreter at the scan, but, um, it was very weird because it was a male interpreter and I don't know if he was really attentive, um sensitive. During the appointment he was talking a lot to the sonographer rather than with me. So I didn't know if it was a boy or girl. I did ask because I believe I could hear the sonographer saying something about the sex...but he just ignored me, so I still don't know. (CBM5)

The findings presented confirm the initial programme theory relating to women being given a choice of who interprets for them at appointments. This should be considered in line with guidance around women being given an opportunity to disclose personal matters away from family members. The CMO configuration presented in Figure 27 has been refined to reflect these women's insights:

Refined CMO configuration

Context	Mechanism	Outcome
Women who do not speak English and those who have difficulties communicating (learning or physical disabilities).	M1) If women who don't speak English have access to language appropriate information about how to access a GP and maternity services, and help is given to fill in registration forms	O1) Then access to maternity care will not be denied or delayed through the process of registering for NHS services, and women will feel more supported from the beginning of their care experience.
	M2) If women have access to high quality interpreter services during antenatal, intrapartum and postnatal care, including telephone services to book or rearrange appointments and seek help when concerned	O2) Then inequity in information received and a key communication barrier will be overcome, women will feel better supported and listened to, be better able to access services and seek appropriate help in a timely manner.
	M3) If women are able to request a different interpreter or method of interpretation if they do not feel the interpretation is accurate or confidential	O3) Then the quality of the interpretation can be improved, and women will have more confidence and trust in the persons providing the service, leading to more meaningful communication with the healthcare professional.
	M4) If healthcare professionals listen to women's choices about interpreter services and offer preferred options, for example a female, an anonymous, or a trusted interpreter such as a family member or friend	O4) Then barriers to the use and effectiveness of interpreters will be reduced and women would feel more comfortable discussing sensitive subjects and disclosing concerns with their healthcare provider, improving safety.

Figure 27 Refined CMO Configuration- Interpreter Services

The next section of this chapter will focus on women's access to and experience of antenatal education and how this impacts on their ability to make informed decisions and exercise choice.

1.33 Antenatal education

Testing of the CMO configuration shown in Figure 28 draws on the qualitative data only as computerised records do not record women's attendance at antenatal education classes. That said, this section extends far beyond antenatal classes and unearths mechanisms relating to how women accessing the specialist model receive information about pregnancy, birth, and care of a new-born. The birth processes and outcomes presented in Chapter 7 are often dependant on women's access to antenatal education, evidence-based information and ability to make informed choices.

Context	Mechanisms	Outcomes
Women who may have limited education, unfamiliar with the system, language barriers, learning difficulties, caring responsibilities, no support, engage in 'risky' behaviours.	<ol style="list-style-type: none"> 1) Culturally sensitive antenatal education (for example child friendly settings and classes without the presence of men), with an opportunity for women to openly discuss cultural beliefs and advice received elsewhere. 2) Understandable, evidence-based information, that is well translated, about maintaining a healthy pregnancy, the impact of risky behaviours, routine procedures, and help/support seeking. 	Increased candidacy, engagement with services, knowledge, choice, informed consent, help seeking and lifestyle/behaviour change.

Figure 28 CMO Configuration- Antenatal education

Cultural sensitivity

Initial programme theory: If antenatal education was culturally sensitive including information that is relevant to women's individual needs at an appropriate gestation, and, for example child friendly settings and classes without the presence of men and provide an opportunity to meet a small team of midwives providing their care, then more women would engage with the classes and be better informed about their birth choices.

No rival theory was put forward to challenge this theory.

Testing using qualitative data: The majority of women receiving the hospital-based model did not attend antenatal classes, despite often wanting to and feeling they would benefit from the education and social opportunities they offer. The reasons given largely support the initial programme theory:

'all the classes this year I couldn't manage it because of [young daughter] is with me.' (HBM5)

There was an antenatal class, not specifically designed for people in my situation but just a general antenatal class, and I was going to go, but then I thought oh I'd be on my own. Like my mum couldn't come because my sister doesn't have childcare and my mum doesn't want to leave her on her own. So the lady [midwife providing antenatal class] was like, she doesn't really think it's suitable for my sister... And then I thought, no I'm going to be the only person on my own and I just didn't want to go through that. I think there should be more ... classes centred around single parents... it makes you feel more alone when everyone has got their partners... So it would be nice if there was more classes... it's an opportunity for the women to maybe make friendships and support each other. (HBM2)

When asked where this woman got her information about pregnancy and birth from she described being given some information from her midwife, but used internet searches for the majority of her information:

[HBM midwife]'s helped me by giving me the hypnobirthing CD and book, which I've read. But then it's mainly me... so it's me preparing myself... Probably Google... Yeah, the internet... because it's more instant. But just like general questions I would rely on Google. (HBM2)

This young mother felt that being signposted to available generic antenatal classes was not helpful for her and described needing advice and guidance on what was relevant to her:

...it was cancelled appointments again and again and again, and I only maybe saw her, I only had maybe one or two midwife appointments during my pregnancy. And it, it, it did make, it suffered me because I didn't go to antenatal classes, because she didn't really sit there and go, 'Well this is what's available, do this,' and all that, and, so me and my partner didn't go to antenatal classes. Um, and we didn't really know what we were doing when she was born. (HBM1)

Another women described how the specialist model midwife encouraged her to go to antenatal classes and involved her partner in preparing for birth. She reflected on how this differed from her previous experience of standard care:

[Because of] my personal experience as well I didn't go to antenatal class [in previous pregnancy under standard care], so I didn't know what to expect, I didn't know any of the process of birth... what choices I had... I didn't know antenatal class exists.... With [HBM] midwife [in current pregnancy].. I went to the birthing class and so ... I had better knowledge of what to expect during the birth. Yeah she advised me to definitely go and attend one... she also talked with my partner... about the birth and how to, you know, support your partner etc. And that was very helpful, and my partner really liked her as well, he always go to every meeting. (HBM3)

When women did attend the antenatal classes they described mixed experiences. One woman described a class that was provided in her own language and how useful this was to her, but felt it would be beneficial if there were more classes:

I attended antenatal classes, um, one day so [name of hospital 2] provide, um, antenatal classes in Spanish, so that was very useful, um, with a lot of people who speak Spanish from, you know, Latin America, Spain, and it was, it was beautiful, it was interesting, and um, but I do feel it was a bit short, it was just one day so I felt, you know, it would be very very useful to have at least another day at least a couple of days, and um, yeah it was an opportunity, you know, to share experience and opinions and love. (CBM5)

Another woman felt that attending the antenatal class was a negative experience that favoured women with support and financial ability to pay for private support. The experience impacted on her trust in the staff at the hospital and discouraged her from attending the next class:

I went to the breastfeeding class... I felt, didn't find it beneficial at all...the lady that was facilitating the class was just saying 'bring your own support', because the midwives and doctors are so rushed off their feet they're not going to have time to help you if you have any, you know, latching on problems...she was giving us numbers about a local [private] lactation consultant... just instilling more fear by saying, she actually saw a midwife manhandle the baby...and that baby never latched on, ever. And I thought, yeah OK, I really don't have any hope in the midwifery team now. She said that they're [staff on postnatal ward] just not skilled enough. And so because I knew she was going to facilitate the birth preparation and what-not the following day...I didn't bother turning up... the dis-empowerment I felt towards the end, that basically you need not trust the NHS staff, and you need to bring your own support. (HBM8)

Women who had high medical risk status and a substantial amount of medical and obstetric appointments to attend during the course of their pregnancy described being overwhelmed with appointments:

'You are [offered antenatal education], and you just have to book it, but there was just too many problems. You know, at the hospital three times a week. As much as I'd love to do antenatal class I wasn't going to make it four times a week!... we didn't do any classes.' (CBM8)

The same woman goes on to describe the impact a lack of education and support from both hospital staff and the specialist team midwives had on her when she gave birth prematurely:

'the breastfeeding [support]...none at all from the postnatal [ward].Yeab, none at all. Because they kept on saying on the neonatal ward, 'Oh the midwives should help you,' da-da-da-da. No. When I was on that ward it was me and my mum, my mum was literally squeezing my breasts, trying to express. (CBM8)

The qualitative data confirmed the initial programme theory and gave insight to enable it's refinement.

Refined theory: If antenatal education is culturally sensitive, flexible, and child-friendly, and midwives have the knowledge to signpost women to classes that are relevant to their individual needs, then women would be more likely to attend classes and benefit from the educational and social opportunities they provide. Women who do not speak English value opportunities to attend classes in their own language and would prefer these to be ongoing throughout pregnancy to develop support networks. Where this is not possible interpretation should be considered in light of the guidance provided in CMO 'Interpreter services'.

Evidenced-based information

Initial programme theory: If basic, evidence-based information about maintaining a healthy pregnancy, and procedures/routines is readily available, easy to understand, and translated into new migrant languages, then women would be better informed, able to provide consent, and have less reliance on the internet and advice from friends and family.

Initial programme theory: If HCP's work in a small geographical area where they are visible and become known by other members of the community, religious networks and other 'gatekeepers', then they can work together to develop trust, facilitate family and community-centred care, and educate the community with evidence-based information and dispel common, harmful myths.

Rival theory: Women who are not educated or have learning disabilities are overwhelmed by information and choice and prefer to be advised by healthcare professionals so that they are not responsible for making choices that they do not fully comprehend.

Testing using qualitative data: Overall, women in both specialist models of care felt they were given evidence-based information by the specialist model midwives during their pregnancy and described how they used this information to make informed choices.

'so I asked them, like, 'What do you think?' And, and again they said, you know, 'Everything we do is evidence-based.' So from what I've seen, from what my experience is, yeah everybody here works on, you know, evidence base, which I think it should be when you give somebody an option like that [antenatal screening], you should put everything on the table...all of the sort of eventualities should be put on the table'. like it's also good to know you can ask the questions and people will just tell you. You know, rather than say, 'Oh I'm the midwife, you don't worry about that.' You know, 'I know what I'm doing,'... you get the answers.' (CBM6)

Women who had experienced standard care in a previous pregnancy or prior to being referred to the specialist model often compared the level of information they received in each model of care:

That [previous booking appointment under standard care] was very different to this booking appointment [with specialist model]. I felt a lot more involved, I felt active and I actually felt like I could trust her. Things seemed to have flow, she explained why she was asking what she was asking. And it, it was a bit more meaningful. When I get quite anxious she'll just explain something quite factually. Whereas the lady in [standard care midwife in previous pregnancy], I just thought ...the way she had rushed through the paperwork, it was very much... onto the next page, onto the next page, and I just thought ...just paperwork has been filled out.' (HBM8)

Whenever I asked 'Why, why do you do this?' or, 'Is this necessary?' it was always like, 'This is what the scientific evidence is.' You know, 'This is why we do it, it's all evidence-based...' (CBM6) And it was all very reassuring.' I don't remember what it was, but I think there was, there was advice or there was recommendations or something that we got that we looked into or whatever, that came up in one of the classes that no one else had even been told about...I remember thinking, no our midwives told us that. Why didn't your midwife tell you that?' (Partner of CBM6)

To add more context to this, this woman reflects on her previous pregnancy under standard care and the lack of understandable information she received about her sons down syndrome diagnosis:

'when he come out he didn't cry and then was very floppy, so they want to find out [why through referral to] genetics doctor....then they take the blood test, after a month they told me he got a problem. Er, he might not going to walk early, he might not going to sit. He might not going to talk, he got some problems... they call, he have, er ... um delayed development. Yeah. Down's syndrome something. Yeah. They say that but I have no idea what it was. And after that I started googling and then I found out what it is. (CBM4)

She then goes on to discuss the amount of information she had been given by the specialist model midwives in this pregnancy:

I never heard from any other pregnant woman they have this kind of support from the midwife. This is the only, the first time I see the community midwife, they always hand you all the information' (CBM4)

Another woman recalls waking up in hospital after losing a significant amount of blood in a previous pregnancy, and not being given appropriate information about what had happened, remaining confused during this pregnancy:

I don't know exactly what happened at, in the second transfusion, but, um ... I don't remember when I wake up with so many doctors, around me...and when I wake up I have a very bad pain. Yeah during the, all the process I think they say something I don't know...now I have antibodies M? After all that thing? I mean I think they had a bad day, you know? They was, it was a really bad experience. (HBM10)

When asked if this had been explored and discussed in this pregnancy with her named midwife from the specialist model she describes the midwife explaining what had happened to her but remained confused:

Yeah yeah, she [HBM midwife] explained to me. And yeah I can understand a bit... I know they need to have blood prepared. In case I think, I bleed a lot. But I don't think it's something that really I can understand like the numbers, you know it's like all these words or something so just ...No I try to ask, yeah? But normally they say, um, 'It's OK.' (HBM10)

Information given by the specialist model midwives extended far beyond pregnancy, birth and care of the new-born:

She [Doctor] talked us through everything, answered our questions, and then still gave me like a leaflet to, you know, take home and make sure I read it and was comfortable with it and stuff, so, um no I felt very informed....I was given an outline of like how they would help me in terms of psychological therapies as well. I kind of got lots of very helpful information straightaway which was really reassuring. I didn't read up, I mean the first phone call, I think it was [midwife 1] who called me, and she gave me a rough outline of like what would happen in my booking appointment, and I was like, right fair enough, didn't think about it. Um, and that first appointment I came away feeling very like, oh wow I'm in quite good hands. Um, very informed. Um, yeah, no it was good. So for me knowledge is power so something like, um, knowing what my next steps are like kind of what the back-up plan is for things, just in general in life I find that very helpful. (CBM9)

When women were interviewed six weeks after birth, those in the hospital-based model discussed not being given information and the opportunity to make informed choices during labour and birth. This seemed to be the case when women were not looked after by their named midwife and not having the opportunity to meet the rest of the team.

This woman was not looked after in labour by her known midwife, but by another member of the specialist team whom she had not met before. Here she describes her transfer to the hospital from home in labour:

[Being asked if she felt well informed and in control] 'no because there were times when I was like 'What's going on, is the baby OK?' because I wasn't, because I could hear them talking and saying things, like er, medical jargon, and so I was like, 'Is everything OK?' and then they'd be like, 'Yeah, yeah, everything's fine.' ...I didn't know what was happening, it was like strapped on the belly monitor for the baby must have been strapped on, a catheter was trying to go in my arm, and it was just like so chaotic and completely everything I didn't want, that's why I wanted the home birth.' (HBM2)

The previous quote is in contrast to this women who was looked after in labour by a number of the community-based model midwives whom she had met during her pregnancy:

They [CBM midwives who provided intrapartum care] were all really great, they explained...So basically they wanted to, um, assist with a ventouse and if that didn't work they would use forceps...And explained they might need to obviously do an episiotomy, why they would need to do that... At the end of all that they were like, 'Are you happy with that?' Like you know, 'Are you OK with why we want to do this and happy for us to do this?' Um, I can't imagine if I'd say no at that point they would have just left and obviously gone away, but it, you know it really felt like it was my choice, my decision. There was no, you hear about perhaps implied consent where people are like, 'Right, just kind of pop your legs in here,' and go from there. Um, no, it was really really good, I felt very comfortable. (CBM9)

Women in both models described being given information and education by their named midwife but when that midwife was not present in the hospital setting they were left to their own devices:

'no one showed me how to, only when she was born [HBM Midwife] was like, 'Hold her like this and make sure she has a good latch on,' but after that when I went to the ward no one really showed me anything. Nobody showed me how to change her nappy, nobody showed me how to do anything, she didn't have a bath. So no one showed me

how to do that ... I did voice every concern I had to [HBM Midwife] and she listened, and she gave me like the correct advice. (HBM1)

This women describes a similar story but adds that when she was seen by doctors whom she had met before and developed a relationship with she felt she was given more information:

'I had a growth scan...and there was no explanation, like I had to ask the doctor, 'So has there been any growth, like what's happened?' [she] shrugged, it was just like, 'Mm, not much growth, same as last time.' I just felt like her attitude was just really off-ish to be honest, um, but by that time I was just so fed up, like I didn't even bother challenging because I was going to lose my head, like I just thought, do you know what, let me just get out the hospital now before I scream. She just done the scan... whereas all the rest of my scans with [named doctor]... everything he does he's explaining, he's showing me...It just reassures you, it calms you, especially if you do have things going on in your personal life' (CBM8)

This women had moved out of area after the birth so did not have her specialist model midwives for the postnatal period. She felt that this impacted the support she received and that that resulted in her baby being readmitted with jaundice.

They were like, 'Oh yeah we'll discharge you.' And I, I said, 'Oh I'm still concerned about feeding..'and he was very sleepy...she wrote some notes and she was like, 'I've put on your notes here that we told you about some milk spots in [borough].' And basically like they said there was help but didn't actually kind of give me any information. At the time I was like, oh well like I'm sure I can Google this, but then when we, two days later when we had another midwife telling us he was jaundiced, and asking, you know, what information we'd been given when we were discharged, I was like, 'Ab. You know, not very much.', that was when she actually said she was surprised we'd been discharged when we weren't OK with feeding. (CBM9)

The insights detailed here confirm the overall content of the initial programme theories and refute the rival theory by demonstrating that women with social risk factors highly value evidence-based information and the ability to make their own choices based upon this. Women did not discuss the midwives being known by or working with members of the community, therefore the second programme theory put forward requires further testing in future research. Mechanisms around the presence of a known healthcare professional in the hospital setting were taken into consideration when refining the programme theory:

Refined theory: If understandable, evidence-based information is given at appropriate timing in relation to a woman's stage of pregnancy and individual needs, then women will be better informed, able to make choices without reliance on non-evidence-based sources and provide

informed consent. Information sharing also makes women feel more reassured, reduces anxiety and contributes to the development of a trusting relationship with their healthcare provider. Increasing continuity of care through the opportunity for women to meet other members of her care team appears to contribute to sharing of evidence-based information.

This leads onto two theories exploring how women with social risk factors, particularly those with social care involvement, can exercise choice to demonstrate their parenting abilities and relinquish control when accessing maternity services.

Exercising choice

Initial programme theory 1): If women and family members are given unbiased information and the opportunity to make choices around their pregnancy, for example place of birth, pain relief, mode of delivery, discharge from hospital, requesting changes in healthcare professional, then they will feel more empowered and in control of their pregnancy. For those whose parenting capacity is being assessed, this can help them to demonstrate how they process information and make choices based on what is best for them and their baby.

Initial programme theory 2) If healthcare professionals inform women of their right to choice, through education and providing the evidence-based information women need to exercise that choice, then they will be empowered, and their self-confidence increased through shared decision making and would not feel as though accessing care equates to relinquishing control through perceptions of manipulation and coercion by the healthcare professional.

No rival theory was put forward to challenge these theories

Testing using qualitative data: Women in both specialist models of care described wanting to exercise choice, but feeling sceptical about how it would be received, particularly if they had experienced substandard, or disempowering care in the past. Overall there was an impression that when they made decisions, or asked about alternative pathways, they were well received by the midwives in the specialist model.

Yes I do believe midwives listen very carefully. Um, they get to know you, they get to understand your situation. And your, and your, um, local personal things. So I think if there is something that I don't agree, in my birth plan or in my care, I will speak out and, er, and give my opinion, no? Of course I will listen to the healthcare professionals, um, if there's something that, you know, I should consider or I should know and then I will make an informed choice, a decision. (CBM5)

'quite early in my pregnancy I said, 'Oh, I'd like to have a home birth,' and [HBM midwife] was like, 'Oh yeah, that's fine.' And then I was like, 'Oh! OK.' It wasn't the reaction I was expecting, it was very positive, and it made me feel good, so that was great. [I was expecting] mainly like, '... we'll have to think about it,' or you know, 'This is what we'd need to consider and,' but it was just like an outright, 'Yeah sure, I mean your pregnancy is going fine, if it continues that way I don't see why not, that will be, yeah, no problem.' So that was really, really positive and it put me on that journey' (HBM2)

The same woman also described asking her named midwife about the child immunisation programme, as she had read information online that made her anxious and resistant to consenting to an immunisation for her baby. She felt comfortable about questioning this information and able to make her own decision with the information provided.

She [HBM midwife] seemed knowledgeable, she said that she understood where I was coming from. Like we've all got our reasons for why we might want certain things or feel certain things. Um, but she would advise that I do immunise her because it's better to than not to, basically. So ... she didn't push it on me, she didn't make me feel like I was wrong for thinking my own thoughts, but she did give me a different side of the coin for me to think about. And, um, yeah, make my decision. (HBM2)

Other women had less positive experiences of informed choice. One woman, a young mum, discussed the impact of a lack of antenatal education and continuity had on her being referred to social care. The referrals to support services were initiated by the health visitor rather than the midwife.

So at the big [child protection] conference I was like, 'Look. We didn't have any preparation for this baby at all. You know, we didn't go to antenatal classes.' We didn't learn about feeding cues and, and all this stuff. So it was, it was complicated because obviously ... So yeah, health visitor ... health visitor was the one who, who intro-, who did social work, the health visitor also introduced me to ... the family support worker as well, to um ... they just help build like, it was all like just learning how like the baby develops. It was kind of like an antenatal class after birth. (HBM1)

This woman's experience will be explored in more detail when testing the CMO configuration 'Continuity of care'.

Although women did not explicitly describe how exercising informed choice led to a demonstration of their parenting abilities, the data did unearth mechanisms around feeling able to exercise choice such as midwives openness to discussion and ability to provide evidence-based

information, and women's response to these mechanisms. Where women were not provided with adequate preparation and information we have seen that their parenting capabilities were questioned, leading to social care involvement. Therefore the programme theory has been refined

Refined theory: If women and family members are given unbiased information and are encouraged to make choices based on their own needs and interpretation of the information, then they will feel more empowered and in control of their pregnancy. This in turn will lead to more positive experiences of pregnancy, avoidance of relinquishing control, and self-belief in their parenting ability. Ensuring women with social risk factors are well prepared through evidence-based information, they will be more able to make choices based on what is best for them and their baby that can have significant impact on child protection outcomes.

When women reflected on the level of education and information they received during pregnancy they often discussed the time they had to interact with healthcare professionals, this mirrored two initial programme theories constructed in the realist synthesis and focus groups with healthcare providers:

Time with healthcare professionals

Initial programme theory: If women have more face-to-face time with a health professional to discuss their lifestyle, then they will better understand the impact of risky behaviours, as many do not engage with or understand information provided in leaflets.

Rival theory: If specialist models of care promise women flexible, open ended face-to-face time with healthcare professionals then they may become overstretched and unable to meet the needs of all women they provide care to.

Testing using qualitative data: Women did not specifically describe how time with healthcare professionals impacted on their understanding of risky behaviours but did discuss feeling more informed of general pregnancy advice. Most of the women accessing specialist models of care did not feel that time with their named midwife was an issue, and that the care they received was flexible to their individual needs.. This flexibility is explored further in the next section that focuses on continuity of care. This woman describes a booking appointment under standard care in a previous pregnancy before compared to the specialist model:

I could tell the difference. Um, so the appointment lasted about half an hour. Compared to maybe an hour-and-a-half [in specialist model]....she [standard care midwife] was an hour-and-a-half late, which it can happen, they

had forgotten about the appointment, which is fine, like it wouldn't have been a big deal...she had to call me back because she had forgotten to ask me or tell me a bunch of things. I kind of knew what they were supposed to ask so I knew that she hadn't asked a lot of things... she had a very different, a very different attitude. Um, it felt, it felt really rushed. (CBM6)

Women described limited time with other healthcare professionals outside of the specialist model and gave insight into how this made them feel.

I had asked to see the first available female doctor, and as I sat down, and she, and she was clicking, literally it was like she was clicking her fingers at me telling me to hurry up and tell me what I've come in for. And I, and I just thought, I was alarmed by her, her demeanour because I thought, hang on a second, I've got 20 minutes with you, why are you rushing me like this? And she said, 'No it's ten minutes...I've got a booking available for next week. So if you want to see me,' and I just thought, well, we haven't made the most of the time that we have here right now. Why are we talking about the future? So I, you know, politely declined that and I felt like I couldn't open up to her of course. (HBM8)

Again, the mechanisms highlighted here are explored later in the chapter when testing programme theories relating to women's help-seeking behaviours and disclosure of sensitive information. This refined theory contributes to the final CMO configuration.

Refined theory: If women have sufficient time with healthcare professionals that is based on their individual needs rather than service structures, then they will be better able to discuss holistic concerns and receive appropriate information, lifestyle advice and support for those concerns.

When women discussed time with healthcare professionals many described a reluctance to take up 'valuable' time. This loosely relates to an initial programme theory, and will be used to refine the theory to reflect women's perception of being a burden:

Perception of being a burden

Initial programme theory: If women accessing busy maternity services with rushed staff feel that they are being 'processed through a system by professionals who follow procedures without really noticing the woman in front of them', then they will not feel cared for, supported, or valued and have a perceived lack of social support.

Additional related programme theory identified in focus groups with healthcare

professionals: If women do not have the time to form a trusting relationship with a midwife, then they are unlikely to disclose sensitive information and seek support for issues that may have long-term detrimental consequences for themselves and their families.

No rival theory was put forward to challenge these theories

Testing using qualitative data: Women in both models described feeling as if they were being bothersome or a burden on the service:

'when you open up the [maternity] folder it says on there when you'll be having the appointments. So the midwife kind of stuck with that... I really don't like to be seen as a bother, or like asking for more. No no no. You wouldn't catch me dead doing that, no no. (HBM8)

'if I didn't speak to my cousin I would have just, left it [concern about fetal wellbeing]...I know you shouldn't when you're pregnant, but you just don't want to be like that person that any little thing you're always calling, I just feel like I'm a bother, I don't want to be a botheration to anyone. (CBM8)

This women describes her experience of standard care in a previous pregnancy and the impact it had on her ability to breastfeed her baby. She goes on to describe ways in which midwives might consider women's reluctance to ask for help by being more forthcoming in providing support, a key principle of candidacy theory:

Oh breastfeeding... I just felt abandoned and that was it, and then I still went home, and I was trying to do it and I just felt like, no one didn't really monitor that and see how the baby was doing and she was taking, and in the end I changed to the bottle... I felt like I shouldn't [ask for help]...maybe it's my own insecurities, and maybe I wasn't confident enough, or maybe it's because I felt young and I shouldn't be asking questions, I don't know, a combination of those things maybe. I'm sure if I had of they would have probably more than likely showed me. But I guess I was hoping they would be more, like, 'Are you all right [name?], how are you doing, is it, is she OK and how are you finding it?' But I didn't get that. I just don't want to be... bothersome. (HBM2)

She goes on to describe how she felt when she did open up about her mental health concerns to her specialist model midwife in this pregnancy:

I don't think I expected, maybe not for them [HBM midwife] to be so nice, but I thought it would be more professional, but they were actually like, could feel my pain almost, like really see that I needed help. So that was nice, yeah... everybody is different but sometimes people might need that ... push, because not everybody might be

able to be like so forthcoming and say, 'I'm going through this,' or, 'I have [blab-blab-blab?],' so maybe for midwives to be a bit more observant about the people that they're seeing maybe, they're not mind-readers so it's quite a difficult situation for them as well but ... if you pick up on a little thing that seems a bit out of place, don't be afraid to push and question it. Because they'll probably just let it all out. But you just sometimes might need that bit of coaxing...I think that would be really helpful and it would open a lot of doors. (HBM2)

Another woman refers to the protective factor of the specialist model of care by describing how she did not appreciate how comfortable she felt compared to her friend who saw different midwives throughout her pregnancy:

'my friend, she's 34 weeks, er, 32 weeks pregnant she doesn't feel confident enough because every time she sees someone different...I didn't really feel the difference until she keeps talking about what's happening with her and then I compare it to myself and I feel how comfortable I am. Especially first time pregnant women, they would be so scared about anything. And everyone thinks that the appointments are so far from each other to see, to talk to someone, to tell them how you feel. (HBM5)

The insights provided by the qualitative data enabled the refinement of the initial programme theories put forward:

Refined theory: If healthcare professionals consider that women can often feel like a burden on the service and unable to discuss their concerns, and they encourage women through reassurance that the service is there to meet their needs and enquire about their wellbeing, then women may feel more confident to discuss concerns. This in turn may enable more disclosure of sensitive information and encourage help-seeking behaviours that improve safety. This reassurance and enquiry is more feasible when women are able to form trusting relationships with their healthcare provider.

In summary, this section has revealed issues around the provision of information that reach far wider than antenatal education classes. The amount and quality of information women receive during pregnancy can impact on their trust in their healthcare professional and the service, help-seeking behaviours, and long-term outcomes such as their confidence in their ability to parent. In view of this data the focus of the initial CMO configuration has been widened and refined to reflect specific contexts, mechanism and outcomes- See Figure 29. The refined CMO configuration has been retitled 'Education, information and choice':

Context	Mechanisms	Outcomes
<p>All women with low socioeconomic status and social risk factors. Consideration of education, information and choice is particularly pertinent for those women who have limited education, are unfamiliar with the system, have language barriers, learning difficulties, caring responsibilities, no support, and women who engage in 'risky' behaviours.</p> <p>Women who have experienced previous poor experiences of healthcare services including coercion or disempowerment from healthcare professionals are more likely to experience this again, and less likely to seek help and disclose sensitive information.</p>	M1) If antenatal education is culturally sensitive, flexible and child-friendly, and continues throughout pregnancy to provide educational and social opportunities relevant to individual need	O1) Then women be more likely to attend classes and benefit from increased knowledge and the development of support networks with other women in similar situations
	M2) If understandable, evidence-based information is given at appropriate timing in relation to a woman's stage of pregnancy and individual need	O2) then women will feel more reassured, less anxious, have trust in their healthcare providers, and be better able to make informed choices and provide consent.
	M3) If models of care provide an opportunity for women to meet the whole team throughout her pregnancy	O3) Then the sharing of evidence based-information relevant to women's individual needs appears to increase when they are not cared for by their 'named' midwife/HCP.
	M4) If women and family members are given unbiased information and are encouraged to enquire and make choices based on their own needs and interpretation of the information	O4) then they will feel more empowered, in control, and have increased self-belief in their parenting ability. This will improve women's ability to make choices based on what is best for them and their baby.
	M5) If face-to-face time with healthcare professionals is flexible and based on women's individual need rather than the service structures	O5) then they will be better able to discuss holistic concerns and receive appropriate information, lifestyle advice and support for those concerns.
	M6) If healthcare professionals acknowledge that women often feel like a burden on the service and lack confidence to demand their time, and respond to this by providing reassurance that the service is there to meet their needs and regularly enquiry about women's wellbeing	O6) then women will feel more confident to discuss concerns and disclose sensitive information. This may also encourage help-seeking behaviours that improve safety. * This reassurance and enquiry is more feasible when women are able to form trusting relationships with their healthcare provider.

Figure 29: Refined CMO Configuration- Education, Information and Choice

As a fundamental aspect of the theoretical approach underpinning this evaluation, the next Chapter goes on to test and refine the CMO configurations relating to syndemic care.

Chapter 9- Realist Evaluation Part 4 continued ‘Why and How’? Longitudinal interviews with women exploring mechanisms relating to syndemic care.

Reflecting the format of the previous chapter, this chapter focuses on the those mechanisms that relate to the theory of syndemics and syndemic care. Therefore the chapter will test the CMO configurations titled ‘relationships and trust’, ‘practical support’ and ‘surveillance and overcoming assumptions’.

1.34 Aims

As part of the process of testing and refining theory and the CMO configurations listed above, this chapter addresses the following questions:

In what circumstances, and how do specialist models of care influence:

- The quality of relational continuity?
- The support women receive during pregnancy, social care involvement, social integration and longer-term outcomes?
- women’s experience of discrimination, stigma and paternalistic care when accessing maternity services?
- Maternal and neonatal outcomes, and the need for analgesia and obstetric interventions?

1.35 Continuity of care, relationships, and trust

Increased levels of continuity of care are thought to improve women’s engagement with maternity services, and in turn, their clinical outcomes because it enables the development of a trusting relationship. The mechanisms for these improved outcomes have been vague in the literature to date. Therefore the two CMO configurations presented in Figure 30 and Figure 31 will be tested in conjunction with one another enabling the development of a refined CMO that merges the two. This section will further interrogate the qualitative data on what is it about continuity of care and the development of a trusting relationship that influences outcomes, for example: do women and healthcare professionals respond differently to situations when they know and trust each other? It not only seeks to identify what outcomes are triggered by continuity of care as a mechanism, but also what mechanisms make up high quality ‘continuity of care’. The quantitative findings presented in chapter 7 will be referred to for examples of potential impact on clinical outcomes.

Context	Mechanisms	Outcomes
Women living chaotic lives who struggle to access and engage with current, fragmented maternity services, social isolation, lack of resource, frequent dispersal, temporary accommodation, lack of support, complex social and/or medical history, disempowered, previous trauma or adverse experiences with services.	<ol style="list-style-type: none"> 1) Access to a known midwife or small team of midwives 24/7 via a phone call, text message or free technology (freephone number, WhatsApp, skype etc) 2) Continued supportive presence throughout pregnancy and the perinatal period, with a known midwife, GP or other HCP who will coordinate communication across different trusts and services such as GP, gynaecology, maternity services, social care and mental health services 3) HCP's work in a small geographical area where they are visible and become known by other members of the community, religious networks and other 'gatekeepers', local charities, food banks, befriending programmes and support services. 4) Flexible, needs-led care, where the time and place of appointments is co-planned (for example at home, community or a hospital setting, not at school times for single mothers, outside of working hours for women working illegally). 	Increased engagement, personalised, holistic care, , trust, agency, candidacy, empowerment, sense of control, support, community integration, safety. Women are less likely to have to repeat their history and experience a variation of responses/advice, fragmentation/disassociation between services, and reduce stress/anxiety.

Figure 30: CMO Configuration- Continuity of care

Context	Mechanisms	Outcomes
Women with previous and/or current experience of trauma, abuse, and discrimination, perceptions of previous manipulation and coercion by professionals, social isolation, lack of resources and support, limited education, unfamiliarity with systems and processes, complex social and/or medical history, disempowered, lack of sense of control, social care involvement/parenting assessments.	<ol style="list-style-type: none"> 1) Development of a trusting relationship with a known HCP through continuity, open discussion and story sharing, and the provision of meaningful, relevant information. 2) Provision of advocacy through known HCP attendance at meetings, and other forms of emotional support during interactions with social care. 3) Women are informed of their right to choice through education and provision of the evidence-based information required to exercise that choice. 4) The perception of a healthcare professional to be respectful, understanding, kind, and helpful. 	Meaningful interactions, self-disclosure, increased perceptions of trust, empowerment, control, support, self-confidence, shared decision making, knowledge of unfamiliar processes. Restore previously broken trust in systems/services and quash the belief that accessing care equates to relinquishing control and feeling violated. Avoidance of labelling women or making assumptions about their needs based on a perceived cultural background.

Figure 31: CMO Configuration- Relationships and trust

24/7 Access to a known midwife

Initial programme theory 1): If women can access a known midwife 24/7 via a phone call or text message, then they will be better able to engage with services, care will be more personalised, they will feel more cared for, and are less likely to have to repeat their history and experience a variation of responses/advice. Additionally, if those women who have few resources, such as no phone credit, have direct, easy access to a midwife through a free phone number, or free technology such as WhatsApp, skype, etc, then their anxieties will be allayed and engagement with services improved.

Rival theory 1): If women can access a known midwife throughout their pregnancy they might become overly reliant on the midwife and misuse the service, leading to inappropriate women-midwife relationships and overburdening the midwife.

Rival theory 2): If women feel they can contact a known midwife for every concern or question they have, then they may become more anxious and less able to seek out information of their own accord, leading to disempowerment and an inability to seek readily available information provided by reliable agencies when they are no longer cared for by their known midwife. Care could also become overmedicalized if midwives feel they have to investigate every concern that women might have prioritised less if they were under standard care and only had access to information through an unknown healthcare professional.

Testing using quantitative data: Before looking to the specific programme theories related to continuity of care, relationships and trust, it is important to test the hypothesis that the specialist models of care improve women's engagement with maternity care, and if so, to what extent the level of continuity and other factors such as the place of antenatal care have an impact. It is important to remember that increased engagement is not necessarily a 'better' outcome, for example more antenatal appointments may be too many and burdensome for the woman, or lead to overmedicalisation. The desired outcome here is a level of engagement that is appropriate to the woman's needs.

Engagement with services is tested in Table 30 and Table 31, Chapter 7 through the number of antenatal appointments women attended. Table 30 showed that women accessing the specialist model of care attended a similar number of appointments to those women in the standard model of care and group practices. Women with high medical risk and any social risk factor were more likely to have more than 15 antenatal appointments (See Appendix E). Given that the specialist models provide care for significantly more women with social risk factors, the similar findings

across model of care groups suggests that specialist model might be mitigating the affects of inequality through improved engagement with maternity care for women with low socioeconomic status and social risk factors has been levelled by the specialist model of care. Women at Service A were less likely to have more than 15 antenatal appointments. A possible explanation for this could be due to the disproportionately high numbers of women at Service B having high medical risk status at the onset of labour and therefore requiring more appointments during pregnancy. This theory will be further explored in the qualitative data and discussion section.

When analysing the effect of place of antenatal care, Table 31 showed that women receiving hospital-based antenatal care were significantly less likely to attend the recommended number of appointments compared to those attending community based care, despite the model of care received.

The qualitative data was interrogated to explore mechanisms that may lead to increased engagement: for example, did women find the number of appointments appropriate for their individual, holistic needs? If they missed an appointment, did they feel they could rebook it without reproach? These were then explored in relation to the level of continuity of care received.

Testing using qualitative data:

Women from both specialist models of care expressed ease of contacting and booking appointments with their midwife or a midwife from the team, particularly when comparing this to their experiences of standard care or other healthcare services. This might be through phone call, text messaging or emailing.

'Yeah, so that sort of things are easier [making appointments with the specialist midwife], instead of calling your hospital and, I don't like calling GP... phone line's so long, and then the music playing and playing and then somebody picks up and they say, 'Oh, the next appointment is this, this and that,' if that doesn't suit you then they give you like very odd hour, and so it's so difficult'(HBM3)

This was also valued by women's family members who felt able to contact the specialist model. This women's partner described the benefit of being able to contact a known midwife, and described how this interaction was enhanced by the fact the team communicated with one another and were knowledgeable about their situation:

for me and probably the absolute amazing thing about the [specialist model] is that I had a phone number I could call...by the end of the first week pretty much knew all of them on a first name basis. Whoever would answer the phone was reassuring, they were able to talk me through things... if we didn't have the like phone number that we could call the first few weeks it would have been a lot worse, a lot more difficult. We would have ended up in A&E a lot more often than we did... which is zero...it's just like every concern... it's just, it's kind of like calling a friend...regardless of which midwife was picking up at the time, they knew who [baby] was. And so when you're saying, 'Oh by the way, we've got this other thing going on is that something to worry about?' they're like, 'Well, I know because my team has told me about this, this and this, that this kid is probably fine.' (Partner of CBM6)

Women who do not speak English particularly valued the ability to text their midwife as it gave them the opportunity to use translation technology.

'everything's scheduled, when my visit will be, next visit, and how many weeks midwife going to see me, when my scan will be, and the reason for having those scans....So it's very informative.... I will book my appointment with midwife through text messages like you're texting a friend, and then it's so informal but also very efficient.... sometimes I can't make the appointment or my midwife can't make the appointment, then we text each other beforehand' (HBM3)

One woman, who had multiple services involved in her care and needed to attend numerous appointments commented on how the regular care she received from the team made her feel looked after and that she could rely on them to remind her of her appointments:

'the fact that I see someone regularly. I feel like I'm being looked after as well. So like [midwife 1] and the other midwives are like really sort of on top of it ... I can rely on them to look after me, remind me of appointments and stuff like that as I really struggle ... [the midwives] text, call, put it in my notes and what-not so ...I am remembering ... or I do actually go to these appointments.'(CBM1)

Reflecting on a past pregnancy under standard care, this woman felt that the ability to access a known midwife from the specialist model reduced the number of appointments she had:

I'm seeing [midwife 1] quite regularly whereas my other midwife appointments [under standard care] were just the normal basic appointments, so...I was visiting hospital more [because] when I did try to get in contact with someone it was impossible, so I just had to keep running to the hospital. (CBM1)

However, when asked about how women felt about being able to contact a midwife from the specialist model in labour, those in the hospital-based model were not always aware that this level

of continuity was offered by the model. This might have an impact on how well supported they felt, or their levels of anxiety about their labour and birth during their pregnancy:

I don't know. No. I don't know whether even if I was here whether she would be ... on-call. I'm not too sure.'
(HBM4)

This woman was 38 weeks pregnant at this particular interview:

'during all of that I wasn't able to speak to [HBM midwife] about any of this...because there wasn't any appointments booked.

INT - *Have you been made aware that it's a 24-hour service?*

PART – *No, wow, I didn't know. No because the thing is like with the doula and that lady in the breastfeeding class, I just get told that they're rushed off their feet, you have one midwife to six, seven ladies when they're all in active labour, so I don't, I wouldn't think that they would be there for 24 hours, I think the kind of contact is very minimal.* (HBM8)

She goes on to describe seeking help when she was worried about the baby's wellbeing:

'the midwife kind of works like nine to five. And I know that she, um, isn't in some days, so any type of concerns like that I'll just rather ring the triage...because they always say, um, because I've got the stickers, you know, maternity helpline and all of this stuff. They just put you through to triage, don't they? And the ladies there, they're very good. Anytime I've rung the helpline they've said it's not available so call the triage. (HBM8)

This woman felt that when her known midwife was not on duty she didn't not want to seek help from another midwife on the team so went to her GP who sent her to the accident and emergency department, who sent her onto the labour ward. This resulted in a delay in seeking hospital treatment:

'because she [HBM midwife] says she will be off...so I didn't want to call another midwife and explain everything, so I just went straight... to the GP because I was feeling bad, yeah, the GP, yeah she say that I had to go back to the hospital... in the Emergency they say because I was five days after the operation they cannot see me, so they send me to the labour ward. (HBM10)

Given both the qualitative and quantitative findings above there is no evidence to support the rival theories put forward, therefore these have been refuted. The initial programme theory has been refined to provide more detailed contexts and mechanisms, and how they trigger outcomes.

Refined theory: If women have 24/7 access to a small team of midwives whom they have had the opportunity to meet during pregnancy and are encouraged to contact midwives via a phone call, text message or free technology, then their engagement with services will improve through needs-based communication and appropriately timed antenatal appointments. For women who have multiple social and medical needs, this open access can work both ways through midwives reminding them of appointments, this leads to women feeling more ‘cared for’.

This leads onto the ongoing impact of continued access to and support from a known midwife, small team of midwives or other healthcare professional:

Continued supportive presence

Initial programme theory: If women feel they have a continued supportive presence throughout pregnancy and the perinatal period, either with a midwife, GP or other healthcare professional, then they will feel better supported and have reduced feelings of anxiety, increased sense of control, and enhanced self-beliefs and wellbeing.

Rival theory: If women have continued supportive presence from a known healthcare professional, then they will become overly reliant on that person and feel anxious when they are not on duty. It is more important that the whole service is perceived as safe, respectful, understanding, and kind, rather than one trusted HCP in a wider toxic environment.

Testing using quantitative data: In order to test this programme theory the quality of continuity of care was analysed first through the number of antenatal appointments women received with a known healthcare professional, and whether women were supported in labour by a known healthcare professional. Table 34 in Chapter 7 shows a significant relationship between the model of care and the number of appointments with a known healthcare professional. The aim of both the group practice and specialist models of care appear to be being met with women more likely to receive more antenatal appointments with a known healthcare professional if they experienced one of these models. Conversely, the fully adjusted results presented in appendix E show that women accessing standard maternity care, Black women, and those in the most deprived deciles were the least likely to see a known healthcare professional for their antenatal appointments. Women receiving care in the specialist model were more likely to be looked after in labour by a known healthcare professional compared to the group practice model. After adjusting for the service provider attended, we found that women in the group practice models were the least likely

group to know the person looking after them in labour. This is unsurprising given that these models of care are often set in the community with midwives not working in intrapartum settings.

Table 35 in Chapter 7 showed that women receiving antenatal care based in the hospital were less likely to see a known healthcare professional for their antenatal appointments than those based in the community setting. Importantly, place of antenatal care made no difference the number of women who knew the person looking after them in labour.

Testing using qualitative data: Firstly we explored why women receiving care in the hospital-based model might have less appointments with a known healthcare professional than those in the community-based model. One explanation for this appeared to be that women in the hospital-based model were referred to the specialist model after disclosing social risk factors during their pregnancy. This would have an impact on the number of appointments they had with a known healthcare professional depending on their gestation at the time of referral to the specialist model. Although it was often seen as a positive referral, only women in the hospital-based model described care being disrupted through a referral to the specialist model.

'I think I got seen by a community midwife close to me and then she referred me to here...because of my age and the heart conditions I was put in the high-risk pregnancy team' (HBM1)

'Because of the situation I was going through, being my second pregnancy and what happened to my first, I was just all over the place, I was quite emotional. So I think the midwife that saw me first she saw that and so she referred me to ... have, um, more of a ... a close-knit ... relationship with a midwife I guess, because I was vulnerable' (HBM2)

'At first they referred me to, to, er, any hospital near you. I contact somebody, they told me to go to, er, a place like, it's like a Children's Centre, it took me two hours. I met someone, midwife there. I go there only twice...I told her I was in Syria, I'm new here, I, it is difficult to get to you by buses or something. I have difficulties now, financial ... I think she's the one, she refers me to [specialist model].' (HBM6)

A woman from the community-based model expressed disappointment that she was not looked after by a known midwife in another model of care from a previous pregnancy. As referred to earlier, this 'behind the scenes' referral process indicates a lack of choice and autonomy that, for this particular woman, actually had an opposite effect on her levels of continuity between pregnancies.

I went back to my old midwife when I first knew, I was liaising with her, um and, I think it's someone else that gets the, workload, caseload and distributes it out, and she thought I was coming back to her. Um, but then I got the message to say [care moved to specialist model] At first, because I didn't know, I was like, oh, I kind of wanted my old midwife, but coming here it's, it's fine. It's still local. Still walking distance. Um, and the care that I've had here has been lovely, so I'm cool with it.' (CBM8)

Women reflected on seeing the same healthcare professional throughout pregnancy and the impact this had on their outcomes, particularly in relation to the social risk factors they were experiencing. Mechanisms were identified that were generated through a level of continuity of carer and ability to build a trusting relationship with their midwife.

I think when you don't know who your midwife is, for example when I go to my doctors' surgery it's the same thing. If I'm seeing my doctor, I kind of get a gist of his personality...Whereas if I go and see a different doctor every time I go to the doctors' surgery, it's very much formal, and it's like this barrier there that, you know, you're a patient, go sit, talk about your problems, give them a prescription, out you go, and I would imagine that to be the same thing with midwives as well. Um, in that moment [during emergency caesarean section] where I was crying my eyes out and thinking, oh God I've failed, and you know, getting into, um, emotionally, um, distressed state, I can't imagine doing all of this with a [midwife] that I've just met on shift. That to me I would just feel like the same thing, that it's very formal, I'm just a pregnant lady...I'm on paper...you're just ticking boxes and then off you go. And you kind of have to source for your own support outside of it...whereas you can actually let off things and be quite genuine and transparent to someone that you know is with you long-term. (HBM8)

Women accessing the community-based model described these mechanisms from knowing the whole team, or from communication between the team:

[In a previous pregnancy under standard care] it was a different person each time...I have got mental health issues, and going through my story over and over again was quite frustrating. Whereas you know when you build a relationship with someone like with [named midwives] I know [named midwife] now knows everything so...and they all know what's going on and stuff. I think that's quite important to me because I don't really like repeating myself over and over again because then I have to re-live it.' (CBM1)

'Yes, yes, every time I was there [in hospital] they [CBM midwives] was coming to see me... when I want something or I'm worrying about something I ask them and they, er, help. They was helpful. They asked me about what I'm doing, if I feel better, if I need something I feel I can call them. I met all of them when I was going for my appointments at [Community centre]. I met all of them before I gave birth...and when I gave birth all of them

came to see me at home one by one.... they was taking care of me. Every time when I'm at home I call them, they pick up my call, they know everything about me. Yeah but not the midwife at hospital.' (CBM7)

This woman describes feeling the investment the midwives had in her outcomes, as described by the midwives in Chapter 6, and how she felt more likely to trust advice from a midwife she knew from the team:

'...they are invested in you and in kind of how things go and the outcome and not just the numbers side of things, like, 'Oh baby's heart is beating,' but also like, 'How are you?' like, 'How are you coping with all of it?' And I think when you feel valued that perhaps you take more in. It's like if people give you advice and it's someone you don't know you're like, 'hm, whatever'. But if it's someone you know and someone you value... I think that sticks more.' (CBM9)

Women accessing the hospital-based model discussed how they knew their named midwife but not necessarily the rest of the team. This impacted on how they felt they could approach the rest of the team or seek help:

'not every appointment (with the same midwife), most appointments. Um, I don't know the team, but I know the lady that sees me.' (HBM5)

'sometimes if I was getting anxious and worried, um, I felt like I didn't want to bother or inconvenience [named midwife] even though I had her mobile number and I think in the beginning I did try to utilise it but it, she wasn't either at work or someone else would pick up from the team and say, 'Oh she's not here.' And so that would kind of knock my confidence, so I wouldn't kind of ring her.' (HBM8)

Conversely, women in the community-based model felt that they were looked after by the whole team, this seemed to impact on how well supported they felt. One woman described having trust in the entire team:

'There are six of them [CBM midwives]... I met all of them, when I have the baby there going to be one of them... in the hospital, which is I never heard this. Which is good, they know you and then they know all the, the problem or the issues you have' (CBM2)

The most important is about the midwife. They take good care of me.... all of them, all of the team. (CBM7)

When interrogating the qualitative data on women's experiences of being looked after in labour by a known healthcare professional women from both models of care discussed the impact of

knowing the midwife looking after them in labour, whether this was how they felt about it during the antenatal period or their retrospective perception of their care in labour. Again, women in the hospital-based model who did not know the rest of the team expressed more anxiety:

'That is something that does worry me a little bit is like who's going to come [to provide care at homebirth]?...obviously you don't know when the baby's going to come so you don't know a hundred percent who's going to come round to help you. So that's a bit ... daunting. (HBM2)

This woman, who had a previous traumatic experience under the standard model of care, had a labour assessment at home during this pregnancy by a known midwife and felt that the fact she had a trusting relationship with that midwife resulted in her going on to have an unplanned homebirth as she felt comfortable at home under the care of the known midwife:

'because of the previous experience I was constantly expecting something to happen and having someone that I could call and talk to, that I trusted, and that knew my story. It's important... if a stranger said, 'It's going to be fine, have him on the couch,' probably I would have been like, 'Well, you know what, actually I prefer to go to the hospital.' But because it was [named midwife] and I trusted her, and she was comfortable that we could have him here, then I was like, OK, I trust her, I'm OK with it' (CBM6)

Another woman describes the importance of having a known midwife with her through a traumatic labour and birth, and how this support helped her process the experience:

If it wasn't for [HBM midwife]... I think I might have actually died...I couldn't imagine that experience without her. That they're a bit more understanding... if I think about the nine-month pregnancy...I just think of [HBM midwife] because I met her... last year, and you know, quite consistently. And she went through the motions with me...I think I would have been very disheartened if, um, [midwife 1] wasn't there like on the day. Because I'd think, well you know, we've started this race together, we're on the starting line, surely you should be on the finishing line too.' (HBM8)

Even when the named midwife wasn't able to attend the labour and birth, women still described how the specialist model of care had benefitted their preparation for birth, or how they still valued the care they received in labour by unknown healthcare professionals:

I had so sound mind at the time because I had [named midwife] so, with during the nine months we got to know each other so well and she knew everything about me and the baby and the pregnancy, , I always knew that I can rely on her. And so I wasn't as scared of birth ... compared to the, the first one. You know, there wasn't any fear

or, un- known or ... you will be pushing your baby out in front of, you know, strangers, sometimes that kind of fear you have. But with [HBM midwife] that made things easier and took out the fear... But in the end I didn't, [HBM midwife] wasn't my delivery midwife. Somebody else was but it didn't really matter. (HBM3)

One woman, who had been looked after in labour and birth by her named midwife in previous pregnancies described how she wanted to wait for her named midwife to return from holiday to be induced, and the negative impact of being looked after by midwives she did not know.

I told her [HBM midwife] 'we're not getting induced until you come back.' I did make that very clear... the baby decided to come beforehand...I don't think that she would have gotten as frustrated with me. Because she knows that I don't like hands and things down there. I trust her to keep me safe and to listen to me and clearly the other two [standard care] midwives didn't listen, because I would have gotten painkillers when I asked for them...They were patient for a certain amount of time then they started snapping...and I guess not having the [HBM midwife] there, in the morning they thought that they could just ... rush me out of the hospital.' (HBM7)

The same woman describes standard care hospital midwives deceiving her when they did not call the specialist team midwives when she arrived on the labour ward:

'we called up (HBM midwife), we said that I was experiencing some pains. So the lady that saw me, I thought that she was part of the team and I later found out that she wasn't. Yeah she was just a hospital staff... I just don't like the deception...if I was going to go to the hospital and be looked after by hospital staff I would have called them directly. Instead of calling up my midwife... they didn't even tell me, I said, 'Is [midwife 2] coming?' And they said, 'Oh no, we'll let the midwife sleep.' It would have been nice if they had told me that ...instead of allowing me to think that it was part of the team. (HBM7)

Although knowing the person looking after them in labour was seen as important, the birth setting was also important to women regardless of being looked after by a known midwife. This woman described her perception of the different characteristics of midwives in different birth settings:

'Yes I would be confident if [HBM midwife] was there, but I would be very scared if I was on the labour ward. Because I've been there a few times, throughout my first pregnancy, and it's not very comfortable, even. And the staff there, I like more the midwives at the Birth Centre, I don't know- Like they're more caring, they understand your pain, they give you the time you want.' (HBM5)

The data confirmed aspects of both the initial programme theory and the rival theory. Therefore the refined theory aims to reflect these conflicting ideas:

Refined theory: If a small team of midwives provide continued supportive presence throughout pregnancy and the perinatal period and prepare women for labour and birth through education and gaining familiarity of birth settings, then they will feel better supported and able to seek help and exercise choice, resulting in improved safety and reduced feelings of anxiety. When a named midwife is unable to be present for labour care, women with social risk factors should be cared for by a healthcare professional who is aware of their circumstances and individual needs to avoid disrespectful care and the risk of triggering previous experiences of trauma.

Relating to this refined theory, a clear theme to emerge from the qualitative data was the importance of midwives knowing a woman's history, therefore this new programme theory has been added to the analysis. It also relates to an initial programme theory that hypothesises a trusting relationship between the woman and midwife overcomes the tendency to make assumptions.

Knowing women's medical and social history

New programme theory: If midwives are aware of women's medical and social history, then women do not have to repeat often difficult histories at each appointment and care can be more responsive, thus improving safety for the woman and unborn.

Initial programme theory If midwives and women are able to get to know each other and build a trusting relationship, then the midwife will be more aware of a woman's social situation and able to provide individualised, holistic support without labelling women or making assumptions about their needs based on a perceived cultural background.

No rival theory was put forward to challenge these theories

Testing using qualitative data: Overall, women in both models of care spoke positively of the midwives knowing about them and their medical and social history.

*And they kind of know your history don't they, from the first appointment to the last...so you don't have to repeat it over and over again., And you kind of get to know how they work, and [they] get to know how you function.
(HBM7)*

When women compared their experiences of standard care to the specialist model of care they described a lack of awareness of their history with the standard care. This woman had experienced late fetal loss in her previous pregnancy and describes her booking appointment where the midwife was not aware of this:

I was a bit surprised, that I had to tell the midwife at the booking appointment... I just thought there would be notes somewhere that ... they would have looked at. No she was completely, like she had no idea that that had happened to me. She asked me, 'Is this your first pregnancy?' ...I don't know if she didn't have time to look at maybe notes or something, or it's just something they don't do. (CBM6)

Her partner described how seeing different midwives results in wasted time during appointments and a lack of information :

Well if you're seeing [different] midwives you're going to spend at least a quarter of the appointment...just reading through your notes or whatever... maybe one person expects that another person has already told you [important information], and the first person thinks, oh it's not for this appointment or the next one.' (Partner of CBM6)

This was experienced by women in both models of care:

'because it's the same person so she doesn't have to ask similar questions over and over again.' (HBM5)

This woman had standard postnatal care after moving out of the community-based models geographical catchment area and described the difference in the care she received and how this impacted on her anxiety:

I think that adds to it [anxiety], because you don't know who you're going to see. I pretty much had to explain my background, my story and [the baby] every single time. If things had been a bit more complicated than I do think I would have been a bit more anxious about it because, yeah it always felt, each appointment felt quite rushed. I was like, 'I don't know why I feel suddenly very attached to [CBM midwives], ...suddenly from nowhere I just was so upset...the experience between the two [specialist model and standard postnatal care] has just been, I just felt like a number...and if you're explaining that every time, so one it's frustrating having to do that, but ... yeah just not feeling very supported.

She goes on to describe her boyfriend's perception and expectations of standard maternity care, and the difference in how attached and cared for she felt between both models:

'my boyfriend was trying to say to me. 'This [standard care] is not the same, I don't think their duty of care is meant to be the same, it's just to make sure you're healing correctly....' But I feel like maybe it should because of the experience I've had [with CBM model]... just makes for a really supportive and like comforting situation... [standard care] does the job but I didn't come out being like, 'oh I feel very looked-after' (CBM9)

Another woman had a similar experience after moving out of the catchment area of the specialist team and felt that the standard care postnatal midwives were unaware of her mental health history and asked generic questions about mental health rather than following up previous concerns:

'because I was crying she [standard care midwife] was like 'Why are you upset?'...you know, they were like, 'Any baby blues?' And I was like, 'No.' They were like, 'Right, fine,' kind of working down the list. But then I don't know if there was a handover but perhaps that team just didn't know, it's just a bit more of a speedy, pared down process. (HBM3)

For some women repeating medical and social history can be upsetting and traumatic:

I probably wouldn't have had this situation that I have now, if but for my daughter passing away perhaps, because I would have not seen a midwife so regularly. And my appointments would have been really spread out and I would have just felt really alone... I think it's better because you get more familiar with the person, you get more comfortable, and because they know your history, you don't have to repeat it all the time, as well. So it's like they know you, they know what's happened, and you just feel more comfortable. Again I'd just say for this pregnancy I think I have been really supported. Um, just in terms of listening to me, and making referrals for me. And offering me a wide range of, um, possible support networks. (HBM2)

[reflecting on previous pregnancy under standard care] I just couldn't feel comfortable telling the whole story of this experience over and over again. I've been with the depression team, the social services, with different midwives... through my last pregnancy, so there was a lot of people already like interfering in my personal life, and then I thought like, that's it, I don't want any more... people hearing my story and me telling it...But the programme [HBM] is really helpful...it wasn't like so personal, interfering in your private life, it was just caring about you. (HBM5)

Women also revealed a connection between midwives knowing their social and medical histories and being able to provide holistic care and tailored advice:

'she asked after my [older] baby and how she's doing and how [new baby] is doing and she already visited my house before, so she knows the background information, everything and so we had chat about how's life really...it's

very warm and nice. I feel emotionally very well-supported. You always have, in back of mind you have something to rely on, back on, you know... reassurance. You will have different advice from your family members or, anyone or internet or TV...but your midwife is different, the person sees the whole situation, outside the box and then tell you what is right and wrong.' (HBM3)

One woman, with a complex medical history revealed mechanisms that lead to improved safety:

I'm actually a lot more happy that I'm seeing the one person. Because I feel like the care is more tailored to you...particularly with me with [heart condition]... the midwife knows what's wrong with you and you haven't got to re-explain that to someone else every time, and then that's not lost in translation between x y and z midwife. (HBM4)

She describes a previous pregnancy under standard care and how a lack of appropriate referral and support had an impact on the overmedicalisation of her pregnancy and experience of labour:

[In previous pregnancy under standard care] I wasn't seen by a cardiology specialist, and I also didn't have a one-to-one midwife, so things were getting chopped and, stuck together and like there was a real miscommunication...information I was given when I was pregnant with [son] was, 'You're at risk of collapse, you can't be on a Birth Centre, you can't do this, you can't do that,' ...so I was induced with [son] and they said that they wanted me to have an epidural But then to speak to someone who was actually specialised in that area [in this pregnancy under HBM], she was like, 'Well that information you were given the first time was like totally incorrect.'...she doesn't see any reason why I shouldn't be able to be on the Birth Centre. (HBM4)

This woman, who did not fully understand her complex medical condition felt that it was important that her known midwife attended the birth because she knew her history and had a better understanding of her condition:

I have just one midwife, so I've seen her a lot. I mean there's no stress at all... I mean it's good to see like a familiar face...because of the antibodies and all the so much information...she knows everything about that. Because you don't have to, you know, to tell all the people like. Sometimes I miss some information. (HBM10)

When the same woman was interviewed after her elective caesarean section. She reflected on the importance of a known presence:

Yeah, she was there. Oh my God, a lot [helpful]...I mean she knows everything about, you know, my care, especially the antibodies and all that kind of stuff...she was checking, she was asking the doctors what happening,

*you know, she was doing like everything, you know, it was, and then she stayed even in the theatre with me.
(HBM10)*

Women accessing the community-based model of care expressed a perception that the midwives in the team spoke to each other and they didn't need to repeat their history when seeing another midwife from the team.

I was super-super-surprised, like at the beginning I thought I wouldn't feel any connection to the team of midwives that was seeing me. It would be like going to a GP here, which, every time I go to a GP is a different one and you have to tell your story all the time again.... But even though I saw [named midwife] most of the times, which is good...when I had to see the other midwives, they completely knew about me. So I feel like they talk to each other. So I feel it's a team rather than one person (CBM10)

The insights provided from women confirmed this new programme theory that has contributed to the refined CMO configuration.

The next section will explore the much-hypothesised mechanism of continuity of care: the development of a trusting relationship. This mechanism related to a number of initial programme theories put forward on the realist synthesis and focus groups with healthcare professionals. It is important to note that aspects of the mother-midwife relationship is discussed throughout this chapter, this section is limited to testing the theories put forward. Other aspects of the relationship such as women's ability to disclose social risk are revealed in a later section of the chapter.

Relationships and Trust

Initial programme theory: If a trusting relationship develops through open discussion and story sharing between women and their HCP, then women will have confidence in their HCP, trust their advice, and benefit from their support.

Initial programme theory If women have the opportunity to get to know their healthcare professional and perceive them to be respectful, understanding, kind, and helpful, then women will feel cared about and cared for, empowered and better able to express or restate their expressed wishes and concerns. Conversely, if women with low socio-economic status experience paternalistic care through being denied choice and perceive HCP's as lacking warmth, patronising, arrogant, and stigmatising, then they will remain disempowered, feel undervalued and their low self-confidence will increase.

Additional related programme theory identified in focus groups with healthcare

professionals: If the midwife-mother relationship is ‘two way’, that is the midwife also has trust in the woman then the many known benefits of the trusting relationship will be enhanced

Testing using qualitative data: Trust was implied by women from both models of care, but they also described other responses brought about by the development of a relationship over time such as reassurance, relief, and feeling listened to.

‘[CBM midwife] was super-reassuring, so welcoming. She explained everything, was very calm...I felt reassured, and relieved, because it’s different here than in my country... usually whoever is your obstetrician and gynaecologist already know you for like years... here I didn’t know exactly what to expect because obviously it would be someone I didn’t know...when I met this team is like they are so nice that I kind of felt like I knew them already. (CBM10)

[HBM midwife] listens... it’s more relaxed...she’s more caring I guess and... more willing to, she’s there, she’s willing to listen, she’s willing to help, she’s willing to ... make sure that everything’s OK, she, she’s open to what I’ve got to say. I don’t feel judged. (HBM2)

This relationship was important to women during labour, this women describes her response to having her named midwife present in labour:

‘[CBM midwife] was explaining to me...calming me down... you know I was obviously screaming and stuff, but she was, I was still aware that she was there, and she was looking after me. It’s just somebody who makes you feel comfortable. And reassures you. That’s the word. (CBM1)

When discussing intrapartum care and the impact of the relationship with the specialist model midwives, women receiving the hospital-based model described a lack of trust in the rest of the team:

[HBM midwife] didn’t make it, to the birth, so she called someone else from her team. And I was a little bit worried about her...Everything came out OK, but I just didn’t trust her. She didn’t make me feel secure because she said that she doesn’t normally work in the hospital. (HBM7)

Again, when women reflected on previous pregnancies under the standard model of care they described a difference, this was sometimes due to poor experiences of standard care rather than a trusting relationship with a named midwife

'This pregnancy [under specialist model of care]...I've found like it was better than the other [pregnancies] because in the other ones I normally change like lots of midwives, yeah? Which normally, or sometimes they were in a bad mood.' (HBM10)

There was sometimes a breakdown in the relationship between the woman and her named midwife. This woman describes a lack of trust in her named midwife due to a concern about her experience, and goes on to reveal the impact this has on her confidence to seek help and support:

I haven't told her [about low mood and loneliness]...I feel like lately there is a bit of a ... a block. I forget that she [HBM midwife] may be experienced in mental health care...so maybe that's why I'm not forthcoming with her... like I'll tell her if I'm like feeling ill or I've had a rough week but I tend not to let go so much... I don't know how long she's been a midwife for but maybe I feel like she's quite young as well and I don't know ... if it's the experience ...If I get to that point where I desperately feel like, after the baby's born and I feel really down I will not fret to go and speak to a GP but ... I think I'd try to be strong and just ... wait it out. See if it will pass. (HBM2)

Women's insights here have highlighted the complexity of the relationship they have with the specialist model midwives. Trust was not discussed as much as was perhaps expected, this is reflected in the refined theory below and explored further in the testing of CMO configuration 'surveillance'. The concept of 'two-way' trust was not described by women in the sample and requires further research to explore its impact on women with social risk factors.

Refined theory: If women have the opportunity to get to know a midwife or a small team of midwives, feel listened to, and perceive the midwife/midwives to be experienced, knowledgeable, caring and honest, then women will have more confidence and trust in the midwife and benefit from their support.

The next section goes on to explore how the flexible nature of continuity of care can lead to more individualised care to meet women's specific needs through a number of related programme theories. This is particularly important for women who are living socially complex lives whose needs extend far beyond the context of standard maternity care pathways.

Flexible, needs-led care

Initial programme theory 1): If services are flexible for women who live socially complex lives and move location frequently, then their engagement with services can be improved as much as

possible, for example appointments at home, or at the weekend, not at school pick up/drop off times for single mothers, not during working hours for women working illegally.

Initial programme theory 5): If midwives are able to visit women at home in the antenatal period, then they will not only overcome barriers such as women unable to travel to appointments, but also be able to assess the living conditions of women to provide more individualised, holistic care.

Initial programme theory 7): If midwives were able to conduct appointments in the woman's home or local GP or community centre, then women who are living in poverty with little resource for public transport would be better able to engage with maternity services.

Initial programme theory 2): If a programme provides physical and social opportunities for women to receive flexible, needs-led care, where the time and place of appointments is co-planned (for example at home, community or a hospital setting), then women will have the best chance to access timely antenatal care, feel listened to and empowered by taking control of their care.

Additional related programme theory identified in focus groups with healthcare

professionals: If models of care were flexible, appropriately staffed, and midwives had full autonomy over their working days and appointments, then women would not perceive the pressure of time and feel more able to disclose information and midwives would have improved attitudes as they would not be working to unrealistic time constraints.

Rival theory: If maternity care aims to meet women's wider needs beyond pregnancy, birth and care of a newborn, then women will become over reliant on the service and feel abandoned when they are discharged from maternity care.

Testing using qualitative data: Flexible care was discussed by women accessing both hospital and community continuity models, in terms of when appointments were scheduled, and how long each appointment lasted. Women in the hospital-based model described how the model of care avoided long waiting times in the antenatal clinic:

'having the little one [toddler] in clinic and waiting times...he gets so bored, there's nothing for him to do. And then he ends up screaming and shouting and getting frustrated, and it's like that then stresses me out... with this pregnancy seeing just [HBM midwife], because we're scheduling it to a time, it's like there's less of a wait.'

Whereas the last time when I was pregnant [receiving standard care] sometimes I would sit in here waiting an hour, an hour-and-a-half past my appointment (HBM4)

It was like a luxury care service. Because I had the baby [young baby at home and pregnant] I didn't have to wait long for that appointment. And because she comes to my house sometimes it's easier.' (HBM5)

When women were asked where they would prefer their maternity care to be based, either in the community or hospital setting, the community or home setting was often preferable and not only seen as more convenient, but also more supportive.

'The home visits, not constantly having to come into hospital... yeah, it makes it a lot easier. I get that hip pain and, it can be quite hard to get up here. I think it's better in the community, it's easier to get to. ... I mean it's more comfortable. (HBM7)

Women who were unfamiliar with UK transport systems, and those with little resource or young children described the relief felt when midwives saw them for appointments at home:

If it's [antenatal care] like near to me it's OK but... I have so much financial problems so when she [HBM midwife] came to my house like, so much easier for me....and at the beginning I didn't know how to use bus... Now I'm good at it...she helped me in this, this particular trouble. (HBM6)

I'll tell [CBM midwife] a convenient time slot for me. Last week it was at home. Sometimes if my husband is not there, it's better to be at home, because travelling with the kids is not easy.' (CBM2)

Appointments in the home setting was also seen to be beneficial in terms of the relevant, individualised advice women received:

'having somebody to come to see you and the baby in the comfort of your own home is so nice, and relaxing...there's no way you forget any questions you have because it's all done in your own environment... or your midwife sometimes point out, you know, 'Oh, is your baby is too close to heating system,'...it's convenient for the mum. (HBM3)

Women reflected on times when they were worried or needed some reassurance, and how the midwives responded to this through flexible, open access.

'it's been very flexible. Um, they have located a lot of time with my appointments because of my circumstances so ... that's really really really helpful particularly with the midwives, it is easy.' (CMB5)

'before I travelled abroad I wanted to make sure that everything was, you know, all right...I just said to her, 'Listen I'm travelling abroad, can you just come and check me over, give me the once-over, make sure everything's all right?'... It's been quite flexible...I mean [midwife 1]'s brilliant, she comes and see me at nan's sometimes, and then obviously sometimes I come here [to the hospital].' (HBM5)

This flexibility appeared to encourage women to seek help more readily when they were concerned or needed reassurance:

'at one point I was a bit worried, so I emailed them, they called me back, they got me in sort of within the day to do some blood tests' (CBM6)

[concerned she had a urine infection] I called up and, again because I've not had like any really serious problems there's always that hesitation like I don't want to bother anyone, but the team are so lovely they're like, 'You can literally just call us to chat.' and she was like *'Someone is in clinic...you could come in today between these hours and also tomorrow'...* I literally got a sample, knocked on the door, gave them that, took a seat for five minutes...and when they had a gap came out and just chatted to me.' (CBM9)

Women in the hospital-based model did not always feel that the way care was scheduled suited their needs. This woman who had three young children and numerous appointments to attend felt that her care was more structured around the hospital protocol than her own individual needs:

'[an appointment] every two weeks...It's too much. Yeah, and um, after the baby's due date they started every week! It was too much. No medical reason, I think it's a requirement... I prefer, um, when I want to see them, like maybe every three weeks. And then if I need to see them then maybe I can call them and then make appointment before three weeks.' (HBM3)

I'm struggling a little bit. Just I think more, I'm feeling a bit low and irritable. I feel a bit, this week I do feel a bit emotional...it's just me, being on my own. I haven't seen [HBM midwife] in probably about two weeks, um, the last time I had an appointment was with a different midwife because she was on holiday. I was meant to see her today but she, I think she's not feeling very well...how I am feeling now I think more [appointments] would be good. I think it [antenatal care] follows a schedule. (HBM2)

It wouldn't be until on the day [of an appointment] like after she's about half an hour late I would call her and she'd be like, 'Oh I'm delivering a baby I can't make it,' and I'm like, 'could have told me before'. And then nobody would come...I would chase her up to be like, 'When's my next appointment?'...or sometimes it would be like, 'Oh, I'm not seeing you at home today I need you to come to the hospital,' like very last minute... So it was a little bit stressful, yeah. (HBM1)

This women who had a complex medical history describes the impact of her named midwives presence at medical appointments:

I had an appointment at [hospital] about my heart condition ...and she [HBM midwife] came to that so she could have more of an understanding of it as well which I thought was really helpful. And it was, nice to have someone else in on that with me sort of thing. You know, she didn't have to, but she did... again she was always at the end of the phone. You know, and with me suffering with the anxiety and depression, and knowing that I can phone [named midwife] and say, 'Do you know what, is it all right if could meet you at home?' sort of thing, that for me is something that is like ...it's like gold dust.' (HBM4)

There was no evidence to support the rival theory regarding over-reliance, therefor it has been refuted but will be explored in the following section on 'practical support'. The numerous programme theories relating to flexible care and continuity have been amalgamated in this refined theory:

Refined theory: If services are flexible and the number, time and place of appointments is co-planned with women to meet their individual needs, then women will be better able to engage, not perceive the pressure of time and feel more able to seek help and disclose information. Midwives would be better able to provide holistic care and referral to appropriate support services through the assessment of women's living conditions and support at home.

As we have found that women's engagement is likely to be improved through the mechanisms brought about by continuity of care, the next section tests a theory relating to the number of appointments women miss during pregnancy and their ability to rebook those missed appointments.

Missed appointments

As the CMO configuration outlines in Figure 24 also describes women's ability to rebook missed appointments, the number of missed appointments was analysed using the quantitative data to

detect any relationship to the model of care accessed. The qualitative data then explored how women reacted to the specialist model and flexible nature of continuity of care.

Initial programme theory If women have a level of trust and confidence in their HCP's and do not fear judgement, for example their concerns are listened to on an individual level, they receive meaningful information, and they are able to rebook missed appointments with ease and without reproach, then they will perceive the maternity environment as a place of safety and their engagement with flexible services will improve.

Additional related programme theory identified in focus groups with healthcare

professionals: If midwives are able to work flexibly, then they are able to meet women's individual needs and increase safety through spending time care planning and coordinating support that may not be available on demand (for example during an allocated appointment time in the standard maternity care model).

Rival theory: If women feel they can rebook appointments at will then they will not prioritise their maternity care appointments and have less engagement.

Testing using quantitative data: The quantitative data was analysed to test the hypothesis that the specialist model of care reduced the number of appointments women miss, or do not attend. Table 32 and Table 33 in Chapter 7 showed no significant relationship between model of care, the place of antenatal care, and the number of missed appointments. Again, this suggests the specialist model of care, that is more likely to care for women with low SES who are known to struggle to engage, could be mitigating the effects of inequality by reducing the number of appointments women miss. The qualitative data explores this in more detail.

Testing using qualitative data: Flexibility was discussed through women's ability to rebook missed appointments easily and without reproach. Women in both models described feeling comfortable when rebooking appointments. This ability to reschedule may reduce the number of 'missed' appointments recorded, seen as a mitigating effect of the specialist model.

'because they say you have to come, I tried to squeeze my plan, to be attending as much as I can...just now because of my situation I called them to change it.... if it's not a convenient time, I'm happy to change it.' (CMB1)

I like her [CBM midwife], I feel open to talk all to her, yeah. Because the first appointment I missed so she said, 'OK I can, if you are free on Saturday I come on Saturday,' And she came to see me... at home.' (CBM7)

I think there was one week where, because I was going out of London back to [region].. I was like, 'I can't do this appointment, could we do it a week early?' And they did and it was fine. Um, which was obviously really helpful' (CBM9)

She's perfect when it comes to, um, appointments or anything like that, and if I'm running late or something comes up I just text her or give her a call and she'll muddle things around (HBM9)

Women discussed the impact of midwives needing to cancel appointments. This was more apparent in the hospital-based continuity of care model that may be due to women having one named midwife. Whereas in the community-based model women described being cared for by the whole team rather than one midwife. The expectation that care is provided by one midwife in the hospital-based model may have a greater impact or lead to women feeling more disappointed when their named midwife is unable to see them. For one woman, a young mum with learning disabilities, a lack of continuity of carer had a significant impact on her that she felt led to social care involvement:

'she [midwife] cancelled a lot of my appointments...I understand that people have babies, but it meant that it was cancelled appointments again and again and again... I only had maybe one or two midwife appointments during my pregnancy.... it suffered me because I didn't go to antenatal classes, because she didn't really sit there and go, 'Well this is what's available'.... so because of me not having the right sort of preparation for the baby it kind of led to bigger things being involved because they [social care] were scared that I wasn't picking up cues and I wasn't doing this, and I wasn't doing that... It was an incredibly stressful time for me... And when I sat there and said, 'Look I didn't have any antenatal care,' they were a little bit more understanding of why I wasn't picking up on those cues...' (HBM1)

Women's insights around missed appointments confirmed the initial programme theory and enabled the development of a new programme theory relating to how midwives in specialist models share workloads.

Refined theory: If women are able to reschedule appointments easily, and do not fear judgement or reproach when they miss appointments then they will perceive the maternity environment as a place of safety and their engagement with flexible services will improve.

Refined theory: If women have the opportunity to get to know the all midwives in a small team throughout their pregnancy, then they will not feel disappointment or let down when their named midwife is unable to attend an appointment, and care, information and responsibility will be shared across the team, thus improving safety.

To summarise this section on continuity of care, insightful detail has been highlighted around the causal mechanisms of continuity of care in relation to information sharing, engagement, and help-seeking. Importantly, both group practice and the specialist models of care are associated with significantly higher levels of continuity of care than standard care. Women who received antenatal care in the hospital setting had significantly lower levels of continuity of care in the antenatal period. Women receiving standard care were significantly more likely to miss four or more antenatal appointments than those in the group practice of specialist models. That said, some women in the hospital-based specialist model described their midwife often having to cancel antenatal appointments. Where poor engagement with services is often associated with women's priorities and behaviours, the women in this sample describe system barriers and sometimes feeling let down by the specialist model of care. This appears to be due to sole responsibility being placed on one named midwife, rather than sharing women's care across a small team of midwives. This was also discussed in the focus groups with healthcare professionals. The CMO configuration in Figure 32 has been refined in light of this insight.

Refined CMO Configuration:

<p>Women who struggle to engage with maternity services and are at a greater risk of inadequate antenatal care.</p>	<p>M1) If women have 24/7 access to a small team of known midwives and are encouraged to contact them via a phone call, text message or free technology. Midwives can also contact women to share information and remind them of appointments</p>	<p>O1) then women’s engagement with services will improve through needs-based communication and face-to-face appointments. They will also be more likely to contact a midwife when concerned, less likely to feel like a burden on the system and less likely to miss appointments.</p>
<p>These women often have complex social and medical histories and require multi-disciplinary services and child protection assessments. Multiparous women, younger women, and those who have had previous trauma or adverse experiences with services, or experienced disempowerment are also at greater risk of inadequate antenatal care</p>	<p>M2) If women have opportunities to meet other members of the team who are aware of their history, contribute to continued supportive presence throughout pregnancy, labour and the perinatal period, and prepare women for labour and birth through education and familiarisation of birth settings</p>	<p>O2) then women will feel better supported and able to seek help and exercise choice, resulting in improved safety, reduced feelings of anxiety and avoidance of disrespectful care and the risk of triggering previous experiences of trauma. This may also reduce the impact on women when the named midwife is unable to provide care.</p>
<p>Another group of women who struggle to engage with their care are those who are unfamiliar with the NHS system, do not speak English, do not have a permanent UK address or access to public funds. These women often include asylum seekers, refugees and trafficked women</p>	<p>M3) If a small team of midwives provide continuity of care over the course of a woman’s pregnancy, including time to get to know women and discuss their physical, emotional and social wellbeing, they will gain an in-depth knowledge of women’s social and medical histories, living conditions and support networks</p>	<p>O3) Then women are more likely to disclose sensitive issues and social risk factors and will not have to repeat their (often difficult) circumstances to numerous healthcare professionals, trust the professionals advice, and feel more reassured and valued. This may also lead to more ‘fast-tracked’ responses to women’s concerns and complex issues, and information is less likely to be missed, thus improving safety.</p>
	<p>M4): If women have the opportunity to develop a relationship with a midwife or a small team of midwives, feel listened to, and perceive the midwife/midwives to be experienced, knowledgeable, caring and honest</p>	<p>O4) Then women will have more confidence and trust in the midwife and benefit from their support. This relationship can extend to a small team of midwives if women have the opportunity to get to know them and responsibility for women’s care is shared.</p>
	<p>M5) If maternity services offer flexible, open access, needs-led care, where the number, time and place of appointments is co-planned, women are able to see a known midwife on short notice depending on their need and appointments can be rebooked without reproach</p>	<p>O5) Then women will feel reassured that their individual needs are taken seriously and met in a timely way, engagement with services will improve, and unnecessary, or inconvenient face to face contacts can be reduced. This is pertinent to those women who have numerous appointments with multi-disciplinary services.</p>

Figure 32: Refined CMO configuration- Continuity of care

The next section will turn to the practical support the specialist models of care provide, how women respond to this support, and how their response might impact outcomes for themselves and their families.

1.36 Practical Support

This CMO configuration relating to the support women receive during pregnancy will be tested using the quantitative data to understand who is referred to support services during pregnancy and if specialist models of care increase referrals to support services for deprived women and those with social risk factors. Qualitative data will then be used to confirm or refute the mechanisms identified in Figure 33 and identify other mechanisms before this CMO configuration is refined.

Context	Mechanisms	Outcomes
Women with or experiencing: A lack of resources/money/support Unfamiliarity with UK culture and systems Frequent dispersal Social isolation Learning disabilities Drug/alcohol abuse Child protection assessments	1) Provision of new skills/resources 2) HCP's knowledge, time and skill to coordinate and facilitate practical support to meet women's wider needs 3) HCP's knowledge of maternity benefits and local support available to enable the provision of advice around practical matters such as housing, employment, education and care of other children and family members. M1) If women receive maternity care by a small team of midwives in a defined geographical area who are knowledgeable about local support services and practical matters such as housing, employment, education and care of other children and family members. These processes should be sensitive to the needs of women who do not speak English through appropriate, high quality interpreter services and choice of interpreter.	Women better prepared and supported for the challenges of parenthood and able to demonstrate their ability in parenting assessments Evidence of care and empathy from HCP's Increased agency Value in engaging with services Avoidance of further financial hardship, distress, and isolation. Development of a supportive network. O1) Then they are more likely to be referred to appropriate services that can better prepare them for the challenges of parenthood and enable them to demonstrate their ability in parenting assessments. They will also be able to develop a support network for their child's early years, their mental wellbeing and avoid further financial hardship, distress, and isolation.

Figure 33: CMO configuration- Practical support

Quantitative (Chapter 7) and qualitative data were interrogated to unearth generative mechanisms that lead to women with social risk factors feeling more socially, emotionally and practically supported. As the data was analysed it was clear that a significant theme was the initial disclosure of social risk factors that highlighted the need for additional support. Therefore the qualitative analysis will first explore the theories that relate to women's disclosure of sensitive information and social risk factors:

Disclosure of sensitive information and social risk factors

Initial programme theory: If women receive more personal continuity in their care, then they will develop feelings of trust and confidence in their healthcare professionals and have more meaningful interactions (for example disclosing sensitive information or exploring the context of women's requests/concerns).

Initial programme theory: If women are offered continuity of care and are able to build a trusting relationship with their midwife, then underlying social risk factors can be explored and care individualised to their needs to improve engagement and empowerment so that women are better able to express or restate their expressed wishes and concerns.

Rival theory: If women build a trusting relationship with a known healthcare professional then they will feel an emotional responsibility towards that healthcare professional and not want to overburden them by disclosing sensitive information that might lead to an increased workload.

Testing using quantitative data: The quantitative data was analysed to test the hypothesis that the specialist model of care increased disclosure of social risk factors and in turn referrals to support services. Data presented in Chapter 7 shows a significant relationship between referrals to support services and model of care received. Women receiving standard care were less likely to be referred to early/enhanced health visitor and family nurse partnership schemes, social care, and mental health services.

When analysing the effect of place of antenatal care on the number of referrals to support services the data highlighted that women were more likely to be referred to social care and mental health services when attending hospital-based antenatal care regardless of model of care or the service attended.

Although the quantitative data does not reveal the number of disclosures made, the data suggests that the women accessing the specialist model of care are disclosing more social risk factors that lead to referrals to support services. This will be further tested with the qualitative data that related to women's experiences of practical support, advocacy, and healthcare professionals knowledge of and ability to refer women to support services will test the initial programme theories. The analysis also explores whether or not referrals to support services are valued by women.

Testing using qualitative data: Women accessing both specialist models discussed being able to disclose personal circumstances and social risk factors to the midwives providing their care.

I did say I was starting to have intrusive thoughts about the baby... and [CBM midwife] was like, 'I don't want to force you to do it but do you want to think about maybe going into talking therapies... Do you want me to refer you? Or do you want to refer yourself?' and I was like, 'I'll have a think about it and I'll probably refer myself.' (CBM9)

Women provided insight into mechanisms such as increased trust and confidence, and the known midwife enabling them to feel comfortable enough to disclose sensitive issues or stressful events in their life:

'When you meet the same person every single time you build trust with the same person, so you feel more confident to tell the stories and open up, so I think I'd just...go back to the people I know' (HBM5)

Yeah she's really good, she made me feel really comfortable, really opened up to her and, because I had a lot going on as well with my mum and, I'm up the hospital every day near enough with her. Um, she kind of took that ... stress from my mum and what-not and just focused on the baby. (HBM9)

Again, women compared previous experiences of standard care to the specialist model, describing the disparity in their expectation of the role of the midwife. This woman was asked if she felt able to speak to the midwives in her previous pregnancy under standard care about her mental health:

'No, I didn't even know I was able, I could do that. Until I had my second, um, baby ... and then [HBM midwife] asked me about background and how I feel, and first I was shocked, 'Oh is it, can you support me emotionally in that way? You know ... can I talk to you anything?'... Her asking me questions made me think that ...until then I didn't know. (HBM3)

However this was not always the case. These women's insight supports the rival theory relating to women feeling that they don't want to overburden the midwife, or that there isn't the time for disclosure. This appeared to be the case for women who were not familiar with UK maternity care.

'I wouldn't call them, like to a non-pregnancy thing because I feel that's too much...it's not because they are not open to it, it's just because... it wasn't that pregnancy bucket...I feel that's too much for them to handle, like they

already have too much. I feel they are busy but not in a way that they can, cannot listen to you, they don't have time for you, it's not that way, I just don't want to bring more concerns to them, than they need to have. Unless it was related to pregnancy, I would say, but if it wasn't I would just not give them more work.' (CBM10)

I can't see that [disclosure of domestic violence] happening in the triage, neither in the antenatal [clinic]...it's very rushed. Um, it's very, you know, um, see the phlebotomist, let's do the blood pressure, check check check, OK off you go, when's your next appointment?... even if someone wanted to...sympathise... they probably wouldn't be able to do that... I don't think the medical midwifery team are equipped for that...I don't think that they could keep track of that...I don't talk to [HBM midwife] about those type of things. So I can't imagine how it would be for a person who doesn't have like an extensive care team like myself... there just isn't enough time. (HBM8)

These insights contributed to the refined theory that incorporates aspects of both the initial programme theories and rival theory put forward:

Refined theory: If women are able to form a trusting relationship with their healthcare provider, and are given the time, reassurance and knowledge that the service is there to provide holistic support, then they are more likely to be comfortable and confident enough to disclose sensitive information and social risk factors. This in turn enables the healthcare provider to address women's wider social and emotional needs through referral to appropriate support services.

Although closely related and often overlapping with the theories around disclose, it was felt that as mental health is not only a social risk factor in itself, but often co-occurs with other social risk factors and difficult circumstances women in the sample were facing, it was analysed separately. Women were interviewed about their experience of ongoing mental health support throughout their pregnancy.

Mental health support

Initial programme theory 3): If midwives are well informed about the mental health issues experienced by many women with complex social histories and have clear processes in place to refer women to effective perinatal support services, then women will be able to access these support services early in pregnancy and prevent these mental health issues worsening in the postnatal period. This will better prepare women for motherhood and improve the mother-infant bonding process.

No rival theory was put forward to challenge these theories

Testing using quantitative data: Data presented in Chapter 7 show that women were more likely to be referred to mental health support if they received the specialist or group practice model of care, or attended antenatal care in the hospital setting.

Testing using qualitative data: Women from both models of care, but particularly those from the hospital-based model, discussed a level of holistic, ongoing mental health enquiry and support throughout their pregnancy regardless of any known mental health concerns:

I started having really bad nightmares... I told my midwife and they were very understanding, they wrote it all down and they referred me to like a therapist to like talk to help get through it. It's very easy to sort of talk to them about that stuff and just be like, 'This is what's going on. Like is it normal or is it not?' (HBM1)

I think I have been really supported, just in terms of listening to me, and making referrals for me. And offering me a wide range of, um, possible support networks. Well she did ask if I wanted to return, um, for grieving counselling... but alongside with the CBT, after we spoke about it...it might be a bit much maybe I should concentrate on one to see how that goes and then go onto another.' (HBM2)

I could talk to her (HBM midwife) more openly about anything, everything, for example...she knew I had other babies at home and I don't have any other family members...she was monitoring my mental health...so she was ready to recommend if I need special maternity service regarding mental health issue, so she would always tell me, 'postpartum depression is very common, and especially when you're not sleeping and it's very common so, you know, you always can talk to me.'...she offered a lot of things but I didn't need it at the time. So she contacted health visitor and then health visitor visited. (HBM3)

I feel like I can trust her [HBM midwife]...we haven't met that often, but I do feel like I can sort of like confide in her I can tell her how I'm feeling...I mean today I said to her that my feelings of low moods have started to come back...and the first thing she said to me is, 'Right, I'm going to get you this leaflet and there's a service where you can have someone to go and to talk to.' (HBM4)

This woman felt that the midwife would be able to recognise her mental health deteriorating as she has known her for a number of pregnancies. This is her response after being asked if she felt able to speak to her midwife if she was worried about how she was coping:

'Yeab. If I had a problem I would tell her. And she would be able to recognise it as well. Yeab. Because she's been around for ... the family. Oh, even with the first pregnancy she was able to detect because she was there from day one, sort of thing.' (HBM7)

Another woman felt that she was more open to a referral to mental health support because she had seen her midwife throughout her pregnancy, and she was able to identify her deteriorating mental health:

'She [CMB midwife] was like, '...I don't have to, but I think perhaps I'll refer you, then they'll get in touch and you can set up an appointment.' ...I did feel like it was the right thing, um, and yes because I met her quite early on ... I remember when she said...'Based on you know, kind of how you sound I think perhaps this could be a good idea,' and that was because she'd seen me... you know she knew me a bit... not just from my notes. Rather than starting from the beginning, every time...Also she was like, 'The way you're coming across today also it does sound like, you know, kind of you do sound a bit ...' And I understood, I was like, 'Yeab I'm a bit ...' (CBM9)

Some women already had mental health support systems in place and described how the trusting relationship they had built with them enabled them to seek help if they felt their mental health was deteriorating:

I know who to contact if I'm feeling low...when you meet the same person every single time you build trust with the same person, so you feel more confident to tell the stories and your worries, so I think I'd just, you know, go back to the people I know (HBM5)

'the pregnancy has brought on different types of like mental health problems for myself, but because of the team that I have, I do feel well-supported. Because I've been referred onto a specialist midwife, it gave me the opportunity to talk about my mental health. I think if I was cast as just a no risk at all, um, maybe I would be, would have been a bit more reluctant. Because you, I don't know, as a mother you just want to be the same as everyone else.'(HBM8)

'when I had like all that depression and all kind of thing, I mean you don't feel like you want to talk with ... with lots of people, you know? It's hard for me to change. Like to go therapies? So with a midwife yeab so I normally I keep ... quiet. But with [HBM midwife] it's different. (HBM10)

The partner of one of the women described contacting the specialist team when he was worried about his partners mental health in the postnatal period:

I was concerned, and I spoke to them about it. But they reassured me that it sounds more like baby blues than anything else'. (Partner of CBM6)

Women also spoke about the process of being referred to support services, whether this was a positive or negative experience. Following on from an earlier quote, one woman disclosed concerns she had about her mental health and explains here how the midwife followed those concern up at a later appointment, offering reassurance and advocacy:

'[CBM midwife] was like, 'Have you called them [talking therapies]?' and I was like, 'No, because ... I was in a very bad patch and I was like, what if they think I'm going to hurt the baby when it's born?' And she was like, 'I would really like to refer you.' ... Like if someone talks about hurting their child it's, so, and [CBM midwife] wasn't laughing but she was very light-hearted about it, like you know, 'No one's going to think, no one's going to be like, "Guys, she's going to hurt the baby".' Um, but then she was like, 'Seriously though, it is confidential, we are not linked, like we are separate... they'll talk about things now, you might get a check-up like after the baby but not because someone's like, "Did you hurt your baby?"' ' Just because they're like, "Can we do any more for you? Do we need to tailor this, do we need to keep you going?"' ... So again there was the like, the reassurance that I'm not a nut-job.. and then ultimately she referred me. (CBM9)

Another woman from the hospital-based team also discussed self-referral and referral to support services from a professional, commenting on how she thought the midwife gave her an option but would have been happy to make the referral:

'In some ways it's like, it's nice that I can do it myself because it's on my terms, to refer myself. But then in other ways it's like it would be helpful if it was referred for me because I know me I will sit there and I won't, phone up I won't make contact until it's like OK cool, I'm now in a hole, and I've hit rock bottom ... I feel like if I did need to I could turn around and say, 'Hey look, I can't actually self-refer, can you pick up the phone and make that call for me?' and I feel like she would.' (HBM4)

Women accessing both models of care discussed how the referral to support services was made and how it made them feel valued.

I told her about my severe anxiety, I was diagnosed, and I had treatment and they referred me straightaway. I was particularly worried about birth because like in Brazil the C section is normal, it's the first option and I was super-anxious of like knowing that here it's not... So she [named midwife] referred me to a senior

midwife consultant at the hospital. She gave me super-reassurance and I felt like...my mental health issues are being taken seriously. And I appreciate that, like that made me feel very well. (CMB10)

'the midwives refer me to the, for psychological help, and I've seen this woman with interpreters all the time, and this has been very very helpful.' (CBM5)

Women's insights confirmed the initial programme theory and contributed to its refinement:

Refined theory:

If midwives are knowledgeable about mental health issues experienced by many women with complex social histories, discuss mental wellbeing with women throughout pregnancy and the postnatal period and have clear processes in place to refer women to appropriate mental health support, then women will be able to access these support services early in pregnancy and prevent mental health deteriorating.

Leading on from this, women also discussed the level of emotional support and advocacy provided by the midwives in the specialist model of care. This relates to one of the initial programme theories:

Emotional support and advocacy

Initial programme theory: If a programme offers advocacy, midwife attendance at meetings, and other forms of emotional support during interactions with social care then women will feel supported and informed of unfamiliar processes

Initial programme theory If midwives recognise pregnancy as a time of emotional fragility and added stress for women living socially complex lives and can empathize and respectfully respond to their individual needs, then women may emerge from their maternity experience feeling empowered rather than violated.

No rival theory was put forward to challenge these theories

Testing using qualitative data: Women from both models of care described the importance and impact that emotional support provided by the specialist model of care had on their wellbeing. This support appeared to be play an essential role in improving pregnancy experiences for women who were socially isolated and unfamiliar with the UK system, with women describing how it was more important than the other types of support offered:

I don't have any family or relatives here, so it's really nice to talk to someone about what you feel, and they advise what you need to do after. Because at the end you need to talk to someone. If you don't talk to someone you don't feel relaxed... And because I'm new to this country, I haven't been here for so long, so you don't know all the things you need to do here or how you need to be supported here or where to go and what you need, so they [HBM midwives] were very helpful. (HBM6)

'being in foreign country ... away from my mum and sisters. I don't have my family other than my partner and my babies... you want to be your mum next to you, you know... It's not like financially or, other issues it's more like emotional issues, you want emotional support from the midwives... I don't think I will get better care than you can anywhere else... It's more personalised, more like family like support... it didn't feel like she was there to medicalise me, she was there for more... support reason. (HBM3)

This woman describes a similar response and refers to feeling 'backed up' by the specialist model of care when in the hospital setting:

when you go to the labour ward and you say, 'I'm with [HBM midwife], 'you know there's someone like to back you up when you need something... So they know I'm on a special care programme, it's like special treatment everywhere, it's really nice. (HBM5)

Women from both models of care discussed other forms of support they received from the midwives and how this impacted on their emotional wellbeing and engagement with services.

'I was really shocked that [CBM midwife] texted me that day [after being admitted to hospital]. I was like, 'So you just what, randomly messaged me?' she was like, 'Yeah, like you was just on my mind... [another CBM midwife] is in the hospital, I'm going to get her to come and see if you're all right'... so it was nice, it was just really... something I needed at the time... So that now helps me to reach out to her, especially with what I'm going through, I need to know that you all know what's going on and you are liaising with each other... it's actually my midwives and the doctors that have made me feel the calmest. (CBM8)'

One woman with multiple social risk factors described how having many professionals involved in her care meant that she preferred to keep appointments relevant to that particular need:

So prior to the pregnancy there was a therapist, there was the care co-ordinator, and the psychiatrist and the GP, four people... [In pregnancy] it was between [HBM midwife 1] and [HBM midwife 2], and then there was the health visitor also... and then the doulas as well.. and then I've got the perinatal nurse so with myself I kind of

keep each appointment very relevant. So I consider [HBM midwife]... to address the biological side of things...whereas [perinatal nurse] is there for the actual kind of mental health. So yeah, the pregnancy has brought on different types of like mental health problems for myself, but because of the team that I have I do feel well-supported.(HBM8)

Overall, women valued the level of emotional support provided by the specialist team but did not describe advocacy from the midwife in any detail.

Refined theory: If midwives offer emotional support to women in the form of personalised care, listening to concerns, and familiarising women with the aims of the service and model of care, particularly those who are isolated, unsupported, or unfamiliar of the system, then women will feel more valued, empowered, and better supported holistically, rather than perceive maternity care as a medicalised services concerned only with physical health.

Women in the hospital-based model only highlighted the emotional support provided by a free doula service that was organised by the midwives in the model. This related to another initial programme theory and will therefore be tested by the qualitative data:

Intrapartum support services

Initial programme theory: If intrapartum care cannot be provided by a known midwife, then midwives should be able to refer women who are alone to subsidised doula services for support and advocacy during labour.

Rival theory: If doula services are available for women and subsidised by the service, then specialist teams will not need to provide intrapartum care and can instead ensure women have a higher level of antenatal and postnatal continuity because care is not disrupted by intrapartum requirements.

Women in the hospital-based model described being referred to a free doula service and how their doula advocated for them during pregnancy, labour and the postnatal period:

'maybe I wouldn't have gotten a doula had I not got [HBM midwife] Because I think [HBM midwife] kind of knew I was on my own. I was a bit nervous about the whole thing, meeting somebody I've never known, and how that was going to go down, but push came to shove I didn't want to be on my own. So I'm glad that [HBM midwife] said it.

She went on to describe an interaction with a paediatrician who told her to give her baby artificial milk because she had lost weight and how the doula provided advocacy in her choice to breastfeed:

I was like, 'Yeah OK,' but ... I was so reluctant to do it, and then I felt so down...after [doula] called me and was like, 'How did it go?' ... she gave me so much advice and sent me some links about if I did want to [breast]feed her...So that was really helpful...she said, you know, 'Follow your instinct, follow your gut.' She was good. (HBM2)

Another woman describes a similar experience, but the advice to artificially feed her baby came from the hospital-based midwife who she trusted:

I spoke to the doula, she was like, 'Well if you want to breastfeed I can help you fully breastfeed.' That is the ideal, but [HBM midwife] was saying, 'No. Formula will keep the baby fuller for longer.' And the thing is I respect [HBM midwife] because of her extensive experience and she's seen women, you know, through the stages, and she probably knows, well I'm assuming she knows that when a woman hasn't had the baby and hasn't started to breastfeed she'll probably, the woman is saying, 'Yeah yeah, I want this, I want that,' but when it comes down to it things change and maybe she's kind of talking from that point of view. (HBM8)

This reveals another side of the trusting mother-midwife relationship, and how conflicting advice can come about through the use of a doula. That said, the doula here gave the woman another point of view, and perhaps encouragement and self-belief in her ability to breastfeed. The limited level of insight, and conflicting information around the use of doula services was not enough to either confirm or refute the programme theory and rival theory put forward. Women who had no other support clearly valued the presence of a doula, but this was only deemed necessary when they could not guarantee knowing the midwife providing care for them in labour. Women in the community-based model did not express feeling anxious about not knowing who might provide intrapartum care, this may be due to the opportunity they had to meet the rest of the team during pregnancy. The programme theory has been refined to reflect this, but more research is needed on the use of doula services for women with social risk factors, particularly when combined with a specialist model of care.

Refined theory: If women are able to meet and get to know a small team of midwives throughout pregnancy and are reassured they will be supported in labour by a member of the team, then they will feel less anxious, more supported, and better able to visualise and prepare for labour and birth. Where intrapartum care is not able to be provided by a known or familiar midwife, women who are unsupported should be given the option of referral to a free doula

service. The midwives and doula's should communicate regularly to avoid conflicting advice and offer an enhanced level of support.

Many of the women interviewed had limited financial resource, limited education, and were socially isolated. Analysis of the qualitative data will test the theory that specialist models of care can support these women through the provision of practical resources.

Resources, knowledge and skills

Initial programme theory: If midwives have the time, resources and skills to coordinate and facilitate practical support to meet women's wider needs (this may include providing information about statutory procedures, contacting social workers, writing letters on their behalf, as well as coordinating, attending and facilitating meetings with other statutory agencies (e.g. Social care, Housing departments, Home Office)), then women will be better informed of unfamiliar processes and better equipped and supported in difficult circumstances.

Initial programme theory: If HCP's support women in difficult circumstances to address the emotional and practical challenges they face by providing them with new skills, knowledge and resources, then they will be better prepared to overcome challenges and internalise this as evidence of care and concern that HCP's feel towards them. Additionally, for those women living in poverty the provision of material items such as breast pumps and infant feeding supplies, phone 'top ups', clothes, baby equipment, nappies, money for travel as well as toys for older children, then they will be enabled to meet their and their babies' material needs.

Initial programme theory 4): If HCP's are educated in maternity benefits available for socially vulnerable women, and able to provide advice around practical matters such as housing, employment, education and care of other children and family members, then women would see more value or purpose in accessing services earlier in pregnancy and further financial hardship and distress for the women could be avoided.

No rival theory was put forward to challenge these theories.

Testing using qualitative data: Women from both models of care described various ways in which midwives provided practical support, whether this was through referral to relevant support or befriending services or offering their time to provide women with new skills and practical resources often seen as outside of the scope of midwifery care.

[HBM midwife referred me to] Early Start worker, she help us so much, she contact for me, so I will talk to somebody for my situation, you know, just talk. She refer me to something financial, she refer me to the food bank, and she refers me to the charity you know, for the baby stuff. Yeab, I went there, and I got nice stuff, [name of charity], it's for refugees. They will help everything. (HBM6)

I've never seen this kind of midwife because in first [pregnancy] I seen a lot of midwife. But this time they make sure you are OK, even the housing problems...They always call you...they've got a coffee morning to talk to them. And then I'm happy. Now this time, they come in my house and then they try to help, even I had a letter from them to give for the council, a supporting letter, which is good. Midwife is there, the social worker, the school, everything is there...you know someone is around you.' (CBM4)

'one thing very important about me trusting them, I know that if they refer me to something it's going to be, I know that anything I ask for they can refer me to... so I really feel confident, I trust them, I know if I need anything I phone them.' (HBM5)

Women often described this practical support in terms of breastfeeding:

'The midwife almost every day they come...they're always so nice. I mean every single day one of them is there. they was coming for the breastfeeding and then they see, and then they show me the position, how I'm going to feed her. (CBM4)

When asked if their midwife was knowledgeable about housing, benefits or other local support, this woman felt that although the midwives were not aware of everything, they listened to her needs and tried to facilitate support:

I think maybe they are not prepared 100% but I think they do as much as they can. Yes I do believe midwives listen to everything very careful, and they actually get to know you and they get to understand your situation, and your local personal things. (CBM5)

This was not the case for this women accessing the hospital-based model who did not receive any advice about maternity benefits and was late to receive her maternity certificate (MAT B1), resulting in her being unable to claim statutory maternity pay and maternity allowance.

'So my work's not paying me maternity leave...Because I didn't get my MAT B1 form until I went on my maternity leave. I just didn't know...I got a letter from my workplace saying, 'Right you're past 20 weeks now, we need your MAT B1 form,' and I was like, 'what the hell is a MAT B1 form?'. And then obviously I went to

talk to [HBM midwife] but obviously it was missed appointments so by the time she came to the house and I was like, 'What is a MAT B1 form?' she was like, 'OK right, you should have told me I would have got it for you,' But what they've done is because it's a zero-hour contract...they're not paying me...they've taken me off their system' (HBM1)

Another woman described a lack of emotional and practical support after giving birth prematurely, this may be because she didn't see the specialist model midwives during pregnancy as she had many hospital appointments. This could be an unintended consequence of community-based care- had the midwives been hospital based she may have been able to develop a better relationship through more continuity of care at the hospital:

It was on the neonatal unit, um, and... had a few people that were a bit cold...that were looking after [baby]...I learnt how to be on the neonatal unit by looking at other parents around me...nothing was explained, like even just the progress of the rooms...I don't know it might just be me because I don't like to be a botheration but... I didn't feel comfortable asking for anything or, you know like, 'Oh can you help me do skin to skin,' or you know. Just, I don't know, just felt a bit awkward so I literally was going in there and sitting down and just looking at my baby and like touching my baby, but I wasn't really doing skin to skin... (CBM8)

In addition to the obvious benefits of practical support, when women received support from midwives such as referral and signposting to services, foodbanks and charities, help with writing housing letters, and breastfeeding support they felt well looked after and listened to. When they lacked this personalised support there were often severe consequences. The three initial programme theories have been amalgamated and refined to reflect these findings:

Refined theory: If midwives have the time, resources and skills to coordinate and facilitate practical support to meet women's wider needs, including the provision of information about maternity benefits, statutory procedures, assistance with contacting housing, social care or the home office, and practical skills to support feeding and care of the newborn, then women will be better informed and equipped to overcome challenges and internalise this as evidence of care and support. Women may also see more value in disclosing social risk factors, and further financial hardship and distress could be avoided.

In addition to practical support, one of the aims of both models of specialist care is to ensure women have an established support network in place before they are discharged from maternity services. Four initial programme theories related to the facilitation of support networks and will be tested using both the quantitative and qualitative data:

Establishing support networks

Initial programme theory: If models of care facilitated the development of effective support networks for women throughout their pregnancy through working with family members and multidisciplinary support services (social workers, health visitors, support workers, children's centres and voluntary sector agencies), then that established support network will enable new mothers to flourish and become confident and successful parents.

Initial programme theory: If HCP's are familiar with local charities, food banks, befriending programmes and support services then they will be able to introduce women to these services in order to provide the most supportive networks possible before they are discharged from maternity care and women will be better able to integrate into the community.

Additional related programme theory identified in focus groups with healthcare

professionals: If models of care are based in the hospital setting or have large catchment areas, then midwives are less likely to have the knowledge and familiarity of niche support services that may benefit the women they care for.

Rival theory: If midwives are seen to be communicating with social workers, then women will become suspicious of their intentions and view maternity services as a form of surveillance rather than a supportive service.

Testing using quantitative data: Data presented in Chapter 7 showed that women receiving standard care were less likely to be referred to early/enhanced health visitor and family nurse partnership schemes, social care, and mental health services. Reflecting the focus of both specialist models of care, women with one or more social risk factors were significantly more likely to be referred to all support services. Women in the most deprived deciles were more likely to be referred to social care, and women were more likely to be referred to social care and mental health services when attending hospital-based antenatal care regardless of the model of care received.

Testing using qualitative data: When women were interviewed about how they perceived the specialist model of care contributed to their support network they gave mixed responses. Some, like the women quoted below, felt very supported:

Social worker, she is helping, I have, er, [name] she's an Early Start worker, she's helping me, yeah. And, er, there is a charity of the debts, they are helping us with our papers and letters, something like that... So much people, for me they are all helping me out. Yeah, everybody they are coming here [home]. Husband - She's [named midwife] perfect. We are telling you. I was stressed, I'm still having stress and problems... but without [midwife] ... I think we would be another different place now. Yeah yeah, she has so much support us. Everything. (HBM6)

So yes I feel like even if I want mental health help I would go back to [HBM midwife] because she will refer me... if I didn't have [midwife] like there are so many things that I would be worried about. But I know there's someone when I need it. It's not like you have to go back for the GP to do the referral and see if you need it or not... Because I was confident that [midwife] will help me and I wasn't worried about what to do next you know because there was always like someone to help you, especially if you're new to the country. (HBM5)

Women also described the support they received from other professionals, suggesting that if they have a trusting relationship with someone else then they may not need the support offered, or not offered, by the specialist model for all of their social and emotional needs:

[health visitor] was really close. She would call me before I need anything. She would suggest things before I even asked. Because at that time I was, I was having some emotional troubles. Um, troubles with my partner, my parents and things, I really needed support at the time. I know who to contact if I'm feeling low. My social worker was lovely so if I need anything I can contact her. It's the people who I've always known... So [named midwife] is one of the people who I can be contacting, because I've seen her so many times and she knows everything about me. (HBM5)

Women described how the specialist model midwives coordinated communication across the multi-disciplinary team:

'she came to the hospital to see the doctor with me.... And she met the social worker and she met health visitor. Every time I need her she will come. and when [HBM midwife] came she know, she asked for, er ... a meeting with everyone, where [Early Start worker name] and social worker [attended]. So she told me, told them to, you know, to try to communicate, yeah. They all came here [home]. So a meeting yeah, help us. (HBM6)

We actually had a meeting on Friday with everyone. So it was my health visitor, my perinatal nurse and midwife. So it was like my birthing plan, do I need to stay on the same medication, what other kind of support do I need and, you know, how am I feeling, what other things have been going on and stuff? Um, so home life for me hasn't been that great so they're [CBM midwives] well aware of it. Um, you know, they can identify that and see what

support I need. There's just loads of people that I know I could go to if need be. I know that I'm being looked after and I'm not just sort of, there. (CMB1)

Some women discussed a negative experience of referral to support services, this was usually due to not hearing back from the service or being ineligible for the service. This was more apparent for women in the hospital-based model.

The midwife said that she referred me to Home Start because when I came home I was feeling really low, and a specialist health visitor. And I never heard from her. I mean I told her; I don't think that she's chased her up because she hasn't told me anything. (HBM7)

They (HBM midwives) helped me with all that kind of stuff, and they referred me to the, um, charities. But because... you need to be like really high risk or something, you know? your mental health needs to be quite severe... I don't know like, trying to kill yourself. So yeah that's why I'm not taking a therapies with them. I went there and then I talked to them ... and that's the hard part... an hour-and-a-half to explain all my things, and when they contact me they say that, because I'm not in the ... very bad criteria... they're not allowed to offer me some help. So, but I asked them if they can provide some resources that maybe I can call them, and I found one, which I have to pay. (HBM10)

[Participant's mum] - You know, and the midwife will say, 'OK well I'll book you onto this, I'll book you onto that,' and ... PART - she never really booked me into anything. Like she said she would look into it and send me like an email or a text message or something like that, but just didn't really happen...I did bring it up like multiple times and she was just like, 'Yeah, you know, I'll do it,' and I was just like, OK, but then again I didn't see her most of the time anyway so ... (HBM1)

Referrals to support services were not always requested by the woman, indicating a lack of choice and consent. A woman with historic drug and alcohol abuse described how the midwife initiated the referrals to support services based on what was on her file when she accessed maternity services.

'[used drugs/ alcohol] before the pregnancy yeah. And then I stopped but that record is still on your file, it's going to stay. So as soon as I meet the midwife she knows all my details, so she refers me everywhere.' (CBM4)

Many women went on to discuss their experiences of support services once they had been referred to them. Again these experiences were mixed in terms of how useful and responsive

to individual needs women felt they were. A common theme here was the level of continuity provided by the support service:

I went to like counselling sessions... I met her [counsellor] for a few weeks and then she had to leave and then I had to meet someone else and I was just unhappy about that. I'm not doing this. It's not helping me.'
CBM1

A lack of continuity seemed to be a particular issue for health visiting services:

'They're [health visitors] all right, it doesn't, no not particularly useful. It's, it's very different, in terms of the relationship we've built with the caseload midwives over nine months, versus ... We've seen three different [health visitors]' (CBM6)

I've got a health visitor for the young kids. I don't know her name ... and I don't like her. So I avoid seeing her.'
(HBM7)

'with the health visitor, yeah every time it's different and because they're like all different...I prefer to take [children] to the GP if they really need to see them... I take them [to see the health visitor] because ...they need to fill the red book and all that kind of routine stuff. But, for me I don't really think it's useful to go to the health visitor...it is so hard to go all the way.' (HBM10)

Some women described a lack of continuity or support after being discharged from maternity care, pointing to a lack of perceived community or early years support. This might be due to the specialist model raising women's expectations of continuity of care with other services:

I think the only thing I'm struggling with more now, after the baby is born and I got discharged and I wanted to have someone to call like I had a midwife. I still don't have anyone to call now...so I call a [GP practice] number and whoever gets it gets it and they send me to another phone number, another team member I don't know...I don't have a person' (CBM10)

The interview guide set out to interrogate the hypothesis that the community-based model would help women to feel more integrated with their local community. Although the women accessing the community model did not discuss social integration in any detail, those attending the hospital-based model discussed a lack of local support, or not being able to blend into an unfamiliar environment. This demonstrates that those who have the opportunity to socially integrate may take it for granted, whereas those who do not feel the impact.

'They [CBM midwives] did say 'There are these groups that you can go to,' like these support groups, especially the, like the breastfeeding ones because that's where I was having problems. They organised a picnic.' (CMB6)

'I even asked her, before she discharged me if there's any social groups or anything I can frequent. Like mums with two babies or something to give advice to each other, she was not helpful with this' (HBM5)

'To be honest with you no. I, er, I just can't blend in yet, I don't know the reason but there's, I just can't blend in very well, it feels like a new, unfamiliar [place].' (HBM4)

This woman from the hospital-based model, who has 7 children at home, describes a lack of social support and opportunity to meet other mothers. She reflects on a time when maternity care was based in the local children's centre and the difference it made to her ability to integrate with the local community and share concerns:

'I don't like have support. I'll go to get the baby weighed once a month and it's a drop-in but it's not like a drop-in as we know it...you go to the GP, you wait in the waiting room, and then they call you. No it's not a social. I don't know if there is any social groups around the area...when they had it in Children's Centres that was a lot better. Because people could just pop in, they had those drop-in sessions. And you could just drop in and speak to a midwife and share your worries... They had groups and, after birth they had someone to deal with postnatal depression or low moods and, baby massage classes and all of that, but that's, that's not doing it anymore.' (HBM7)

One woman, who struggled with a lack of support and loneliness, felt that she did not develop a trusting relationship with her named midwife and felt that the hospital-based model had an impact on her community engagement as she was unable to attend the local children's centre for her maternity care:

'I think there's the [name of children's centre]... I wouldn't know what they would do, especially that I don't have the baby now. Because it was over there [points to road opposite flat]!

INT - OK. *So if you, looking back if you could have had your pregnancy care there, would you have had it there? '...possibly. If it was, if it was just the same, then yeah. Because for me it doesn't seem any different perhaps than what I would have been doing now.'* (HBM2)

The mixed experiences described in this section largely confirm the initial programme theories put forward that suggest models of care should facilitate the development of supportive networks, as regardless of whether women experienced this support or not, they expressed a need for it. Care in the community appeared to be favoured by most women, particularly when reflecting on social integration and midwives knowledge of support services. The refined program theory reflects this, and will be tested in further detail as the chapter goes on. The rival theory has been put aside to be discussed in the next section on ‘surveillance’ as women described their perception of social care support extensively.

Refined theory: If midwives aim to establish effective support networks for women and families during pregnancy through referral, signposting and encouragement to access community and multidisciplinary support services, then women will be better supported once discharged from maternity care, resulting in the avoidance of disillusionment after experiencing the specialist model, and enabled to parent and seek help confidently. This will be more feasible if models of care are placed within the local community where midwives are knowledgeable of local support services and referral pathways.

To summarise this section on support it is important to note the significant relationship found between the specialist model of care and increased referral to enhanced health visitor, social care and mental health services. Women who received hospital based antenatal care were more likely to be referred to social care and mental health service. These findings were reflected in the qualitative data. Although most women felt comfortable to disclose social risk factors to their midwife, this was after a level of trust had been developed, suggesting that women do not disclose social risk factors until they feel safe and supported. Some women did not want to overburden the midwives or were not aware the service offered support outside of pregnancy and birth issues.

Women described ongoing enquiry about their mental health and wellbeing throughout pregnancy by the specialist model midwives, they felt this was helped by the development of a trusting relationship and midwives knowing them and their histories. They also discussed a level of reassurance provided by midwives about mental health referrals, this will be further explored in the next section on ‘surveillance’. Most women described high levels of emotional support but did not describe advocacy in any significant detail. When asked about intrapartum care, women in the community-based model were not offered doula services but did not express anxiety about not having their ‘named midwife’ provide intrapartum care. This appeared to be because they

knew the other midwives in the team. Women in the hospital-based model valued advocacy from a doula but reflected on times where advice conflicted between the doula and their midwife. Not all women experienced the practical support they required, leading to a lack of financial resource, and feeling ill equipped to care for their newborn. They highlighted the importance of having an established support network and the opportunity to integrate into local communities. This appeared to be more feasible for those receiving the community-based model. The refined CMO theory in Figure 34 below has been renamed 'Social, emotional, and practical support' in light of these findings.

Refined CMO Configuration

Context	Mechanisms	Outcomes
<p>Women with or experiencing:</p> <p>A lack of resources/money/support</p> <p>Unfamiliarity with UK culture and systems</p> <p>Frequent dispersal</p> <p>Social isolation</p> <p>Mental health issues</p> <p>Learning disabilities</p> <p>Drug/alcohol abuse</p> <p>Child protection assessments</p>	<p>M1) If women are able to form a trusting relationship with their healthcare provider, and are given the time, reassurance and knowledge that the service is able to provide support for their wider needs in a confidential manner</p> <p>M2) If midwives are knowledgeable about mental health issues, discuss mental wellbeing with women throughout pregnancy and the postnatal period and have clear processes in place to refer to appropriate mental health support based on women's individual needs and circumstances</p> <p>M3) If midwives offer emotional support to women in the form of personalised care, listening to concerns, and familiarising women with the aims of the model of care, particularly those who are isolated, unsupported, or unfamiliar of the system</p> <p>M4) If women are able to meet and get to know a small team of midwives throughout pregnancy and are reassured they will be supported in labour by a member of the team. Where this is not possible the option of a doula service should be explored with the woman.</p> <p>M5) If midwives have the time, resources and skills to coordinate and facilitate practical support, including the provision of information about maternity benefits, statutory procedures, assistance with contacting housing, social care or the home office, and practical skills to support feeding and care of the newborn.</p> <p>M6) If midwives aim to establish effective support networks for women and families during pregnancy through referral, signposting and encouragement to access community and multidisciplinary support services, this will be more feasible if models of care are placed within the local community where midwives are knowledgeable of local support services and referral pathways.</p>	<p>O1) then women will feel safer and more comfortable to disclose sensitive information and social risk factors. This in turn enables the healthcare provider to address women's wider social and emotional needs through referral to appropriate support services.</p> <p>O2) then women will be able to access appropriate support services early in pregnancy and prevent mental health deteriorating. If women re referred to inappropriate services, then they may not meet criteria for support, this can impact on their sense of candidacy, self-worth and openness to discuss their mental health.</p> <p>O2) then women will feel more valued and better supported holistically, rather than perceive maternity care as a medicalised services concerned only with physical health. This can also increase women's self-worth and likelihood of accepting support service referrals.</p> <p>O4) then they will feel less anxious, more supported, and better able to visualise and prepare for labour and birth. Having a midwife who is familiar with the women's history can also improve safety, clinical outcomes, and women experience of labour and birth.</p> <p>O5) then women will be better informed and equipped to overcome challenges. They will internalise this as evidence of care and support. Women may also see more value in disclosing social risk factors, and further financial hardship and distress could be avoided</p> <p>O6) then women will be better supported once discharged from maternity care and enabled to parent and seek help confidently. They will also be able to develop a support network for their child's early years, their mental wellbeing and avoid further social isolation.</p>

Figure 34: Refined CMO Configuration- Social, emotional and practical support

The realist synthesis (Chapter 4) found that many women with low socioeconomic status and social risk factors have a level of mistrust in professionals and services due to previous poor experiences, assumptions, or cultural beliefs. The next section explores the concept of ‘surveillance’, and if this mistrust or suspicion is alleviated by the specialist models of care.

1.37 Surveillance

Women receiving the specialist model of care often described substandard experiences of care, leading to detrimental outcomes. These experiences often involved perceived stigma and discrimination, impersonal and paternalistic care, assumptions being made based on their age, race, ethnicity, social status or other characteristics, and a lack of respect for women’s knowledge of their own bodies, strengths and other assets. Due to the overlap between these outcomes, the two CMO configurations titled ‘Surveillance’ and ‘Overcoming assumptions’ have been tested together to enable the refinement of a merged CMO configuration. Therefore, this section of the findings chapter often leads to an investigation of ‘what *does not* work, in some circumstances, and why’, rather than what *does* work. This is a particularly important contribution to the thesis as it highlights causal mechanisms for the inequalities often seen in maternal and infant health outcomes.

The CMO configurations detailed in Figure 35 and Figure 36 provide an overview of the context of women who are likely to perceive maternity care as a system of surveillance and experience substandard care due to assumptions, and those mechanisms that are thought to improve women’s experiences and outcomes.

Context	Mechanisms	Outcomes
Women who fear judgement of healthcare professionals or perceive maternity services as a system of surveillance rather than support, for example: those with immigration issues who are worried that they can be tracked by authorities and their babies removed if they registered with services, trafficked women, young mothers, those with disabilities, women experiencing abuse, drug and alcohol abuse, known to social care/undergoing parenting assessments.	<ol style="list-style-type: none"> 1) HCP’s knowledge about reporting mechanisms for women with immigration issues, including processes of payment as a non-UK resident, and ability to signpost women to confidential advice. 2) HCP’s ability to explain the reasoning behind reporting safeguarding concerns, the process of assessment, and discussion of what ‘meaningful support’ means to the woman. 3) Women’s involvement in the process of reporting safeguarding concerns in an open manner that encourages them to identify their needs. 4) Processes are in place that protect the woman from being put at risk of harm, for example women whose abusers or traffickers may control or observe access to services are given the opportunity to self-disclose in safe environment and disclosures are followed up safely and sensitively. 	<p>Increased access and engagement, self-disclosure, trust, safety, development of meaningful support networks, improved long term outcomes for mother and child.</p> <p>Decreased intergenerational vulnerability, discrimination, disconnectedness, fear and anxiety.</p>

Figure 35 CMO Configuration: Surveillance

Context	Mechanisms	Outcomes
Women who experience disadvantage, discrimination, stigma and stereotyping based on their race, class, ability, age and other sources of oppression.	<ol style="list-style-type: none"> 1) HCP's recognition of strengths and assets held by women and communities and respect for women's expertise of their own body, needs and baby. 2) Recognition that women with social risk factors are more likely to experience paternalistic care, as passive recipients. 3) <u>Women are encouraged</u> to raise concerns in an easy and confidential manner and escalate those concerns if they are not satisfied with the response. 4) HCP's work within a community where they are immersed in local cultures and acknowledge the importance of culture and the influence of family members on women's experience of pregnancy 	Women will not feel their cultural needs are being disregarded in favour of the western medical model and inequities in access, engagement, the uptake of screening, and antenatal education will be reduced. Increased perception of being cared for on a personal level and involved in decision making. Avoidance of disempowerment, feelings of being pressurised, ignored and excluded, long lasting psychological trauma, and increased control, bonding between a mother and her baby, improved self-confidence, and potential adverse outcomes could be avoided.

Figure 36 CMO Configuration: Overcoming Assumptions

The first programme theories tested whether or not women accessing the specialist model perceive the service as a form of surveillance rather than support, or if the resources offered by the specialist model counteract the perception of surveillance.

Perception of surveillance and judgement

Initial programme theory: If women feel they are under surveillance, or that asking questions and disclosing information will cause their healthcare provider to judge them, then they will perceive their care to be stressful and disempowering, rather than a supportive, informative preparation to parenthood and will feel that it is safer not to ask for help. The place of care is also explored.

Initial programme theory: If women perceive their support network to be invested in their ability to parent successfully, and receive practical, tailored advice and positive affirmations, then they will feel less scrutinised and feel better able to seek support and advice when needed. This in turn will demonstrate how they are able to seek appropriate help and parenting advice.

Initial programme theory: If midwives are placed in the community setting, then they will be better able to place the individual needs of women before institutional norms because they feel a sense of obligation and responsibility towards the woman rather than the system.

Additional related programme theory identified in focus groups with healthcare

professionals: If midwives advocate social care to women through explaining their role and how they can provide practical support, then women's perception of surveillance may lessen leading to engagement, and child protection outcomes and maternal infant-bonding improve.

Rival theory: If midwives are seen to be communicating with social workers, then women will become suspicious of their intentions and view maternity services as a form of surveillance rather than a supportive service.

Testing using qualitative data: Overall women in both models did not describe a feeling of surveillance, or mistrust, when describing interactions with the specialist model of care.

I don't feel like it's intrusive, I don't feel like [HBM midwife]'s overpowering and, you know, always on my case and double-checking that I'm OK, but she's always said that if I need her I can call her and let her know. So, I'm happy with that.' (HBM2)

I don't feel judged. Um ... I think ... subconsciously you can.- Just because you don't know the person very well. Yeab. And, and I don't feel that way with [HBM midwife].' (HBM9)

However, this was not the case for some women, particularly those who go on to discuss perceived discrimination about age, race, class and parity. Although women had mixed experiences of other support services, those with social care involvement discussed a lack of trust and usefulness with social care:

[discussing a referral to social care] I'd feel that ...I'm not doing something right, or there's some sort of concern about me. That I need to be monitored and, like, maybe I'm a threat to my baby...I only want the best for my baby and to have somebody overseeing that would make me feel uncomfortable. Yeab I think confidentiality's really important. But I think that the midwife should go on her own discretion. So, if she feels like there's a real threat or danger obviously she has to go beyond the confidentiality. But I think it's always good that you can build up trust with the person that you're dealing with and open up and know that it won't go any further. (HBM2)

When this woman, who had extensive social care involvement, was asked if she found their service useful or supportive she responded with:

No. Not really. Not really. No, they don't understand you'. (CBM4)

Other women gave similar responses to the same question:

I just don't like them. I find them useless.'

Interviewer: Do you trust them?'

Participant: No.'

Interviewer : do you feel like they assess people fairly?'

Participant: 'No.' I do [have examples] but I don't want to go into it.' (HBM7)

I'd be very hesitant with [social care support]. Um, my mum at the moment's got a social worker who I, deal with on a regular basis and to be fair he's not much help and he's just no support whatsoever...if anything I try and avoid him if I see him because every time I see him it's just always bad... they tried to pull the wool over my eyes and it's just how he is, arrogant and he's just really not a nice person....He's there for the system and the funding, he's not there for me and my mum.' (HBM9)

This woman revealed a fear of disclosing her deteriorating mental health as it might make professionals question her ability to parent:

I wish I had the strength to say to someone, 'Do you know what? I need somebody to talk to,' ...I don't want it to be a thing of I go and get help and because I admit to someone that I am depressed and that they say to me, 'Well, are you fit to be a mother?' Because my biggest fear in life is losing my kids.' (HBM4)

The quote below demonstrates how the community-based specialist midwife tried to overcome this fear by acknowledging it and providing reassurance around the process and confidentiality:

'there was a couple of things where I was like, 'I have to give you background on this,' and I never felt like I was like, wasting anyone's time...I feel confident about it [disclosing sensitive information] because, um, when I first...talked about how I was starting to feel a certain way...and then ultimately she referred me...I was like, don't take my baby off me, kind of thing. she spent that time with me, you know, explaining why, how the process works, confidentiality.' (CBM9)

This fear of social care was revealed more often by women in the hospital-based model of care, so even though the perception of surveillance wasn't directly related to the midwives in the specialist model, there was a belief that disclosure to them would lead onto social care

involvement and their children being removed. This fear was often exaggerated by stories women have heard from friends and family:

Participants partner- *that's what everybody telling her -that the social worker will take your kids and all those drama stories. But I know that they don't do anything.*

Participant- *Er, I don't know, like they will speak to [son] and I don't know what, what will they do.*

Participants partner - *She was thinking about what the other people telling her. 'Don't let them in. Er, if you do any mistake with [son], if you are raising up your son,' like if I shout at him if he did something wrong, he's my son, I need to shout at him. But other people will say, 'If he said to the social worker they will take him.'*

Interviewer - *after you met your social worker did you change your mind.*

PART - *Yeah of course, yeah, she was so nice!*

Husband- *We're already telling her everything. Because she's helping her. Someone helping, helping you, you want to tell them what happening.(HBM6)*

Similarly to the women above, this woman was concerned about her social care referral but later felt that she did receive helpful support though social care:

I was worried about it. I mean to be honest I never really wanted social workers involved in her care but obviously I understand why ... it's come to that...but I was very scared. But no they've worked with me, because they want to keep [baby] pretty much in my care...they've been working with me, we had a conference and my partner, he tried to ... you know, make statements about my mental health and why I didn't want her on formula and [social worker] went, 'No. The reason she didn't want her on formula is because she wanted to give her breast milk.' You know and, so they were very much on my side, they were very sympathetic towards me.' (HBM1)

This woman describes her partners serious mental health diagnosis and talks about knowing people that have had bad experiences of social care:

'To be honest with you, with the way he is [referring to partners mental health], I wouldn't have said anything anyway, because I would have been too worried about having social services involved. My kids come first. And I just, I don't want social involved. Because I know people who have had bad experiences.' (HBM4)

The honest insights given by women here confirm both the initial programme theory and the rival theory. There was some discussion of midwives providing advocacy for mental health services, but not social care. Women's distrust of social care and their suspicion of links between the specialist models and social care highlights a barrier to women's ability to develop a genuinely trusting relationship, open disclosure and help seeking. When testing the programme theory

related to place-based care, the women's insights appeared to confirm the theory, with women from the hospital-based model more likely to equate care with surveillance over support, leading to a second refined theory that contributes to the refined CMO configuration. .

Refined theory: If midwives providing care to women with social risk factors acknowledge that women often feel they are under surveillance, or that disclosing information will lead to a referral to social care without their knowledge or consent, then they can ensure they communicate with women openly and co-plan the support required to help them. This may alleviate feelings of suspicion and mistrust and increase women's confidence to disclose social risk factors and accept referrals to support services earlier in pregnancy, that can improve child protection outcomes.

Refined theory: If midwives are placed in the community setting, then they will be better able to place the individual needs of women before institutional norms because they feel a sense of obligation and responsibility towards the woman rather than the system. This may lead to increased confidence and trust in the midwife providing care, that in turn can overcome feelings of surveillance.

The next section will move on to explore women's perceived stigma and experiences of discrimination and impersonal care, focusing on whether or not the specialist model of care might protect women from these experiences.

Stigma, discrimination and impersonal care

Initial programme theory If women with low socioeconomic status experience discriminatory, or impersonal care, then their often already fragile self-confidence can be further undermined, making them feel they are not good enough to parent.

Rival theory: Rather than undermining self-confidence, the experience of discrimination or perceived stigma may make women more determined to avoid services and professionals, resulting in further isolation and exclusion from the benefits of engaging with maternity care and support services.

Testing using qualitative data: Women's experiences of stigma and discrimination was most apparent in the hospital-based models of care. The reasons for this will be explored as the data is interrogated throughout this section. When describing a previous pregnancy under the standard model of care this woman describes feeling as though she did not have a voice, believing this was

due to her young age. Although she feels more able to express her opinion during this pregnancy under the specialist model, she attributes that to being older, rather than the model of care.

'They [standard care midwives in previous pregnancy] were nice ladies, don't get me wrong, and they weren't nasty to me or anything, but I just didn't feel like I had a voice and I was just young and didn't know what was going on, so I was just going with the motions. Whereas now I feel like I've got more experience I can ask questions and like, if something's not quite right I can express it.... they might have judged me because they might have thought oh she's just still just a teenager...there's no point in asking her to elaborate on certain things, or are you sure you want this, are you sure you want that? It just kind of happened. (HBM2)

She describes how feeling more confident during this pregnancy, and being older, has impacted on concerns about her baby's health being taken seriously:

'with my fears about this baby being OK...So just things like that that I probably wouldn't have been privy to before. It's really nice to know that my concerns are being taken seriously, and I feel that that's what's happening (HBM2).

Another woman describes a similar experience when reflecting on her previous pregnancy under standard care, she feels that she was given little support to breastfeed because of her age and this contributed to her decision not to return to the hospital to give birth in this pregnancy:

'one of my main reasons for not wanting to come back here [to hospital she previously gave birth in] was I really wanted to breastfeed with [older son], and I struggled... but there was no one really willing to actually sit with me and help me...they looked at me like a young mum anyway, and, you know, she don't know what she's doing, she's never going to know what she's doing...If I was older I probably wouldn't have been looked down upon and I probably would have got the help that I needed, because there was other mums that were, you know, married, in their late 20s early 30s, and they were getting the help breastfeeding...Whereas me, I was just sort of shoved in a corner...I think it's people's perceptions and I think it's a lack of training, a lack of understanding and, you know, a lack of acceptance, as well. It's definitely a lack of acceptance...'(HBM4)

She felt that this lack of support had an impact on her ability to feed her son, her own health, and affected her long-term emotional wellbeing and ability to bond with her son. Interestingly, she goes on to reveal she is preparing herself for a lack of support again, despite receiving the specialist mode of care:

I mean I was expressing and then because I was producing so much milk and because he wasn't feeding and I was unable to feed him, it became quite painful to express as well, I ended up with mastitis and I had to have tablets to dry up my milk, which it did, it really upset me that I couldn't breastfeed him. Because I felt like we missed out on a bonding experience that we should have had, and still to this day I feel like it does, like not to say that we haven't bonded because that's my boy...but, I feel like there is something, missing there. Yeah, I do I still think about it, and much more so now that I am pregnant and I'm thinking about it again, and I'm like I do really want to breastfeed this time... I'm sort of half preparing myself for not having that support..'(HBM4)

She feels that she has been more respected during this pregnancy under the specialist model of care but again, attributes this to the fact that she is now older and a multip rather than the model of care.

I feel a lot more respected this time around than I did the last time [under standard care]. But again I think that's because I'm slightly older this time...and I think when they realised that, yes you're young and yes you're having a baby, but you've already got a baby, there's sort of more respect is then given to the fact of, all right, she's done this before, she knows what she's doing. (HBM4)

The interview guide asked women why they thought health inequalities happened. When one woman was asked what her views were on why black women are more likely to die in pregnancy and childbirth, she discussed stigma and described possible mechanisms for poor birth outcomes:

It's being stigmatised and, you know, or your body is not working for you and stuff like that. So yeah, I can see why they would die, be more likely to die...I think that as much as there's less of it now I think that in some cases there is still a bit of discrimination and a bit of racism surrounding, yeah.(HBM7)

The interviewer went on to ask if she felt she had ever been treated differently because of race, age, or any other personal attribute:

'more by social care than healthcare professionals... Race. Social status. My other kids. Yeah, pick one... [with] the amount of kids...when I was in labour they kept on telling us that my husband should have the snip...that's not the right time to be saying that...even with the [HBM midwife] it's like, 'No more kids. I think you've had enough now.' And at hospital appointments the doctor was there making jokes of, 'Oh should I place a bet whether I'll see you next year?'...That's not nice. (HBM7)

Again, women did not describe any perceived stigma or discrimination from the midwives in the specialist model of care, but the model did not appear to protect them from substandard, impersonal, and at times abusive, care when their named midwife was not present:

'the generic midwives that are there, and the catering staff...just came across like they had a, you know, chip on their shoulder or something. But the people that were kind of directly aimed with the care for myself, I have no complaints...one particular day, just because the catering staff were so rude...she made an assumption that because I'm wearing a headscarf I must eat Halal food, like it's a must. Um, no what if I just don't want to have the Halal stuff and just want to have something else? and she was just ordering food on my behalf. And she was doing this to everyone. And, um, yeah just her mannerisms and demeanour, you know, pulling back the curtain, 'What do you want?' ...one of the days I just said, 'Do you know what, I don't want anything, thanks. You know, I'll spare you your troubles, I don't want anything.' (HBM8)

This woman's experience took place on the antenatal ward during an induction of labour process. Midwives from the specialist team were not present as she was not thought to be in 'established' labour, therefore they had not been called to provide intrapartum care:

'they were just being very forceful and even ... before I gave birth I went to the toilet and... I was in so much pain, but what had happened was this midwife[hospital based standard care midwife] what she did she just picked me up and dragged me out of the toilet...I still had my trousers down and everything...it was the midwife who didn't give me the paracetamol. Um, that's why my partner will say it was a horrible [experience]...

She goes on to describe how this midwife acted when she was in labour and requesting analgesia:

'she was really horrible...just wasn't very like attentive, I was just like in so much pain and she was just sitting there, literally doing nothing, and even my partner had gone and asked like three times like, 'Look she's in pain like, is there anything you can give her or anything like that?' and they were like, 'Yeah fine, we'll get it for you.' And I didn't get it until about an hour later' (HBM1)

Women also described how they felt that questioning medical advice could be detrimental to the care they received. This women felt that questioning advice might be detrimental to the care she received because of her mental health diagnosis:

'when the doctors come to speak to you as a patient you understand that they're quite busy, and you don't want to hold them back by saying, 'Oh, no sorry I don't actually understand this do you mind just waiting a bit longer and, and going over it again?' So you feel like, you know, you'd be perceived as bothersome if you did do that...

and also I've got mental health diagnoses, so I would feel like if I kind of said, 'No I don't want the induction. I fully understand what the risks are, and I don't want it,' I may be kind of like questioned as, oh an unfit mother or something like that. So, yeah they're the two main reasons why I probably wouldn't kind of, um, intervene with what's been planned.' (HBM8)

The refined programme theory refutes the initial programme theory- women did not internalise substandard treatment as an undermining of ability to parent but described retreating from the service and avoiding interaction with healthcare professionals, thus confirming the rival theory.

Refined theory: If women with low socioeconomic status, social risk factors, or other often-stigmatized characteristics, experience discriminatory or impersonal care from healthcare professionals, then they will avoid continued interaction with the service, resulting in further isolation and exclusion from the benefits of engaging with maternity care and support services.

The analysis now moves on to test the programme theories under the umbrella of 'Overcoming assumptions'. A significant theme exposed was women's experiences of paternalistic care, particularly, but not confined to, experiences of labour and birth. The section below tests whether or not the specialist model of care promotes women's active participation in their maternity care.

Active participation vs paternalistic care

Initial programme theory If healthcare professionals recognise that socially deprived women are more likely to experience paternalistic maternity care, as passive recipients, then they can personalise care and strive to involve women in planning and decision making to ensure women are active, respected participants. This can in turn improve the self-confidence these women often lack in situations where there is a power imbalance.

Initial programme theory If antenatal care provides reassurance through clinical checks, effective preparation for labour, an opportunity for socialising with other mothers, and women are encouraged and given the time and resources required to ask questions about their pregnancy and care, then women will see the service as beneficial, feel like active participants and engage with their healthcare providers.

Rival theory: Women who are not educated or have learning disabilities are overwhelmed by information and choice and prefer to be advised by healthcare professionals so that they are not responsible for making choices that they do not fully comprehend.

Testing using qualitative data: Reflecting the insights from the section above, women from both models of care described paternalistic care in the decision-making process, and explanation of induction of labour, this was often seen in the language women used to describe their care:

'[Standard care hospital based midwife] was sort of like, 'Oh well we, you know, we're going to try to push you to 39 weeks, '.. I just felt like, what if something happens to my baby before that? You know, should we not try and take him out?...I didn't feel reassured that that was all going to be OK' (CBM1)

'Because of the diabetes. Yeah, they said, 'We don't let you to stay pregnant after 38 weeks.' (CBM4)

I just felt like [doctor] was just pushing for my delivery a lot... so when she finally had said that she does want to deliver it, me and my partner were just a bit sceptical, we were just like, is this just because she's tired of seeing us?... because it wasn't, 'OK, this has changed, that's stopped happening'... it was, 'She's grown. And she has grown a bit more, but I think it's time to deliver,' so it was just like, well if she's grown...like what is the main reason? (CBM8)

Um, that's my other anxiety though is that, they're going to say that she's small and try and take her out early and she's going to end up in like NICU, but then her dad was only four pounds at term...I worry that they're going to try and take her out and there be no reason to have taken her out because she only would have been four pound at birth anyway... I don't know where I stand, to be honest with you. (HBM4)

The woman quoted above did talk to her named midwife about this concern at a routine antenatal appointment who provided reassurance but she reported paternalistic language and remained feeling unsure as to her rights and ability to question medical advice:

I voiced this concern to [HBM midwife] today and she said to me at the end of the day they try and keep baby in as long as they can...But it's just I don't know really where I stand on the whole refusing to have her out early...with my anxiety and depression I'm not someone who challenges what someone that I feel like is someone who has authority. Yeah, if there's no medical reason i.e. my placenta has stopped working, my umbilical cord has stopped working or baby's just completely damn straight stopped growing, that to me is a reason for her to come out. But unless you can physically tell me that her being in there is going to cause her more harm, I want her to stay. And I don't know whether I have that ... well a. the confidence to turn round and say it but I don't know

whether I have... the authority to say it sort of thing, like to go against medical professionals' advice...say they were saying to me, 'Right [baby] has to come today.' I would say, 'Why? Please explain that to me, explain it to me in detail.' But if that still didn't make sense to me... Or didn't feel right, I don't know whether I would have it within myself to go against that medical professional's advice. (HBM4)

Another women described doctors asserting authority over her when discussing a date for her induction of labour:

the obstetric cholestasis had kicked in... [obstetrician] very much spoke to me as if, you know, she was quoting from Google Scholar or something, um, 'This is what's going to happen. 37 weeks, we're going to pull out the baby,' and that's it...I requested that could we delay the induction till 37 weeks and 5 days, and she was like, 'No. No. It's definitely against medical advice.' I go home...very upset about this...and then she actually rings me, in the evening to say that she's spoken to someone senior, and that someone senior has said....'all is well so we can push it until then.' She just wanted to assert her authority!' (HBM8)

When the same woman reflected on a conversation with the specialist model midwife where she discussed her decision for not wanting an epidural before her induction of labour:

'...any time I have mentioned [not wanting an epidural], it's more, 'No...it will be better for you just take it.'- But no, I don't want it. 'No but, you know, it'll relax your mind. If it numbs you from the bottom your mind will be more clearer.' So I feel, um, like I will probably have to put up a fight...and say, 'No, I don't want these things.'... I wouldn't want to be seen as someone that's making complaints. Or before the, you know, main day has even arrived and I don't want them to kind of like think a certain way about me. I'd feel like I have to go along with it...I guess it's just easier to say, 'Yes yes,' and walk out.' (HBM8)

One woman described paternalistic care in a previous pregnancy under standard care, she was concerned that she was not offered Aspirin in her first pregnancy for prevention of intrauterine growth restriction. She went on to have a premature baby who is severely disabled. She felt that she was more informed in this pregnancy under the specialist model and able to be an active participant in her care:

[In previous pregnancy under standard care] When I went to the scan they say, 'Oh the baby's not growing, you have to do this, you have to do this,' but they didn't give me any medication...one day when I went to my appointment at the hospital they say...I have to stay there they take the baby out. They say because the baby is not growing they decide to take him out....I didn't ask or anything because they take my baby out, [until then] everything was all going fine. They can take my blood pressure, do all the tests, but they didn't prescribe me

aspirin... this pregnancy I know that the aspirin help the baby grow. [in this pregnancy under specialist model] they were giving me the information... Yes, I was worried, but they were telling me what is going on, about me, about the baby, when they're monitoring the baby.'(CBM7)

Another common experience of paternalistic care and lack of choice was around being discharged from hospital after giving birth:

Husband- 'they don't want her to go out [be discharged from hospital after birth] . And I was like so angry.'
Participant- 'Yeah, and I wanted, I want to really to go out. I didn't feel that I should stay... everything was OK'(HBM6)

'So by the time that they were asking me to leave, there was, breakfast hadn't even been served...baby wasn't feeding very well....They hadn't checked if my bleeding had subsided or anything. Nothing like that.' (HBM7)

'they weren't really sympathetic because obviously I wasn't able to go to the toilet... every time I kind of like went to the toilet it, it just burned, it wouldn't come out and I was literally like, 'I really can't go to the toilet.'...but they were just like forcing me to like drink...but they weren't, they didn't explain it to me, so I didn't actually understand why they needed it.' (HBM1)

Issues around pain relief was discussed by many women in the hospital based model. Some women described being given medication without knowing what it was, and others being denied pain relief they asked for. These experiences all happened when the women's named midwife, or a midwife from the specialist team, was not in attendance:

'Yeah it was a midwife on the ward. and then they ended up giving me an injection in my leg. And then when I had the injection in my leg I felt no pain, I was happy.'

(Interviewer- And do you know what it was that was, the injection in your leg?)

PART - I think it was just paracetamol. I think they just injected, um, some sort of pain relief.

Interviewer- And were you asked about that, or told about it?

PART - No. They just went, so my partner went in and asked for paracetamol and they came in with an injection, 'Right we're going to inject this into your knee and, leg,' and I was like, 'What?' they was like, 'This will help stop the pain,' and I went, 'Give it to me, I don't care.'(HBM1)

They [hospital-based standard care midwives] don't listen to me during labour because I was there asking for the injection. I just wanted, um ... diamorphine is it? And I asked them quite early on, like as soon as I started feeling the pain getting excessive I said, 'Did you give me that?' and they said, 'No.' It's like, 'Oh baby will get

tired when it comes out.' But I was, I was in agony, so I really need, I really wanted something. I think that they went with the like ideology that they're the professional, they know best, and I'm not listening. (HBM7)

When the same woman was asked if she was always asked for consent when healthcare professionals carried out examinations, inserted catheters or gave injections, she gave this response:

'No they just told me that they had to.' (HBM7)

Although women from both models described paternalistic care from healthcare professionals involved in their pregnancy, only those under the hospital based model of care experienced this from the specialist model midwives. This could be due to the women in the community based model being more likely to be looked after in labour by a midwife they have met before, or, as described earlier, the needs of the women being placed before system norms when midwives work in the community. The rival theory was disputed as women often discussed their disappointment at the level of paternalistic care they received. The two initial programme theories are confirmed but refined to reflect the mechanism and linked outcomes highlighted by the qualitative data:

Refined theory: If healthcare professionals recognise that women with social risk factors are more likely to experience paternalistic care, as passive patients, then they can strive to co-plan personalised care to meet their individual needs and ensure women are active, respected participants. This can empower women to feel in control of what happens to them, seek help when they are concerned, and escalate those concerns if they remain unhappy or unclear about decisions being made about their care.

This sections lead on to the testing of a programme theory that reflects the mechanisms identified in the refined theory above, and relates to how healthcare professionals respect women's expertise of their own bodies, needs and choices:

Respecting women's expertise of their own bodies

Initial programme theory If maternity care encompasses the foundations of woman-centred care: working with women as partners, respecting their expertise of their own body, needs and baby, and making decisions based upon individuals rather than stereotypes or entrenched professional norms, then women will be more situated in a context of control rather than

disempowerment. For some women this may also avoid disempowerment, feelings of being pressurised, ignored and excluded, long lasting psychological trauma, and increase bonding between a mother and her baby.

No rival theory was put forward to challenge this theory.

Testing using quantitative data: The qualitative data below describes women's experiences of pain relief in labour and skin-to-skin contact with their baby immediately after birth. The data presented in Chapter 7 found a significant increase in the use of water for pain relief in labour and skin-to-skin contact when women received the specialist model of care, although the use of water for pain relief became insignificant in the subgroup analysis of women with increased social risk. However, for skin to skin contact there remained a significant relationship. This supports the theory that encompassing woman-centred care leads to improved mother-infant bonding.

Testing using qualitative data: The small number of women who had experienced the type of 'woman-centred' care described in the programme theory expressed the value of feeling listened to and taken seriously. This woman gives an example of requesting minimal vaginal examinations to avoid previous trauma being triggered during labour:

I had a really bad experience with my previous pregnancy, so I had asked that they limited the ... vaginal examinations to the bare minimum... they were like, 'Yeah absolutely fine, we might need, like we'll probably need to do that,' and I was like, 'Yes, that's fair, I'm OK with it. But if we can keep it to the minimum number necessary,' and they never tried to sort of like push more... They wrote it down and they stuck with it. And they were really great about it, they were always asking me how I felt about my previous pregnancy... if I needed support'. (CBM6)

Unfortunately, this level of respectful care did not seem to be the 'norm' when women received care from healthcare professionals outside of the specialist model of care. This woman, with severe mental health issues who had planned for an elective caesarean section, described deception from a member of the medical team and not feeling listened to when she went into spontaneous labour until a known midwife from the specialist team came to look after her in the hospital setting:

I was exhausted already and so I said 'Yeah, I want to put my plan in motion, I want an elective C section.'...the first obstetrician, I don't know how senior she was but she was really really rude. She got to see me like at least one hour after I asked to have the C section and she said, 'let me see, let me give you another

assessment.' And she said, 'Oh, no you're very dilated, like you're dilated now six centimetres,' I was like 'How come like in one hour I was two and now I'm six? It's impossible.' So she was kind of [saying that] to put my plan away. She said, 'I'm going to see the other obstetrician if they allow you to have a C section', like the senior midwife in the hospital already allowed me to have a C section, it's in my birth plan...at that point I started like kind of panicking because then she said, 'I'm not going to section you,'... [CBM midwife] arrived and she kind of sorted my plan out. So she talked me through all the processes to see if I still wanted, which I thought it was great. But she said like, 'I'm here to support your plan but I just wanted to make sure, because if you wanted to do a normal labour we could do this, this,' so she kind of was very informative and gave me the option again ...It was great of her, because she was very sensitive...not saying that she wouldn't, it wasn't in the plan, but just giving me an alternative. (CBM10)

Disrespectful care and not being listened to in labour was a common theme amongst women in the hospital based model of care. The woman quoted below describes her induction of labour on the antenatal ward:

I had the injection..I tried gas and air, they didn't teach me how to do the gas and air...they didn't teach me anything... [standard care midwife on antenatal ward] was like, 'No you can't go and have [pain relief], you can't go do that yet, you have to have the inducement in for 24 hours,' and I was like, 'Listen. I am in so much pain can you just come and check me,'...and she went, 'All right, well you're four to five centimetres ... but you're meant to have it in for 24 hours.' So then she left it inside of me ... and put pressure on my belly and I was like, 'Ow, like you can't,' so I was screaming in pain. (HBM1)

Shortly after this woman was given an injection for pain relief she was taken to the labour ward:

'I got down to the labour ward [HBM midwife] came ...all of a sudden I felt the top of her head. And they were all trying to find her heartbeat up here, I was like, 'You guys aren't going to find her heartbeat, her head's coming out.'

[Participant's mum] - it was funny because [HBM midwife] says, 'OK, right I'm going to get my gloves on and then we'll investigate you.' But 'She's already on the bed! She's here!'...But [HBM midwife]'s like, 'Oh well your waters have gone for certain,' and she lifts up the sheet and the baby's there on the thing, and was like, 'Oh!'

Participant - ...it was half an hour after she had checked me. Not even that, like less than half an hour...so no one was there to catch her, she just delivered herself. And I was just sitting there, like no one was paying attention to me at this point. (HBM1)

Another two women had a similar experience:

'they said, 'Sit there for six hours.' Three hours later I'm telling them, 'Please, I really want my epidural, I need to push,' and no one wanted to believe me that I needed to push...eventually got [to labour ward] and, no epidural... with that her head came and the midwife walked off across the other side of the room expecting me to be getting an epidural so I had then to turn round to shout at her to come back...I looked at the midwife and went, 'I told you so.' (HBM4)

The woman quoted below did not have a midwife from the specialist model with her in labour because the hospital based standard care midwives did not call them to attend the labour:

I asked [hospital based standard care midwives] for the epidural, the anaesthetist took a while to come... during the talk with the anaesthetist I gave birth. So ... I wasn't listened to... and they were just mean...I think that they just got frustrated with me. Because I was in pain, so I didn't let them check properly... and they got frustrated with me over the placenta because it was taking a bit longer to come out, they said that I wasn't pushing or, that I needed to concentrate. I don't know. They were just mean.

Interviewer - And what do you think would have been different if [HBM midwife] was there?

Participant- I don't think that she would have gotten as frustrated with me. Because she knows that I don't like hands and things down there. I trust her to keep me safe and to listen to me and clearly the other two midwives didn't listen, because I would have gotten painkillers when I asked for them. (HBM7)

One woman from the community based model, who had a high risk pregnancy and many obstetric appointments to attend, described how she often felt that the system worked against her and did not respect her expertise of her own body, impacting on her physical and mental health. She described how she eventually felt able to tell the hospital based midwives what she wanted:

I know you see high blood pressure and bells are ringing, but I know myself, I know my body...like all of that is a contribution to the high blood pressure. Really frustrated... I had to start going there and telling them, 'No. I must sit here and wait for Dr [name]...and I'll do it [blood pressure check]in the room with them. You can't take my blood pressure straightaway. That's not going to help, it's not going to help me, it's not going to help you. Because you're going to say something wrong, it's going to irritate me, it's going to go even more higher' (CBM8)

When interviewed six weeks after birth she described the same levels of anxiety due to not being listened to on the postnatal ward:

They [postnatal ward staff] were the experts, like no one was listening...especially when it came to my blood pressure... they expected it to just go back to normal, just like that. And I was just like, that's just, that is

stupid. Like my body has been through trauma. I know what my body's doing. I know I need time, I know I need to not be in a hospital because you lot are the cause.... I think it was just me, I know my body, I was just under shock... I just needed time to settle, and being in hospital wasn't allowing that to happen. Yeah they wanted to keep me in but ... I knew, I discharged myself. (CBM8)

When this experienced was explored in more depth she gave insight to aspects of her of care that contributed to higher levels of stress and resulted in her not feeling able to talk to hospital staff apart from those she knew and trusted. She also expressed not being able to expose her true feelings because hospital staff were looking after her premature baby in the neonatal intensive care unit:

'The last two to three days of me being there when I was still an in-patient I just stopped talking. Like literally had nothing to say to anyone...If you're not Dr [name 1], Dr [name 2], Dr [name 3], or my own midwives, do not talk to me... Come in, take my bloods, do what you need to do, just don't talk to me. Just a huge, huge lack of communication and just, yeah, not listening. I understand at the end of the day if they see something and it's alarming to them it's alarming to them, you're not necessarily going to listen to the patient because ... the stats say what the stats say, but, there was just no compassion, there was no level of understanding... so I just thought, if I get angry it's not going to help my blood pressure. (CBM8)

When a midwife from the community base model came to visit the situation improved through listening, apologising and mediation, even though it was not her 'named' midwife:

'even though she didn't know me it was still just like, oh someone that knows me or like someone that's more on my side...because she is the branch of my actual midwives... I just broke down, I was like, 'No, I don't know what's going on,' like I was so frustrated, I felt like no one's listening. And she just totally got it. She understood exactly where I was coming from, with taking my blood pressure, white coat syndrome, just everything, she was just like, 'No I understand, I'm sorry you feel like that,'...she got the main midwife that was supposed to be looking after me. And then I even had a little meeting with her in another room...I was just like ... I've got enough going on without having to worry about you guys and your miscommunication.' (CBM8).

Another woman had been moved to temporary accommodation out of the hospitals catchment area late in pregnancy so needed to book for maternity care at another hospital, this meant she was no longer able to be cared for by her known midwife. Her experiences of standard care also centre around not being listened to:

I didn't plan home birth so this one come quickly. I called hospital and they said, 'Oh wait, Wait till the pain to be stronger'. I called my [community] midwife and I also called maternity unit....and I called them again and they said, 'Oh wait until, you know, like time, they're five minutes apart.' 'Or your water broke.' And then they come five minutes apart, and then I started, er, packing and then the baby was out.

Interviewer - And did you, when you called them the second time, did you want to go in then?

Participant - Yes I did.

Interviewer- OK. And did you tell them that you wanted to go in?

Participant - Yes.(HBM3)

After giving birth unplanned at home she was transferred into the local hospital via an ambulance despite having no medical risk factors to warrant this and wanting to stay at home. During her hospital stay she felt that care was overmedicalized and unnecessary and expressed wishing she had been given the option to stay at home:

So I'm feeling very, feeling better and I don't need to do anything and then lady come in ... you know, I know myself I'm OK and she said she wants to check my blood pressure. They were checking like the morning and the evening again. [Blood pressure had] never been high...It's just, they're just checking everyone. You know, so I said to her, 'I don't think I need it.' And she would say, 'OK that's fine.' And then probably an hour later, midwife come and then, 'Darling, let us check your blood.' 'Why you have to?' They say, 'No we have to check everyone's.' Just like they needed to tick box...they didn't [give a reason]...it's just part of hospital procedure I think... 'OK, I don't want to cause any trouble'...you cannot request your discharge afternoon... has to wait until next day!' (HBM3)

The woman quoted below describes her past experience of labour under the standard model of care. She talks about the impact this traumatic experience had on how she bonded with her son:

'But where I did have ... such bad postnatal depression with him (son) ... me and him just didn't bond like that to start with, and it took a long time to get that bond with him and ...

Interviewer - Do you think ... there was anything in particular that made the postnatal depression worse...

Participant - My labour, with how traumatic it was and... the staff...the midwife that actually delivered him, was so horrible... it made my labour awful...they didn't want to believe me ...they didn't listen to me, and they didn't want to listen...I had six doctors pinning my arm down. Yeah, and [name of birth partner] actually had to scream at them and she, I mean it was the first time I'd ever heard her swear, 'Get the [fuck implied] off of her!' You know? And they all sort of realised that they needed to back down ... I said, 'I don't want to do this anymore, put me out and give me a C section, I don't want to be awake for this.'...they worked me into an anxiety attack when I had him. And it just meant that I didn't bond with him straightaway either. Um, when he

was delivered he wasn't delivered onto me, the midwife delivered him and didn't even give his dad the option to cut the cord, she cut the cord and just took him off. He was breathing he was fine, but she just took him off and it was like we were young parents and we didn't know what we were doing and we might drop the baby or something. (HBM4)

Another woman describes a similar experience in this pregnancy under the specialist model of care:

I was very much geared up and planning towards having a natural birth. And I became very emotional when, um, [midwife 2] had to pull the crash bell because his pulse had dropped... theatres, never again. There was a gentleman who was on my right-hand side telling me, 'Stop screaming, stop screaming.'... he was part of the anaesthetist team...and I just lost my cool, I said to him, 'How dare you? As a man you will never know what a woman has to go through.'... 'Just please numb me out completely.' They said, 'No we can't do that.' ...I was telling them I had no relief from the epidural, 'Please, please understand,' so I'm screaming at them, they're not listening....I found the experience to be very traumatic. (HBM8)

She also described a lack of empathy and respect from other healthcare professionals:

When I was in the theatres and everyone was unseen and unknown, I mean even the paed's doctor was telling me, 'Oh you have to pick him up.' I said, 'Yes I will.' But I just thought, why are you forcing me to pick up my child? I can't lift my arms up, I mean as a mother, you know, I've been stopped from doing all of this and you're telling me to lift him up: I can't...I just felt like I'd failed him before he had even come into this planet Earth and the people around me weren't making my life any easier. (HBM8)

The woman quoted below decided to change hospitals for this current pregnancy after a midwife described her as being childish for asking for help and getting support from her husband:

Because in my first pregnancy [under standard care] when I had my baby they were very rude in the other[hospital]... that's why I changed the hospital actually. It was the first time... I didn't have mum ... I was by myself in this world, basically. I don't have no one to call to ask them for help so I have to ask them [hospital midwives]... I mean maybe she has a bad day... she said something about...Like I was like very ... childish, she says something about that... she was very rude. Very very rude. I just want to forget about them actually. (HBM10)

When women did feel able to discuss their concerns with the specialist model midwives, they described feeling listened to and taken seriously:

I know that anything happens at any time there's someone that I can count on and call...for example around 30 weeks she was measuring my baby bump and it was growing smaller than it used to be. And she said... 'If, we wait two weeks and then we do a scan.' But then I felt that this is not the right thing to do and I asked her to do a scan like during this week... everything was fine... if you're worried you can contact your midwife, but if I didn't have her I would be going to the labour ward, they wouldn't understand the progress we'd been going through together... it might have taken longer, might have kept me more worried. (HBM5)

The insights given in this section expose disrespectful care, with women repeatedly describing not being listened to, or believed. The specialist model of care, particularly the community based model, appeared to protect women to an extent, although when women were not in the presence of a known midwife they were still vulnerable to disrespectful care. This highlights the importance of continued supportive presence from a known midwife during intrapartum care for women with low socioeconomic status and social risk factors. However this is not a panacea for disrespectful care, and service should focus on improving women-centred care from all healthcare professionals, particularly for women with social risk factors who are more likely to receive care as passive patients and not feel listened to. This confirms the initial programme theory put forward that contributes to the refined CMO configuration.

With the insights from the previous section in mind, the next goes onto explore women's ability to seek help and escalate concerns.

Help-seeking and escalating concerns

Initial programme theory If women are encouraged by healthcare professionals to raise concerns in an easy and confidential manner and escalate those concerns if they are not satisfied with the response, then they will not only feel empowered and listened to, but potential adverse outcomes could be avoided.

Rival theory: If women with social risk factors, such as mental health issues or social care involvement, escalate their concerns when they feel they have not been adequately addressed, then their care may be impacted as healthcare professionals view them as 'trouble making' or complaining.

Testing using qualitative data: In contrast to women's experiences of disrespectful care and a disregard for their expertise of their own bodies, women in both models of care discussed largely positive experiences of seeking help:

This woman describes the flexible support offered when she called the specialist team, and how her initial ambivalence to seek help was not diminished, but certainly reduced through knowing the team:

The cramp escalated and that was when I called the team, [CBM midwife]...was like, 'I do think you should go in... nothing sounds like panic, but it's best for you to go in and get checked out.' She explained what they would do when we got there. But even before I called...I was a bit like, do I really need to call? You know, am I just going to hassle someone? I was like, no, it's fine...there is no question too stupid for them. So...the um-ing and ah-ing whether to call was like minutes, whereas if I was seeing a different person every time... despite the fact that I, I haven't had an appointment with every member here but I have met them at coffee. I was always encouraged to, you know, if there was any issues get in touch or any questions, I always really felt like the door was open.
(CBM9)

Women continued to describe the perception of being a burden when seeking help, but the community based model appeared to ease this concern and reduce the time taken to receive medical help. This was also tested in the section 'CMO- Antenatal education' under the programme theory 'perception of being a burden'.

I'm one of these people that is always really concerned that I'm just calling for nothing or I'm just going to call them and it's nothing. And it really helps to know that I know this person, I know she won't mind if I call for nothing. It's just very reassuring. At some point. Um, I was a bit worried so I emailed them, they called me back, they got me in sort of within the day to do some blood tests (CBM6)

I call them [CBM midwives]. I do, like sometimes I feel that I annoy them...But [that's] my perception, because when they get the call...they were all like receptive and calmed me down. And the times I was worried they, I was taken seriously... 'No I believe you, go to the hospital and get checked then you'll stop worrying.' ...another thing that was a good example...the midwife who attended the call had to cut the call to deliver a baby. And then the next day they followed up, they called me and made sure how I was as soon as they could...very, very, very looked after. (CBM10)

This anxiety was discussed by another woman in the hospital based model who described having her confidence knocked after not being able to contact her known midwife. She highlights the

difference between the two models of care in the sense that responsibility for women appears to be more shared throughout the community-based team:

'if I was getting anxious and worried, um, I felt like I didn't want to bother or inconvenience [HBM midwife] even though I had her mobile number and I think in the beginning I did try to utilise it but it, she wasn't either at work or someone else would pick up from the team and say, 'Oh she's not here.' And so that would knock my confidence, so I wouldn't kind of ring her. (HBM8)

This was not the case for all women, one discussed how contacting the specialist model is more 'fast-tracked'.

'they're (HBM midwives] there for you to call them, if you need them, like if you have a worry you can call them personally...I wasn't eating or drinking I couldn't keep anything down, I called [HBM midwife] and she was like, 'Right, go to, go to hospital and go to A&E and,' so I went...it is better because it's more fast-track, if that makes sense. Like if I have a worry at least I know someone who's been there from the beginning is, is just there, she knows like everything...(HBM1)

Women also discussed help-seeking outside of the specialist model and how useful they found it:

I used to look for the number of labour ward and things online and call them, but to be honest with you, it wasn't very beneficial... it keeps you worried, because when you call them, sometimes they give you 'things are good' over the phone. So it doesn't really ... help you.'(HBM5)

The advice women sought from the specialist model went far beyond pregnancy:

If, if it's kind of anything related to pregnancy I definitely will call her now if I have headache I can ... say, 'Oh I have a headache,' you know. Or, 'What kind of medicine should I take?' you know, 'Can I take this?' or if like cold I, I always contact her...and then we just text each other...You just text your midwife and then midwife text you back whether it's weekend or whichever days, evening or morning you just text. Anything else, um, yeah I would, I would talk to her, I would if I had any issues, like mental health issues or if I'm ups and down mood, ups and down, I would talk to her...the personal approach is much better, you know. And then they come to see you in your house, you feel more comfortable (HBM3)

'She was always at the end of the phone. If I ever needed anything I could phone her. If she wasn't working there was always a midwife from the team that was there. Um ... right at the end of my pregnancy took my son into school ...that they had had chicken pox going round the nursery... it was helpful to be able to actually pick up

the phone outside the school gate and say, 'Excuse me, do I leave him here or do I take him home with me?'. (HBM4)

I just want to tell you that having someone who cares for you, even if it's not a doctor, like [midwife]'s not a doctor but I know what she can offer when I need it, it's very stress-relieving, it makes you feel like very confiden... a month ago [daughter] was sick and I thought she had measles, and I was worried, I didn't contact the doctor, I didn't go to my GP I just contacted [midwife] directly. (HBM5)

I was quite ill, I had, I don't know if it was the flu or something but I had really bad cough and it was stressing me out ... I think it was just before the 12 weeks as well. So I was really panicking, and messaged [HBM midwife] and she just calmed me down completely...and she just reassured me and brought that stress level down ...It's more personal and, I just feel like if I ever, if I ever have a problem or I feel anxious I can just text her and, you know I'll get a text back and she'll just calm me down and...reassure me. (HBM9)

The support provided by the community-based team was offered even after discharge from maternity care:

'when the time she discharged me [CBM midwife said]... any time if I need them they're happy to contact. So I'm not worried now if there is some question... I can just walk down or call them. (CBM4)

Despite often receiving paternalistic care with health services, many women in the sample, including this young mother with learning difficulties described examples of escalating their concerns to other healthcare providers:

'I have questioned like things in the past to do with my health where I don't feel anything's right, but the doctors tell me it is right. I went to my GP once, I had a really bad cough, um, in my throat, this was before pregnancy, and pretty much, um, they told me I was fine, it was a cold it would go away...I went back and I went, 'This genuinely doesn't seem right.'... It didn't go away, um, and I ended up going to hospital. Um, I, when I fractured my wrist they did an X-ray and they told me it was a soft tissue injury, but I was in so much pain that I went back to my GP and I said, 'Something's really not right,'..She went, 'it's a fracture, you've actually fractured your hand.'...she didn't sort of like palm me off and be like, 'Oh it's fine,' she, she went, and she sent me back for another X-ray.' (HBM1)

This is an important insight and refutes the rival theory put forward suggesting women with social risk factors do not escalate concerns. However, it should be noted that women in this study did not describe escalating concerns in pregnancy when they were not happy with initial

advice received and described a fear of judgement about their ability to parent. This highlights the importance of future research addressing the question ‘are pregnant women with social risk factors able to escalate concerns if they are not satisfied with an initial response, and how does this impact on their safety?’. Women’s experiences of seeking help confirm the initial programme theory put forward, adding that the relationship they develop with their midwife or small team of midwives lessens their anxieties and perception of being a burden.

Refined theory: If women are able to seek help and raise concerns with a known midwife or small team of midwives in a flexible, and confidential manner, and are encouraged to escalate those concerns if they are not satisfied with the response, then they will not only feel empowered and listened to, but potential adverse outcomes could be avoided through timely medical assessment.

The last programme theories to be tested in this study relate to the strengths and assets of women’s community, culture and support networks. Similar to women’s expertise of their own bodies and needs, these resources are important to women and contribute to their overall physical, mental and social wellbeing. The next section will explore if and how the specialist models of care acknowledge these resources and incorporate them into women's care plans to improve outcomes.

Strengths and assets of community, culture and support networks

Initial programme theory If midwives acknowledge the importance of culture and the influence of family members on women’s experience of pregnancy, then they will be able to personalise care around the needs and cultural norms of the family unit and avoid potential conflicts in offering advice that does not reflect a cultural norm

Initial programme theory 1): If HCP’s work in a small geographical area where they are visible and become known by other members of the community, religious networks and other ‘gatekeepers’, then they can work together to develop trust, facilitate family and community-centred care, and educate the community with evidence-based information and dispel common, harmful myths.

Initial programme theory 6): If HCP’s work within a community where they are immersed in local cultures different to their own, or the hospital environments, then they will become culturally sensitive, women will not feel their cultural needs are being disregarded in favour of the

western medical model and inequities in access, engagement, the uptake of screening, and antenatal education will be reduced.

Rival theory: If healthcare professionals work away from the hospital setting then they will become alienated from the medical teams and multi-disciplinary communication will diminish. This can have a particularly detrimental effect for those women with high medical risk status.

Testing using qualitative data: When discussing support networks, women from both models of care felt that their support network centred more around their friends, family, other mothers, and religious groups, and they would seek support and advice from them before healthcare professionals.

I feel I have a network of friends, that they're also from Brazil, they all have children like, there's like maximum two-year-old. So I've been turning to them rather than the community [services].' (CBM5)

'my mum's the main person that I go to with everything so if I ever feel like there's something wrong, I go to her first...the next person I would then call is my midwife. But my mum is the main person because she's been through it four times... I'm not saying she's an expert, but she knows what it's like. I think I know I'm going to be OK. Mainly because I have everyone around me like I've always had like a really good support system...it's my family.' (HBM1)

When this woman was asked who she speaks to first when she is concerned about something she highlighted the importance of her religion, and time with friends. This form of spiritual support is often minimised by the western model of medicine, but remains important to women, particular from different cultures who may be unfamiliar with the UK healthcare system.

God. My God. Yeab, religion first... I still prefer friends [to healthcare professionals]. Trust make me comfortable, talking of nice things with friends, making comfortable, sitting at home or going outside, having a coffee... my stresses go away with comfort, not with the medication. That's why I prefer friends, traditionally we had very good ceremony for our coffee. So that coffee ceremony make you more happy, you got time to talk. (CBM4)

Another woman highlights her perception of care from healthcare professionals being limited because it is their 'job', rather than the personal investment provided by family support:

'If I didn't have people like that (close family) I could speak to...I don't know how well I would do even if I was being consulted by someone from an external source [healthcare services]. Because I don't know them. And I feel like that's their job, Like that's what you do, you're there because of this, and as much as you might come across as caring and, you know, helping me out, it's your job ...everyone's got a job, that doesn't mean everyone loves their job. It's just like teachers. There's some teachers out there that hate children! It's just how it goes...it's a bad thing but I'd always have it in my head like, do you really care? Whereas my family... It's a personal thing'. (CBM8)

When reflecting on the support community brings, women discussed the impact of dispersal and being moved to temporary accommodation outside of their known communities:

[discussing temporary housing] Very far, I'm trying to get moved back down because I just, I can't cope up here., it's so lonely. So lonely. You know, and I've got knee problems, heart problems, I can't be carrying the buggy up and down the stairs on the train...I'm stuck here, unless my nan comes and helps me down, well it's fifty quid round in a cab. Probably not [going to be able to move back to local area], because they [housing support services] moved me out here because they don't want to pay my rent down there. It's much too expensive.(HBM4)

Some women felt more comfortable in their community setting and described the benefits of a known environment:

'...so with my anxiety and ... worrying about who I'm seeing, it's worrying about being in the environment. I'm very comfortable in the environment of my GP surgery. I can go there and, it's like walking into a family member's house. You know. I know all the staff there. You know, they're all friendly, they're all lovely, you know. We sit and we have a chat on the reception desk rather than sitting and waiting in the waiting chairs, you know. It's, it's a nice environment.' (HBM4)

Although women in the community based model discussed being happy with care set in the community as described throughout this chapter, they did highlight a disconnect between community and hospital services, particularly those with high medical risk factors:

'the care could be a bit more united....it looks like everything's a bit separated, all the care. ..it could be kind of at the same place or with the same people...you know, you could have like a clinic where you can have your doctors and your midwives there and you can do the scans so everything is in that place...erhaps it is more, um, comfortable to have the midwife coming to the house but I, I think I prefer just going out the house ... going to another environment, that is more positive. (CBM5)

I feel like it's still quite separate...I know that all the doctors are talking to each other...the midwives obviously talk to each other...even though [CBM midwife]'s obviously shown me that she knows [doctor] and everyone... I don't think they've had a conversation. (CBM8)

This section highlights the many other forms of support women rely on and prioritise over the relationship with their midwives or other healthcare professionals. These strengths could be used as a resource by maternity services to enhance women's perception of holistic, personalised support, and improve communication of evidence based information across families and communities. Aspects of all initial programme theories and the rival theory have been highlighted in this section. The refined theories merge these mechanisms and link them to potential improved outcomes:

Refined theory: If midwives acknowledge the importance of culture and the influence of family, friends and other support networks on women's experience of pregnancy, then they will be able to involve others in women's pregnancies to establish needs led support networks that women feel comfortable with. Improving relationships between maternity services and women's support networks may also avoid potential conflicts in offering advice that does not reflect a cultural norm.

Refined theory: If maternity services are based in the community setting where midwives are immersed in local cultures different to their own, or the hospital environments, then they will become culturally sensitive and women will not feel their cultural needs are being disregarded in favour of the western medical model. This would involve consideration of clear pathways of communication between multi-disciplinary services and the hospital setting, particularly for those women with high medical risk factors, to avoid a disconnect between the two settings.

To summarise this final section on 'surveillance and overcoming assumptions', the qualitative data highlights different levels of stigma, discrimination, and impersonal care that may well have been associated with women's personal characteristics. Women described a lack of voice, choice, ability to question medical advice, support, and impersonal and abusive treatment from healthcare professionals outside of the specialist model of care. The specialist model of care appeared to protect women from these experiences only when the midwife was present. Many women in the study described paternalistic and disrespectful care, again particularly from healthcare professionals outside of the specialist model. Women repeatedly described not being listened to, and although this had detrimental impact on their clinical outcomes and experiences, they still reported feeling able to seek help from the specialist model of care. The strengths and

assets held by women, either in their own expertise of their body, or their support networks, is often overlooked by maternity services. Overall this section highlights that the specialist model of care provides a level of protection from discrimination, disrespectful and paternalistic care, but the service as a whole should aim to reduce health inequalities by addressing these issues. It is not feasible for a known midwife to be with a woman at all times, and therefore the model of care should acknowledge that these women are likely to experience this substandard care, and aim to equip women with resources to minimise its impact. These resources could include enabling women to become familiar with a small team of midwives, providing them with evidence-based information and encouragement to exercise choice and control over what happens to them.

The refined CMO configuration in Figure 37 below has been renamed ‘Stigma, Discrimination, and Surveillance’ and provides an overview of the contexts, mechanisms and outcomes identified in the realist synthesis and this aspect of the evaluation, and how they are linked. This CMO configuration is slightly different to the others in that it also demonstrates what does not work in some circumstances, and how the specialist model of care cannot overcome all inequalities without improvements in the system as a whole.

Refined CMO Configuration

Context	Mechanisms	Outcomes
<p>Women who experience disadvantage, discrimination, stigma and stereotyping based on their race, class, ability, age and other sources of oppression. These factors increase women's fear of judgement from healthcare professionals leading to a perception of maternity services as a system of surveillance rather than support.</p> <p>Women who might be particularly vulnerable to paternalistic and discriminatory care include: Black and minority ethnic women, those with mental health issues, immigration issues, trafficked women, young mothers, those with disabilities, women experiencing abuse, drug and alcohol abuse, those known to social care/undergoing parenting assessments.</p>	<p>M1) If midwives acknowledge that women with social risk factors often experience paternalistic care and feel they are under surveillance, or that disclosing information will lead to a referral to social care then they can ensure they communicate with women openly and co-plan needs based support.</p>	<p>O1) This may alleviate feelings of suspicion and mistrust and empower women to disclose social risk factors, accept referrals to support services earlier in pregnancy, seek help and escalate concerns, that can in turn improve physical, emotional and social outcomes.</p>
	<p>M2) If models of care are placed in the community setting, then midwives will be better able to place the individual needs of women before institutional norms because they feel a sense of obligation and responsibility towards the woman rather than the system.</p>	<p>O2) Then women will have increased confidence and trust in the midwife and feel they are invested in them over the service, in turn overcoming the perception of surveillance. Midwives will become culturally sensitive and women will not feel their cultural needs are being disregarded in favour of the western medical model.</p>
	<p>M3) If women with low socioeconomic status, social risk factors, or other often-stigmatized characteristics, experience discriminatory or impersonal care from healthcare professionals, particularly when a known healthcare professional is not providing care</p>	<p>O3) then they will avoid continued interaction with the service, resulting in further isolation and exclusion from the benefits of engaging with maternity care and support services. This can be alleviated to an extent through care from a known healthcare professional, but services should focus on reducing discrimination and systemic racism.</p>
	<p>M4) If maternity care encompasses the foundations of woman-centred care: working with women as partners, respecting their expertise of their own body, needs and baby, and making decisions based upon individuals rather than stereotypes or entrenched professional norms,</p>	<p>O4) then women will be more situated in a context of control rather than disempowerment. For some women this may also avoid disempowerment, feelings of being pressurised, ignored and excluded, long lasting psychological trauma, and increase bonding between a mother and her baby.</p>
	<p>M5) If women are able to raise concerns with a known midwife or small team of midwives in a flexible, and confidential manner, and are encouraged to escalate those concerns if they are not satisfied with the response.</p>	<p>O5) then women will not only feel empowered and listened to, but potential adverse outcomes could be avoided through timely medical assessment.</p>

Figure 37: Refined CMO Configuration - Stigma, Discrimination and Surveillance

Chapters 8 and 9 will be summarised overall at the beginning of the discussion chapter that follows.

Chapter 10 Discussion

This thesis has attempted to address the knowledge gaps around what models of maternity care work in reducing inequalities for pregnant women with low socioeconomic status and social risk factors. Realist methodology was used to identify and test theories about how models of maternity care work, and do not work, for this population. A theoretical framework was developed to structure the study design and analysis of the mixed methods data around the overarching concepts of syndemics and candidacy. This chapter will summarise the key findings of the realist synthesis and evaluation of two specialist models of care. The findings will be interpreted in relation to the wider literature and how they contribute to the theoretical perspectives, or middle range theories. The implications of the findings will be discussed in relation to current maternity practice and policy, with a focus on how the new knowledge can contribute to the development of safe, effective maternity care for this at-risk population. Limitations of the project will be presented followed by future research recommendations that may overcome those limitations and address existing knowledge gaps. The chapter will be structured to reflect the objectives of the thesis.

1.38 Summary of key findings

How pregnant women with social risk factors access and engage with maternity services, and if improved engagement improves their outcomes is a complex, multifaceted issue. Despite encouraging evidence that continuity of care improves birth outcomes, the underlying mechanisms of this aspect of care, and evidence around who benefits the most, are largely absent in the literature. This thesis aimed to explore whether continuity of care has the same effect for women who have social risk factors, why some specialist models of care seem to be more effective than others, if women with social risk factors are more likely to be offered these models of care over their more affluent peers, and how specialist models of care can impact on social integration and longer term outcomes. It also aimed to determine how acceptable specialist models of care are for minority populations, whether they are seen as supportive, stigmatizing, or potentially isolating. The findings of this enquiry are presented in the form of a realist synthesis, and a subsequent realist evaluation of two specialist models of maternity care that aim to provide continuity of care to women with low socioeconomic status and social risk factors.

The realist synthesis explored how women with social risk factors experience maternity care in the United Kingdom in order to advance theoretical understanding of the underlying mechanisms that contribute to health inequalities or improved outcomes for this population. The findings

highlighted that access to services, education, interpreter services, practical support, and continuity of care were particularly relevant for women who are unfamiliar with the UK system. Many women, particularly those from minority groups, described paternalistic care and discrimination from healthcare professionals. Regaining control and the ability to form a trusting relationship were important mechanisms for women with a history of trauma or poor experience of care. An interesting finding, and imperative aspect of context to consider in the subsequent evaluation, was how women with social care involvement can perceive maternity services as a threat that could lead to the removal of their children. They described healthcare services as a system of surveillance, with healthcare professionals allegiance lying with the system rather than with the woman, and a lack of practical support that might have enabled them to demonstrate their parenting abilities. The findings also highlighted the mitigating effect of a trusting relationship with a healthcare provider or support worker who would often provide advocacy, signpost or referral to support services, and education that empowered women. The synthesis resulted in a list of programme theories that represent the theorised architecture of how specialist models of maternity care for women with social risk factors are thought to work. In order to gain greater depth of understanding of this architecture, focus groups were held with midwives providing specialist care (including continuity) for this population of women. The focus groups led to the identification of hidden mechanisms and additional programme theories from the healthcare professionals perspective. Again, these often centred around trusting relationships but opened up a further layer of causal explanation by identifying how women disclosed their individual needs as and when they felt safe to do so. Midwives responded to these disclosures of sensitive information through needs led referrals to support services, and holistic care. A particularly important finding of the focus group study was that concerning place of care. Midwives working in the community model reported how their location enabled them to meet women's multifaceted needs and encourage them to engage with local support services through knowledge of the community and straightforward referral processes. The findings of both papers are explored in the discussion sections of chapter 4 and 5, but this overview presents the key findings that were developed into 8 overarching CMO configurations; tested and refined in the realist evaluation that followed.

The realist evaluation has been presented in two parts; firstly Chapter 7: 'What works, for whom' used quantitative birth outcome data to explore whether specialist models of maternity care improve maternal and neonatal birth outcomes, service use and social care involvement. A key finding in Chapter 5 where the context of the research is described, is the statistically significant relationship between deprivation score and the number of social risk factors women were experiencing. This adds validity to the use of the deprivation score to identify women at higher

social risk. Chapter 7 highlights that the specialist model appears to mitigate the effects of inequality for women with low SES and social risk factors, and significantly increase the use of water for pain relief in labour, skin to skin contact between the mother and baby after birth and social care involvement at discharge from maternity care. When the data was analysed to explore the impact of the place of antenatal care (the hospital or community setting) women attending antenatal care in the community setting experienced significantly less preterm birth, low birthweight infants and social care involvement at discharge, and less induction of labour than those receiving antenatal care in the hospital. A subgroup analysis of women with increased social risk (not of white ethnicity, a high deprivation score and any social risk factor) found that the effect of the place of antenatal care on preterm birth increased for this at risk population. Overall, the data suggests that the specialist models of care and the place or setting of antenatal care both hold underlying mechanisms that lead to different outcomes. The specialist model of care and community based antenatal care were associated with some improved outcomes, a levelling of inequality, and no detrimental effects when compared to standard care, group practice and the hospital setting.

Secondly, chapter 8 went on to explore the 'how and why', seeking to identify the causal mechanisms that lead to outcomes or have an impact on health inequality. The chapter addresses questions around how the specialist model of care influences access to maternity and other support services, women's ability to disclose sensitive information, their experiences of discrimination, stigma and paternalistic care, how they experience continuity of care and the wider maternity services and how these aspects might contribute to the outcomes highlighted in chapter 7. Thirty programme theories and 8 CMO configurations were tested through quantitative and qualitative data analysis resulting in 6 refined CMO configurations. These configurations provide a wide overview of the specific findings of the project, but in order to interpret the findings on a deeper level this discussion chapter will refer back to the aim and objectives put forward in Chapter 2. It will situate the findings of this evaluation within the wider literature, discuss their transferability to wider contexts, and describe how the findings contribute to the middle range theories proposed in the original theoretical framework.

1.39 Interpreting and situating the findings in the wider discussion

The two specialist models of care evaluated in this thesis were similar in that they both provided continuity of care to women with low socioeconomic status and social risk factors. The main differences between the models is that one model was based within a local community health

service 'hub' where women had the opportunity to meet the team of 6 midwives. The other model was based within a large teaching hospital setting where women had one named midwife who provided the majority of care and only met other members of the team if her named midwife was not on duty. These differences allowed for the exploration of mechanisms based not only on continuity of care and how the midwives working in the model aimed to meet the needs of this at-risk population, but also the impact of place-based care. This section of the discussion will address the questions put forward in chapter 2 in response to the knowledge gaps identified in the introduction.

1) Are women with social risk factors more likely to be offered specialist models of care or continuity of care over their more affluent peers and if so, do they find this acceptable?

The findings in chapter 8 show that the aims of the specialist models of care- to reach the most deprived women, black and minority ethnic women, and those most likely to be experiencing social risk factors, are being met. Women with low SES, BME women and those with social risk factors were the most likely groups to be cared for in a full continuity of care models at both service providers. This is an important finding as it directly relates to the aims of the NHS Ten Year plan ²⁹⁸. In response to concerns that the most affluent and lowest risk women are often the most likely to receive the highest standards of maternity care ³⁶², a clear example of Tudor Harts Inverse Care Law ³⁶⁰, the findings here reflect a shift change to more proportionate universalism through services targeting those who are at highest risk of poor outcomes. That said, the findings suggest that community-based models of care targeting areas of deprivation are likely to identify women who are experiencing social risk factors that are disclosed during pregnancy. The hospital-based model cared for women with at least once known social risk factor prior to the referral to the team, the data found that these women are not necessarily in the highest deprivation centile. This presents the possibility that the inclusion criteria for the service is not identifying those women who are at increased risk but are yet to disclose social risk factors. Those women who are most at risk may well end up receiving fragmented, standard maternity care, not feeling able to disclose sensitive circumstances, and remain 'under the radar'. In the introduction chapter of the thesis the concept of 'relative poverty' is described, with those who have less than others around them being susceptible to feelings of shame, anxiety, a loss of self respect and sense of control, these mechanisms could be at play for the women receiving care outside of their own familiar community. In addition to this, the 'Inverse care law' still appears to be at play in how women with low socioeconomic status and social risk factors described a fear of being seen as a 'burden on the system'. This puts forward the theory that when the more

affluent women demand high quality care, as is their right, the time and resource is taken away from those whose voice is seldom heard- those who do not want to be a burden on the system.

Women experienced numerous pathways of referral to the specialist models, whether from other healthcare professionals in primary and secondary care, or for those women who knew about the model from previous pregnancies- self-referral. The findings indicated that the models of care are known to local health services and have open referral pathways, but that most women were not aware the model of care existed, and referral pathways were very much 'behind the scenes'. The findings also show that many women were not aware of the reason they were referred to the specialist model of care, and although on the whole seemed happy with their care, some expressed a lack of choice, and perceived discrimination about being left in the dark for the reason for referral. This may have an impact on the mother-midwife relationship and compounded feelings of surveillance felt by women. There is a wealth of literature around healthcare professionals emotion work, feelings of unpreparedness, discomfort and reluctance to address sensitive issues such as mental health, weight, social risk factors and cultural differences with women ^{483,499-505}. In addition to this, socioeconomic status and ethnicity are often associated with stigma and discrimination in healthcare services ^{40,506-508}. These factors might contribute to midwives feelings of discomfort around informing women why they have been referred to a specialist model of care. That said, the qualitative findings of this study suggest that avoidance of this disclosure may have detrimental effects of the mother-midwife relationship and hinder the level of two-way trust ⁴⁸⁵. As explored by Rayment-Jones et al's study of midwives experiences of working with women with social risk factors ⁴³⁹ and a study by Dahlberg and Aune ⁴⁸⁶, this two-way trust acts as a generative mechanism for increased disclosure of sensitive issues during pregnancy, and longer terms outcomes such as child protection outcomes, parenting abilities, and personal growth and development. Importantly, both women and midwives insights described that as the mother-midwife relationship strengthened through continuity of care over the course of the pregnancy, women were more likely to disclose social risk factors and accept referrals to support services. This did not seem to differ between the two teams, with women from the community-based model of care reporting a sense of familiarity and trust with the whole team.

Although women often described being referred to the specialist model of care without their knowledge, consent, or indeed choice, overall they described positive experiences of the care they received by the specialist midwives. Women expressed ease of contacting and booking appointments, seeking help and support from their known midwife. However some described feeling like a burden on the service, and one woman, a Black Caribbean grand multip, referred to perceived discrimination when she was referred to the specialist model. The take home points from this section include the importance of open disclosure and choice when referring women to

specialist models of care, and the effectiveness of community-based models of care set within areas of significant deprivation. This place-based, specialist care is likely to identify women most at risk whilst minimising the risk of stigmatizing or discriminating based on women's individual characteristics.

2) Do specialist models of care improve access and engagement with maternity services?

If so, for whom, and how?

The quantitative data analysis of women booking at the two service providers found no differences in the relationship between the model of care received and timing of access to maternity care. Considering women in the specialist models were more likely to have low socioeconomic status and social risk factors and were therefore more likely to access care later in pregnancy ^{161,164,369} this indicates that the inequality in access to antenatal care was levelled through the specialist model of care. However, the timing of access differed significantly between women accessing community-based care and those accessing hospital-based care. Regardless of the model of care they received, women who booked for maternity care after 20 weeks' gestation were more likely to receive hospital-based care, these differences were driven by multiparous women and those with low medical risk. This disputes the explanation that the differences in timing of late access in the women receiving hospital care is due to transfer of care from community services based on medical risk factors and questions theories around women's care seeking behaviour, with those at lesser risk perhaps being more likely to deprioritise maternity care ^{163,164}. The qualitative data was analysed to explore this difference, women described system differences in how they were given a booking appointment based on the place of care with those accessing care in the community getting an appointment earlier. Women described difficulties in registering or booking an appointment with their GP when they found out they were pregnant, particularly if they did not speak English, were homeless, or unfamiliar with the system. These barriers exacerbated the already convoluted referral pathways between community and hospital services. Difficulties in registering and accessing GP appointments amongst these groups has been reported in the wider literature, with interpreter services often recommended as a means to address these inequities ^{509–511}. Hatherall et al's ³⁶⁹ qualitative study of women accessing antenatal care in a diverse area of London found that women want to access care in early pregnancy but are influenced by their perception of antenatal care being only for viable and continuing pregnancies at a later gestation. This desire to be seen earlier in pregnancy and the impact that late booking had on their emotional wellbeing and perception of not being valued by services until their pregnancy was considered 'viable' was discussed by women in this thesis project. This contributes to the theory of candidacy defined as "the ways in which people's eligibility for

medical attention and intervention is jointly negotiated between individuals and health services²⁰⁸. If women do not feel that a service is open to them, or that maternity services only value those who carry a viable pregnancy, they may internalise this as a prioritisation of the wellbeing of the fetus over their own emotional, physical and social needs. As well as impacting on women's engagement with services this can impact on the safety of women with complex needs such as those who are experiencing abuse, honour based violence, or need to discuss a termination of pregnancy. Hatherall et al's³⁶⁹ study also found that women experienced similar barriers to access as those in this thesis project, including; difficulties navigating the health system, compounded for women unable to speak English, and service provider delays in the processing of referrals. Given the insights of the women interviewed in this study and their experiences of interpreter services, it is suggested that all women are made aware of the possibility to self-refer directly to maternity services by administrative staff at the first point of contact with health services, using language appropriate information. Strict inclusion criteria for access to specialist models that restrict women who have booked late for maternity care should be reviewed as these women are often high risk and can benefit from the many mechanisms of the specialist model described in the sections below.

When analysing women's engagement with maternity care it was found that multiparous, younger and black African women were more likely to miss a significant amount of appointments, as well as those with social risk factors. This reflects findings in the wider literature^{164,512} highlighting inequities for these groups and presents an opportunity for those designing models of care to focus on these demographics. The adjusted quantitative data analysis showed no differences in the number of antenatal appointments women attended depending on what model of care they accessed. Similar to the timing of access to maternity care this indicates the known inequity in engagement with services¹⁶⁴ appears to have been levelled by the specialist models care. Interestingly, when analysing the same outcome with place of antenatal care, women receiving hospital-based antenatal were more likely to have more appointments and those receiving care in the community were more likely to have less appointments than currently recommended^{180,213}. The relationship remained significant after adjusting for medical risk factors, and although high medical risk status did not equate to more antenatal appointments, women with social risk factors were more likely to have more than 15 appointments. This could explain women's perception of maternity services as a system of surveillance highlighted by the realist synthesis. Again, this gives insight into the concept of candidacy and was analysed in the quantitative data, revealing interesting mechanisms in women's engagement with services. Women accessing both specialist models of care described straightforward and flexible processes in contacting healthcare professionals and booking appointments. This was through phone calls, text messaging, emails

and free social media applications. Women also described flexibility in when and where their antenatal appointments were scheduled, and that the length of appointments matched their level of need at the time. They reflected on times when they were worried or needed some reassurance, and how the midwives responded to this through flexible, open access. When women needed to cancel appointments they were rebooked easily and without reproach, giving them a sense of understanding from the midwives that were caring for them. As described by the midwives in the focus groups with midwives in the specialist models⁴³⁹, women living socially complex lives were reminded of appointments and encouraged to engage through midwife-led communication between appointments. This gave women a sense of feeling cared for and valued by the midwives providing their care and they described how they were more likely to communicate with them because of these impromptu 'check in's'. Importantly, many women felt that the ability to contact a known midwife anytime reduced the number of appointments or face-to-face contacts they needed. Where engagement in this thesis was measured through the number of antenatal appointments attended, it would be useful for future research to measure forms of contact such as phone calls and text messages.

Differences in how women engaged were noted between the two models of care. Women from the hospital-based model discussed the detrimental impact of midwives needing to cancel their appointments. Rather than a place-based issue this seems to relate to how the teams are organised; Women in the hospital-based model are allocated one midwife who they will see for the majority of their appointments, whereas women accessing the community-based model described being cared for by the whole team rather than one midwife. The expectation that care is provided by one midwife in the hospital-based model may have a greater impact or lead to women feeling more disappointed when their named midwife is unable to see them. For women in the hospital-based model this impacted on how they felt uncomfortable to approach the rest of the team when their named midwife was not available. Finally, women from both community and hospital-based continuity models expressed a preference for care to be based in the community or home setting as they felt it was more accessible and supportive to their needs and increased social interaction.

To summarise this section and attempt to succinctly answer the question posed, access and engagement with maternity services is thought to be improved by the specialist model of care, but it is not a panacea. Rather than the often-assumed 'relaxed maternal care-seeking behaviour' and 'women with social risk factors deprioritising maternity care' explanations for late booking, the findings highlighted system barriers in access to care. Women want to be able to access care earlier in pregnancy, and there appears to be a lack of information regarding their choices in

doing so, particularly for those who do not speak English or are unfamiliar with the system. The level of continuity of care varied between the different models of care analysed, with the specialist model of care providing the highest level. That said, when women were not accompanied by their known midwife or midwife from the specialist model team that reported poor care experiences. Women's engagement with maternity services was levelled by the specialist model of care, with those accessing standard care with certain social risk factors being more likely to miss their appointments. The mechanisms for improved engagement identified by women accessing the specialist models of care reflected some of the objectives of NHS England's Comprehensive Personalised Care Model including needs led care and flexibility but added to the review by stating the importance of the community setting and local services. A recent review of maternal deaths in London ¹²⁶ concluded that these approaches to engagement would have helped women to address the risk factors linked to obesity in pregnancy, managing multiple appointments and engaging with multiple professionals.

3) Do specialist models of care that include continuity improve maternal and newborn outcomes and experiences of care? If so, for whom, and how?

The mechanisms cited in the context of the specialist model of care often related to continuity of care, the development of a trusting relationship between the midwife and woman, and one healthcare professional coordinating care and having overall responsibility. This reflected the findings of the recently published realist evaluation that explored the implementation of continuity models of midwifery care in Scotland and finding trusting relationships were the key mechanism that triggered midwives' commitment to provide high quality care associated with improved outcomes ²⁷⁶. Overall, the women interviewed for this thesis project felt that their relationship with their midwife had a significant impact on their emotional wellbeing, experience of care, and safety. Many reported the reassurance and support offered by the specialist model reduced their levels of stress and anxiety. These emotional responses to the resources provided by the model might explain the overall positive impact seen in the quantitative data analysis. The specialist model of care, and in some cases the group practice model, was associated with a levelling of inequality for most pregnancy and birth outcomes with some improved birth outcomes such as skin to skin contact after birth and the use of water as pain relief in labour. There were no adverse outcomes associated with the specialist or group practice model. Interestingly, different relationships were found between the place of antenatal care and neonatal outcomes such as premature birth and low birth weight.

The quantitative analysis also enabled the identification of specific risk factors or characteristics that put women at increased risk of poor birth outcomes and increased service use. These

characteristics were often related to race, age, parity, medical risk status, socioeconomic status and social risk factors, although varied by the outcome analysed. This level of retrodiction allows for a more targeted approach of the thematic framework analysis of the qualitative data using women's characteristics. The variation seen between context and outcomes highlights the individual nature of pregnancy and birth outcomes. There is no 'one size fits all' approach to improving all outcomes for all women, care must be tailored to meet these individual needs and a starting point for this is continuity of care through which women's needs can be realised. A subgroup analysis was also carried out for the significant outcomes presented, this used a sample of the cohort who were in the most deprived deciles, not of white ethnicity, and had at least one social risk factor. The subgroup analysis found that for most outcomes there was little difference compared to the whole cohort, but for preterm birth, women attending the hospital-based model who were at increased social risk were more likely to have premature birth. Women receiving the specialist model of care who were at increased social risk were more likely to have experienced skin-to-skin contact with their baby shortly after birth. This discussion will therefore focus on the underlying mechanisms of these two outcomes. The differences seen between the quantitative results in this thesis and the Cochrane review of midwife led models of care can be largely explained by the population being analysed and the place of care. Where some of the trials included in the review excluded women with medical risk factors and substance abuse, others were based in the hospital setting. A subgroup analysis of women with social risk factors and place of care would be a useful contribution to the literature. That said, preterm birth was a significant outcome in both the review of literature and the findings of this thesis.

As established in the introduction, women with low socioeconomic status and social risk factors are more susceptible to poor infant birth outcomes, including preterm birth (birth before 37 weeks gestation). Despite efforts to decrease its prevalence, improve clinical management and reduce infant morbidity and mortality, preterm birth rates continue to rise in most countries with reliable data ⁵¹³. This is an important outcome and indicator for health over the life course with many preterm neonates going on to have significant developmental delay, learning disabilities, visual and hearing problems, chronic lung disease as well as other health implications ^{514,515}. These factors lead to increased costs to health services, the economy and the broader society ⁵¹³. There are many predisposing, and often intersecting, factors associated with preterm birth that are important to bear in mind as we attempt to define the specific mechanisms that reduce preterm birth rates for women who are accessing care in the community setting. These factors include; infection, social stress, intimate partner violence, non-Caucasian ethnicity, young or advanced age, previous preterm birth, short inter-pregnancy intervals, nutritional deficiencies, cervical procedures, underlying medical conditions, smoking and alcohol consumption ¹⁷⁰. Some

of these factors are clearly biological, and some socially constructed, but it is important to reflect on the intersecting nature of these factors and women's characteristics- how much of the health problems that BAME women experience are caused by the stresses of their environment? As discussed in the introduction to this thesis, women from Black and minority ethnic groups are more likely to be living in poverty, experiencing multiple social risk factors and health issues than their white counterparts, and describe poor experiences of healthcare services driven by discrimination^{92,93}. Nuru-jeter et al⁶⁴ described the unique and shared variance of socioeconomic status and ethnicity in relation to a wide variety of health outcomes. Women from BAME groups, who are at increased risk of preterm birth, have described the effect of 'weathering' in relation to accessing medical care. Weathering, first coined by Arline Geronimus⁵¹⁶ in 1992, posits that Black women's health deteriorates in early adulthood as a result of the cumulative effects of socioeconomic disadvantage. The theory has been widely tested and supported through analysis of health inequalities seen in pregnancy outcomes (Howell, 2018; MBRRACE-UK, 2018), excess mortality, disability and mental health^{70,71,519}. Geronimus' theory led the way to phenomena such as the allostatic load⁵²⁰, epigenetics⁵²¹, and telomere shortening (a marker of cellular aging), all of which have been associated with preterm birth and the cumulative effect of stress and exposure to discrimination on the body⁵²². The question is then, how can models of maternity care acknowledge and aim to reduce the effect of these stressors, not only to improve pregnancy outcomes but also to break the cycle of socioeconomic disadvantage and its associated health inequalities?

There is strong evidence that antenatal stress and anxiety increases the likelihood of preterm birth^{523,524}, therefore maternity care that aims to reduce the causes of stress is proposed as a real solution to the disparities seen in premature birth across the social gradient. Women in the qualitative sample of this thesis revealed how the community setting reduced stress during their antenatal care, highlighting place of care as a potential mechanism in the reduction of antenatal stress and anxiety. In addition to the Cochrane review of midwifery led models of care²³⁴, a systematic review and meta-analysis of models of antenatal care designed to prevent and reduce preterm birth found that women randomised to midwife-led continuity models of antenatal care were less likely to experience preterm birth⁵²⁵. Interestingly, Turienzo et al's review also found that specialist models of care were associated with lower rates of preterm birth for low risk women. The review concluded that although alternative models of antenatal care are effective in reducing preterm birth compared with standard maternity care, the mechanisms remain unknown. Possible explanations put forward to explain the reduction include improved access to early maternity care seen in the intervention groups, empathic care, agency and control. Neither systematic review analysed the effect of place of care on preterm birth.

The hospital environment has been associated with increased stress, waiting times, unfamiliarity, fragmentation and impersonal care ^{221,526–528}. Women’s experiences of facility-based intrapartum care in LMIC was discussed in the introduction, highlighting that disrespectful care and abuse is the biggest deterrent to accessing maternity care ²²⁶. Reflecting the findings of the new empirical evidence put forward in this thesis, Bradley et al ²²⁷ suggest that this is due to institution-centred care, rather than woman-centred, where pregnant women are controlled by system norms and power structures. Indeed there is a wealth of literature around the design of patient-friendly hospitals that aim to overcome these institutional, stress inducing factors ^{529–531}. When the stressful effects of the hospital environment are compounded by paternalistic care, a lack of choice and perceived stigma and discrimination often described by BAME women and those with low socioeconomic status and social risk factors ^{167,220,428}, poor outcomes and experiences can be exacerbated. Acknowledgement of the effect of environment is seen in recent policy with the NHS long term plan ⁵³² and five year forward view ⁴¹⁷ emphasizing the value of expanding community based health services on people’s health, help-seeking behaviours and pressures on the wider service. The Kingsfund published a paper proposing a place based care approach to tackle the growing financial and service pressures in the NHS ⁵³³. The paper argued that individual NHS organisations should move away from a ‘fortress mentality’ where their own interests are centred and move to establish local systems of care where they collaborate with other organizations and services to focus on local population need.

Both the qualitative data and input from the PPI group for this thesis puts forward new theories around how women respond to the resources provided by the specialist model of care, particularly around place of antenatal care. Women described accessing care in the community setting as stress reducing, protective of the relinquishment of control often associated with hospital-based care, and an association with wellness rather than sickness. The concept of handing over control and choice to the healthcare professional was also described in Ebert et al’s ⁴⁸⁷ qualitative work with socially disadvantaged women in Australia. The study concluded with the recommendation to step away from medically focused maternity care environments in order to increase midwives autonomy and create a ‘safe space’. The following quote from the study discusses women’s ‘belongingness’, referring to the concept of candidacy; *‘When all involved in a maternity care interaction ‘feel safe’ to have a voice, the woman’s sense of worth and belongingness within the maternity care environment is facilitated...In order for a socially disadvantaged woman to feel safe enough to have a voice and choice, she needs to believe her need for information and participation are valued.’* ⁴⁸⁷. Although the place of care is not discussed in Ebert et al’s study, care set within women’s local communities could be a solution to protecting women from the medicalised hospital environment where they

feel disempowered and silenced, creating a safe space where women have this sense of belonging. In addition to this, the focus group's with midwives providing the specialist models of care in this thesis described how midwives working in the community setting were more sensitive to women's wider needs, were able to act quickly on abnormal findings or concerns, and had increased knowledge of support services available to women- an example of street level beauracracy at play.

Another protective factor to consider is that of 'ethnic maintenance', discussed in the introduction chapter and descibring the social connections and cultural norms that multi-cultural communités provide. The women interveiwed descibred how these connections were protective of stressors and anxieties in thier lives. These combined insights contribute to the overarching theory of candidacy, in that services based within the community setting may be perceived by women to align more closely with their needs as the service has 'come to them'. The qualitative and qualitative data found that this increased support, ease of access, familiarity and increased continuity of care associated with community based antenatal care found in the quantitative data can all contribute to reducing stress and anxiety, potentially reducing preterm birth. Although the effect of place of care on the reduced preterm birth rate was not analysed in Sandall et al's Cochrane review, an Australian study of a community-based model of care for young women found similar findings, with a significant reduction in preterm birth and neonatal unit admissions ⁵³⁴. The authors hypothesised that improved antenatal engagement was the mechanism by which the community-based continuity model improved neonatal outcomes for this at-risk group. These insights are presented in CMO format in Figure 38 below:

Context

Community based antenatal care in area of social deprivation providing care for women with low socioeconomic status and social risk factors

These women are more likely to experience discrimination, paternalistic and depersonalised care and are at a higher risk of poor birth outcomes such as preterm birth



Resource mechanisms

Continuity of care (more appointments with a known healthcare professional and more likely to be looked after in labour by a known HCP)

Reduced travel costs and inconvenience

Family friendly environment where women are able to bring children without fear of reproach

Familiar environment, processes (for booking appointments, following up test results etc) and faces (reception staff, healthcare professionals)

Community based antenatal education that includes information relevant to local populations

Referring, escalating concerns, and handing over information to relevant professionals in the same local setting to ensure women do not fall through the gaps



Response mechanisms

Trust in healthcare professional and perceived 'safe space'

Help-seeking behaviour and disclosure of social risk factors

Engagement with services as an active, well informed participant

Referral to specialist services to meet women's physical, social and emotional needs

Social capital and opportunity to meet local women and form support networks



Outcome

Appropriate, needs led care where concerns are raised in a timely manner and healthcare professionals respond with empathy and evidence-based practice.

Reduced stress, anxiety, experiences of paternalistic care and discrimination

Established support groups and professional networks for the early years

Early detection of abnormalities and appropriate care plans put in place

Improved outcomes (including preterm birth) and experiences of care

Figure 38: CMO configuration to reduce inequalities seen in preterm birth rates

Another interesting finding was the significant relationship between the specialist model of care and the increased number of women practising skin to skin contact with their baby shortly after birth. Skin-to-skin contact, sometimes referred to as ‘kangaroo care’, can be defined as ‘placing a naked infant onto the bare chest of the mother’⁵³⁵. A growing body of evidence has put forward a vast list of the benefits of skin-to-skin including regulation of the heartrate, respiratory rate and temperature leading to improved adaptation to extrauterine life, stimulation of the digestive system and hormone release leading to improved feeding, colonisation of the baby’s skin with the mother’s friendly bacteria, thus providing protection against infection, improved oxygen saturation, reduced cortisol levels, and parent-infant bonding^{535–538}. Although many studies^{264,268}, including Sandall et al’s²³⁴ Cochrane review, on continuity of care models have not measured skin-to-skin contact, Rayment-Jones et al’s²⁶⁷ small observational study of socially disadvantaged women accessing the same continuity of care model found no difference. This difference could be due to the transition in skin-to-skin contact becoming the ‘norm’ since the observational study, or another mechanism at play. Women accessing both the standard models of care and the group practices were 3 times less likely to have had skin-to-skin with their babies, the data closely reflects the levels of ‘known midwife at birth’, suggesting that an underlying mechanism could be being looked after by a familiar midwife. Although the underlying mechanism for this outcome remains unclear and warrants further research, the phenomenon could be explained using the street level bureaucracy theory in that when midwives know women and are invested in them and their outcomes, they are more likely to provide gold standard practice. This was referred to in the focus groups with the midwives providing the specialist models of care and is summed up well in the following quote: “I think we also have that like emotional insight as well... I feel like we, as a team, we are quite invested in our women, and we do do a lot for them and I think, when you have that investment in someone that you want to push for them and you want their outcome to be good’.

5) Why are some specialist models of care more effective than others?

In order to understand the effectiveness of the proposed generative mechanisms that underpin specialist models of care for women with social risk factors it is important to test the level of continuity these models provide. Just because the aim of a model is to provide continuity of care does not necessarily mean it is always achieved and as continuity of care is the resource that’s leads to trusting relationships, it is the level of continuity that is easier to measure than the quality of the relationship itself. As Hunter⁴⁸² emphasized, the visible, measurable factors in maternity care are often the physical outcomes, or use of technology, whereas the relationships that impact on these outcomes are often hidden and difficult to measure. This section addresses questions

around whether it is the level of continuity or other resources provided by the model that lead to improved access, engagement, outcomes and experiences. Women in both the specialist and group practice models were more likely to receive more antenatal appointments with a known healthcare professional than those accessing standard maternity care. Black African women were the least likely ethnic group to see a known healthcare professional more than 5 times regardless of the model of care they received. Women receiving care in the specialist model were more likely to be looked after in labour by a known healthcare professional, with those receiving the group practice model being the least likely. This is unsurprising given that group practice models are often set in the community with midwives not working in intrapartum settings. When analysing the data by place of care we found that women receiving care based in the hospital setting were less likely to see a known healthcare professional for their antenatal appointments.

Qualitative results referring to the level of continuity experienced by women receiving the specialist models identified both resource mechanisms and how women's response to these resources lead to different outcomes. One explanation for women in the hospital-based model of care having less appointments with a known healthcare professional appeared to be due to referrals to the team later in pregnancy, whereas women in the community-based model were cared for by the team from the beginning of their pregnancy. This highlights another benefit of universal care where models care for all women in a geographical area, rather than women being referred to a specialist model as issues arise. Women also discussed a lack of choice in the model of care they received, and for some this impacted on their level of continuity as they were not able to be looked after by a known midwife from a previous pregnancy due to system barriers. Women's response to high levels of continuity included increased trust in the healthcare provider and reassurance that their needs are being taken seriously, efficiently and communicated effectively. These responses led to increased disclosure of sensitive issues and social risk factors; women described not having to repeat difficult histories, meaningful engagement, and unnecessary or inconvenient face to face contacts were reduced. When asked about their experiences of labour and birth, women from both models of care discussed the impact of knowing or not knowing the midwife looking after them in labour. Even when a known midwife wasn't able to attend the labour and birth, women still described how the specialist model of care had benefitted their preparation for birth, or how they still valued the care they received in labour by unknown healthcare professionals. However some women described the negative impact of being looked after by midwives they did not know; this included a lack of compassionate care and choice, and perceived deception. This was further explored through women's experience of the hospital environment and there was a clear theme demonstrating that when women were not accompanied by a known midwife in the hospital environment they

experienced disrespectful, paternalistic care. Many described not being listened to by healthcare providers outside of the specialist model of care.

Some women were not aware of the level of support, or continuity, offered by the team and this made them feel that they were unable to disclose special risk factors. If women are not aware of the aim of the model, or how it works, then they will not be able to fully utilise its resources or benefit from the added sense of support. This may be due to the medicalisation of pregnancy and childbirth; if women perceive maternity care to be centred around risk and physical outcomes, then they will use that service only for those aspects of their pregnancy, much like a patient visiting a dentist would. If they are aware that the aim of the model is to provide holistic physical, social and emotional wellbeing, then they will utilise this opportunity.

6) How do specialist models of care impact on support, social integration and longer-term outcomes for women with social risk factors?

The realist synthesis highlighted how women with social care involvement can perceive maternity services as a threat, and feared their children being removed from their care if they did not present as a capable, compliant mother. The evaluation findings supported this, with women describing how they disclosed needs, deteriorating mental health, or sensitive information as and when they felt safe to do so and only if the benefits of doing so outweighed the risk. For women who felt they had a close relationship with their midwife or the team of midwives, this openness to disclose appeared to come about earlier in pregnancy. An example of this included one woman who had been having negative thoughts of harming her baby and despite being fearful of the consequence, felt able to talk to her known midwives about it. To put this into perspective, a key finding in the latest London maternal mortality review⁵³⁹ highlighted that if the women who had died had received more support, then they would have felt more confident in disclosing key elements of their medical history, information relating to their pregnancy and the challenges in caring for their baby.

Women receiving both group practice and the specialist models of care were more likely to be referred to early/enhanced health visitor and family nurse partnership schemes, social care, and mental health services. Women in the most deprived deciles were the most likely to be referred to social care regardless of the model of care they accessed. This reflects the findings of an earlier retrospective analysis of a specialist model of care for women with social risk factors²⁶⁷. This thesis adds a deeper layer of understanding through the analysis of the qualitative data exploring women's willingness to be referred to support services and how they experienced those services. The data revealed generative mechanisms that lead to women with social risk factors feeling

more supported by these services and prepared for the early years. Most women had positive experiences of holistic support from midwives in the models of care that led to an increased feeling of being valued and a willingness to be referred to and engage with support services. When women discussed a more negative experience it was usually due to not hearing back from the service or being ineligible for the service, or a lack of continuity provided by the support service. When women under the models of care did not receive a high level of continuity or referral to appropriate support services, they described low levels of support and fear of the future. One woman felt that a lack of continuity and appropriate support resulted in her being referred to social care as there were concerns she was not able to recognise her baby's needs. As theorised in Rayment-Jones et al's realist synthesis ²²¹, if women are referred to appropriate services that can better prepare them for the challenges of parenthood and enable them to demonstrate their ability in parenting assessments then their children may be less likely to be removed by social care. Appropriate referrals to support services and holistic support can also help women develop a supportive network for their child's early years, their mental wellbeing and reduce further financial hardship, distress, and isolation. These mechanisms were incorporated into the refinement of the CMO configuration on engagement: see **Error! Reference source not found.**

When women were asked how they felt their care impacted on how well integrated they felt to their community those attending the hospital-based model discussed a lack of local support services. Women who were not native to the UK also described not being able to blend into an unfamiliar environment.

Other women felt that their support network centred more around their friends, family, and religious groups, and they would seek support and advice from them before professionals. This highlights an opportunity for maternity services to engage with these forms of support to gain trust in the local community and women's support systems- this is particularly important for women with social risk factors who are not always able to reach out for help. The key recommendations from the most recent London maternal deaths review ¹²⁶ include the development of a culture of trust between the mother, her family, maternity team and other professionals. The review highlighted that 41% of maternal death cases suggested that women were not listened to by their maternity healthcare providers, or that their concerns were not responded to in an effective way. If maternity services are known by and open to input from women's support networks, they may be able to provide safer, more responsive care. This type of outreach would need to be carried out sensitively and in partnership with women, ensuring it does not exacerbate women's perception of surveillance. Women also discussed the impact of dispersal and being moved to temporary accommodation outside of their known communities,

this not only had an impact on their support networks but also on their engagement with maternity care. Women from both models of care discussed other forms of support they received from the midwives and how this impacted negatively on their emotional wellbeing and engagement with services.

Eight of the twenty women recruited to the qualitative aspect of this study did not speak English and required an interpreter. Their insights provide detailed insight into how poor-quality interpreter services impact on their ability to disclose risk factors and communicate effectively with their healthcare providers. Women described a lack of choice of interpreter, suspicion around the level of confidentiality interpreter services provide, and most worryingly most questioned how well ‘professional’ interpreters were able to interpret what they were trying to relay to the healthcare professional during appointments. This resulted in many women preferring to use a known and trusted family member and friend to interpret for them where possible. Although evidence around how women experience interpreter services during pregnancy is sparse the use of family members works against the advice that many healthcare professionals try to adhere to⁵⁴⁰. It is recommended that women are seen at least once on their own during pregnancy to give them an opportunity to disclose sensitive issues that they may not be able to in front of family members, for example information about previous pregnancies, terminations, sexually transmitted diseases, drug and alcohol consumption, domestic abuse and physical and mental health issues^{458,541,542}. The insights provided in the study can inform future research around how maternity services can work to overcome this conflict and may well extend to wider services where women have even less of a voice or access to any interpretation service.

The findings of this thesis contribute to the emerging field of ‘syndemics’ and the concept of ‘syndemic care’ in the way that different mechanisms appear to work to improve outcomes for different groups of women. To oversimplify the analysis, there appeared to be three distinct groups of women with particular risk factors outcomes: 1) those unfamiliar with UK systems, non-English speaking, refugees and asylum seekers, 2) those with a lack of resource, socially isolated, unsupported, and have experienced poor care, trauma or abuse, and 3) those who experience disadvantage, discrimination, stigma and stereotyping based on their race, class, ability, age and other sources of oppression. Of course, there is often significant overlap between these groups, and many social risk factors umbrella all groups, such as poor mental health and poverty. This intersectionality is seen in the overlapping of multiple social risk factors in both the qualitative and quantitative sample, and how women described multiple factors to try to interpret the underlying biases of the discrimination they experienced, for example ‘... *Race. Social status. My other kids. Yeab, pick one...*’. However, the purpose of this oversimplification is to highlight the

clusters of women whom different mechanisms may lead to different responses, and therefore outcomes. Of course the multiple characteristics listed in the three groups above are associated with multiple epidemics, for example refugees, recent migrants and asylum seekers face specific maternal and child health inequalities, particularly in sexual and reproductive health, and increased exposure to violence. Deprivation, poor living conditions and a lack of access to services experienced by this population can contribute to skin and respiratory infections, gastrointestinal illnesses, and increased vulnerability to noncommunicable diseases ⁵⁴³. Despite the known health inequalities that particular groups of women face, standard maternity care is not organised around these needs- a women with complex needs will have the same length appointment as a woman with no health or social concerns. When women have difficulties in communicating with healthcare professionals through language, cultural or cognitive barriers, or lack trust in healthcare professionals, the impact of this inflexible, rigid system results in ineffective, unsafe and futile care for women most at risk of poor outcomes. Syndemic care has been put forward as a solution to target populations with shared needs, the specialist models of care evaluated in this thesis provide good examples of this. The community based model has targeted a local population with significant disadvantage within a culturally diverse community- the model responds to the local populations needs through holistic care that incorporates flexible, needs led appointments, on hand interpreter services, midwives who are knowledgeable about financial, legal and housing support, and trained in commonly associated health concerns such as poor mental health, drug and alcohol abuse and preterm birth. The hospital-based model on the other hand provides syndemic care to women with specific social risk factors who are more likely to miss appointments and struggle to engage with care, there is often an element of child protection issues with many of the women accessing the model. child protection. The midwives receive advanced safeguarding training and aim to meet the needs of the women they care for through advocacy at social care meetings and medical appointments, and guiding women through the often-fragmented maternity care system. Although the benefit of the hospital model was not always apparent in the qualitative findings of the evaluation, women who did receive a high level of continuity of care from the team valued their care and felt that midwives took their co-occurring needs into consideration throughout pregnancy. The benefit of using the syndemic lens to develop services that reduce health inequalities and improve social integration for pregnant women is the ability to take a concept of a model of care and its core working mechanisms and adapt them to the context a local community and the specific needs of its population. Other examples of this in maternity care might be the development of antenatal support groups or classes in languages common to the local area, or midwives communicating with local gatekeepers to create a sense of trust and understanding of their culture. This thesis has provided insight into those core working mechanisms, and the impact of place of care. The

findings suggest an overall benefit of care that is set within the community, particularly for fostering social integration and improving women and children's longer-term outcomes.

1.40 The implications to practice and future research recommendations

The findings of this thesis and the field of literature it is based within suggest increased action to up-scale models of care that aim to provide continuity of care during the antenatal, intrapartum and postnatal period. These models are best placed in the community setting, in areas of significant disadvantage to reach women who might be at most risk of poor birth outcomes, including those with undisclosed social risk factors. The community setting can also increase women's perception of candidacy and enable the development of support networks based on women's individual needs. The refined CMO configurations listed in Chapter 8 provide detailed, practical advice for those developing maternity services for women with social risk factors. Based on these findings, the insights of the PPI group, and the wider literature, **Error! Reference source not found.** below was adapted from Dahlgren and Whitehead's ⁵⁴⁴ representation of the wider determinants of health. The figure provides an overview of the key components of a model of care for women with low socioeconomic status and social risk factors made up of three layers of care represented by the circles. The inner circle represents the local community and includes a team of 6-8 midwives who provide antenatal, intrapartum and postnatal care to women in a local catchment area. This emphasis on the 'known team' rather than one 'known midwife' is important for policy as it is very difficult to deliver models of care with one known midwife allocated to each woman.



Figure 40: The key components of a model of care for women with low socioeconomic status and social risk factors

Referring to the model pictured above, the known team is based at a local health centre or community hub in an area of deprivation. The midwifery team act as a single point of contact for multi-disciplinary services described in the middle layer. The location and aim of the team can encourage women with social risk factors to use community services such as the health centre can help to foster a sense of belonging to the community and encourage use of other services and facilities such as: Playgrounds and play spaces, children's centres, community based activities for young children, social spaces where women can meet each other – Infant feeding café's / antenatal education centre/ baby weigh-in clinics /Community activities /Churches/Cultural centres/ libraries etc. The middle circle represents integrated care with other forms of local support that can be easily accessed on a needs led basis such as social care, health visiting services, GP, Mental health support, interpreter services, dietician, domestic violence advocacy, local charities, foodbanks, schools and nurseries. The outer circle represents specialist services that can be easily accessed on a needs led basis through clear referral pathways, these include the local or specialist hospitals for women with high medical risk, housing, financial and legal services and the Home Office. It does not centre the woman but the community-based model of care, this is to acknowledge the sense of surveillance women feel and aims to overcome that spotlight on the women by demonstrating the potential support available through a single point of contact. This model could be adapted for local use and should be tested and evaluated.

It is reported that data-driven approaches generate an overabundance of programme theories, which can be overwhelming (Pawson, 2013). Indeed, some of the initial programme theories put forward in the realist synthesis have not been analysed in this study. This is because they were not highlighted by the project's patient and public involvement group, expert panel, supervisors and thesis progression committee as priority theories to test in the constraints of a PhD project, or that they were not relevant to the study participants. This does not mean that they are not potentially important programme theories and should be kept in mind in future research into maternity and healthcare services for women with social risk factors.

It might be argued that decentralising maternity services could be a costly, resource heavy endeavour and indeed it will be important to measure the cost implications of such a restructure, as well as evaluate the services. That said, the research into cost effectiveness of continuity models of care suggests a cost-saving effect because of shorter hospital stay for mother and baby, fewer tests and interventions, and continuity models of care being more flexible and matching the input of midwives time to women's needs, especially in labour and birth ^{234,264,265} Based on limited evidence, Ryan et al's ⁵⁴⁵ cost effectiveness assessment of midwife led models of care

estimated that if midwife-led services such as the one proposed in figure ... were expanded to 50% of all eligible women in the UK the mean cost saving per women is UK £12.38 or £1.16 million per year. Although this is not hugely significant amounts of money in relation to NHS costs, it confers a cost reduction. In addition to this, the potential long term cost savings on the reduction of preterm birth, as was found in this thesis project, have never been estimated but highlighted as a consideration in future research evaluation of these models ⁵⁴⁶. It is also important to consider the wider effects of community-based antenatal care on the maternity system. When women access care in one part of the service such as the community, the flow of women in other parts of the service such as the hospital based antenatal clinic is affected. If services were to increase community based antenatal care, resource such as staffing, would shift from one setting to the other. This would also require careful monitoring and a full economic evaluation of these specialist models of care would be required before conclusions are made on cost effectiveness. Guidance on the implementation of these models of care ⁵⁴⁷ and a monitoring and evaluation framework have been published to support those developing maternity services ⁵⁴⁸.

Although the findings described in this thesis contribute a clearer understanding of how women respond to resources provided by specialist models of care, and how those response can lead to different outcomes, there is much more to be understood about the underlying mechanisms of many outcomes. For example the huge disparity in maternal deaths for black and ethnic minority women is poorly understood. Until the mechanisms for BAME women's disproportionality poor outcomes and experiences are realised, well intentioned interventions to improve them will most likely be a leap in the dark, or a hunch based on evidence reflecting white, affluent women's experiences. The most disadvantaged or marginalised in society, who are often the main target population for such interventions, are often the hardest to access and engage with services ⁵⁴⁹. Although they may be the hardest to reach, it is imperative to ensure they are able to participate fully so that health research and its findings are relevant to a wide population and those most affected by poor health outcomes. This is particularly relevant when referring to community-based interventions as the researcher will not be as familiar with the context as those with lived experience of those communities ⁴²². As it is hoped is clear at this point of the thesis, context is key in understanding the relationship between mechanism and outcome. One particularly important example of this is how women perceive continuity of care; Affluent woman who are less likely to have social risk factors have made their desire for continuity of care clear and reflected on it's impact of feeling cared for and empowered by knowing their midwife, resulting in improved engagement and experience of care ²³⁴. Whereas women with social care involvement or a lack of trust in the system can perceive continuity of care as a form of

surveillance that threatens their family, resulting in disempowerment and disengagement with the service ²²¹. In practice, early involvement with representatives of ‘harder-to-reach’ populations is not always easily achievable unless a formal, regular patient involvement arrangement already exists. This can be overcome by involving gatekeepers, and intermediaries (sometimes referred to as community leaders), who can act as both representative and translator of groups and introduce the researcher to the patients with the deep, lived experience ⁵⁵⁰.

Another issue is how to determine what is deemed as ‘success’ in the evaluation of models of care. Symon et al’s qualitative study that used the Quality and Newborn Care Framework ¹⁸² to evaluate women’s experiences of different models of maternity care disrobed the framework as useful for identifying the features that lead to improved quality of care. They also found that women receiving continuity of care described more positive experiences, particularly around the relationships developed with healthcare providers. Although this method was not deemed appropriate for this realist evaluation as it may have directed the focus away from what was important to the specific population, there were many similarities between the findings and Symon et al’s work. The QMNC framework could be developed into future evaluations of care for this at-risk population to provide comparable explanations of casual mechanisms for particular outcomes and give a sense of the models ‘success’. On the other hand, Berg’s ⁵⁵¹ myth busting paper on the implementation of information systems in healthcare settings discusses the notion of failure and success of an intervention, arguing *‘The question of whether an implementation has been successful or not is socially negotiated’*. Berg states that if an intervention aims to achieve one outcome but along the way learns things or encounters challenges that convince it that another outcome is a more appropriate goal, then it will have “succeeded” if it achieves something approaching the outcome conceived along the way. This flexibility in the term ‘success’ is an important point for the evaluation of specialist models of maternity care. The models studied in this thesis project may have been developed to improve a particular clinical outcome, but over time it has become more apparent, particularly to those healthcare professionals providing care, that the model effects wider aspects of women’s lives. Although it may not always be explicit, care that is aimed at women with social risk factors has often been designed to not only improve short term birth outcomes, but their long-term life trajectories children have been considered. Although long term outcomes are rarely measured in evaluations unless there is a life-course aspect to the study, for this population they might include engagement with early years services, GP, health visitors, A&E visits, hospital admissions, adherence to immunization programmes, developmental milestones, child health and subsequent pregnancy prevalence and outcome. Future research should focus on these outcomes and their contribution to reducing health inequalities in populations over time.

1.41 Strengths and limitations

This evaluation used mixed methods and was based on the findings of a realist synthesis of how women with social risk factors experience UK maternity care, and focus groups with healthcare professionals who provide specialist care. This realist process of theory development and testing worked well as a way of structuring the phases of the thesis and demonstrating transparent progress in the identification of new knowledge. The limitations of the preceding synthesis and focus group study have been discussed in Chapters 4 and 6 but their influence on the evaluation as a whole will be reflected upon here. One of the key limitations of the synthesis was the lack of studies reporting women's socioeconomic status, experiences of specialist models of care, or the inequities in health service utilisation, experiences and outcomes for second or third generation descendants. Programme theories later tested in the evaluation were often based on what did not work in standard care, rather than accounts of effective specialist models of care. Had the synthesis not aimed to identify programme theories that went on to be tested but to contribute to the development of interventions, the GRADE-CERQual approach would be useful in assessing how much confidence to place in the programme theories. A strength of the approach being that it identifies outcomes that are important to stakeholders such as the acceptability and feasibility of programmes and unintended consequences ⁵⁵².

Another challenge found in the synthesis was that the included papers were often not explicit about the potential causal mechanisms behind women's experiences. Retroductive and abductive thought, as described by Jagosh ⁴⁰¹ were practised in this scenario to enable the development of programme theories that could be tested in the context of specialist models of care for women with low socioeconomic status. Longitudinal interviews were proposed for the realist evaluation to overcome the challenges in unearthing causal mechanisms within one interview. As Calman et al ⁵⁵³ found when reflecting upon a longitudinal qualitative study of cancer patients experiences, this method was particularly helpful in identifying how women responded to transitions in their care pathways, for example the referral to specialist models of care, shedding light on barriers to access and continuity of care.

The limitations identified in the focus group study in Chapter 6 are similar to later aspects of the evaluation of the two specialist models of care. For example, the focus groups participants knew that the study formed part of an evaluation of their service, creating a potential sense of being tested or assessed that might impact on their response. Similarly, women interviewed during the study, particularly those who perceived maternity services as a form of surveillance, may have perceived the study questions to be testing them about their willingness to engage with their care

or the services offered to them. This could be overcome to an extent by testing women's experiences with the quantitative data on engagement. Not all women engaged with the study after consenting- one woman, who missed a significant number of antenatal appointments also missed numerous interviews. Therefore the views of women are not representative of the experiences of all women recruited to the study- whilst the findings from the women who engaged with the model do reflect the majority and are consistent and credible, we cannot extrapolate from them to draw conclusions about the mechanisms operating for those who struggle to engage. The model of care and continuity provided may not have been a positive experience for that woman. This reflects some of the points made in the focus groups, the midwives from both models of care gave specific examples of social circumstances that led to a resistance to be helped such as women living very complex lives and trying to avoid the social care system. In addition to this, the quantitative data showed significant differences between the two different service providers despite similar urban contexts. This points to organisational or cultural system differences, some of which were highlighted in the qualitative data analysis but should nonetheless be investigated by those service providers. The relatively small numbers in each group and wide confidence intervals for many outcomes should be taken into consideration when analysing the quantitative findings. It should also be emphasized that the main purpose of the quantitative data collection was to link contexts and potential outcomes and direct the focus of the qualitative data analysis to unearth causal mechanisms, rather than to make specific claims about what models of care work overall.

Another potential limitation relates to the use of the IMD score to classify women's socioeconomic status. Although the IMD score has been shown to be a robust measure of socioeconomic ranking in England, especially where individual-level data are not available^{164,554,555} it is based on area-level information and therefore can fail to capture the characteristics of individual socioeconomic disadvantage. With this in mind we analysed women's IMD scores by their social risk factors and found there was a significant relationship between the most deprived women according to IMD score and the number of social risk factors they had. This warrants the use of the IMD score for this population of women as it is known that social risk factors, health inequalities and poor access and engagement are more prevalent amongst more deprived populations^{139,154,162,164,556}. However, a more robust method of measuring women's socioeconomic status, particularly in pregnancy, would add a much-needed level of rigor in the maternal health inequality research. The same goes for defining ethnicity and the use of the ONS's 18+ categories⁵⁵⁷, which were poorly recorded in the hospital data used in the evaluation.

When recruiting women with social risk factors to the study, the midwives working in the specialist models of care were asked to identify all women who fit the inclusion criteria. This may have created a bias in sample selection as the midwives were aware their service was being evaluated and may have excluded women who they thought might give negative feedback of their care. This was minimised by the researchers presence at team meetings where new referrals to the teams were discussed and assessed for inclusion to the study. A similar limitation is that the midwives working in the specialist models were aware of the women who were recruited to the study, and therefore may have provided an enhanced level of care for those women, although this does not appear to be the case when analysing women's mixed experiences and apparent honest reflections about their relationships with the midwife. This limitation may have been lessened through the trust built between the participant and the researcher over the course of the longitudinal interviews, a key aspect of the evaluation design based on the research methodology literature around engaging with vulnerable populations ^{558,559,560}. That said, it is important to consider that this research has been analysed and interpreted in a context that is different from that of those women who gave their experiences. Again, the insight of the patient involvement group was sought in the analysis and write up of this thesis to minimise this disconnect.

Finally, the generalisability of the findings is limited by the urban location of both specialist models of care evaluated. This is particularly significant when reflecting on the outcomes relating to place-based care- what may have yielded significant outcomes in a densely populated, multicultural community in London, may yield very different results elsewhere. Research is needed to test the generalisability of the findings to rural and other community settings. The findings of the thesis are nonetheless valid for the purpose of answering the research questions, and the specific content, mechanism, outcome configurations described in chapter 8 allow for refined testing in different contexts. Of course the global and local context has significantly, and probably irrevocably, changed since the evaluation data was collected and analysed. The Covid-19 pandemic has led to huge disruption of people's lives, healthcare services and economies across the globe. It has also demonstrated a further significant health inequality with more people from black, Asian and minority ethnic groups dying from Covid-19 than white people ^{75,561}. In this context the tragic killing of George Floyd by policemen in Minneapolis, USA, led to an international movement of #BlackLivesMatter demonstrations across the world that went on to further highlight the racial inequalities for pregnant Black and Asian women in the UK found in the most recent MBRRACE report ⁵¹⁷. This is not to say that the findings of this thesis are not relevant in this new and ever emerging context, but that they can inform policy for current maternity services for women with social risk factors, including Black and minority ethnic women, be adapted to different contexts and further tested to address these inequalities. Indeed,

Pawson et al have published working papers on the relevance of realism in the pandemic, one of which describes this ability to adapt the working parts of a programme to specific contexts to gain maximum benefit;

'Public health programmes do not provide panaceas. They work under particular applications, in particular contexts, for particular groups, in particular respects, over particular durations. The great challenge is to identify these contingencies and to maximise effectiveness across every 'particular'⁵⁶².

1.42 Conclusion

This thesis set out to identify what works at reducing the stark health inequalities experienced by pregnant women with low socioeconomic status and social risk factors, particularly those of Black and ethnic minority backgrounds. It was unclear if, and how models of care can overcome the detrimental effects of poverty, class, stigma and discrimination, amongst other causes of inequality. A realist synthesis and evaluation was designed to address the gaps in knowledge, with a focus on identifying the specific mechanisms of specialist models of care. This was because of the known benefits of models of care that incorporate continuity of care for women without social risk factors. This thesis was also concerned with other potential mechanisms of these specialist models of care, for example the setting in which they are based. For most women with interviewed, continuity of care was seen as a positive aspect of their care that led to the development of trusting relationships, increased engagement and a willingness to disclose social risk factors with the service. But high levels of continuity were not always provided by the specialist models of care, and when women experienced the hospital environment or other healthcare professionals without the presence of a known midwife, they described paternalistic care and discrimination. Women receiving the specialist model of care based in the community reported a higher satisfaction of continuity of care due to being able to form a relationship with the team as a whole, rather than one named midwife. The community setting appeared to offer further benefits such as perceptions of support and higher levels of candidacy than the hospital-based model of care. The data highlighted how carefully considered place-based care can create safe spaces for women, identify the specific needs of a local population that's leads to the design of services aimed to address those needs- syndemic care. The quantitative data highlighted interesting relationships between the community setting and neonatal outcomes that require further testing in future research. There were many more mechanisms that appeared to lead to improved outcomes, most identified by women, but some hidden mechanisms were highlighted by the midwives providing the services, for example the time spent providing the most flexible care and coordinating support systems. For women who perceived maternity services as a form

of surveillance and a threat to their family, the combination of the community setting and ability to form relationships with their care providers appeared to ease this perception.

The identification of specific mechanisms will allow those developing maternity services to structure models of care around local need without losing the core aspects that lead to improved outcomes. These mechanisms, in which contexts they are fired, and what outcomes they effect are detailed in six refined CMO configurations. These configurations provide a framework for future models of care for women with low socioeconomic status and social risk factors. These future models of care should be evaluated, and findings shared to further refine this knowledge base.

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Term	Definition and justification
Abduction	The analysis of data that falls outside of the expected, or theoretical framework, or perhaps something that has not been accounted for in past theorising of similar programmes
Apgar score	A measure of the physical condition of a newborn infant. It is obtained by adding points (2, 1, or 0) for heart rate, respiratory effort, muscle tone, response to stimulation, and skin coloration; a score of ten represents the best possible condition.
Ascriptive characteristics	A group in which status is based on a factor other than achievement. A group that only has members of a certain race or sex is an example of an ascriptive group.
Candidacy	The ways in which people's eligibility for medical attention and intervention is jointly negotiated between individuals and health services
Constructivism	An approach to learning that holds that people actively construct or make their own knowledge and that reality is determined by the experiences of the learner.
CTG monitoring	Cardiotocography (CTG) is a technical means of recording the fetal heartbeat and the uterine contractions during pregnancy. The machine used to perform the monitoring is called a cardiotocograph, more commonly known as an electronic fetal monitor (EFM).
Demi-regularity	A semi-predictable outcome pattern. The demi-reg concept has relevance to fundamental principles in realist evaluation (Pawson and Tilley, 1997) including the context-mechanism-outcome (CMO) configuration and middle-range theorizing. ³⁷⁴
Ethnicity	A subjective concept referring to the identification of population groups based on shared social, cultural and historical variations. Ethnic groups are characterised by organised cultural boundaries such as language, religion and country of origin ⁶⁶
Gender	The UK government defines gender as a social construct relating to behaviours and attributes based on labels of masculinity and femininity. Gender identity is a personal, internal perception of oneself and so the gender category someone identifies with may not match the sex they were assigned at birth. An individual may see themselves as a man, a woman, as having no gender, or as having a non-binary gender. ⁶⁵
Generative causation	The idea that underpinning hidden mechanisms generate outcomes. This notion contrasts with successionist causation, which is based on the idea of observing correlations between empirical events to infer causation (i.e., constant conjunction of events). ³⁷⁴

Induction of labour	The process of artificially stimulating the uterus to start labour
Inequality	The condition or state of being unequal
Inequity	A lack of justice or fairness.
Poverty	ABSOLUTE poverty refers to a situation where people lack the resources necessary for subsistence. RELATIVE poverty refers to a situation where people lack resources or opportunities when compared with that of other members of society. ²⁴
Intersectionality	The interconnected nature of social categorizations such as race, class, and gender as they apply to a given individual or group, regarded as creating overlapping and interdependent systems of discrimination or disadvantage.
Low Socio-economic status	For the purpose of this research: <ul style="list-style-type: none"> • An IMD score of higher than 30 will be defined as low socioeconomic level. AND/OR <ul style="list-style-type: none"> • Secondary school as the highest level of education attained. The highest level of education attained has also been chosen as an indicator of deprivation as it has a clear influence on occupational opportunities and earning potential. Other advantages, compared with measures based on income or occupation, is that educational attainment is specific to an individual, relevant for women who may not be working to look after children. In the wider literature educational attainment is a stronger predictor of mortality and morbidity mortality than either income or occupation (Psaki, 2014). Therefore, self-reported level of education, categorised into three groups: no completed education or completed only primary school; completed secondary school; and completed tertiary (university or college). Indicators measuring life course socioeconomic position, for example income, housing, relationship and occupation, will also be collected and reported for the cohort of women recruited to the study
Indices of Multiple Deprivation score	A composite measure using routine data from seven domains of deprivation to identify the most disadvantaged areas in England.
Mental health categories (common and severe)	Common mental health problems include depression and anxiety disorders such as generalised anxiety disorder, panic disorder, obsessive-compulsive disorder (OCD) and post-traumatic stress disorder (PTSD) and phobias. Severe mental health disorders include a diagnosis of schizophrenia, bipolar affective disorder or other psychoses.

Maternal death	
Medical risk status	For the purpose of data collection: women are assigned 'high' or 'low' medical risk status at booking appointment and again at the onset of labour based on numerous medical conditions that pose risk to the woman or the fetus.
Miscarriage or termination of pregnancy	The loss of a pregnancy during the first 23 weeks.
Neonatal death	A baby born at any time during the pregnancy who lives, even briefly, but dies within four weeks of being born.
No recourse to public funds	A condition imposed on someone due to their immigration status. ... If a person has valid leave to enter or remain and there is no reference to NRPF on their immigration documentation then it should be assumed that they do have recourse to public funds.
Ontological depth	The idea that reality is stratified in layers. For example, a layered perspective may suggest that to understand why something has manifested in the way that it has involves mechanisms at the societal, community, family, individual, and intraindividual layers. ³⁷⁴
Objectivism	The belief that certain things, especially moral truths, exist independently of human knowledge or perception of them.
Obstetric emergency	For the purpose of this research obstetric emergency refers to recorded antenatal or <u>postpartum hemorrhage</u> , <u>shoulder dystocia</u> , cord prolapse, neonatal resuscitation, eclamptic seizure and undiagnosed breech and/or twin birth.
Paradigm	A distinct set of concepts or thought patterns, including theories, research methods, postulates, and standards for what constitutes legitimate contributions to a field.
Parity	The number of times that a woman has given birth to a fetus with a gestational age of 24 weeks or more, regardless of whether the child was born alive or was stillborn. Primiparous meaning the woman has not given birth before, and multiparous meaning the woman has given birth to at least one fetus over 24 weeks gestation.
Participatory Appraisal	A family of approaches that enable local people to identify their own priorities and make their own decisions about the future.
Perineal trauma	Damage to the genitalia during childbirth that occurs spontaneously or intentionally by surgical incision (episiotomy).
Positivism	An approach to the study of society that relies specifically on scientific evidence, such as experiments and statistics, to reveal a true nature of how society operates.
Race	In the past, theorists have categorised race on geographic regions, ethnicities, skin colours, and ancestral ties. Now however, a far more common way to understand race is through the 'social construction of race' or 'racialization':

	<p>race is not biologically identifiable. Rather, certain groups become racialized through a social, subjective, process that refers to superficial physical differences that a particular society considers significant. ⁶⁶</p>
Realist synthesis	<p>Realist synthesis is an approach to reviewing evidence on the effectiveness of complex social interventions, to provide an explanatory analysis of how and why they work (or don't work) in particular contexts or settings. It complements the traditional systematic review process, which was been developed and is used mainly for simpler interventions like clinical treatments or therapies. (pawson et al, 2004). ³⁷⁴</p>
Realist evaluation	<p>The term 'realist evaluation' is drawn from pawson and tilley's seminal work, realistic evaluation (1997)ⁱ. It is, as its name suggests, an approach grounded in realism, a school of philosophy which asserts that both the material and the social worlds are 'real' and can have real effects; and that it is possible to work towards a closer understanding of what causes change. Some of the implications which pawson and tilley raise for program evaluation include the following:</p> <ul style="list-style-type: none"> • Social programs are an attempt to address an existing social problem – that is, to create some level of social change. • Programs 'work' by enabling participants to make different choices (although choice-making is always constrained by participants' previous experiences, beliefs and attitudes, opportunities and access to resources). • Because programs work differently in different contexts and through different change mechanisms, programs cannot simply be replicated from one context to another and automatically achieve the same outcomes. Good understandings about 'what works for whom, in what contexts, and how' are, however, portable. • Therefore, one of the tasks of evaluation is to learn more about 'what works for whom', 'in which contexts particular programs do and don't work', and 'what mechanisms are triggered by what programs in what contexts'.
Rivalry or rival theories	<p>The juxtaposition of two or more causal claims that appear to be in contradiction with each other, at least initially.</p>
Sex	<p>The UK government defines sex as referring to the biological aspects of an individual as determined by their anatomy, which is produced by their chromosomes, hormones and their interactions. Sex is generally male or female and is assigned at birth. ⁶⁵</p>
Social capital	<p>The effective functioning of social groups through interpersonal relationships, a shared sense of identity, a shared understanding, shared norms, shared values, trust, cooperation, and reciprocity.</p>

Social Class	A group of people within a society who possess the same socioeconomic status. Besides being important in social theory, the concept of class as a collection of individuals sharing similar economic circumstances has been widely used in censuses and in studies of social mobility.
Social risk factors	Table 2 in Chapter 1- ‘Social risk factors associated with increased risk’ lists the social factors associated with increased obstetric risk, with definition, and have been divided into two groups ‘women who find services hard to access’ and ‘women needing multi-agency services’ (NICE 2010, CMACE 2011, Hollowell 2011, MBRRACE 2015, New Policy Institute, 2015, Rayment-Jones, 2015):
Skin-to-skin	Skin-to-skin contact is usually referred to as the practice where a baby is dried and laid directly on their mother's bare chest after birth, both of them covered in a warm blanket and left for at least an hour or until after the first feed.
Standard maternity care:	<p>Both study sites (st thomas’ nhs trust and st marys hospital (icht nhs)) offer all pregnant women ‘shared care’- as a standard maternity care package. This means care is shared between midwives, hospital doctors and a woman’s gp. The standard maternity care schedule was established on the nice (2008) antenatal care guidance- see below for a table of the schedule of standard maternity care. Women attend appointments at a hospital based antenatal clinics. Antenatal education is offered and carried out by an allocated trust midwife.</p> <p>A labour ward/birth centre midwife and the medical team if necessary will provide labour care. for women living within the trusts geographical boundaries, the trusts community midwives will carry out postnatal care at home with a minimum of 3 visits. Women living outside of the trusts boundary will receive postnatal care from the trust covering her postcode.</p>
Stillbirth and intrauterine death	A baby delivered with no signs of life known to have died after 24 completed weeks of pregnancy. Intrauterine fetal death refers to babies with no signs of life in utero.
Specialist care	Maternity care that has been reconfigured to meet the needs of a specific population. In this study two case study sites have been selected to be evaluated as they provide care for women with low ses.
Service provider A	<p>A number of teams provide care to women based on social risk and their geographical location. The teams are located in areas of social deprivation but not all women under their care will have social risk factors. Any woman presenting to the trust with complex social risk factors will be referred to the team nearest her residence. Care is provided in the local community setting. This study will evaluate one of these specialist teams, located at a GP surgery in a London borough with significant health inequality (Tinson et al, 2017).</p> <p>Inclusion Criteria for case study one-</p> <ul style="list-style-type: none"> • Domestic Violence • Previous child protection or social service involvement

	<ul style="list-style-type: none"> • Depression/Anxiety/Previous PND • Tokophobia/Traumatic birth • Previous birth before arrival (BBA)/ Homebirth • Special needs • Non-English speakers • Homeless • Deafness • Single/unsupported • Teenager • Staff
<p>Service provider B</p>	<p>A specialist midwifery service offering continuity of care to women with complex social risk factors only. Women living within the Trusts geographical location with one or more social risk factor are referred to the team. Care is provided in the home or hospital setting. This site was chosen as an 'early adopter' for the Better Birth's' Maternity Review (2017) to test innovative ways of working to help transform maternity services such as using small teams of midwives to offer greater continuity of care to women. Therefore, trust stakeholders are keen to evaluate the existing service and understand the mechanisms of safe care for this population of women.</p> <p>Inclusion criteria for case study two-</p> <ul style="list-style-type: none"> • Domestic abuse • Drug or alcohol dependency • Safeguarding cases- Current, or significant previous Social Service involvement • Asylum seeker/refugee • Homelessness • Travelling community • Women under 19 at time of booking • Physical or learning disability • Mental health illness – current or past hx (medicated &/or treated by a psychiatrist &/or community mental health team) <p>*This referral criteria were established by the caseload midwives who reviewed outcomes of the CMACE report (2009), recommendations of the pregnancy and complex social factors guideline (NICE, 2010), Maternity Matters (2007), and the specific vulnerable and disadvantaged groups in the North West London population (ONS, 2009).</p>
<p>Subjectivity</p>	<p>A central philosophical concept, related to consciousness, agency, personhood, reality, and truth, which has been variously defined by sources. ... Something being a subject, narrowly meaning an individual who possesses conscious experiences, such as perspectives, feelings, beliefs, and desires</p>

Syndemics	The co-occurrence of multiple psychosocial and health conditions that contribute to health disparities
Complex intervention	Non-standard programmes or interventions, having different forms in different contexts, while still conforming to specific, theory driven processes.
Context (C), Mechanism (M), and Outcome (O) configurations:	<p>Programs ‘work’ in different ways for different people (that is, programs can trigger different change mechanisms for different participants).</p> <ul style="list-style-type: none"> • The contexts in which programs operate make a difference to the outcomes they achieve. Program contexts include features such as social, economic and political structures, organizational context, program participants, program staffing, geographical and historical context, and so on. • Making and sustaining different choices requires a change in participant’s reasoning (for example, values, beliefs, attitudes, or the logic they apply to a particular situation) and/or the resources (e.g. Information, skills, material resources, support) they have available to them. This combination of ‘reasoning and resources’ is what enables the program to ‘work’ and is known as a program ‘mechanism’. • Some factors in the context may enable particular mechanisms to be triggered. Other aspects of the context may prevent particular mechanisms from being triggered. That is, there is always an interaction between context and mechanism, and that interaction is what creates the program’s impacts or outcomes: Context + Mechanism = Outcome.
Mind-independent reality	The idea that the world exists independent of our knowledge of it. Our knowledge of reality is always partial and prone to fallibility. ³⁷⁴
Middle range theory	Theories that ‘lie between the minor but necessary working hypotheses (programme theories) that evolve in abundance during day-to-day research, and the all-inclusive systematic efforts to develop a unified theory’ (merton, 1968). They help conceptualise complex reality so that empirical testing of the more specific programme theories becomes possible and generalisable.
Realist philosophy	An intellectual tradition involving a number of core ideas, including (a) mind-independent reality, (b) ontological depth, (c) generative causation, and (d) retrodution. ³⁷⁴
Realist program theory:	Theory that hypothesises how a program is expected to work, given contextual influences and underlying mechanisms of action. A realist program theory takes into account all the factors involved in determining program success or failure and relies on middle-range theories to provide a level of abstraction that facilitates the analysis of complex data. ³⁷⁴
Retrodution:	The activity of unearthing causal mechanisms. ³⁷⁴

Appendix B: Realist informed data extraction form sample

<p>First author: Phillips, 2015</p>	<p>Year: 2015</p>	<p>Title: The first antenatal appointment: an exploratory study of the experiences of women with a diagnosis of mental illness</p>	<p>Reviewer initials: HRJ</p>
<p>Aim</p>		<p>Full reference</p>	
<p>This exploratory research study asks what are the feelings, perceptions, and expectations that influence how women with pre-existing diagnoses of mental illness experience their first antenatal (booking) appointment.</p>		<p>Phillips, L. & Thomas, D. (2015). The first antenatal appointment: An exploratory study of the experiences of women with a diagnosis of mental illness. <i>Midwifery</i>, 31(8), pp. 756-764.</p>	
<p>Overall summary for included papers only:</p>			
<p>Setting: UK</p> <p>Participants: Twelve women who had a pre-existing diagnosis of mental illness and received regular support and care by mental health services</p> <p>How was low SES measured? Other complex social factors?</p> <p>Sample size: 12</p> <p>Study design: Semi-structured interviews</p> <p>Objectives: Not stated</p> <p>Details of maternity care experienced: Standard maternity care</p> <p>Is the maternity care clearly described (could it be replicated)? NO</p> <p>Are the required resources described? NO</p> <p>Was a control group used? NO</p> <p>Was there any form of randomization between groups? NO</p> <p>Other methods information? N/A</p> <p>Limitations: Small sample size and one locality</p> <p>CASP analysis: 9/10</p>			
<p>Initial programme theories (introduction/background)</p>			
<p>Midwives report feeling unconfident in assessing the needs of women with severe mental illness and referring them to relevant specialist services. Attributable causes have been identified such as lack of</p>			

pre and post-registration training around perinatal mental illness, poor continuity of care, and lack of available specialist services

Women are reluctant to report their mental health issues due to fear of referral to social services and the potential removal of their child.

Contexts (C), Mechanisms (M) and Outcomes (O). *To confirm or refute initial programme theory. Specify which are contexts (separate to the intervention) and which are mechanisms (divide into reactions of participants (Mp) and resources of programme (Mr)). Use maternity care characteristics and environment as contexts*

Most booking appointments for maternity services were arranged following the GP referral to maternity services (C), and women received very little information (Mr) about the appointment.

Lack of knowledge and skills (Mr) displayed by their GPs when discussing referral to maternity services and the nature of the initial booking appointment (C), this left woman feeling unprepared and impacted their readiness to disclose pre-existing mental health issues or current symptoms (O)

The length of time between the GP appointment and the maternity booking appointment (Mr) appeared to increase a level of apprehension about fetal wellbeing (O)

The amount of information (Mr) given at a booking appointment (C) was felt to be excessive and women found it overwhelming (O)

Women were unclear about their mental health needs at the time of the first booking appointment (C), and needed more opportunities (Mr) to discuss their mental health needs and the possible impact this would have on their pregnancy in order to plan what support would be needed (O)

Women with a diagnosis of bipolar disorder (C) received a less positive and supportive response from the midwives following disclosure (O)

It was also identified that a lack of awareness around perinatal mental illness amongst partners and family members (C) may act as a potential barrier to disclosure of mental illness at the booking appointment (O) as they can discourage women from disclosing mental health issues (Mp)

If a level of sensitivity, receptiveness and interpersonal skills (Mr) are used by the Midwife, this can be effective in enabling women to disclose (O) as she understands why (Mp) she should disclose the information and how this can help her support network (O)

Women expressed their disappointment at not having one midwife allocated to them throughout their pregnancies as they were unable to build up a personal relationship

The women diagnosed with bipolar disorder (C) stated that midwives didn't appear to have much awareness and knowledge (Mr) of perinatal mental health service, or demonstrate sensitivity and knowledge about their diagnosis, and appeared to express uncertainty.

What does this paper add to our theoretical understanding of how women with low socioeconomic status experience maternity care *where are the gaps in care that might be addressed by a different model of care?*

Women interviewed perceived a general of lack of joined up working between antenatal and perinatal mental health services.

Additional References to follow-up/ other comments *(Please find and review additional references and add to database)*

The Francis Report (2013) emphasised the importance and need for service user's views and involvement in healthcare design and monitoring of clinical effectiveness, recognising that patient safety and quality of care improves when services work in partnership with patients to provide appropriate healthcare delivery

Refined programme theories to consider for realist evaluation

If women were more informed about how to access maternity services, and what their care will offer, then they will be able to self-refer at the earliest opportunity, prepare for the appointment by considering their personal needs and what information they may need to disclose and how they might go about this.

If women have more access to a healthcare professional between appointments, then their levels of apprehension about fetal wellbeing may be reduced.

If antenatal appointments are individualised to meet women's needs, then information could be given at appropriate times and women would not feel overwhelmed by an excess of information at a booking appointment.

If antenatal appointments are flexible and individualised to meet women's needs, then women with mental health problems would have more opportunities to discuss their needs and the possible impact their mental health may have on their pregnancy in order to make an appropriate plan.

If midwives have effective training and access to a perinatal mental health specialist, then they will be better prepared to respond to disclosure and support women with complex mental health needs, such as bipolar disorder.

If antenatal education incorporates the learning needs of family members and birth partners, then the whole family unit will feel better prepared to support women with complex needs.

If antenatal education included information on mental health problems including what support is available, then women and their family members/birth partners would feel better prepared to disclose concerns around perinatal mental health.

If a level of sensitivity, receptiveness and interpersonal skills are used by a midwife, then women are better able to disclose mental health concerns as she understands why she should disclose the information, and how this can help her support network.

If women have a named midwife providing the majority of their care throughout pregnancy birth and postnatal period, then they will be able to build up a close trusting relationship.

Programme Theories	Middle Range Theory
<p>RESOURCES</p> <p>If women receive written information (in their preferred language) about how to access maternity services and what their care will offer and are able to do this directly rather than through a GP, then barriers around NHS administration and/or postal delays will be overcome and antenatal care will commence earlier in pregnancy. (1), (3), (4), (7), (9), (10), (11), (12), (14), (16), (18), (19), (20), (22)</p> <p>If women are able to register with maternity services and GP's without extensive documentation or evidence of a permanent address, then they could access care earlier in pregnancy, reduce stress and fear of disclosure to agencies or individuals who might put them at risk. This will, in turn, improve early access to abortion services. (4), (7), (9), (11), (12), (14), (16), (20)</p> <p>If maternity care incorporated early pregnancy care (from conception/confirmation of pregnancy), then women would not view it as a package of care for viable and continuing pregnancies and therefore see value of accessing care early in pregnancy to seek support and advice regardless of whether or not they intend to continue the pregnancy. (7), (10), (11), (12)</p> <p>INTERPRETATION SERVICES</p> <p>If HCP's listen to women's choices about interpreter services, for example a female, an anonymous, or a trusted interpreter, then barriers to their use and effectiveness will be reduced and women would feel more comfortable discussing sensitive subjects and disclosing concerns with their healthcare provider, improving safety. (1),(5),(7), (9), (12), (13), (14), (18), (20), (21)</p> <p>If women have easy, immediate telephone access to interpreter services to register with services, arrange or reschedule appointments, organise travel to appointments, and access to properly translated materials, then inequity in information received and a key communication barrier will be overcome, and women will be better able to access services. (11), (14), (18), (20), (21)</p> <p>EDUCATION</p> <p>If antenatal education was culturally sensitive including information that is relevant to women's individual needs at an appropriate gestation, (for</p>	<p>Resources</p> <p>Access/System barriers</p> <p>Interpretation services</p> <p>Education</p> <p>Flexibility</p> <p>Community</p> <p>Continuity of care</p> <p>Multi-disciplinary working</p> <p>Support</p> <p>Staffing</p> <p>Time</p>

example child friendly settings and classes without the presence of men) and provide an opportunity to meet a small team of midwives providing their care, then more women would engage with the classes and be better informed about their birth choices. (1),(2), (6), (8), (15), (19)

If basic, evidence-based information about maintaining a healthy pregnancy, and procedures/routines is readily available, easy to understand, and translated into new migrant languages, then women would be better informed, able to provide consent, and have less reliance on the internet and advice from friends and family. (6), (8), (15), (20)

If women have more face-to-face time with a health professional to discuss their lifestyle, then they will better understand the impact of risky behaviours, as many do not engage with or understand information provided in leaflets. (22), (13)

PRACTICAL SUPPORT

If HCP's support women in difficult circumstances to address the emotional and practical challenges they face by providing them with new skills, knowledge and resources (for example help to resolve infant feeding challenges, provision of breast pumps, bottles and storage bags, reassurance, and motivation to abstain from illegal substances), then they will be better prepared to overcome challenges and internalise this as evidence of care and concern that HCP's feel towards them. (2), (12)

If HCP's have the time, resources and skills to coordinate and facilitate practical support to meet women's wider needs (this may include providing information about statutory procedures, contacting social workers, writing letters on their behalf, as well as coordinating, attending and facilitating meetings with other statutory agencies (e.g. Social care, Housing departments, Home Office)), then women will be better informed of unfamiliar processes and better equipped and supported in difficult circumstances. (2), (11),(14), (20)

If HCP's are educated in maternity benefits available for socially vulnerable women, and able to provide advice around practical matters such as housing, employment, education and care of other children and family members, then women would see more value or purpose in accessing services earlier in pregnancy and further financial hardship and distress for the women could be avoided. (9), (10), (14), (16), (20)

CONTINUITY

If women can access a known midwife 24/7 via a phone call or text message, then they will be better able to engage with services, care will be more personalised, they will feel more cared for, and are less likely to have to repeat their history and experience a variation of responses/advice. (2),(3), (4), (7), (14), (15), (19), (21), (22)

If women feel they have a continued supportive presence throughout pregnancy and the perinatal period, either with a midwife, GP or other HCP, then they will feel better supported and have reduced feelings of anxiety, increased sense of control, and enhanced self-beliefs and wellbeing. (2), (4), (6), (7), (10), (13), (14), (15), (16), (17), (19), (22)

If women are offered continuity of care and are able to build a trusting relationship with their HCP, then underlying social risk factors can be explored and care individualised to their needs to improve engagement and empowerment so that women are better able to express or restate their expressed wishes and concerns. (7), (13), (17), (16)

COMMUNITY/LOCATION

If HCP's work in a small geographical area where they are visible and become known by other members of the community, religious networks and other 'gatekeepers', then they can work together to develop trust, facilitate family and community-centred care, and educate the community with evidence-based information and dispel common, harmful myths. (3), (14), (18), (20), (21), (22)

If HCP's are familiar with local charities, food banks, befriending programmes and support services then they will be able to introduce women to these services in order to provide the most supportive networks possible before they are discharged from maternity care and women will be better able to integrate into the community. (2), (9), (12), (14), (20), (21)

If a programme provides physical and social opportunities for women to receive flexible, needs-led care, where the time and place of appointments is co-planned (for example at home, community or a hospital setting), then women will have the best chance to access timely antenatal care, feel listened to and empowered by taking control of their care. (2),(3),(7),(8), (9), (14), (15), (20)

If services are flexible for women who live socially complex lives and move location frequently, or for those who have no access to a telephone or resources to travel far away to a hospital, for example local drop in services, appointments at home, or at the weekend, not at school times

for single mothers, not during working hours for women working illegally, then their engagement with services can be improved as much as possible (1), (2), (4), (9), (12), (20), (22).

If midwives are able to visit women at home in the antenatal period, then they will not only overcome barriers such as women unable to travel to appointments, but also be able to assess the living conditions of women to provide more individualised, holistic care. (9), (14), (15), (20)

TIME / ACTIVE PARTICIPATION

If antenatal care provides reassurance through clinical checks, effective preparation for labour, an opportunity for socialising with other mothers, and women are encouraged and given the time and resources required to ask questions about their pregnancy and care, then women will see the service as beneficial, feel like active participants and engage with their healthcare providers. (2), (8), (10), (13), (15), (16), (17), (20), (22)

If healthcare professionals give information in an unbiased way, and listen to women's choices, questions, and decisions, then women will be able to make informed choices about their pregnancy, feel a sense of control and being listened to, and demonstrate their ability to make appropriate choices. (10), (15), (16), (20)

If women accessing busy maternity services with rushed staff feel that they are being 'processed through a system by professionals who follow procedures without really noticing the woman in front of them', then they will not feel cared for, supported, or valued and have a perceived lack of social support. (3), (13), (16), (15)

If models of care were flexible, appropriately staffed, and midwives had full autonomy over their working days and appointments, then women would not perceive the pressure of time and feel more able to disclose information and midwives would have improved attitudes as they would not be working to unrealistic time constraints. (3), (4), (13), (16), (20), (21)

MULTIDISCIPLINARY WORKING/COMMUNICATION

If there are clear paths of communication across different trusts and services such as GP, gynaecology, maternity services, social care and mental health services is seamless, then women would be able to access care earlier in pregnancy and experience less fragmentation and disassociation between the services. (7), (9), (10), (11), (19), (22)

<p>If models of care facilitated the development of effective support networks for women throughout their pregnancy through working with family members and multidisciplinary support services (social workers, health visitors, support workers, children's centres and voluntary sector agencies), then that established support network will enable new mothers to flourish and become confident and successful parents. (9), (15), (16)</p>	
<p>If a trusting relationship develops through open discussion and story sharing between women and their HCP, then women will have confidence in their HCP, trust their advice, and benefit from their support. (2), (3), (4), (13), (16)</p> <p>If a programme offers advocacy, midwife attendance at meetings, and other forms of emotional support during interactions with social care then women will feel supported and informed of unfamiliar processes (2), (6), (10)</p> <p>If healthcare professionals inform women of their right to choice, through education and providing the evidence-based information women need to exercise that choice, then they will be empowered, and their self-confidence increased through shared decision making, and would not feel as though accessing care equates to relinquishing control through perceptions of manipulation and coercion by the healthcare professional. (4), (6), (10), (11), (13), (15), (16), (17)</p> <p>If maternity care encompasses the foundations of woman-centred care: working with women as partners, respecting their expertise of their own body, needs and baby, and making decisions based upon individuals rather than stereotypes or entrenched professional norms, then women will be more situated in a context of control rather than disempowerment. For some women this may also avoid disempowerment, feelings of being pressurised, ignored and excluded, long lasting psychological trauma, and increase bonding between a mother and her baby. (4), (6), (8), (11), (13), (16), (22)</p> <p>If healthcare professionals recognise that socially deprived women are more likely to experience paternalistic maternity care, as passive recipients, then the HCP can personalise care and strive to involve women in planning and decision making to ensure women are active, respected participants. This can in turn improve the self-confidence these women often lack in situations where there is a power imbalance. (8), (13), (15), (16), (17)</p> <p>If women are encouraged by healthcare professionals to raise concerns in an easy and confidential manner and escalate those concerns if they are</p>	<p>Agency/ Power</p> <p>Advocacy</p> <p>Surveillance</p> <p>Participation</p> <p>Knowledge</p> <p>Control</p> <p>Intergenerational vulnerability</p> <p>Empowerment</p> <p>Social Capital</p>

<p>not satisfied with the response, then they will not only feel empowered and listened to, but potential adverse outcomes could be avoided. (7), (15)</p> <p>If women feel they are under surveillance, or that asking questions/disclosing information will cause their healthcare provider to judge them, then they will perceive their care to be stressful and disempowering, rather than a supportive, informative preparation to parenthood and will feel that it is safer not to ask for help. (13), (15), (16)</p>	
<p>If women receive more personal continuity in their care, then they will develop feelings of trust and confidence in their healthcare professionals and have more meaningful interactions (for example disclosing sensitive information or exploring the context of women's requests/concerns). (3), (7),(8), (9), (10), (11), (13), (16), (17), (19), (21), (22)</p> <p>If women perceive their support network to be invested in their ability to parent successfully, and receive practical, tailored advice and positive affirmations, then they will feel less scrutinised and feel better able to seek support and advice when needed. This in turn will demonstrate how they are able to seek appropriate help and parenting advice. (2), (6), (15), (22)</p> <p>If women have a level of trust and confidence in their HCP's and do not fear judgement, for example their concerns are listened to on an individual level, they receive meaningful information, and they are able to rebook missed appointments with ease and without reproach, then they will perceive the maternity environment as a place of safety and their engagement with flexible services will improve. (13), (15), (16), (19), (20), (21) (22)</p> <p>If women have the opportunity to get to know their healthcare professional and perceive them to be respectful, understanding, kind, and helpful, then women will feel cared about and cared for, empowered and better able to express or restate their expressed wishes and concerns. (5), (7), (8), (13), (21)</p> <p>Conversely, if women with low socio-economic status experience paternalistic care through being denied choice and perceive HCP's as lacking warmth, patronising, arrogant, and stigmatising, then they will remain disempowered, feel undervalued and their low self-confidence will increase. (15)(16)</p> <p>If HCP's recognise pregnancy as a time of emotional fragility and added stress for women living socially complex lives and can empathize and respectfully respond to their individual needs, then more may emerge from their maternity experience feeling empowered rather than violated.(5), (17),(21)</p>	<p>Symbolic Interactionism</p> <p>Relationship</p> <p>Self-disclosure</p> <p>Value</p> <p>Trust</p> <p>Empathy</p> <p>Holism</p> <p>Respect</p> <p>Individualised</p> <p>Assets/Strengths</p> <p>Intergroup contact theory</p>

<p>If women who have had a previous traumatic experience and/or have lost confidence in the system and approach services tentatively are able to develop a trusting relationship with their HCP, then their trust in the system may be restored and their engagement with services improved. (4), (5), (6), (7), (9), (11), (12), (17),</p> <p>If midwives acknowledged that some women, especially those with unintended pregnancies, are undecided whether they want to continue with the pregnancy when they access services, then they would be better prepared to support and advise women in an objective manner and women would not view maternity services as exclusive to those with continuing pregnancies (7), (11), (15)</p> <p>If the value of accessing maternity services for the purpose of monitoring, prevention and support is communicated across the communities in which women live, then women would not view the purpose if the service as simply the treatment of ill health and access care earlier in pregnancy. (10), (11), (20)</p> <p>If midwives and women are able to get to know each other and build a trusting relationship, then the midwife will be more aware of a woman's social situation and able to provide individualised, holistic support without labelling women or making assumptions about their needs based on a perceived cultural background. (5), (6), (10), (14), (15)</p> <p>If midwives acknowledge the importance of culture and the influence of family members on women's experience of pregnancy, then they will be able to personalise care around the needs and cultural norms of the family unit and avoid potential conflicts in offering advice that does not reflect a cultural norm (1), (5), (10), (13), (18), (21)</p> <p>If HCP's work within a community where they are immersed in local cultures different to their own, or the hospital environment, then they will become culturally sensitive, women will not feel their cultural needs are being disregarded in favour of the western medical model and inequities in access, engagement, the uptake of screening, and antenatal education will be reduced. (1), (10), (13), (18), (21)</p> <p>If women with low socioeconomic status experience discriminatory, or impersonal care, then their often already fragile self-confidence can be further undermined, making them feel they are not good enough to parent. (6), (15),(16)</p>	<p>Discrimination</p> <p>Intersectionality</p> <p>Candidacy</p> <p>Familiarity</p> <p>Conflicting cultures</p> <p>Stigmatisation</p> <p>Labelling</p> <p>Assumptions</p> <p>Social isolation</p> <p>Disconnectedness</p> <p>Cultural competence</p>

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Programme theories specific to social risk factor

<p>Asylum seekers /Refugees/ Migrants (1), (2), (5), (9), (10), (11), (12), (14), (16), (18), (20), (22)</p>	<p>If newly arrived immigrant women or those with refugee status have access to language concordant group educational programmes or befriending services, they will be better informed, empowered and less isolated. (3), (5), (14)</p> <p>If maternity services and immigration services (UKBA) had a standardised method of communication during pregnancy, then women who are detained or dispersed could be followed up and appropriate care plans made or handed over to other trusts, and the UKBA better able to ask midwives whether these women were safe to travel or had other health needs. (9), (14), (20), (21)</p> <p>If pregnant women seeking asylum have access to information about healthcare services that are often unfamiliar to them, whilst in initial accommodation, such as a direct phone number to specialist midwifery services, then the value of care will be better understood, access and engagement improved, and costly health emergencies avoided. (9), (14), (20)</p> <p>If women who are seeking asylum are not dispersed during pregnancy or the postnatal period, then their physical and mental health would not suffer as a result of being isolated from a known community that includes partners, friends, support for giving birth, childcare, churches, temples and mosques, networks of children established at school, GPs and midwives. (9), (12), (14), (20)</p> <p>If women with immigration problems who are worried that they can be tracked by immigration authorities and their babies removed if they registered with maternity services (believing their presence in the UK would be evident if their name was entered into an electronic database) are protected by a firewall established between maternity and immigration services so that it is widely understood, as in Portugal, that maternity professionals will not report undocumented migrants or failed asylum seekers, then access, engagement and overall safety of the mother and her unborn will improved. (20)</p> <p>If asylum seeking women were able to suspend their asylum claim until six weeks after childbirth, instead of after 12 weeks of pregnancy, then attendance and engagement with one NHS trust would be facilitated and potential adverse outcomes associated with lack on engagement avoided. . (20)</p> <p>If maternity services recognise that migrants without recourse to public funds often work lengthy hours at below minimum wage and lack the</p>
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	<p>protection of employment laws which at least in theory means that migrants who are “on the books” are entitled to attend appointments, then services could be adapted to meet their needs. This might include drop in clinics, weekend and evening appointments, local services, telephone access. (20)</p>
<p>BME (1), (3), (5), (7), (10), (11), (12), (13), (14), (16) (18), (20), (21), (22)</p>	<p>If women possess a cultural sense of docility, then they may accept care and information without questioning it., in addition to this if women are language discordant, then they may be concerned about being perceived as a ‘problem-patient’ for their healthcare provider and appear ‘docile’ and ‘compliant’ (5)</p> <p>If importance is placed only on the culture behind a health issue, then healthcare providers might inadvertently hand the problem over to the patient as a private matter. (5)</p> <p>If women believe that pregnancy outcomes are controlled by external factors, such as a supernatural power and lack education to make informed choices, then their sense of personal autonomy and control may be undermined.(5)</p> <p>If ethnic minority women born in the UK have an absence of language barriers, and are familiar with the NHS system, then they do not want or feel the need to receive specialist care based on their ethnicity. (21)</p>
<p>Child protection (2), (6), (15), (16), (22)</p>	<p>If women and family members are given the information and opportunity to make choices around their pregnancy, for example place of birth, pain relief, mode of delivery, discharge from hospital, requesting changes in healthcare professional, then they will feel more empowered and in control of their pregnancy. For those whose parenting capacity is being assessed, this can help them to demonstrate how they process information and make choices based on what is best for them and their baby. (15), (16), (19)</p> <p>If midwives explain the reasoning behind safeguarding concerns and the process of assessment, then women with social service involvement will be better prepared and supported for the often stressful and intense process of child protection assessment. (6), (15)</p> <p>If women are looked after by a known healthcare professional, then they are less likely to receive conflicting advice from numerous healthcare professionals. This may have direct consequences on child protection outcomes for women whose parenting is being assessed by social care. (15)</p>

	<p>If women who are undergoing parenting assessments by social care are looked after in pregnancy by a known midwife they trust, then they will be more open to disclose information about their physical and emotional wellbeing, and this honest dialog may support their parenting assessment through demonstration of help-seeking, learning and making positive decisions. (15)</p> <p>If women who are undergoing parenting assessments are looked after by a known midwife whom they trust, and feel is invested in their chance of successfully parenting their child, then they will have more confidence in their own abilities and perceive less discrimination. (15)</p> <p>If women are not informed about social care processes and parenting assessments, and lack information needed about pregnancy, birth and parenting, then they will be unclear about what standards of behaviour they are being judged against. This can leave women feeling frustrated, disempowered and marginalised, and potentially lose parental responsibility of their children. (15)</p>
Childhood sexual abuse (17)	If healthcare professionals listen to unspoken messages (for example in requests for female staff or planned caesarean sections), recognise distress and validate women's experiences, then open communication can be enhanced, and women will feel their healthcare professional has a genuine interest on them as an individual. (17)
Disabled (6), (22)	<p>If women with a disability and/or experiencing abuse feel that a referral to social care could be beneficial to them and their needs as a new mother, then they will be more likely to disclose, and their fear of judgement lessened. (6)</p> <p>If each pregnancy is viewed as an individual, unique, journey, rather than labelled as low risk/high-risk/normal/abnormal, then care for women with a disability would not be dominated by the social norms of a traditional medical model, rather than those of a holistic, woman-centred care. (6)</p>
Domestic abuse (2), (6), (16), (22)	<p>If women with a disability and/or experiencing abuse feel that a referral to social care could be beneficial to them and their needs as a new mother, then they will be more likely to disclose, and their fear of judgement lessened. (6)</p> <p>If women experiencing domestic abuse have a trusting relationship with their healthcare provider, then they will be more likely to understand statutory reporting and gain benefits through additional support and safety mechanisms. (22)</p>

FGM (18)	
Homelessness (2), (9), (12), (21)	
Learning difficulties (6), (15), (22)	If healthcare professionals caring for women with learning disabilities had prior knowledge of different forms of sharing complex information, then women would receive individualised information and advice, and would not perceive care to be judgemental (6), (15)
Mental health (2), (16), (19), (22)	If midwives are well informed about the mental health issues experienced by many women with complex social histories and have clear processes in place to refer women to effective perinatal support services, then women will be able to access these support services early in pregnancy and prevent these mental health issues worsening in the postnatal period. This will better prepare women for motherhood and improve the mother-infant bonding process. (9), (16), (19)
Non-English speaking (1), (11), (12), (14), (18), (20), (22)	<p>If women who have survived rape, sexual assault or other trauma have access to an interpreter they trust and feel comfortable with, for antenatal, postnatal appointments, and labour care, then they will be better informed, more able to communicate concerns and flashbacks or other psychological responses during labour (9)</p> <p>If women do not trust discussing personal matters with an interpreter, despite whether the interpreter was a stranger or someone from within their own social community, then language barriers will continue (5)</p> <p>If interpreter services were available on request and for emergency appointments, and a lack of need not assumed, then women would be better able to communicate effectively with their healthcare provider. (13)</p>
Single parents (16), (22)	If services are flexible for women who live socially complex lives and move location frequently, then their engagement with services can be improved as much as possible, for example appointments at home, or at the weekend, not at school pick up/drop off times for single mothers, not during working hours for women working illegally. (20)
Social deprivation (3), (7), (8), (9), (12), (14), (16), (22)	<p>If women who have few resources, such as no phone credit, have direct, easy access to a midwife through a free phone number, or free technology such as WhatsApp, skype, etc, then their anxieties will be allayed and engagement with services improved. (7), (14), (22)</p> <p>If midwives were able to conduct appointments in the woman's home or local GP or community centre, then women who are living in poverty</p>

	with little resource for public transport would be better able to engage with maternity services. (9), (14), (20), (22)
Social isolation (2), (14), (16), (22)	If intrapartum care cannot be provided by a known midwife, then midwives should be able to refer women who are alone to subsidised doula services for support and advocacy during labour. (14)
Substance misuse (2), (22)	
Teenager (7), (16), (22)	
Trafficked women/ Modern slavery (4), (12), (16)	<p>If trafficked women do not know how to access NHS services, or they fear of being charged a fee as a non-UK resident, then they will have poorer access and engagement with services(4)</p> <p>If women are offered ongoing, targeted support for their mental and physical health and parenting of infants conceived in the traumatic setting of trafficking, then inter-generational transmission of vulnerability, and adverse mental and physical child health outcomes can be prevented. (4), (12)</p> <p>If women who are being exploited have open, direct access to maternity services and emergency support, then their desire to protect their unborn child may give them the courage to escape to a safe point of contact. (12)</p> <p><i>Conflicting theory: If access to maternity services is controlled and observed by traffickers, then women may access maternity services late in pregnancy and be unable to disclose for fear of punishment by their traffickers. (4)</i></p> <p>If women with a history of trauma and abuse are able to develop a trusting relationship with their healthcare provider, then barriers to accessing and engaging with health services will be overcome through individualised care plans and sensitivity around intimate examinations. (12), (17)</p>
Travelling community (22)	

Realist informed interview guide for focus groups with midwives in continuity modes of care for women with social risk factors.

Question	Rationale
Can you tell me what your involvement in this specialist model of care is?	Realist evaluation assumes that people know different things according to their role. These answers will be used to tailor future questions according to the specific insight of the stakeholder.
<p>What is the purpose of the service? /what do you think are the desired outcomes for women?</p> <p>Do you think the service makes a difference to these outcomes? Can you give examples?</p>	<p>Assuming that programmes have different outcomes for different groups, stakeholders, women and family members will be asked this question until the range of outcomes has been identified. Interviewer will prompt for evidence of the nature and extent of the outcome.</p> <p>If expected outcomes are not identified (improved access and engagement), Interviewer will prompt for those outcomes. If unexpected outcomes are identified, interviewer will prompt for greater description.</p> <p>These outcomes will be verified using the quantitative data analysis.</p>
We are interested in how specialist models of care have an effect on women’s outcomes. How do you think the service has caused, or helped to cause [outcomes identified earlier in interview]?	Initial question leading into exploration of mechanisms. When participants identify programme activities (for example flexible appointments, 24hr access to a known mw, safeguarding training) Interviewer will probe further – e.g. – So, what is it about being able to contact a known midwife 24/7? How did that help cause (the later outcome)?
Are the outcomes previously mentioning the same for all women? For example, women with different social risk factors? [using the specific sub-groups identified in the	This question is seeking more specific information about “for whom” the programme has and has not been effective (in what respects, to what extent). Interviewer will specifically probe in relation to sub-groups that are identified in the realist synthesis’ programme theories.

<p>programme theories – specific disadvantaged groups/social risk factors and different cultures].</p> <p>In what ways have they been different?</p>	
<p>Do you think women with social risk factors want/are open to this model of care prior to accessing it? How might this differ for different groups of women (specific risk factors?)</p> <p>Do you think this specialist model of care changes the way women feel about maternity services? In what ways? Can you provide examples?</p>	<p>This theory-based question sets out to explore candidacy theory. Examples might be given of how women with particular social risk factors have reported their experience of maternity care (for example those who are unfamiliar with the UK system, or those who have social care involvement), to explore if and how the programme addresses these issues and what the outcomes of this might be.</p>
<p>There are lots of ideas about how specialist models of care actually work, and we think they probably work differently in different places or for different people. One of those ideas is (an example: that if women trust their midwife then they will engage with the services and be more open to disclosing concerns.)</p> <p>Does it work at all like that here? Can you give an example? Does this apply to all women?</p> <p>What about: (brief description of other mechanisms not previously identified)</p> <ul style="list-style-type: none"> - Engagement with the multi-disciplinary team - Engagement with local community 	<p>The subject of a realist interview is the programme theory. The aim is to get the respondent to refine the programme theory for the particular context about which they know. This question revisits the mechanisms (particularly those not identified before) but in a more specific way to test the programme theories and whether the programme works differently for different people.</p> <p>This (in conjunction with the women and family members responses) will help confirm or refute the initial programme theories.</p>

<p>- What other resources the service offers (practical support, interpretation services, access)</p>	
<p>We've seen that specialist models of care work differently in different places. What is it about this service that makes it work so well/less well?</p> <p>Do you think culture, the local community or other resources has an effect on women's outcomes? Can you give examples?</p>	<p>Realist evaluation assumes context does affect outcomes (by affecting which mechanisms fire). Interviewer will probe for aspects of culture, local resources/lack of them, local and family relationships/support, relationship between organisation and participants and so on.</p>
<p>If you could change something about this service to make it work more effectively here, what would you change and why?</p>	<p>This question aims to elicit understanding of why the programme has not worked as effectively as it might (i.e. mechanisms not firing, aspects of context) as well as strategies for improvement.</p>
<p>What else do you think we need to know, to really understand how the service works here?</p>	<p>This open probe that enables participants to comment on anything not covered by the interview. The structure of the question keeps the focus on 'how the programme works' and 'in this context'.</p>

Interviews with women (and family members) 26-28 weeks – 1st interview

Question	Rationale/ concepts and programme theories addressed
<p>Introduction</p> <p>Can you tell me a bit about your pregnancy? How are you feeling? how many weeks pregnant are you? How your pregnancy is going? is this your first pregnancy?</p>	<p>General relaxed introductory questions. Understanding the general context of women’s lives and how they are experiencing their pregnancy.</p>
<p>Access to maternity services</p> <p>When did you first know you were pregnant, and how and when did you get in contact with health services?</p> <p>How easy was it to get an appointment with a GP/ midwife? What was that appointment like?</p>	<p>These questions gain context into how women access care and relate to the theoretical framework around Candidacy. Concepts might include: unfamiliarity, help-seeking, resource/barriers, culture.</p> <p>PT: If maternity care incorporated early pregnancy care (from conception/confirmation of pregnancy), then women would not view it as a package of care for viable and continuing pregnancies and therefore see value of accessing care early in pregnancy to seek support and advice regardless of whether or not they intend to continue the pregnancy</p> <p>PT: If midwives acknowledged that some women, especially those with unintended pregnancies, are undecided whether they want to continue with the pregnancy when they access services, then they would be better prepared to support and advise women in an objective manner and women would not view maternity services as exclusive to those with continuing pregnancies</p> <p>PT: If women are able to register with maternity services and GP’s without extensive documentation or evidence of a permanent address, then they could access care earlier in pregnancy, reduce stress and fear of disclosure to agencies or individuals who might put them at risk. This will, in turn, improve early access to abortion services.</p>

<p>Are you able to contact and speak to your GP or midwife easily?</p> <p>(if relevant) How have you experienced interpreter services? Is it difficult to Have you received written information in your preferred language?</p>	<p>PT: If women can access a known midwife 24/7 via a phone call or text message, then they will be better able to engage with services, care will be more personalised, they will feel more cared for, and are less likely to have to repeat their history and experience a variation of responses/advice.</p> <p>PT: If women receive written information (in their preferred language) about how to access maternity services and what their care will offer and are able to do this directly rather than through a GP, then barriers around NHS administration and/or postal delays will be overcome and antenatal care will commence earlier in pregnancy.</p> <p>PT: If HCP's listen to women's choices about interpreter services, for example a female, an anonymous, or a trusted interpreter, then barriers to their use and effectiveness will be reduced and women would feel more comfortable discussing sensitive subjects and disclosing concerns with their healthcare provider, improving safety.</p> <p>PT: If women have easy, immediate telephone access to interpreter services to register with services, arrange or reschedule appointments, organise travel to appointments, and access to properly translated materials, then inequity in information received and a key communication barrier will be overcome, and women will be better able to access services.</p>
<p>Perceptions of care</p> <p>When did you first meet ... (your named midwife)? What was the first meeting like?</p> <p>Did you choose this type of care? If not, why do you think you were referred to this service? (for example, is it because you live in a certain area/ GP surgery/specific need?)</p>	<p>These questions address access, how women feel about their maternity care, and what type of care they expected to receive. Both context and outcomes may arise from responses. Concepts might include: discrimination/stigma, unfamiliarity, surveillance, trust, relationships, continuity, HCP characteristics.</p> <p>Pt: If there are clear paths of communication across different trusts and services such as GP, gynaecology, maternity services, social care and mental health services is seamless, then women would be able to access care earlier in pregnancy and experience less fragmentation and disassociation between the services.</p>

<p>Did you know you would see the same midwife all the way through your pregnancy? Or did you think your maternity care might be different to this?</p> <p>Is this the type of care you wanted?</p> <p>How do you feel about it now? What is the best thing about your maternity care? What is not so good?</p>	<p>Addressing concepts around choice, trust and surveillance.</p> <p>PT: If women receive more personal continuity in their care, then they will develop feelings of trust and confidence in their healthcare professionals and have more meaningful interactions (for example disclosing sensitive information or exploring the context of women's requests/concerns).</p> <p>PT: If models of care were flexible, appropriately staffed, and midwives had full autonomy over their working days and appointments, then women would not perceive the pressure of time and feel more able to disclose information and midwives would have improved attitudes as they would not be working to unrealistic time constraints.</p> <p>PT: If women accessing busy maternity services with rushed staff feel that they are being 'processed through a system by professionals who follow procedures without really noticing the woman in front of them', then they will not feel cared for, supported, or valued and have a perceived lack of social support.</p>
<p>Previous experiences (if relevant)</p> <p>Can you tell me about your other pregnancies? Did you know your midwife/see them all the way through your pregnancy?</p> <p>Do you think your past experiences of maternity care were good or bad? What made them good/bad?</p>	<p>Rather than test specific programme theories, these questions seek to understand how previous experiences (context) an effect have on how women perceive and experience maternity services. Outcomes will become apparent through discussion of previous experiences of care and clinical pregnancy/birth outcomes etc. The responses will contribute to the discussion around both syndemic and candidacy theory.</p> <p>Concepts that may arise from these questions include: health inequalities, trust, continuity, relationships, discrimination/stigma.</p>

<p>What about your pregnancies before? What was your birth like? What about after the baby was born?</p> <p>We know that women who know their midwife/healthcare professional are more likely to have better experiences and outcomes. Has this been the case for you in previous pregnancies? Do you think your maternity care made a difference to these experiences or your pregnancy/birth/early weeks and months with your baby? How did it make a difference? (try to extract the specific mechanisms here)</p>	<p>This question aims to extract specific mechanisms. The question will be asked again at the final interview about this pregnancy, and findings compared.</p>
<p>Social circumstances and support networks</p> <p>Can you tell me about your life before your pregnancy? For example, how long have you lived in the country? Who do you live with? How is your general health? Do you see any other healthcare professionals or have a social worker?</p> <p>(discuss known social risk factors in context, for example if living in poverty discuss the impact of this/what support they have- family/friends/professional/ community)</p> <p>(If relevant) Do you access other support services? If so, do you find them supportive/useful? Can you tell me about a time where they have or have not been helpful?</p>	<p>These questions will prompt further insight into the context of women's lives and add to the discussion around Syndemics. The purpose is to get a sense of the complexity of women's lives and how this influences their pregnancy, general physical and mental health and experiences of care.</p> <p>Programme theories specific to social risk factor will be highlighted prior to each interview and addressed depending on the woman's specific social risk factors (See appendix 1 for table of PT's relating to specific social risk factors).</p> <p>PT: If women perceive their support network to be invested in their ability to parent successfully, and receive practical, tailored advice and positive affirmations, then they will feel less scrutinised and feel better able to seek support and advice when needed. This in turn will demonstrate how they are able to seek appropriate help and parenting advice.</p>

<p>Do you trust other support services? (for example, do you have trust in your social worker/ mental health support worker etc)</p> <p>If you were worried about something, or wanted to talk to somebody who would you go to? Do you have friends in the local community? Who do you trust in the local community?</p> <p>Do you feel you can talk to your midwife about personal issues or something that is worrying you?</p> <p>What is it that makes you feel you can or cannot trust your midwife?</p>	<p>PT: If women who have had a previous traumatic experience and/or have lost confidence in the system and approach services tentatively are able to develop a trusting relationship with their HCP, then their trust in the system may be restored and their engagement with services improved.</p> <p>This question aims to reveal the support networks important to women. It addresses the concepts of strengths and assets, trust, relationships, social capital, help-seeking.</p> <p>PT: If a trusting relationship develops through open discussion and story sharing between women and their HCP, then women will have confidence in their HCP, trust their advice, and benefit from their support.</p> <p>PT: If women are encouraged by healthcare professionals to raise concerns in an easy and confidential manner and escalate those concerns if they are not satisfied with the response, then they will not only feel empowered and listened to, but potential adverse outcomes could be avoided</p> <p>PT: If women receive more personal continuity in their care, then they will develop feelings of trust and confidence in their healthcare professionals and have more meaningful interactions (for example disclosing sensitive information or exploring the context of women's requests/concerns).</p> <p>PT: If women have the opportunity to get to know their healthcare professional and perceive them to be respectful, understanding, kind, and helpful, then women will feel cared about and cared for, empowered and better able to express or restate their expressed wishes and concerns. Conversely, if women with low socio-economic status experience paternalistic care through being denied choice and perceive HCP's as lacking warmth, patronising, arrogant, and stigmatising, then they will remain disempowered, feel undervalued and their low self-confidence will increase.</p>
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<p>What is difficult about your life at the moment?</p> <p>Do you think this could be improved? How? What would need to happen? What support would be useful?</p> <p>Do you think your midwife or GP could help with this?</p> <p>What is the best thing about your life at the moment?</p> <p>What do you hope for: for this pregnancy? Your baby? life after the baby is born?</p>	<p>These questions press on context in a more direct approach, understanding what is difficult about women's lives will enable clearer and more specific contexts and outcomes. This will enable exploration of mechanisms in subsequent interviews with women, and the testing of those mechanisms over the course of the pregnancy.</p> <p>PT: If HCP's have the time, resources and skills to coordinate and facilitate practical support to meet women's wider needs (this may include providing information about statutory procedures, contacting social workers, writing letters on their behalf, as well as coordinating, attending and facilitating meetings with other statutory agencies (e.g. Social care, Housing departments, Home Office)), then women will be better informed of unfamiliar processes and better equipped and supported in difficult circumstances.</p> <p>PT: If HCP's are educated in maternity benefits available for socially vulnerable women, and able to provide advice around practical matters such as housing, employment, education and care of other children and family members, then women would see more value or purpose in accessing services earlier in pregnancy and further financial hardship and distress for the women could be avoided.</p> <p>This question revisits the concept of strengths and assets in the woman's lives and aims to apply a salutogenic approach to the interview process.</p> <p>This question seeks to identify what outcomes are important to women and will be asked at each interview.</p>
<p>Is there anything else you think we should know about how you are experiencing your maternity care so far?</p>	<p>This open probe question enables participants to comment on anything not covered by the interview. The structure of the question keeps the focus on 'how the programme works' and 'in this context'.</p>

Interviews with women (and family members) 36-38 weeks – 2nd interview

Question	Rationale/ concepts and programme theories addressed
<p>Can you tell me a bit about how your pregnancy is going? How are you feeling? how many weeks pregnant are you?</p>	<p>General relaxed introductory questions. Understanding the general context of women's lives and how they are experiencing their pregnancy.</p>
<p>Engagement with maternity services</p> <p>How are you finding your maternity care?</p> <p>Have you attended all of your appointments?</p> <p>If not, what was the reason for not attending?</p> <p>Do you think there are too little/too many appointments?</p> <p>Was your maternity care scheduled or more relaxed/based on your own needs?</p> <p>Who decides when and where your appointments are?</p> <ul style="list-style-type: none"> - If perceived as a schedule did it meet your needs? Would you prefer to see a midwife as and when you felt you needed to? - Where would you prefer to see your midwife and why? 	<p>If a programme provides physical and social opportunities for women to receive flexible, needs-led care, where the time and place of appointments is co-planned (for example at home, community or a hospital setting), then women will have the best chance to access timely antenatal care, feel listened to and empowered by taking control of their care.</p> <p>If services are flexible for women who live socially complex lives and move location frequently, or for those who have no access to a telephone or resources to travel far away to a hospital, for example local drop in services,</p>

<p>Do you feel that some appointments have been more important than others?</p> <p>What is it about appointments that makes you think some are more useful than others? Can you give examples (certain tests? Scans?)</p> <p>Are you able to get to your appointments easily or would you prefer is a midwife came to you?</p> <ul style="list-style-type: none"> -Is cost of public transport expensive - How long does it take you to get to appts? -How does this work with childcare commitments? - Do you feel able to bring your children to appointments? <p>Would you worry or feel anxious about missing an appointment or having to rearrange an appt?</p> <p>Do you feel that your maternity care has been flexible? (location/timing)</p>	<p>appointments at home, or at the weekend, not at school times for single mothers, not during working hours for women working illegally, then their engagement with services can be improved as much as possible</p> <p>If midwives are able to visit women at home in the antenatal period, then they will not only overcome barriers such as women unable to travel to appointments, but also be able to assess the living conditions of women to provide more individualised, holistic care.</p> <p>If antenatal care provides reassurance through clinical checks, effective preparation for labour, an opportunity for socialising with other mothers, and women are encouraged and given the time and resources required to ask questions about their pregnancy and care, then women will see the service as beneficial, feel like active participants and engage with their healthcare providers.</p> <p>If women have a level of trust and confidence in their HCP's and do not fear judgement, for example their concerns are listened to on an individual level, they receive meaningful information, and they are able to rebook missed appointments with ease and without reproach, then they will perceive the maternity environment as a place of safety and their engagement with flexible services will improve.</p>
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<p>Have you been able to contact and speak to your GP or midwife easily? What is your preferred method of contacting them and why?</p> <p>(if relevant) How have you experienced interpreter services? Did you have to ask for them? What is good/not so good about interpreter services?</p> <p>What is good/not so good about using a family member or friend to interpret for you?</p> <p>Would you feel happy talking about very personal matters whilst using an interpreter? Why/why not?</p> <p>Have you ever used a translator for a telephone conversation. How did you access this?</p> <p>What do you do if you need to contact a healthcare professional urgently and you do not have anyone around to interpret for you?</p>	<p>INTERPRETATION SERVICES</p> <p>If HCP's listen to women's choices about interpreter services, for example a female, an anonymous, or a trusted interpreter, then barriers to their use and effectiveness will be reduced and women would feel more comfortable discussing sensitive subjects and disclosing concerns with their healthcare provider, improving safety.</p> <p>If women have easy, immediate telephone access to interpreter services to register with services, arrange or reschedule appointments, organise travel to appointments, and access to properly translated materials, then inequity in information received and a key communication barrier will be overcome, and women will be better able to access services.</p>
<p>Education</p> <p>Did you attend any antenatal education class?</p> <p>If so what was that like? Useful? Culturally sensitive?</p>	<p>EDUCATION</p> <p>If antenatal education was culturally sensitive including information that is relevant to women's individual needs at an appropriate gestation, (for example child friendly settings and classes without the presence of men), and provide an</p>

<p>Could your partner attend? Did they? Who gave the class? What did you learn? What do you wish you had learnt? What is given at the right time in your pregnancy? Did you speak to any other mums there? Do you still speak to anyone now?</p> <p>How/Where do you access information about pregnancy?</p> <p>If appropriate: Have you been provided with written information in your language? If so, by who? Was it useful? What could have been better?</p> <p>If not, would you find this useful? What particular topics would you like it to cover?</p> <p>During your appointments with your midwife have you learnt things about pregnancy? Birth? Caring for a baby? Was this useful? What would you have liked your midwife to teach you/talk to you about?</p> <p>Have you ever changed something that you do because a midwife has taught you about the impact of it? (for example eating healthily? Stopping smoking? Exercise?) Can you give an example?</p>	<p>opportunity to meet a small team of midwives providing their care, then more women would engage with the classes and be better informed about their birth choices.</p> <p>If basic, evidence-based information about maintaining a healthy pregnancy, and procedures/routines is readily available, easy to understand, and translated into new migrant languages, then women would be better informed, able to provide consent, and have less reliance on the internet and advice from friends and family.</p> <p>If women have more face-to-face time with a health professional to discuss their lifestyle, then they will better understand the impact of risky behaviours, as many do not engage with or understand information provided in leaflets.</p>
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<p>Experiences of care</p> <p>How has your care been so far?</p> <p>Have you seen the same midwife throughout your pregnancy?</p> <p>If so, is that what you wanted form maternity care? Why?</p> <p>What is your relationship with your midwife like?</p> <p>Have you seen the rest of the team? Do you feel like you are familiar with everyone in the team?</p> <p>Is this the type of care you wanted?</p> <p>What is the best thing about your maternity care? What is not so good?</p> <p>Do you think that the team are well staffed? Have they ever seemed over worked or stressed out to you?</p> <p>Do you trust your midwife? Rest of the team?</p> <p>Do you feel listened to by your midwife/team?</p>	<p>These questions address how women feel about their maternity care and their relationships with their HCP's. Both context and outcomes may arise from responses.</p> <p>Concepts might include: discrimination/stigma, unfamiliarity, surveillance, trust, relationships, continuity, HCP characteristics. Addressing concepts around choice, trust and surveillance.</p> <p>PT: If women receive more personal continuity in their care, then they will develop feelings of trust and confidence in their healthcare professionals and have more meaningful interactions (for example disclosing sensitive information or exploring the context of women's requests/concerns).</p> <p>PT: If models of care were flexible, appropriately staffed, and midwives had full autonomy over their working days and appointments, then women would not perceive the pressure of time and feel more able to disclose information and midwives would have improved attitudes as they would not be working to unrealistic time constraints.</p> <p>PT: If women who have had a previous traumatic experience and/or have lost confidence in the system and approach services tentatively are able to develop a trusting relationship with their HCP, then their trust in the system may be restored and their engagement with services improved.</p> <p>PT: If women accessing busy maternity services with rushed staff feel that they are being 'processed through a system by professionals who follow procedures without really noticing the woman in front of them', then they will not feel cared for, supported, or valued and have a perceived lack of social support.</p> <p>If models of care were flexible, appropriately staffed, and midwives had full autonomy over their working days and appointments, then women would not perceive the pressure of time and feel more able to disclose information and midwives would have improved attitudes as they would not be working to unrealistic time constraints.</p> <p>PT: If women perceive their support network to be invested in their ability to parent successfully, and receive practical, tailored advice and positive affirmations, then they will feel less scrutinised and feel better able to seek</p>

<p>Do you feel like you are in control of your maternity care? Pregnancy? Are you encouraged to make decisions? Can you provide an example?</p> <p>Do you feel like your midwife/team are there to help you or the baby more?</p> <p>If appropriate: Do you trust social care? Do you think they are a supportive service? Can you tell me any reasons why you think this? Personal experience? Others experiences? Media portrayal?</p> <p>In your pregnancy so far have you ever told a HCP about something very personal or something that was worrying you? Would you mind talking about this in more detail? How did the HCP react? What did they do?/not do? Is there anything you would have liked them to have do differently?</p> <p>Can you tell me what characteristics in a midwife/HCP are important to you?</p> <p>Have you ever had a bad healthcare experience? Can you tell me about it?</p>	<p>support and advice when needed. This in turn will demonstrate how they are able to seek appropriate help and parenting advice</p> <p>If healthcare professionals give information in an unbiased way, and listen to women's choices, questions, and decisions, then women will be able to make informed choices about their pregnancy, feel a sense of control and being listened to, and demonstrate their ability to make appropriate choices.</p> <p>If women feel they are under surveillance, or that asking questions/disclosing information will cause their healthcare provider to judge them, then they will perceive their care to be stressful and disempowering, rather than a supportive, informative preparation to parenthood and will feel that it is safer not to ask for help.</p> <p>PT: If women receive more personal continuity in their care, then they will develop feelings of trust and confidence in their healthcare professionals and have more meaningful interactions (for example disclosing sensitive information or exploring the context of women's requests/concerns).</p> <p>If women are offered continuity of care and are able to build a trusting relationship with their midwife, then underlying social risk factors can be explored and care individualised to their needs to improve engagement and empowerment so that women are better able to express or restate their expressed wishes and concerns.</p> <p>PT: If women have the opportunity to get to know their healthcare professional and perceive them to be respectful, understanding, kind, and helpful, then women will feel cared about and cared for, empowered and better able to express or restate their expressed wishes and concerns.</p> <p>Conversely, if women with low socio-economic status experience paternalistic care through being denied choice and perceive HCP's as lacking warmth, patronising, arrogant, and stigmatising, then they will remain disempowered, feel undervalued and their low self-confidence will increase.</p>
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<p>Have you ever experienced discrimination when accessing healthcare? Can you tell me about it?</p> <p>Do you feel like your midwife is knowledgeable and sensitive about your culture?</p> <p>Do you feel like you have a choice in aspects of your maternity care? For example where you give birth?</p> <p>If you were unhappy with advice given to you or a plan of care from a HCP would you feel able to question it? Would you feel able to decline care/go against advice? Why/why not?</p>	<p>If women with low socioeconomic status experience discriminatory, or impersonal care, then their often already fragile self-confidence can be further undermined, making them feel they are not good enough to parent.</p> <p>If midwives acknowledge the importance of culture and the influence of family members on women's experience of pregnancy, then they will be able to personalise care around the needs and cultural norms of the family unit and avoid potential conflicts in offering advice that does not reflect a cultural norm</p> <p>If HCP's work within a community where they are immersed in local cultures different to their own, or the hospital environment, then they will become culturally sensitive, women will not feel their cultural needs are being disregarded in favour of the western medical model and inequities in access, engagement, the uptake of screening, and antenatal education will be reduced.</p> <p>If healthcare professionals inform women of their right to choice, through education and providing the evidence-based information women need to exercise that choice, then they will be empowered and their self-confidence increased through shared decision making, and would not feel as though accessing care equates to relinquishing control through perceptions of manipulation and coercion by the healthcare professional.</p> <p>If maternity care encompasses the foundations of woman-centred care: working with women as partners, respecting their expertise of their own body, needs and baby, and making decisions based upon individuals rather than stereotypes or entrenched professional norms, then women will be more situated in a context of control rather than disempowerment. For some women this may also avoid disempowerment, feelings of being pressurised, ignored and excluded, long lasting psychological trauma, and increase bonding between a mother and her baby.</p>
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	<p>If healthcare professionals recognise that socially deprived women are more likely to experience paternalistic maternity care, as passive recipients, then the HCP can personalise care and strive to involve women in planning and decision making to ensure women are active, respected participants. This can in turn improve the self-confidence these women often lack in situations where there is a power imbalance.</p> <p>If women are encouraged by healthcare professionals to raise concerns in an easy and confidential manner and escalate those concerns if they are not satisfied with the response, then they will not only feel empowered and listened to, but potential adverse outcomes could be avoided.</p>
<p>Social circumstances/ practical support</p> <p>The last time we met we spoke about some of the difficulties you were having with..... How is this situation now?</p> <p>Has your midwife been able to help with this in any way? Please give examples</p> <p>Do you think your midwife has a lot of knowledge about (housing issues/benefits available/ local community support)</p> <p>What about other HCP's or support services?</p> <p>Do you think this has had an effect on your levels of stress?</p> <p>Do you think this has had an effect on your pregnancy? How? Please give examples</p>	<p>Rather than test specific programme theories, these questions seek to understand how women's current social circumstances have an effect have on how women perceive and experience maternity services. The responses will contribute to the discussion around both syndemic and candidacy theory. These questions aim to extract specific mechanisms and get a sense of the complexity of women's lives and how this influences their pregnancy, general physical and mental health and experiences of care.</p> <p>PT: If women feel they have a continued supportive presence throughout pregnancy and the perinatal period, either with a midwife, GP or other healthcare professional, then they will feel better supported and have reduced feelings of anxiety, increased sense of control, and enhanced self-beliefs and wellbeing.</p> <p>If HCP's work in a small geographical area where they are visible and become known by other members of the community, religious networks and other 'gatekeepers', then they can work together to develop trust, facilitate family and community-centred care, and educate the community with evidence-based information and dispel common, harmful myths.</p> <p>If HCP's are familiar with local charities, food banks, befriending programmes and support services then they will be able to introduce women to these services in order to provide the most supportive networks possible before they are discharged from maternity care and women will be better able to integrate into the community.</p>

<p>Is there anything you were worried about being able to afford that your midwife has helped you get? Or told where to go to find more affordable things? Can you give an example?</p> <p>Is there anything you still worry that you do not have for the baby?</p>	<p>If women perceive their support network to be invested in their ability to parent successfully, and receive practical, tailored advice and positive affirmations, then they will feel less scrutinised and feel better able to seek support and advice when needed. This in turn will demonstrate how they are able to seek appropriate help and parenting advice.</p> <p>PT: If HCP's have the time, resources and skills to coordinate and facilitate practical support to meet women's wider needs (this may include providing information about statutory procedures, contacting social workers, writing letters on their behalf, as well as coordinating, attending and facilitating meetings with other statutory agencies (e.g. Social care, Housing departments, Home Office)), then women will be better informed of unfamiliar processes and better equipped and supported in difficult circumstances.</p> <p>PT: If HCP's are educated in maternity benefits available for socially vulnerable women, and able to provide advice around practical matters such as housing, employment, education and care of other children and family members, then women would see more value or purpose in accessing services earlier in pregnancy and further financial hardship and distress for the women could be avoided.</p> <p>If midwives and women are able to get to know each other and build a trusting relationship, then the midwife will be more aware of a woman's social situation and able to provide individualised, holistic support without labelling women or making assumptions about their needs based on a perceived cultural background.</p>
<p>Social Risk Factor questions (see last page)</p>	<p>Programme theories specific to social risk factor will be highlighted prior to each interview and addressed depending on the woman's specific social risk factors (See appendix 1 for table of PT's relating to specific social risk factors). This question aims to reveal the support networks important to women. It addresses the concepts of strengths and assets, trust, relationships, social capital, help-seeking.</p>

<p>MULTIDISCIPLINARY WORKING/COMMUNICATION</p> <p>Do you see other HCP's or access support services? What are they?</p> <p>Do you think that your midwife or midwifery team communicates with these services? Do they do this well? Is this something you think is important?</p> <p>Does your midwife attend other appointments with HCP's? for example obstetric appts or Social care meetings? Can you give an example? Do you think this is something that is important?</p>	<p>If there are clear paths of communication across different trusts and services such as GP, gynaecology, maternity services, social care and mental health services is seamless, then women would be able to access care earlier in pregnancy and experience less fragmentation and disassociation between the services.</p> <p>If models of care facilitated the development of effective support networks for women throughout their pregnancy through working with family members and multidisciplinary support services (social workers, health visitors, support workers, children's centres and voluntary sector agencies), then that established support network will enable new mothers to flourish and become confident and successful parents.</p> <p>If a programme offers advocacy, midwife attendance at meetings, and other forms of emotional support during interactions with social care then women will feel supported and informed of unfamiliar processes</p>
<p>Is there anything else you think we should know about how you are experiencing your maternity care so far?</p>	<p>This open probe question enables participants to comment on anything not covered by the interview. The structure of the question keeps the focus on 'how the programme works' and 'in this context'.</p>

Interviews with women (and family members) Postbirth/ 6 weeks postnatal – 3rd interview

Question	Justification/ Programme theory
<p>How are you? How old is baby now?</p> <p>How are things currently going for you?</p>	
<p>(If relevant) Interpreter services – Emergency care/Labour and postnatal</p> <p>Did you have access to interpreter services in labour/after your baby was born? Did you have to ask for them? If no how did you find this service? If not, why not?</p> <p>What is good/not so good about using interpreter services/ family member/ friend to interpret for you?</p> <p>Would you feel happy talking about very personal matters whilst using an interpreter? Why/why not?</p> <p>Have you ever used a translator for a telephone conversation. How did you access this?</p> <p>What do you do if you need to contact a healthcare professional urgently (for example in early labour) and you do not have anyone around to interpret for you?</p>	<p>If women have easy, immediate telephone access to interpreter services to register with services, arrange or reschedule appointments, organise travel to appointments, and access to properly translated materials, then inequity in information received and a key communication barrier will be overcome, and women will be better able to access services.</p>

<p>Practical support</p> <p>Have you received helpful, practical support during pregnancy and after your babies birth? (give examples)</p> <p>How did that make you feel?</p> <p>Has this helped you overcome difficulties you were having?</p>	<p>If HCP's support women in difficult circumstances to address the emotional and practical challenges they face by providing them with new skills, knowledge and resources (for example help to resolve infant feeding challenges, provision of breast pumps, bottles and storage bags, reassurance, and motivation to abstain from illegal substances), then they will be better prepared to overcome challenges and internalise this as evidence of care and concern that HCP's feel towards them.</p>
<p>Continuity</p> <p>Have you seen the same midwife throughout pregnancy? Did they care for you during labour? Did you know the person caring for you during labour?</p> <p>Birth: Who did you contact? How was the birth experience? Did you feel well prepared for labour and birth? Why do you think this was?</p> <p>Who provided your postnatal care?</p> <p>How many times were you seen by a midwife after baby was born?</p> <p>What was your care on the postnatal ward like? Were you visited by your midwife? Who discharged you?</p>	<p>If women can access a known midwife 24/7 via a phone call or text message, then they will be better able to engage with services, care will be more personalised, they will feel more cared for, and are less likely to have to repeat their history and experience a variation of responses/advice.</p> <p>If women feel they have a continued supportive presence throughout pregnancy and the perinatal period, either with a midwife, GP or other healthcare professional, then they will feel better supported and have reduced feelings of anxiety, increased sense of control, and enhanced self-beliefs and wellbeing.</p> <p>If women are offered continuity of care and are able to build a trusting relationship with their midwife, then underlying social risk factors can be explored and care individualised to their needs to improve engagement and empowerment</p>

<p>Who did the baby check?</p>	<p>so that women are better able to express or restate their expressed wishes and concerns.</p>
<p>Community/Location</p> <p>Where did you have most of your appointments during pregnancy?</p> <p>Is this what you wanted?</p> <p>Where would you prefer to have your appointments?</p> <p>Have you used your local children's centre at all? Who introduced you to this?</p> <p>What about other local resources/charities/support groups?</p> <p>Do you feel like you have a supportive network of people around you? If so, who does this consist of?</p>	<p>If HCP's are familiar with local charities, food banks, befriending programmes and support services then they will be able to introduce women to these services in order to provide the most supportive networks possible before they are discharged from maternity care and women will be better able to integrate into the community.</p> <p>If a programme provides physical and social opportunities for women to receive flexible, needs-led care, where the time and place of appointments is co-planned (for example at home, community or a hospital setting), then women will have the best chance to access timely antenatal care, feel listened to and empowered by taking control of their care.</p>
<p>Communication/Choice/Agency</p> <p>During your pregnancy/birth and postnatal care do you feel you were given the time and opportunity to ask questions?</p>	<p>If antenatal care provides reassurance through clinical checks, effective preparation for labour, an opportunity for socialising with other mothers, and women are encouraged and given the time and resources required to ask questions about their</p>

<p>Do you have any examples of this?</p> <p>Do you feel like you were well informed about pregnancy/birth etc? Were you provided with appropriate information?</p> <p>Did you feel involved in decisions about your pregnancy care? (place of birth, pain relief, baby care)</p> <p>Do you think that your knowledge about your own body/needs/baby is respected by healthcare professionals?</p> <p>Would you feel able to question care that you were concerned about/not happy about?</p> <p>If not, why?</p> <p>Have you ever felt pressurised into doing something you didn't want to do?</p> <p>Have you ever felt your needs/wishes/choices were ignored by healthcare professionals?</p> <p>Do you have any examples of this happening?</p>	<p>pregnancy and care, then women will see the service as beneficial, feel like active participants and engage with their healthcare providers.</p> <p>If models of care facilitated the development of effective support networks for women throughout their pregnancy through working with family members and multidisciplinary support services (social workers, health visitors, support workers, children's centres and voluntary sector agencies), then that established support network will enable new mothers to flourish and become confident and successful parents.</p> <p>If healthcare professionals recognise that socially deprived women are more likely to experience paternalistic maternity care, as passive recipients, then the HCP can personalise care and strive to involve women in planning and decision making to ensure women are active, respected participants. This can in turn improve the self-confidence these women often lack in situations where there is a power imbalance.</p> <p>If women are encouraged by healthcare professionals to raise concerns in an easy and confidential manner and escalate those concerns if they are not satisfied with the response, then they will not only feel empowered and listened to, but potential adverse outcomes could be avoided.</p> <p>If healthcare professionals inform women of their right to choice, through education and providing the evidence-based information women need to exercise that choice, then they will be empowered and their self-confidence increased through shared decision making, and would not feel as though accessing care equates to relinquishing control through perceptions of manipulation and coercion by the healthcare professional.</p> <p>If maternity care encompasses the foundations of woman-centred care: working with women as partners, respecting their expertise of their own body, needs and</p>
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	<p>baby, and making decisions based upon individuals rather than stereotypes or entrenched professional norms, then women will be more situated in a context of control rather than disempowerment. For some women this may also avoid disempowerment, feelings of being pressurised, ignored and excluded, long lasting psychological trauma, and increase bonding between a mother and her baby.</p>
<p>Surveillance/ Trust</p> <p>Did you have any involvement with social care/ do you have a social worker? If so, do you know the reason for this?</p> <p>Have they been helpful/supportive?</p> <p>How did you feel about being referred to social care?</p> <p>How do you feel about it now?</p> <p>Do you trust your social worker?</p> <p>Would you tell your social worker about something that was worrying you? If so do you have any examples of this?</p> <p>Has your midwife been involved in your social care? If so how? How did you feel about this?</p>	<p>If women feel they are under surveillance, or that asking questions/disclosing information will cause their healthcare provider to judge them, then they will perceive their care to be stressful and disempowering, rather than a supportive, informative preparation to parenthood and will feel that it is safer not to ask for help.</p> <p>If women perceive their support network to be invested in their ability to parent successfully, and receive practical, tailored advice and positive affirmations, then they will feel less scrutinised and feel better able to seek support and advice when needed. This in turn will demonstrate how they are able to seek appropriate help and parenting advice.</p> <p>If women receive more personal continuity in their care, then they will develop feelings of trust and confidence in their healthcare professionals and have more meaningful interactions (for example disclosing sensitive information or exploring the context of women's requests/concerns).</p>
<p>Culture</p>	<p>If midwives acknowledge the importance of culture and the influence of family members on women's experience of pregnancy, then they will be able to</p>

<p>Has your midwife asked you about your culture? Do you think she is knowledgeable about your culture? Do you have any examples of this?</p> <p>Do you feel your midwife is knowledgeable about your local community (for example support services available?)</p> <p>Do you feel you have ever been treated differently because of your race/age/class etc?</p> <p>Do you have any more information you think would be useful for us to know about your maternity care experience? (give examples)</p> <p>Thank you</p>	<p>personalise care around the needs and cultural norms of the family unit and avoid potential conflicts in offering advice that does not reflect a cultural norm</p> <p>If HCP's work within a community where they are immersed in local cultures different to their own, or the hospital environment, then they will become culturally sensitive, women will not feel their cultural needs are being disregarded in favour of the western medical model and inequities in access, engagement, the uptake of screening, and antenatal education will be reduced.</p> <p>If women with low socioeconomic status experience discriminatory, or impersonal care, then their often already fragile self-confidence can be further undermined, making them feel they are not good enough to parent.</p>
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Multinomial logistic regression Number of obs = 764
 LR chi2(66) = 118.84
 Prob > chi2 = 0.0001
 Log likelihood = -867.49667 Pseudo R2 = 0.0641

booking_by_weeks	RRR	Std. Err.	z	P> z	[95% Conf. Interval]	
less_than_10	(base outcome)					
10_to_13						
place_hosp_comm						
hospital	1.00336	.2024533	0.02	0.987	.6756249	1.490076
ethnicity						
BA	1.334442	.5151908	0.75	0.455	.6261447	2.843969
BC	.766018	.3445405	-0.59	0.553	.3172375	1.849667
BO	.6923595	.3854517	-0.66	0.509	.232514	2.061646
M	.3655942	.2340446	-1.57	0.116	.1042511	1.282088
U	1.279369	.399387	0.79	0.430	.6938601	2.358955
WB	.9397428	.2956228	-0.20	0.843	.5072702	1.740919
WO	.8957496	.2647394	-0.37	0.710	.5018957	1.59674
WP	5067080	1.20e+10	0.01	0.995	0	.
age_cat						
20-24	1.538972	1.460734	0.45	0.650	.239498	9.889157
25-29	1.753666	1.68206	0.61	0.539	.2923071	10.5183
30-34	1.280188	1.154429	0.27	0.784	.21862	7.496481
greater than 34	1.567427	1.417993	0.50	0.619	.2661565	9.230766
1.parity	1.23626	.2198688	1.19	0.233	.8724162	1.751846
imd_3_score						
3rd and 4th deciles	.7879048	.1724215	-1.09	0.276	.5130983	1.209893
5th and 6th deciles	.9896035	.2323215	-0.37	0.711	.5513749	1.500573
least deprived	1.014114	.2817931	0.05	0.960	.5882506	1.748281
1.any_risk	.7892282	.1783753	-1.05	0.295	.5067813	1.229093
2.high_risk_num	.7087357	.1948708	-1.25	0.211	.4134678	1.214862
mod_care_4						
standard	.7668591	.2321091	-0.88	0.380	.4237193	1.387883
partial CoC	.8674172	.2802026	-0.44	0.660	.460536	1.633776
imp_gstt						
imp	1.94413	.428977	3.01	0.003	1.261553	2.996022
_cons	.5992325	.5848482	-0.52	0.600	.0884762	4.058488
13_to_20						
place_hosp_comm						
hospital	1.05097	.3495657	0.15	0.881	.5476087	2.017022
ethnicity						
BA	1.880764	1.007965	1.18	0.239	.6578797	5.376777
BC	.879995	.6116616	-0.18	0.854	.2253368	3.426594
BO	.6772392	.5960294	-0.44	0.658	.1206731	3.800787
M	.5571623	.5041002	-0.65	0.518	.09459	3.281845
U	1.528332	.7273685	0.89	0.373	.601328	3.884402
WB	1.035115	.5188021	0.07	0.945	.3875826	2.764476
WO	.9787965	.4439433	-0.05	0.962	.4023659	2.381024
WP	.6953945	3549.102	-0.00	1.000	0	.
age_cat						
20-24	.3697443	.350147	-1.05	0.293	.0577851	2.365851
25-29	.3577783	.3203188	-1.15	0.251	.0618776	2.066686
30-34	.1970194	.1730667	-1.85	0.064	.0352202	1.102111
greater than 34	.4102757	.3572851	-1.02	0.306	.0744414	2.261192
1.parity	1.357764	.3664033	1.13	0.257	.8000567	2.30424
imd_3_score						
3rd and 4th deciles	.7758606	.2442081	-0.81	0.420	.41866	1.437825
5th and 6th deciles	1.029455	.3671180	0.08	0.935	.5117479	2.070896
least deprived	.5349525	.251296	-1.33	0.183	.2130395	1.343292
1.any_risk	1.406591	.4298377	1.12	0.264	.7727702	2.560265
2.high_risk_num	.5371098	.2690423	-1.24	0.215	.2012287	1.433628
mod_care_4						
standard	.891767	.3978579	-0.26	0.797	.371956	2.138017
partial CoC	.7594591	.3653578	-0.57	0.567	.2958091	1.949832
imp_gstt						
imp	2.732355	.9649009	2.85	0.004	1.367477	5.45952
_cons	.4841614	.5020639	-0.70	0.484	.0634329	3.695438
3						
place_hosp_comm						
hospital	2.510521	.8052141	2.87	0.004	1.338915	4.707331
ethnicity						
BA	2.23247	1.200553	1.48	0.138	.7719772	6.45605
BC	.3917793	.3265533	-1.09	0.275	.072749	2.109872
BO	6.47e-07	.0004433	-0.02	0.983	0	.
M	.3680627	.4184516	-0.88	0.379	.039645	3.417083
U	1.183014	.5736468	0.35	0.728	.4579438	3.060233
WB	.7463861	.37587	-0.58	0.561	.2781697	2.002706
WO	.8127787	.3744247	-0.45	0.653	.3294938	2.004922
WP	.7171062	3822.002	-0.00	1.000	0	.
age_cat						
20-24	2.274215	2.940942	0.64	0.525	.1803371	28.67993
25-29	1.210863	1.550069	0.15	0.881	.0985013	14.88499
30-34	1.303381	1.621172	0.21	0.831	.1138492	14.92152
greater than 34	1.273376	1.59059	0.19	0.847	.1100805	14.73002
1.parity	.5574027	.1582005	-2.06	0.039	.3195828	.9721981
imd_3_score						
3rd and 4th deciles	.7432598	.2534893	-0.87	0.384	.3809235	1.450252
5th and 6th deciles	.7850165	.3181927	-0.60	0.552	.3553471	1.737759
least deprived	1.057588	.4481618	0.13	0.895	.4609062	2.426723
1.any_risk	1.938461	.6191795	2.07	0.038	1.036497	3.625319
2.high_risk_num	2.498193	.9487996	2.41	0.016	1.18671	5.259053
mod_care_4						
standard	1.276589	.6689131	0.47	0.641	.4571242	3.565067
partial CoC	1.154034	.644423	0.26	0.798	.3862778	3.447762
imp_gstt						
imp	1.328284	.4706625	0.80	0.423	.6632503	2.660141
_cons	.0851625	.1209387	-1.73	0.083	.0052658	1.377316

Table 28 Model of care received by level of deprivation

Multinomial logistic regression Number of obs = 765
 LR chi2(57) = 153.19
 Prob > chi2 = 0.0000
 Log likelihood = -948.68392 Pseudo R2 = 0.0747

imd_3_score	RRR	Std. Err.	z	P> z	[95% Conf. Interval]	
most_deprived						
mod_care_4						
standard	.291514	.1930548	-1.86	0.063	.0796072	1.067497
partial CoC	.1270207	.0863271	-3.04	0.002	.0335253	.481257
ethnicity						
BA	8.688427	6.039025	3.11	0.002	2.224848	33.92985
BC	4.741514	3.985545	1.85	0.064	.91291	24.6267
B0	3.775191	4.386607	1.14	0.253	.3871507	36.81272
M	1.711281	1.391649	0.66	0.509	.3476215	8.424344
U	2.078345	.9214765	1.65	0.099	.8716061	4.955816
WB	.6403515	.2711355	-1.05	0.292	.279258	1.468356
W0	1.002714	.3973854	0.01	0.995	.4611452	2.180302
WP	2.391133	13830.83	0.00	1.000	0	.
age_cat						
20-24	1.37e-06	.0012548	-0.01	0.988	0	.
25-29	1.19e-06	.0010827	-0.01	0.988	0	.
30-34	4.47e-07	.0004081	-0.02	0.987	0	.
greater than 34	2.79e-07	.0002551	-0.02	0.987	0	.
0.parity						
1.any_risk	.6508242	.1653202	-1.69	0.091	.395589	1.070738
2.high_risk_num	1.684199	.5775913	1.52	0.129	.859561	3.298455
place_hosp_comm						
hospital	.4068348	.1188187	-3.08	0.002	.2295193	.7211356
imp_gstt						
imp	2.764661	.8701099	3.23	0.001	1.491925	5.123148
_cons	1.15e+07	1.05e+10	0.02	0.986	0	.
3rd_and_4th_deciles						
mod_care_4						
standard	.2897059	.1877638	-1.91	0.056	.081335	1.031898
partial CoC	.1905813	.1257227	-2.51	0.012	.052307	.6943858
ethnicity						
BA	5.239074	3.616894	2.40	0.016	1.353978	20.27205
BC	2.414152	2.031332	1.05	0.295	.4640247	12.55996
B0	7.223335	7.936432	1.80	0.072	.8385027	62.22588
M	1.297728	1.029289	0.33	0.742	.2741926	6.142027
U	2.248795	.9372376	1.94	0.052	.9935552	5.089884
WB	.689703	.2667646	-0.96	0.337	.3231713	1.471945
W0	1.130883	.4187918	0.33	0.740	.5472657	2.336883
WP	3.09e+07	1.41e+11	0.00	0.997	0	.
age_cat						
20-24	1.58e-06	.001445	-0.01	0.988	0	.
25-29	9.24e-07	.0008435	-0.02	0.988	0	.
30-34	5.30e-07	.0004843	-0.02	0.987	0	.
greater than 34	2.87e-07	.0002617	-0.02	0.987	0	.
0.parity						
1.any_risk	.66367	.1575855	-1.73	0.084	.4167141	1.056979
2.high_risk_num	1.480933	.4932381	1.18	0.238	.7709656	2.844695
place_hosp_comm						
hospital	.4245959	.1120848	-3.25	0.001	.2530904	.7123212
imp_gstt						
imp	1.547321	.4430837	1.52	0.127	.8827429	2.71223
_cons	1.06e+07	1.70e+10	0.02	0.985	0	.
5th_and_6th_deciles						
mod_care_4						
standard	.2513724	.1692147	-2.05	0.040	.0671924	.9404055
partial CoC	.1490418	.1026833	-2.76	0.006	.0386249	.575107
ethnicity						
BA	5.558974	4.138049	2.30	0.021	1.292314	23.9123
BC	4.761389	4.20312	1.77	0.077	.843985	26.86164
B0	2.572342	3.305336	0.74	0.462	.2072886	31.92139
M	.9059086	.9060892	-0.10	0.921	.1275596	6.433623
U	2.623069	1.22996	2.06	0.040	1.046359	6.575653
WB	1.151676	.5021643	0.32	0.746	.4899841	2.706942
W0	1.536157	.6463339	1.02	0.308	.6734338	3.504099
WP	1.570376	9622.35	0.00	1.000	0	.
age_cat						
20-24	1.05e-06	.0009586	-0.02	0.988	0	.
25-29	1.12e-06	.0010216	-0.02	0.988	0	.
30-34	6.55e-07	.0005984	-0.02	0.988	0	.
greater than 34	4.74e-07	.0004326	-0.02	0.987	0	.
0.parity						
1.any_risk	1.061601	.2752384	0.23	0.818	.6386644	1.764615
2.high_risk_num	.9115363	.3385852	-0.25	0.803	.4401491	1.887766
place_hosp_comm						
hospital	.6201716	.1818529	-1.63	0.103	.3490713	1.101817
imp_gstt						
imp	2.111408	.6563113	2.40	0.016	1.148112	3.882935
_cons	4769809	4.36e+09	0.02	0.987	0	.
Least_deprived (base outcome)						

Table 29 Place of antenatal care by level of deprivation

Multinomial logistic regression Number of obs = 765
 LR chi2(57) = 153.19
 Prob > chi2 = 0.0000
 Log likelihood = -948.68392 Pseudo R2 = 0.0747

imd_3_score	RRR	Std. Err.	z	P> z	[95% Conf. Interval]	
most_deprived						
place_hosp_comm						
hospital	.4068348	.1188187	-3.08	0.002	.2295193	.7211356
ethnicity						
BA	8.688427	6.039025	3.11	0.002	2.224848	33.92985
BC	4.741514	3.985545	1.85	0.064	.91291	24.6267
B0	3.775191	4.386607	1.14	0.253	.3871507	36.81272
M	1.711281	1.391649	0.66	0.509	.3476215	8.424344
U	2.078345	.9214765	1.65	0.099	.8716061	4.955816
WB	.6403515	.2711355	-1.05	0.292	.279258	1.468356
W0	1.002714	.3973854	0.01	0.995	.4611452	2.180302
WP	2.391133	13830.83	0.00	1.000	0	.
age_cat						
20-24	1.37e-06	.0012548	-0.01	0.988	0	.
25-29	1.19e-06	.0010827	-0.01	0.988	0	.
30-34	4.47e-07	.0004081	-0.02	0.987	0	.
greater than 34	2.79e-07	.0002551	-0.02	0.987	0	.
0.parity						
	.6508242	.1653202	-1.69	0.091	.395589	1.070738
1.any_risk						
	1.684199	.5775913	1.52	0.129	.859561	3.298455
2.high_risk_num						
	2.372965	.9909666	2.07	0.039	1.046704	5.379712
mod_care_4						
standard	.291514	.1930548	-1.86	0.063	.0796072	1.067497
partial CoC	.1270207	.0863271	-3.04	0.002	.0335253	.481257
imp_gstt						
imp	2.764661	.8701099	3.23	0.001	1.491925	5.123148
_cons	1.15e+07	1.05e+10	0.02	0.986	0	.
3rd_and_4th_deciles						
place_hosp_comm						
hospital	.4245959	.1120848	-3.25	0.001	.2530904	.7123212
ethnicity						
BA	5.239074	3.616894	2.40	0.016	1.353978	20.27205
BC	2.414152	2.031332	1.05	0.295	.4640247	12.55996
B0	7.223335	7.936432	1.80	0.072	.8385027	62.22588
M	1.297728	1.029289	0.33	0.742	.2741926	6.142027
U	2.248795	.9372376	1.94	0.052	.9935552	5.089884
WB	.689703	.2667646	-0.96	0.337	.3231713	1.471945
W0	1.130883	.4187918	0.33	0.740	.5472657	2.336883
WP	3.09e+07	1.41e+11	0.00	0.997	0	.
age_cat						
20-24	1.58e-06	.001445	-0.01	0.988	0	.
25-29	9.24e-07	.0008435	-0.02	0.988	0	.
30-34	5.30e-07	.0004843	-0.02	0.987	0	.
greater than 34	2.87e-07	.0002617	-0.02	0.987	0	.
0.parity						
	.66367	.1575855	-1.73	0.084	.4167141	1.056979
1.any_risk						
	1.480933	.4932381	1.18	0.238	.7709656	2.844695
2.high_risk_num						
	2.558484	.9732096	2.47	0.014	1.213942	5.392215
mod_care_4						
standard	.2897059	.1877638	-1.91	0.056	.081335	1.031898
partial CoC	.1905813	.1257227	-2.51	0.012	.052307	.6943858
imp_gstt						
imp	1.547321	.4430837	1.52	0.127	.8827429	2.71223
_cons	1.06e+07	1.70e+10	0.02	0.985	0	.
5th_and_6th_deciles						
place_hosp_comm						
hospital	.6201716	.1818529	-1.63	0.103	.3490713	1.101817
ethnicity						
BA	5.559974	4.138049	2.30	0.021	1.292314	23.9123
BC	4.761389	4.20312	1.77	0.077	.843985	26.06164
B0	2.572342	3.305336	0.74	0.462	.2072886	31.92139
M	.9059086	.9060892	-0.10	0.921	.1275596	6.433623
U	2.623069	1.22996	2.06	0.040	1.046359	6.575653
WB	1.151676	.5021643	0.32	0.746	.4899841	2.706942
W0	1.536157	.6463339	1.02	0.308	.6734338	3.504099
WP	1.570376	9622.35	0.00	1.000	0	.
age_cat						
20-24	1.05e-06	.0009586	-0.02	0.988	0	.
25-29	1.12e-06	.0010216	-0.02	0.988	0	.
30-34	6.55e-07	.0005984	-0.02	0.988	0	.
greater than 34	4.74e-07	.0004326	-0.02	0.987	0	.
0.parity						
	1.061601	.2752384	0.23	0.818	.6386644	1.764615
1.any_risk						
	.9115363	.3385852	-0.25	0.803	.4401491	1.887766
2.high_risk_num						
	1.397186	.6138501	0.76	0.446	.5905828	3.305426
mod_care_4						
standard	.2513724	.1692147	-2.05	0.040	.0671924	.9404055
partial CoC	.1490418	.1026833	-2.76	0.006	.0386249	.575107
imp_gstt						
imp	2.111408	.6563113	2.40	0.016	1.148112	3.882935
_cons	4769809	4.36e+09	0.02	0.987	0	.
least_deprived	(base outcome)					

Table 30 Number of antenatal appointments in relation to model of care received

1_6	(base outcome)						
7_9							
mod_care_4							
standard	1.149272	.39513	0.40	0.686	.5858305	2.254621	
partial CoC	1.812476	.6855162	1.57	0.116	.863635	3.803772	
ethnicity							
BA	.5885425	.2427223	-1.29	0.199	.2622598	1.32076	
BC	1.099803	.5676191	0.18	0.854	.3999463	3.024324	
BO	4.068241	4.736953	1.20	0.230	.4325555	39.95962	
M	1.171773	.7748172	0.24	0.810	.3210558	4.276678	
U	.759139	.2641498	-0.79	0.428	.3838287	1.50143	
WB	.5519485	.1999764	-1.64	0.101	.2713313	1.122787	
WO	.7548208	.2487774	-0.85	0.393	.3956406	1.440081	
WP	2.74e+10	5.45e+15	0.00	1.000	0	.	
age_cat							
20-24	1.483199	1.397323	0.42	0.676	.2340356	9.399771	
25-29	1.624311	1.465304	0.54	0.591	.2772002	9.517979	
30-34	1.808432	1.601011	0.67	0.503	.3189559	10.25354	
greater than 34	1.769831	1.573776	0.64	0.521	.3097586	10.11208	
0.parity	.8018499	.1583715	-1.12	0.264	.5444704	1.180897	
imd_3_score							
most deprived	.9755324	.2950882	-0.08	0.935	.5392154	1.764904	
3rd and 4th deciles	.900557	.2580345	-0.37	0.715	.5135923	1.579079	
5th and 6th deciles	1.030453	.3231764	0.10	0.924	.5572748	1.905402	
1.any_risk	.7663696	.1894805	-1.08	0.282	.4720452	1.244208	
2.high_risk_num	1.527345	.5028294	1.29	0.198	.8011361	2.911843	
place_hosp_comm							
hospital	1.610698	.3915808	1.96	0.050	1.000176	2.593892	
imp_gstt							
imp	1.778247	.4527273	2.26	0.024	1.07965	2.928877	
_cons	.3449901	.3564553	-1.03	0.303	.045532	2.613946	
10_14							
mod_care_4							
standard	.9440856	.3450886	-0.16	0.875	.4611841	1.932629	
partial CoC	1.765937	.7013047	1.43	0.152	.8108462	3.846024	
ethnicity							
BA	.7315004	.3275001	-0.70	0.485	.3041747	1.759163	
BC	.9096089	.5294628	-0.16	0.871	.2906628	2.846557	
BO	11.42446	12.8353	2.17	0.030	1.263331	103.3129	
M	1.689606	1.169752	0.76	0.449	.43499	6.562836	
U	.8829985	.3416791	-0.32	0.748	.4136041	1.885103	
WB	.922301	.3626736	-0.21	0.837	.426734	1.993371	
WO	.8191602	.3035302	-0.54	0.590	.3962462	1.693484	
WP	.6818543	213248.4	-0.00	1.000	0	.	
age_cat							
20-24	4.078474	4.889285	1.17	0.241	.3891123	42.74845	
25-29	3.71801	4.365364	1.12	0.263	.3723091	37.12935	
30-34	3.286795	3.815627	1.02	0.305	.3377661	31.98373	
greater than 34	3.223814	3.749286	1.01	0.314	.3299325	31.50031	
0.parity	.7469259	.1584339	-1.38	0.169	.492862	1.131957	
imd_3_score							
most deprived	1.3555	.4647616	0.89	0.375	.6922249	2.654311	
3rd and 4th deciles	1.424572	.4613422	1.09	0.275	.7551377	2.687465	
5th and 6th deciles	1.681039	.5879565	1.49	0.138	.8469609	3.336508	
1.any_risk	.9725235	.2515335	-0.11	0.914	.5857946	1.614562	
2.high_risk_num	2.733911	.8926909	3.08	0.002	1.441603	5.184694	
place_hosp_comm							
hospital	4.356843	1.119242	5.73	0.000	2.633324	7.208409	
imp_gstt							
imp	1.158933	.3096098	0.55	0.581	.6865297	1.956399	
_cons	.0613308	.0796822	-2.15	0.032	.004806	.7826666	
15							
mod_care_4							
standard	.4947072	.2322508	-1.49	0.136	.1963356	1.246514	
partial CoC	2.32004	1.123352	1.74	0.082	.8981479	5.992984	
ethnicity							
BA	.3915834	.2406746	-1.53	0.127	.1173977	1.306137	
BC	1.330121	.8859924	0.43	0.668	.3605009	4.907675	
BO	14.03244	16.56205	2.24	0.025	1.388309	141.8339	
M	.3621583	.4306236	-0.85	0.393	.0352192	3.724071	
U	.4462132	.2238845	-1.61	0.108	.1669005	1.192963	
WB	.4952449	.2435218	-1.43	0.153	.1889154	1.298293	
WO	.3881658	.1850012	-1.99	0.047	.1525217	.9878774	
WP	.6593021	273021.6	-0.00	1.000	0	.	
age_cat							
20-24	.4101014	.4703021	-0.78	0.437	.0433249	3.881902	
25-29	1.199808	1.214551	0.18	0.857	.1650205	8.724565	
30-34	.9813159	.9625507	-0.02	0.985	.1435107	6.710166	
greater than 34	1.388501	1.361578	0.33	0.738	.203165	9.489499	
0.parity	1.135431	.3389281	0.43	0.670	.6325219	2.038196	
imd_3_score							
most deprived	.8194501	.3920441	-0.42	0.677	.3208395	2.092942	
3rd and 4th deciles	1.249745	.5321265	0.52	0.601	.5424875	2.079074	
5th and 6th deciles	1.721278	.7826422	1.19	0.232	.7060268	4.19644	
1.any_risk	1.971849	.670567	2.00	0.046	1.012524	3.840095	
2.high_risk_num	4.129237	1.634349	3.58	0.000	1.900924	8.969637	
place_hosp_comm							
hospital	7.886996	2.707958	6.01	0.000	4.023983	15.45849	
imp_gstt							
imp	.5237601	.1927356	-1.76	0.079	.2546264	1.077361	
_cons	.1135639	.1406873	-1.76	0.079	.010017	1.287483	

Table 31 Number of antenatal appointments in relation to place of antenatal care

ante_appt_cat	RRR	Std. Err.	z	P> z	[95% Conf. Interval]	
1_6						
place_hosp_comm						
hospital	.6193839	.1505954	-1.97	0.049	.3845926	.9975136
ethnicity						
BA	1.693631	.6982336	1.28	0.201	.7549079	3.799652
BC	.9099711	.469674	-0.18	0.855	.3308926	2.502466
BD	.2459387	.2869793	-1.20	0.229	.0249794	2.421427
M	.8530948	.5635031	-0.24	0.810	.2337463	3.113507
U	1.317993	.4506435	0.79	0.428	.6063566	2.006871
WB	1.817802	.650774	1.65	0.099	.8934492	3.690479
WO	1.325525	.4369106	0.85	0.393	.6947288	2.529067
WP	5.47e-06	.0028133	-0.02	0.981	0	.
age_cat						
20-24	.6736911	.6347487	-0.42	0.675	.1062827	4.270307
25-29	.6160015	.5557416	-0.54	0.591	.1051111	3.610066
30-34	.553214	.4898026	-0.67	0.504	.0975572	3.13709
greater than 34	.5657324	.5031052	-0.64	0.522	.0990007	3.232836
1.parity	.8019261	.1583226	-1.12	0.264	.5446073	1.180824
imd_3_score						
3rd and 4th deciles	1.0851	.2609095	0.34	0.734	.6773299	1.738357
5th and 6th deciles	.942631	.2653404	-0.21	0.834	.5417946	1.640019
least deprived	.9741613	.2946691	-0.09	0.931	.5384622	1.762408
1.any_risk	1.305822	.3228398	1.08	0.280	.8043415	2.119959
2.high_risk_num	.6512724	.2144145	-1.30	0.193	.3416069	1.241648
imp_gstt						
imp	.5628822	.1432485	-2.26	0.024	.3418175	.9269167
mod_care_4						
standard	.8709317	.2994596	-0.40	0.688	.4439239	1.708676
partial CoC	.551143	.2084863	-1.57	0.115	.2625861	1.156796
_cons	3.705105	3.624279	1.34	0.181	.5447133	25.20189
7_9						
(base outcome)						
10_14						
place_hosp_comm						
hospital	2.706802	.7010945	3.84	0.000	1.629239	4.497053
ethnicity						
BA	1.250261	.5609235	0.50	0.619	.5189353	3.01223
BC	.8264228	.4639844	-0.34	0.734	.2749832	2.483696
BD	2.816899	1.91737	1.52	0.128	.7419706	10.69439
M	1.443782	.9667798	0.55	0.583	.3886181	5.363892
U	1.162341	.4419722	0.40	0.692	.5516585	2.449047
WB	1.664648	.6550648	1.30	0.195	.7697707	3.599842
WO	1.084449	.3876004	0.23	0.821	.5382388	2.184957
WP	3.74e-06	.0023281	-0.02	0.984	0	.
age_cat						
20-24	2.750417	3.611257	0.77	0.441	.2097893	36.059
25-29	2.286663	2.944347	0.64	0.521	.1833074	28.5249
30-34	1.815692	2.31376	0.47	0.640	.1493981	22.0668
greater than 34	1.819661	2.322906	0.47	0.639	.1490666	22.21266
1.parity	1.072536	.2310358	0.33	0.745	.7031594	1.635949
imd_3_score						
3rd and 4th deciles	1.137171	.2975716	0.49	0.623	.6809041	1.899178
5th and 6th deciles	1.179217	.3566926	0.54	0.586	.651809	2.133376
least deprived	.720963	.2481504	-0.95	0.342	.3672196	1.415468
1.any_risk	1.26802	.3372343	0.89	0.372	.7529157	2.135532
2.high_risk_num	1.801903	.6252472	1.70	0.090	.9127898	3.557068
imp_gstt						
imp	.6524645	.1786534	-1.56	0.119	.381493	1.115905
mod_care_4						
standard	.8213091	.3325921	-0.49	0.627	.3713723	1.816368
partial CoC	.9744801	.4157976	-0.06	0.952	.4222568	2.248895
_cons	.2299289	.3119432	-1.08	0.279	.0160981	3.28408
15						
place_hosp_comm						
hospital	4.907966	1.683372	4.64	0.000	2.50582	9.612873
ethnicity						
BA	.6804993	.4201494	-0.62	0.533	.2029011	2.282291
BC	1.210251	.7847556	0.29	0.769	.3395752	4.313351
BD	3.471839	2.712416	1.59	0.111	.7508414	16.05354
M	.3102073	.3671998	-0.99	0.323	.0304835	3.156746
U	.5870266	.2926949	-1.07	0.285	.2209244	1.559811
WB	.8915576	.4378813	-0.23	0.815	.3404777	2.334587
WO	.5134041	.2397176	-1.43	0.153	.2055976	1.282037
WP	3.62e-06	.0033946	-0.01	0.989	0	.
age_cat						
20-24	.2764452	.3510455	-1.01	0.311	.0229459	3.330521
25-29	.7364513	.8450313	-0.27	0.790	.0777041	6.979816
30-34	.5412187	.6054519	-0.55	0.583	.0604155	4.848384
greater than 34	.7835655	.876771	-0.22	0.827	.0874225	7.02308
1.parity	.7035639	.211548	-1.17	0.242	.3902687	1.268362
imd_3_score						
3rd and 4th deciles	1.649296	.6300238	1.31	0.190	.7800879	3.487016
5th and 6th deciles	2.010318	.8698524	1.61	0.107	.8609046	4.69434
least deprived	1.195039	.5724279	0.37	0.710	.4673623	3.055699
1.any_risk	2.56915	.8901076	2.72	0.006	1.302813	5.066368
2.high_risk_num	2.738223	1.123561	2.45	0.014	1.22518	6.119809
imp_gstt						
imp	.2950832	.1098794	-3.28	0.001	.1422278	.6122156
mod_care_4						
standard	.4299578	.2149768	-1.69	0.091	.1613724	1.145572
partial CoC	1.278626	.6479404	0.49	0.628	.4735869	3.452134
_cons	.3905271	.5050302	-0.73	0.467	.0309654	4.925227

Table 32 Number of missed appointments in relation to the model of care received

miss_appt_4_cat	RRR	Std. Err.	z	P> z	[95% Conf. Interval]
0	(base outcome)				
1					
mod_care_4	1.466618	.6491423	0.87	0.387	.6159775 3.491961
standard	1.976347	.9847997	1.49	0.137	.8856957 4.847919
partial CoC					
ethnicity					
BA	2.495515	1.125998	2.01	0.044	1.822826 6.03992
BC	1.94952	1.063413	1.22	0.221	.6692974 5.678536
BO	.8342489	.7124188	-0.21	0.832	-.1564588 4.448272
M	.7729222	.6665585	-0.30	0.765	-.1425838 4.139078
U	.9045829	.3983115	-0.23	0.820	-.3816297 2.144147
WB	.909801	.4042185	-0.21	0.830	-.3802318 2.173103
WO	1.45843	.5847411	0.97	0.338	.8827766 3.115247
WP	1.28e-06	.0036594	-0.00	0.996	0
age_cat					
20-24	-.2842646	.2541574	-1.41	0.159	-.4482884 1.639726
25-29	-.2827736	.172672	-1.07	0.061	-.3828894 1.0761
30-34	-.2833981	.2325385	-1.54	0.124	-.567485 1.415269
greater than 34	-.2804958	.1662139	-1.94	0.053	-.3948864 1.018037
0.parity	.7442038	.1735291	-1.27	0.205	-.4712092 1.175358
imd_3_score					
most deprived	1.779518	.6478759	1.58	0.113	.8717703 3.632474
3rd and 4th deciles	-.7533867	.2805336	-0.76	0.447	-.3631296 1.563855
5th and 6th deciles	1.253867	.4778692	0.59	0.553	-.5940794 2.646417
1.any_risk	1.38075	.3691036	1.21	0.227	-.8176568 2.331628
2.high_risk_num	-.5591242	.2403068	-1.35	0.176	-.2408071 1.298217
place_hosp_comm					
hospital	-.9538957	.2571112	-0.18	0.861	-.5624315 1.617827
imp_gstt					
imp	1.748019	.4995678	1.93	0.054	.99122 3.854485
_cons	-.3266529	.3430343	-1.07	0.287	-.8417859 2.558439
2					
mod_care_4	1.819736	1.136977	0.96	0.338	-.5347799 6.192154
standard	-.8625367	.5949985	-0.21	0.838	-.2231548 3.333872
partial CoC					
ethnicity					
BA	11.34923	9.569888	2.08	0.04	2.173787 59.25374
BC	3.389846	3.648733	1.13	0.257	-.4111224 27.95845
BO	7.72868	7.823851	2.02	0.043	1.062728 56.28676
M	6.162843	6.898838	1.63	0.104	-.6884586 55.15332
U	6.547895	5.386848	2.32	0.028	1.337286 32.85524
WB	4.231173	3.552244	1.72	0.086	-.8162852 21.93207
WO	3.399138	2.703933	1.54	0.124	-.7149213 16.16141
WP	2.12e-06	.0091325	-0.00	0.998	0
age_cat					
20-24	.9444185	1.201994	-0.84	0.404	-.7779468 11.44257
25-29	-.0079029	1.815	-0.17	0.865	-.6688561 5.478885
30-34	.3067858	.3842996	-0.94	0.346	-.026337 3.573591
greater than 34	-.256753	.3218523	-1.08	0.279	-.8216855 3.014454
0.parity	1.016398	.3258644	0.85	0.398	-.5422839 1.985387
imd_3_score					
most deprived	-.4342183	.2256839	-1.61	0.108	-.1568933 1.292157
3rd and 4th deciles	.5644775	.2685964	-1.20	0.229	-.2221354 1.434417
5th and 6th deciles	-.6883869	.3456319	-0.76	0.448	-.251392 1.841452
1.any_risk	2.112226	.7313112	2.16	0.031	1.071595 4.163417
2.high_risk_num	1.848433	1.227859	0.92	0.355	-.5827771 6.795662
place_hosp_comm					
hospital	-.6361429	.2928467	-0.98	0.326	-.2580514 1.568206
imp_gstt					
imp	18.41672	5.68486	4.36	0.000	3.628525 29.98417
_cons	-.0143837	.0240619	-2.54	0.011	-.0885419 -.817767
3					
mod_care_4	2.029736	2.288317	0.63	0.530	.22274 18.49613
standard	2.438196	2.827234	0.77	0.442	-.2512174 23.66398
partial CoC					
ethnicity					
BA	2.626847	2.073478	1.22	0.221	-.5887396 12.34229
BC	1.281955	1.499941	0.15	0.883	-.841498 13.87132
BO	1.832836	1.324827	0.83	0.408	-.8837234 12.74325
M	1.53e-06	.0016317	-0.01	0.990	0
U	.5783578	.5561831	-0.57	0.569	-.8878276 3.888574
WB	1.778281	1.412697	0.72	0.478	-.3727437 6.483993
WO	1.156887	.8684031	0.25	0.804	-.2887184 4.96185
WP	1.60e-06	.0100035	-0.00	0.998	0
age_cat					
20-24	946768.2	2.68e+09	0.00	0.996	0
25-29	1881410	3.07e+09	0.00	0.996	0
30-34	1768211	4.89e+09	0.01	0.996	0
greater than 34	472766.8	1.34e+09	0.00	0.996	0
0.parity	.7531945	.3418827	-0.62	0.532	-.389477 1.833898
imd_3_score					
most deprived	1.474234	1.08019	0.53	0.599	-.3469455 6.264289
3rd and 4th deciles	-.8275071	.6216565	-0.25	0.801	-.1898423 3.68756
5th and 6th deciles	1.433826	1.086795	0.47	0.635	-.3242916 6.335112
1.any_risk	2.895147	1.356331	2.27	0.023	1.155836 7.251788
2.high_risk_num	1.272324	1.592764	0.19	0.847	-.1894081 14.79715
place_hosp_comm					
hospital	1.023997	.5942124	0.84	0.397	-.3283651 3.193383
imp_gstt					
imp	9.324685	7.681576	2.71	0.007	1.85534 46.8646
_cons	2.88e-09	7.93e-06	-0.01	0.994	0
4					
mod_care_4	-.2389158	.1969389	-1.72	0.086	-.4434838 1.228514
standard	-.4939632	.4295315	-0.81	0.417	-.8898589 2.715607
partial CoC					
ethnicity					
BA	-.6189749	.6822693	-0.49	0.622	-.8919274 4.167747
BC	-.3482144	.4352897	-0.84	0.399	-.8277126 4.176653
BO	7.92e-07	.0011195	-0.01	0.992	0
M	4.08e-07	.0084959	-0.01	0.988	0
U	-.7825714	.5593681	-0.44	0.657	-.1475663 3.344983
WB	-.373482	.3541876	-1.04	0.299	-.8582359 2.396858
WO	-.2937428	.2447886	-1.47	0.142	-.8563789 1.589981
WP	3.24e-06	.0258196	-0.00	0.999	0
age_cat					
20-24	-.1451364	.2109871	-1.33	0.184	-.4084818 2.587158
25-29	-.0522817	.0791982	-1.95	0.051	-.2026848 1.018076
30-34	-.0480073	.059397	-2.17	0.038	-.1821937 .7328142
greater than 34	-.0252698	.0370816	-2.47	0.013	-.1013678 .4668686
0.parity	-.2194832	.1566993	-2.12	0.034	-.414613 1.889438
imd_3_score					
most deprived	1.482894	1.292939	0.37	0.714	-.238061 8.544987
3rd and 4th deciles	-.6948283	.6501386	-0.39	0.697	-.1118201 4.348325
5th and 6th deciles	-.8176681	.901942	-0.18	0.855	-.8941892 7.184175
1.any_risk	1.932184	1.203268	1.06	0.290	-.5780627 6.548446
2.high_risk_num	2.565955	2.56353	0.94	0.346	-.3621195 18.18219
place_hosp_comm					
hospital	-.3593408	.2686003	-1.37	0.171	-.8838328 1.555118
imp_gstt					
imp	7.983945	7.665181	2.13	0.033	1.181288 52.88495
_cons	1.928439	3.991262	0.31	0.754	-.8326846 112.8388

Table 33 Number of missed appointments in relation to place of antenatal care

miss_appt_d_cat	RRR	Std. Err.	z	P> z	[95% Conf. Interval]
0	(base outcome)				
1					
place_hosp_comm	.9569555	.2576891	-0.16	0.870	.564521 1.622196
hospital					
ethnicity					
BA	2.517118	1.14186	2.03	0.042	1.034586 6.120478
BC	1.946081	1.061845	1.22	0.222	.6683913 5.665725
BO	.8344806	.7122503	-0.21	0.832	.1566369 4.445681
M	.7755741	.6686859	-0.29	0.768	.1431597 4.201709
U	.9020032	.397927	-0.23	0.815	.3886642 2.137342
WB	.9135967	.4862334	-0.20	0.839	.3021793 2.183956
WO	1.456576	.5637853	0.97	0.331	.6821274 3.118291
WP	1.19e-06	.0036291	-0.00	0.996	0
age_cat					
20-24	.207718	.2572229	-1.39	0.163	.0498866 1.659396
25-29	.282999	.1127676	-1.07	0.061	.0322875 1.070294
30-34	.2834254	.2324265	-1.54	0.124	.0568668 1.41489
greater than 34	.2015995	.1670383	-1.93	0.053	.0397307 1.02274
1.parity	1.333352	.3112723	1.23	0.218	.0437039 2.106972
imd_3_score					
3rd and 4th deciles	.425283	.1189227	-3.06	0.002	.245044 1.735707
5th and 6th deciles	.7094975	.2181208	-1.12	0.264	.3083082 1.296092
least deprived	.5615893	.2044222	-1.59	0.113	.275154 1.146204
1.any_risk	1.376409	.3679088	1.20	0.232	.0151256 2.324183
2.high_risk_num	.5711377	.2460416	-1.30	0.194	.2454991 1.328715
mod_care_4					
standard	1.473125	.6518644	0.88	0.381	.6188412 3.506712
partial CoC	1.979531	.9058473	1.49	0.136	.0873215 4.853758
imp_gstt					
imp	1.736336	.4981058	1.92	0.054	.0895738 3.046629
_cons	.4301065	.4174436	-0.87	0.385	.0641852 2.802153
2					
place_hosp_comm	.6444555	.2961171	-0.96	0.339	.2618232 1.506272
hospital					
ethnicity					
BA	11.49696	9.698998	2.90	0.004	2.200715 60.06232
BC	3.376232	3.627379	1.13	0.259	.4080811 27.78461
BO	7.69689	7.798642	2.02	0.044	1.056634 55.00893
M	6.204943	6.936276	1.63	0.102	.6937629 55.49636
U	6.504876	5.271353	2.31	0.021	1.320774 31.04394
WB	4.261276	3.577301	1.73	0.084	.0222254 22.00558
WO	3.390012	2.696209	1.53	0.125	.7131934 16.1137
WP	2.10e-06	.0090408	-0.00	0.998	0
age_cat					
20-24	.9640915	1.227325	-0.83	0.407	.0795255 11.68773
25-29	.0111337	1.018517	-0.17	0.868	.069225 9.504333
30-34	.3079089	.3054009	-0.94	0.347	.026469 3.501664
greater than 34	.2579331	.3245363	-1.00	0.316	.0219033 3.073422
1.parity	.9754309	.3129515	-0.88	0.378	.5201102 1.829325
imd_3_score					
3rd and 4th deciles	1.306187	.5227048	0.67	0.504	.5961767 2.061777
5th and 6th deciles	1.570365	.7246758	0.99	0.320	.6417920 3.001604
least deprived	2.29793	1.193699	1.60	0.109	.030167 6.360747
1.any_risk	2.099106	.7269789	2.14	0.032	1.06473 4.130368
2.high_risk_num	1.51207	1.273571	0.97	0.330	.5107963 7.003547
mod_care_4					
standard	1.029594	1.142745	0.97	0.333	.5379022 6.22309
partial CoC	.0894436	.5991082	-0.20	0.839	.22527 3.355672
imp_gstt					
imp	10.31898	5.539971	4.35	0.000	3.602089 29.55446
_cons	.0062786	.0099685	-3.19	0.001	.0002795 .1410296
3					
place_hosp_comm	1.027215	.5956154	0.85	0.393	.3296095 3.200501
hospital					
ethnicity					
BA	2.648130	2.091771	1.23	0.218	.5630855 12.45394
BC	1.198983	1.495906	0.15	0.884	.1039478 13.02964
BO	1.033182	1.324002	0.83	0.408	.0030262 12.73427
M	1.54e-06	.0016308	-0.01	0.990	0
U	.5769185	.5547314	-0.57	0.567	.0076291 3.798224
WB	1.70182	1.420415	0.72	0.469	.3735372 8.499663
WO	1.194065	.060795	0.25	0.806	.202096 4.932312
WP	1.50e-06	.0099383	-0.00	0.998	0
age_cat					
20-24	.941966	2.65e+09	0.00	0.996	0
25-29	1.064254	2.99e+09	0.00	0.996	0
30-34	1.731111	4.07e+09	0.01	0.996	0
greater than 34	4.66779	2.13e+09	0.00	0.996	0
1.parity	1.320394	.599513	0.61	0.540	.5422793 3.215022
imd_3_score					
3rd and 4th deciles	.563164	.3080157	-1.07	0.286	.1961723 1.616709
5th and 6th deciles	.976598	.5736932	-0.84	0.400	.3087447 3.008532
least deprived	.6780669	.500478	-0.53	0.599	.1595896 2.080901
1.any_risk	2.866719	1.35232	2.26	0.024	1.15252 7.230371
2.high_risk_num	1.296785	1.62442	0.21	0.836	.1113293 15.10521
mod_care_4					
standard	2.037241	2.296359	0.63	0.528	.2263637 18.55704
partial CoC	2.44362	2.832502	0.77	0.441	.2519027 23.69718
imp_gstt					
imp	9.301962	7.659012	2.71	0.007	1.052085 46.71844
_cons	3.15e-09	0.04e-06	-0.01	0.994	0
4					
place_hosp_comm	.3685907	.2694494	-1.37	0.172	.0033602 1.559004
hospital					
ethnicity					
BA	.6230185	.6064412	-0.49	0.627	.0924588 4.190100
BC	.3460471	.4350152	-0.84	0.399	.0277086 4.173147
BO	7.95e-07	.0011212	-0.81	0.418	0
M	4.11e-07	.0004077	-0.81	0.418	0
U	.70192	.5507515	-0.44	0.657	.1474698 3.340967
WB	.3747134	.3553621	-1.04	0.301	.0584059 2.404042
WO	.2916114	.244571	-1.47	0.142	.0563523 1.509027
WP	3.22e-06	.0256849	-0.00	0.999	0
age_cat					
20-24	.1404099	.2139002	-1.32	0.186	.0084707 2.02092
25-29	.052439	.0794902	-1.95	0.052	.0026946 1.020510
30-34	.0401708	.0595274	-2.17	0.030	.0022007 .733278
greater than 34	.025392	.0377773	-2.47	0.014	.001375 .4680034
1.parity	4.534777	3.238673	2.12	0.034	1.11851 10.38535
imd_3_score					
3rd and 4th deciles	.496867	.3204713	-1.00	0.318	.1403553 1.759842
5th and 6th deciles	.5848716	.510162	-0.61	0.539	.1058251 3.232454
least deprived	.7131029	.6575218	-0.37	0.714	.1170295 4.345191
1.any_risk	1.928033	1.200607	1.05	0.292	.5689343 6.533016
2.high_risk_num	2.501789	2.580332	0.95	0.343	.3640024 18.30804
mod_care_4					
standard	.2315544	.197482	-1.72	0.086	.0435214 1.231979
partial CoC	.494682	.4300472	-0.81	0.418	.0900206 2.718301
imp_gstt					
imp	7.084151	7.64327	2.13	0.033	1.179125 52.71693
_cons	.5883176	1.026903	-0.30	0.761	.019219 18.00909

Table 34 Number of appointments and support in labour by known HCP for model of

noofapptswithknown-p	RRR	Std. Err.	z	P> z	[95% Conf. Interval]
0	(base outcome)				
2					
mod_care_4	2.12497	1.42854	1.13	0.260	.5732255 7.877349
standard	1.814651	1.387945	0.83	0.408	.4418483 7.452689
partial CoC					
ethnicity					
BA	.6897641	.3674787	-0.78	0.436	-.2427864 1.959642
BC	1.746553	1.212281	0.88	0.378	.4442582 6.816153
BO	1.674624	1.297217	0.67	0.506	-.3659816 7.643372
H	3.514697	3.072361	1.44	0.150	.6335969 19.49678
U	1.185322	.5578245	0.38	0.718	-.4737297 2.977422
WB	1.151437	.5773619	0.28	0.779	-.4389476 3.076492
WO	1.175381	.587662	0.37	0.708	-.5848567 2.746431
WP	2.89e+07	1.28e+11	0.00	0.998	0
age_cat					
20-24	.2837928	2.43e+09	0.01	0.990	0
25-29	.5806335	5.83e+09	0.01	0.989	0
30-34	.5239593	6.18e+09	0.01	0.989	0
greater than 34	.3618132	4.21e+09	0.01	0.990	0
0.parity	1.822294	.481216	2.27	0.023	1.086026 3.057712
imd_3_score					
most deprived	.9973948	.4158319	-0.81	0.419	-.4412336 2.25458
3rd and 4th deciles	1.119722	.438289	0.29	0.773	-.1319313 2.421538
5th and 6th deciles	1.117686	.4667524	0.27	0.790	-.4938066 2.533883
1.any_risk	.8629611	.2652524	-0.48	0.632	-.4724473 1.576264
2.high_risk_num	1.664787	1.116654	0.76	0.447	-.4471117 6.198789
highriskatbirth					
Y	.8888816	.2524653	-0.41	0.678	-.5894256 1.558983
place_hosp_comm					
hospital	-.2463731	.11066	-3.12	0.002	-.1821577 .5943768
imp_gstt					
imp	130.1612	68.8159	9.21	0.000	46.17993 366.8679
_cons	3.58e-09	4.07e-06	-0.82	0.417	0
3					
mod_care_4					
standard	-.3452881	.1998772	-1.04	0.305	-.1115313 1.088923
partial CoC	-.8252684	.5891991	-0.31	0.755	-.2468462 2.759878
ethnicity					
BA	-.4432498	.2848524	-1.27	0.205	-.1257847 1.561957
BC	-.3192784	.3881943	-0.96	0.338	-.8389432 3.294382
BO	-.5948215	.7219469	-0.43	0.668	-.8548643 6.432527
H	2.319887	2.948918	1.86	0.289	-.4838225 21.2428
U	.9484837	.5481176	-0.89	0.371	-.3113155 2.89535
WB	1.232423	.7186215	0.36	0.720	-.393831 3.864492
WO	1.118556	.5684128	0.22	0.826	-.4374958 2.98612
WP	-.2178232	.3289.857	-0.80	0.424	0
age_cat					
20-24	.4878954	6.23e+09	0.01	0.992	0
25-29	1.68e+07	2.45e+10	0.01	0.991	0
30-34	8761815	1.34e+10	0.01	0.982	0
greater than 34	1.37e+07	2.18e+10	0.01	0.991	0
0.parity	1.645874	.5272247	1.56	0.120	.878477 3.083635
imd_3_score					
most deprived	2.243444	1.183187	1.53	0.125	-.7988385 6.386765
3rd and 4th deciles	1.962588	.9973883	1.33	0.185	-.724849 5.131436
5th and 6th deciles	1.874744	1.018673	1.17	0.244	-.651718 5.392923
1.any_risk	1.249665	.4584288	0.62	0.536	-.6165841 2.532765
2.high_risk_num	2.851514	1.692983	0.87	0.384	-.487858 10.3399
highriskatbirth					
Y	-.9182559	.3897816	-0.28	0.782	-.4672554 1.773261
place_hosp_comm					
hospital	-.232326	.1178467	-2.08	0.04	-.8559663 .6278666
imp_gstt					
imp	158.5837	186.957	7.51	0.000	42.23336 594.8719
_cons	1.58e-09	2.29e-06	-0.81	0.419	0
4					
mod_care_4					
standard	-.1871422	.087988	-2.72	0.006	-.8214569 .5358886
partial CoC	1.723888	1.298399	0.73	0.467	-.3978573 7.47759
ethnicity					
BA	-.383219	.2529282	-1.43	0.153	-.8591197 1.55518
BC	1.393483	1.353861	0.34	0.734	-.288748 9.358229
BO	1.817385	1.394737	0.81	0.419	-.8692739 14.94173
H	3.92e+06	8841128	-0.81	0.419	0
U	1.888822	.7921629	0.11	0.916	-.256966 4.545851
WB	1.758317	1.226933	0.80	0.425	-.4438485 6.914965
WO	.6518823	.4259885	-0.66	0.512	-.1885956 2.346782
WP	-.8369524	.16815.77	-0.80	0.424	0
age_cat					
20-24	1.13e+07	2.81e+10	0.01	0.993	0
25-29	9275798	1.65e+10	0.01	0.993	0
30-34	1.53e+07	2.72e+10	0.01	0.993	0
greater than 34	7897596	1.26e+10	0.01	0.993	0
0.parity	1.553959	.6429383	1.07	0.287	-.6986625 3.496335
imd_3_score					
most deprived	2.797857	1.835835	1.57	0.117	-.7732198 18.12239
3rd and 4th deciles	1.791835	1.137387	0.92	0.359	-.5153883 6.217517
5th and 6th deciles	1.821841	.9757158	0.29	0.773	-.3694775 5.485488
1.any_risk	.9786877	.4723698	-0.86	0.391	-.3738863 2.518436
2.high_risk_num	5.872818	6.282963	1.31	0.190	-.4477329 57.47735
highriskatbirth					
Y	1.834165	.8826277	1.39	0.166	-.777954 4.32437
place_hosp_comm					
hospital	-.384421	.1568288	-2.31	0.021	-.1123742 .8355462
imp_gstt					
imp	293.5531	331.2947	5.83	0.000	32.14813 2681.178
_cons	3.35e-10	5.95e-07	-0.81	0.419	0
5					
mod_care_4					
standard	.8288159	.819887	-4.77	0.000	-.885612 1.531847
partial CoC	-.8293245	.5368572	-0.29	0.772	-.2358612 2.944886
ethnicity					
BA	-.1758425	.1385612	-2.21	0.027	-.837531 .8238682
BC	-.5801275	.5111954	-0.68	0.498	-.8674593 3.787827
BO	1.5265	1.869733	0.35	0.730	-.1383895 16.838
H	2.457489	4.421256	0.65	0.518	-.1684981 37.6382
U	.8435185	.6812533	-0.24	0.811	-.2886195 3.418562
WB	1.151793	.7786169	0.21	0.835	-.3854468 4.346895
WO	-.8221212	-.2684842	-1.38	0.168	-.1328881 1.438376
WP	1.229522	.22817.75	0.00	1.000	0
age_cat					
20-24	2.161349	3.465587	0.48	0.631	-.893299 58.86944
25-29	3.178843	5.818867	0.73	0.466	-.1424256 78.58951
30-34	3.288827	5.188225	0.77	0.441	-.1585235 68.57188
greater than 34	4.282286	6.658542	0.94	0.350	-.2832856 98.28458
0.parity	-.8574591	.3721887	-0.35	0.723	-.3662257 2.807684
imd_3_score					
most deprived	3.896168	2.531882	2.88	0.004	1.879256 14.86537
3rd and 4th deciles	1.732854	1.141455	0.83	0.405	-.475997 6.382582
5th and 6th deciles	1.696877	1.193329	0.75	0.453	-.4271259 6.734965
1.any_risk	1.753116	.8877984	1.22	0.223	-.7185512 4.325399
2.high_risk_num	3.22637	4.879844	0.93	0.354	-.2787415 38.44788
highriskatbirth					
Y	2.248574	.8934991	1.84	0.066	-.9474877 5.336388
place_hosp_comm					
hospital	-.352471	.1887112	-2.03	0.042	-.128946 .9627944
imp_gstt					
imp	366.4982	422.7924	5.12	0.000	38.28274 3515.848
_cons	-.8819683	.8842857	-2.88	0.004	-.8888276 1.484139

care

deliver_named_mv	RRR	Std. Err.	z	P> z	[95% Conf. Interval]
yes					
mod_care_4					
standard	.5946168	.2068586	-1.49	0.135	.3006882 1.175866
partial CoC	.449976	.1650201	-2.18	0.029	.2192944 .9233177
ethnicity					
BA	1.046184	.4292538	0.11	0.912	.4681195 2.338082
BC	.8967914	.4419813	-0.22	0.825	.3413336 2.356155
B0	1.854459	1.143742	1.00	0.317	.5536518 6.211521
M	1.216114	.8112797	0.29	0.769	.3289506 4.495913
U	1.195388	.4084546	0.52	0.601	.6118717 2.335381
WB	1.639338	.5708567	1.42	0.156	.8284374 3.243973
W0	.8078926	.2654723	-0.65	0.516	.4242775 1.538357
WP	.0000218	.0131227	-0.02	0.986	0 .
age_cat					
20-24	.0977237	.0972065	-2.34	0.019	.0139093 .6065076
25-29	.1640474	.1580707	-1.08	0.061	.0248164 1.084427
30-34	.1664188	.1581358	-1.09	0.059	.0258444 1.071613
greater than 34	.1401364	.1331445	-2.07	0.039	.021768 .9021592
0.parity	.9184738	.1805213	-0.43	0.665	.624838 1.350101
imd_3_score					
most deprived	.9251936	.2839633	-0.25	0.800	.5069664 1.688442
3rd and 4th deciles	.8776901	.2509988	-0.46	0.648	.5010921 1.537322
5th and 6th deciles	.7187203	.2248527	-1.06	0.291	.3892784 1.326965
1.any_risk	1.143658	.2771815	0.55	0.580	.7112067 1.839064
2.high_risk_num	1.235476	.4092979	0.64	0.523	.6454187 2.364977
highriskatbirth					
Y	.4457864	.1021054	-3.53	0.000	.2845527 .6983784
place_hosp_comm					
hospital	.8950985	.1903522	-0.52	0.602	.5900024 1.357963
imp_gstt					
imp	.0889442	.0219054	-9.83	0.000	.0548885 .1441299
_cons	53.00874	57.60484	3.65	0.000	6.300034 446.0176
no	(base outcome)				

Table 35 Nof appointments and support in labour by known HCP for place of antenatal care

deliver_named_mv	RRR	Std. Err.	z	P> z	[95% Conf. Interval]
yes					
place_hosp_comm					
hospital	.8999399	.1918592	-0.49	0.621	.5925771 1.366728
ethnicity					
BA	1.107203	.4571936	0.25	0.805	.4928825 2.487202
BC	.8993323	.4435732	-0.22	0.830	.3420474 2.36458
B0	1.875314	1.157879	1.02	0.309	.5591325 6.289745
M	1.222475	.8163165	0.30	0.764	.3302511 4.525181
U	1.193273	.4079359	0.52	0.605	.6105841 2.33203
WB	1.595939	.5570766	1.34	0.181	.8051871 3.163266
W0	.8055546	.2648301	-0.66	0.511	.42292 1.534376
WP	.0000219	.0132068	-0.02	0.986	0 .
age_cat					
20-24	.094338	.0939308	-2.37	0.018	.0134017 .6640707
25-29	.1635071	.157408	-1.08	0.060	.0247791 1.078915
30-34	.1665161	.1580722	-1.09	0.059	.0259071 1.070272
greater than 34	.1411916	.1340099	-2.06	0.039	.0219737 .9072226
1.parity	1.07912	.212864	0.39	0.699	.7331014 1.588456
imd_3_score					
3rd and 4th deciles	.9407191	.2249157	-0.26	0.798	.5887716 1.503049
5th and 6th deciles	.8024294	.2263074	-0.78	0.435	.4616835 1.394663
least deprived	1.089825	.3345874	0.28	0.779	.5970758 1.989227
1.any_risk	1.142474	.2769763	0.55	0.583	.7103706 1.837418
2.high_risk_num	1.267832	.4231819	0.71	0.477	.6590892 2.438816
highriskatbirth					
Y	.4433954	.1015607	-3.55	0.000	.2830229 .6946416
mod_care_4					
standard	.5923736	.206196	-1.50	0.133	.2994372 1.171887
partial CoC	.4508229	.1653001	-2.17	0.030	.2197363 .9249327
imp_gstt					
imp	.0891558	.0219513	-9.82	0.000	.0550266 .1444528
_cons	44.86345	46.44374	3.67	0.000	5.898045 341.2536
no	(base outcome)				

noofapptswithknown-p	RRR	Std. Err.	z	P> z	[95% Conf. Interval]
0	(base outcome)				
2					
place_hosp_comm					
hospital	-2.467317	.1107829	-3.12	0.002	-.1623374 .5948611
ethnicity					
BA	-.6924964	.3698025	-0.69	0.490	-.2436956 1.967829
BC	1.738724	1.210712	0.79	0.427	-.4441403 6.806772
BO	1.472789	1.295196	0.66	0.506	-.3668126 7.6294
H	3.585537	3.864964	1.44	0.151	-.6332072 19.44667
U	1.182666	.555711	0.36	0.721	-.4789314 2.969765
WB	1.168279	.5821279	0.30	0.767	-.4340132 3.101858
WO	1.174625	.5071569	0.37	0.709	-.503946 2.737881
WP	2.45e+07	1.16e+11	0.00	0.998	0
age_cat					
20-24	2.871967	2.40e+09	0.01	0.990	0
25-29	4946104	5.74e+09	0.01	0.989	0
30-34	5173676	6.00e+09	0.01	0.989	0
greater than 34	3587930	4.16e+09	0.01	0.990	0
1.parity	-.5471574	.1444873	-2.28	0.022	-.3260891 -.9180962
imd_3_score					
3rd and 4th deciles	1.127121	.3644407	0.37	0.711	-.5980605 2.124203
5th and 6th deciles	1.121483	.4141216	0.31	0.756	-.5438459 2.312648
least deprived	1.008974	.4163176	0.00	0.998	-.4429937 2.261769
1.any_risk	-.8623928	.2650129	-0.48	0.630	-.4722857 1.574994
2.high_risk_num	1.668212	1.119368	0.76	0.446	-.4478124 6.214504
highriskatbirth					
Y	-.8882196	.2522359	-0.42	0.676	-.5890926 1.549687
mod_care_4					
standard	2.13658	1.428092	1.14	0.256	-.5764682 7.918868
partial CoC	1.819327	1.318825	0.83	0.406	-.4432208 7.467951
imp_gstt					
imp	129.3069	68.29544	9.21	0.000	45.92469 364.0801
_cons	6.43e-09	7.46e-06	-0.02	0.987	0
3					
place_hosp_comm					
hospital	-.2324609	.117893	-2.08	0.004	-.0660323 -.6281338
ethnicity					
BA	-.4448746	.2859349	-1.26	0.208	-.1262245 1.567948
BC	-.3192713	.3080974	-0.96	0.338	-.0389593 3.292522
BO	-.5933663	.7289856	-0.43	0.668	-.8548337 6.420853
H	2.913797	2.942518	1.06	0.290	-.4625942 21.08876
U	-.9475622	.5389036	-0.89	0.372	-.3180185 2.88874
WB	1.248831	.7237501	0.37	0.711	-.355315 3.892245
WO	1.138668	.5989861	0.22	0.827	-.4274467 2.983873
WP	-.2178736	3262.333	-0.00	1.000	0
age_cat					
20-24	4050570	6.18e+09	0.01	0.992	0
25-29	1.59e+07	2.43e+10	0.01	0.991	0
30-34	8673906	1.32e+10	0.01	0.992	0
greater than 34	1.36e+07	2.00e+10	0.01	0.991	0
1.parity	-.6959389	.1948902	-1.56	0.118	-.3234282 1.135219
imd_3_score					
3rd and 4th deciles	-.8780057	.3331795	-0.34	0.732	-.4173393 1.847164
5th and 6th deciles	-.8363101	.3654243	-0.41	0.682	-.35517 1.969239
least deprived	-.445141	.2346754	-1.54	0.125	-.158398 1.258966
1.any_risk	1.248047	.4580963	0.62	0.537	-.6163776 2.531108
2.high_risk_num	2.048627	1.698593	0.87	0.385	-.4664657 10.32528
highriskatbirth					
Y	-.9095566	.3094149	-0.28	0.780	-.4669455 1.771713
mod_care_4					
standard	-.3472074	.2002005	-1.83	0.067	-.1121461 1.074963
partial CoC	-.8268466	.5089512	-0.31	0.757	-.2474472 2.762914
imp_gstt					
imp	157.4338	106.1708	7.50	0.000	41.98182 590.384
_cons	5.57e-09	8.51e-06	-0.01	0.990	0
4					
place_hosp_comm					
hospital	-.3067113	.1569143	-2.31	0.021	-.112526 8360000
ethnicity					
BA	-.3042188	.2537595	-1.43	0.154	-.0593156 1.568281
BC	1.398588	1.351873	0.34	0.735	-.2868341 9.348128
BO	1.016634	1.393221	0.01	0.990	-.0692878 14.9167
H	3.92e+06	.8041131	-0.01	0.991	0
U	1.078093	.7895921	0.18	0.857	-.2565851 4.526542
WB	1.759525	1.233466	0.81	0.420	-.4453323 6.951948
WO	.6586795	.4255932	-0.66	0.511	-.1885583 2.344859
WP	-.8377351	35882.32	-0.00	1.000	0
age_cat					
20-24	1.13e+07	2.00e+10	0.01	0.993	0
25-29	9189086	1.63e+10	0.01	0.993	0
30-34	1.52e+07	2.68e+10	0.01	0.993	0
greater than 34	7848785	1.25e+10	0.01	0.993	0
1.parity	-.641973	.2655857	-1.07	0.284	-.2853466 1.444311
imd_3_score					
3rd and 4th deciles	-.6420809	.3898632	-0.92	0.359	-.2493483 1.653381
5th and 6th deciles	-.5992814	.2955374	-1.16	0.245	-.1633864 1.588226
least deprived	-.3570741	.2342331	-1.57	0.116	-.0987161 1.291602
1.any_risk	-.9700013	.4719995	-0.86	0.390	-.3737493 2.51747
2.high_risk_num	5.082526	6.295867	1.31	0.189	-.4485454 57.59876
highriskatbirth					
Y	1.833258	.8021245	1.39	0.166	-.7776577 4.321274
mod_care_4					
standard	-.1076186	.803812	-2.72	0.007	-.8215472 5374261
partial CoC	1.724272	1.298989	0.73	0.467	-.3974641 7.480207
imp_gstt					
imp	292.0811	338.4324	5.03	0.000	32.06074 2674.065
_cons	1.47e-09	2.60e-06	-0.01	0.991	0
5					
place_hosp_comm					
hospital	-.3526896	.108827	-2.03	0.042	-.1291142 .9634099
ethnicity					
BA	-.1763719	.1389716	-2.20	0.028	-.0376468 .8262865
BC	-.4999369	.5180733	-0.68	0.497	-.0674673 3.704565
BO	1.525588	1.807989	0.34	0.738	-.1384323 16.81267
H	2.455825	3.417835	0.65	0.519	-.1693359 37.59076
U	-.8423045	.6802791	-0.24	0.810	-.2883768 3.484778
WB	1.157315	.7833931	0.22	0.829	-.3670921 4.361488
WO	-.4218462	.2638713	-1.38	0.168	-.1238636 1.437376
WP	1.23247	21857.73	0.00	1.000	0
age_cat					
20-24	2.168438	3.462691	0.40	0.631	-.0933811 49.90325
25-29	3.158476	4.997976	0.73	0.467	-.1420808 70.21337
30-34	3.283103	5.08069	0.77	0.442	-.1581348 68.16189
greater than 34	4.27602	6.645841	0.93	0.358	-.2632789 89.94712
1.parity	1.163698	.5058955	0.35	0.727	-.4970344 2.724547
imd_3_score					
3rd and 4th deciles	-.4457214	.2104513	-1.71	0.087	-.1766693 1.124516
5th and 6th deciles	-.4357005	.2474089	-1.46	0.143	-.1431661 1.325976
least deprived	-.256448	.1679203	-2.00	0.038	-.0710622 .9254647
1.any_risk	1.752219	.8072836	1.22	0.223	-.7182678 4.322695
2.high_risk_num	3.227525	4.088159	0.93	0.354	-.2788952 38.45369
highriskatbirth					
Y	2.247512	.9989025	1.84	0.066	-.9471462 5.333191
mod_care_4					
standard	-.8255088	.0196586	-4.76	0.000	-.0856316 1.154723
partial CoC	-.8295332	.5361767	-0.29	0.772	-.2336962 2.94453
imp_gstt					
imp	365.364	421.434	5.12	0.000	38.09746 3503.93
_cons	-.0865914	-.0132469	-2.50	0.012	-.0801283 3385662

Table 36 Maternal birth outcomes in relation to the model of care received

modeofbirth_n	RRR	Std. Err.	z	P> z	[95% Conf. Interval]
EL					
mod_care_4					
standard	2.003354	.9337735	1.49	0.136	.8035415 4.994673
partial CoC	.3677398	.1985434	-1.85	0.064	.1276366 1.059512
ethnicity					
BA	.9713834	.4980972	-0.06	0.955	.3555652 2.653763
BC	1.04113	.6883208	0.06	0.951	.2849385 3.804159
BO	3.539303	2.75134	1.63	0.104	.7712963 16.24106
H	2.49e-07	.000393	-0.01	0.992	0
U	1.184691	.5285955	0.38	0.704	.4940927 2.840543
WB	1.675006	.7554674	1.14	0.253	.6919975 4.054417
WO	1.140549	.4729083	0.32	0.751	.5060326 2.570689
WP	.3204243	10827.54	-0.00	1.000	0
age_cat					
20-24	2044510	4.17e+09	0.01	0.994	0
25-29	4823943	9.83e+09	0.01	0.994	0
30-34	3269442	6.66e+09	0.01	0.994	0
greater than 34	5379184	1.10e+10	0.01	0.994	0
0.parity	1.612019	.4231585	1.82	0.069	.9636687 2.696574
imd_3_score					
most deprived	1.021401	-.3969521	0.05	0.957	.4768589 2.187776
3rd and 4th deciles	.5688503	-.2150634	-1.49	0.136	.2711358 1.193463
5th and 6th deciles	1.144608	.4482362	0.34	0.730	.5312765 2.466
any_risk	.9452127	.2873468	-0.19	0.853	.5209096 1.715129
2.high_risk_num	5.524621	2.588172	3.65	0.000	2.205627 13.83799
highriskatbirth					
y	2.662195	.8050489	3.24	0.001	1.471757 4.815524
place_hosp_comm					
hospital	1.110636	.3565508	0.33	0.744	.591981 2.083701
imp_gstt					
imp	3.211075	1.272748	2.94	0.003	1.476613 6.982875
_cons	9.34e-09	.000019	-0.01	0.993	0
EM					
mod_care_4					
standard	.9195016	.3361012	-0.23	0.818	.4491762 1.882297
partial CoC	.6556095	.2540713	-1.09	0.276	.3067435 1.401249
ethnicity					
BA	1.120853	.496935	0.26	0.797	.4700729 2.672591
BC	1.533683	.7925706	0.83	0.408	.5569999 4.222952
BO	3.781777	2.547085	1.98	0.048	1.01018 14.15772
M	1.549247	1.113456	0.61	0.542	.3787527 6.337031
U	1.218028	.4616697	0.52	0.603	.5794635 2.560287
WB	.9636401	.3753256	-0.09	0.925	.4464086 2.008161
WO	.6007186	-.2230382	-1.37	0.170	.2901564 1.243684
WP	1.60e+08	2.53e+12	0.00	0.999	0
age_cat					
20-24	1.210377	1.095109	0.21	0.833	.2054856 7.129508
25-29	3.65021	3.072517	1.54	0.124	.701181 19.00228
30-34	1.348789	1.112099	0.36	0.717	.2679071 6.708502
greater than 34	1.739644	1.448089	0.67	0.504	.343114 8.820278
0.parity	4.960771	1.19362	6.66	0.000	3.095566 7.949838
imd_3_score					
most deprived	.7304032	-.2605595	-0.80	0.379	.3627705 1.470806
3rd and 4th deciles	.6811212	-.2230036	-1.17	0.243	.3577137 1.29692
5th and 6th deciles	1.246949	.435639	0.63	0.528	.6287382 2.473021
any_risk	1.013507	.2756383	0.05	0.961	.5947436 1.727125
2.high_risk_num	2.300618	.9117015	2.10	0.036	1.050898 5.002226
highriskatbirth					
y	4.256568	1.157275	5.33	0.000	2.490245 7.252438
place_hosp_comm					
hospital	1.135797	.2830891	0.51	0.609	.6960593 1.851214
imp_gstt					
imp	1.191839	.370947	0.56	0.573	.6475756 2.193537
_cons	.0503601	.05143	-2.93	0.003	.0060078 3.726511
I					
mod_care_4					
standard	1.6055	.7131289	1.07	0.286	.6722408 3.834387
partial CoC	1.184982	.560106	0.36	0.720	.4692172 2.992606
ethnicity					
BA	.7326625	.4544128	-0.50	0.616	.2172555 2.470797
BC	1.99e-07	.0002267	-0.01	0.989	0
BO	2.873315	2.409447	1.26	0.208	.5553921 14.86507
M	4.290789	3.107885	2.01	0.044	1.037525 17.74498
U	1.919366	.8390518	1.49	0.136	.8148066 4.521275
WB	1.626583	.7276146	1.09	0.277	.6768787 3.908785
WO	1.65226	.6927544	1.20	0.231	.7264222 3.750893
WP	.3792767	12148.02	-0.00	1.000	0
age_cat					
20-24	4.806144	5.731892	1.32	0.188	.4641292 49.76852
25-29	4.610474	5.360374	1.31	0.189	.4721662 45.01904
30-34	3.905054	4.432093	1.20	0.230	.4222256 36.11683
greater than 34	4.922443	5.605459	1.40	0.162	.5282076 45.86602
0.parity	8.067078	2.207764	7.63	0.000	4.718055 13.79334
imd_3_score					
most deprived	1.891101	.7141174	1.69	0.092	.902161 3.964107
3rd and 4th deciles	1.130044	.4045669	0.34	0.733	.5602178 2.27947
5th and 6th deciles	1.831354	.6945811	1.60	0.111	.8708339 3.851316
any_risk	.627007	.2042229	-1.43	0.152	.3312209 1.187238
2.high_risk_num	1.85377	.8465969	1.35	0.177	.7573926 4.537226
highriskatbirth					
y	1.812664	.5108073	2.11	0.035	1.043397 3.149091
place_hosp_comm					
hospital	1.252604	.3339295	0.84	0.398	.7428372 2.112196
imp_gstt					
imp	1.06921	.3354473	0.21	0.831	.5781128 1.977488
_cons	.0048666	.0065231	-3.97	0.000	.0003518 .0673225
S	(base outcome)				

PPH	RRR	Std. Err.	z	P> z	[95% Conf. Interval]	
0	(base outcome)					
1						
mod_care_4						
standard	1.026148	.2842491	0.09	0.926	.5962411	1.766029
partial CoC	.7691351	.2287573	-0.88	0.377	.4293752	1.377743
ethnicity						
BA	.745633	.2522575	-0.87	0.386	.3841956	1.447098
BC	.5911921	.2526086	-1.23	0.219	.2558713	1.365953
B0	2.067044	1.143476	1.31	0.189	.6989888	6.112647
M	1.555513	.8467086	0.81	0.417	.5352309	4.520704
U	.9052517	.2598109	-0.35	0.729	.5157879	1.588794
WB	.6231245	.1839234	-1.60	0.109	.349407	1.111266
W0	.7046247	.1928606	-1.28	0.201	.4120768	1.204863
WP	143179.4	1.12e+08	0.02	0.988	0	.
age_cat						
20-24	1.775543	1.357437	0.75	0.453	.3967991	7.944956
25-29	2.603773	1.906829	1.31	0.191	.6197838	10.93871
30-34	2.629369	1.888086	1.35	0.178	.6436123	10.74184
greater than 34	3.208525	2.311167	1.62	0.106	.7819291	13.16569
0.parity	3.237733	.5449599	6.98	0.000	2.327935	4.503096
imd_3_score						
most deprived	1.247598	.3206801	0.86	0.389	.7538475	2.064742
3rd and 4th deciles	.8755945	.2111505	-0.55	0.582	.5458017	1.40466
5th and 6th deciles	1.273582	.3341148	0.92	0.357	.7615885	2.129773
1.any_risk	1.025005	.2067363	0.12	0.903	.6903102	1.521974
2.high_risk_num	1.235451	.3656097	0.71	0.475	.6917157	2.206599
highriskatbirth						
Y	1.8453	.3570016	3.17	0.002	1.262958	2.696156
place_hosp_comm						
hospital	.9410253	.1743786	-0.33	0.743	.6544368	1.353116
imp_gstt						
imp	1.777707	.3961329	2.58	0.010	1.148639	2.751291
_cons	.14721	.1247637	-2.26	0.024	.0279592	.7750852

MOH	RRR	Std. Err.	z	P> z	[95% Conf. Interval]	
0	(base outcome)					
1						
mod_care_4						
standard	.9920067	.4352015	-0.02	0.985	.4198417	2.343925
partial CoC	.6931022	.345198	-0.74	0.462	.2611309	1.839655
ethnicity						
BA	.9131116	.4917031	-0.17	0.866	.3178036	2.623547
BC	3.05e-07	.0002531	-0.02	0.986	0	.
B0	.4266917	.4725885	-0.77	0.442	.0486804	3.740026
M	.9782016	.8412815	-0.03	0.980	.1812886	5.278204
U	.6340275	.2977736	-0.97	0.332	.2525445	1.591763
WB	.9248786	.4320139	-0.17	0.867	.370242	2.310382
W0	.4686005	.2222334	-1.60	0.110	.1849784	1.187092
WP	1.98e-07	.0010719	-0.00	0.998	0	.
age_cat						
20-24	.4055993	.4215935	-0.87	0.385	.0528847	3.110746
25-29	.4156071	.3908216	-0.93	0.350	.0658028	2.624953
30-34	.4603023	.4105829	-0.87	0.384	.0801279	2.64425
greater than 34	.717681	.6371897	-0.37	0.709	.1259494	4.089468
0.parity	1.58227	.4699457	1.54	0.122	.8840311	2.832002
imd_3_score						
most deprived	1.325684	.6780298	0.55	0.581	.486505	3.612373
3rd and 4th deciles	1.675587	.7890055	1.10	0.273	.6658102	4.216803
5th and 6th deciles	2.067533	1.006822	1.49	0.136	.7960582	5.369825
1.any_risk	1.996842	.6654422	2.08	0.038	1.039161	3.83711
2.high_risk_num	1.037359	.4984314	0.08	0.939	.4045228	2.660207
highriskatbirth						
Y	1.817155	.6689577	1.62	0.105	.8831512	3.738942
place_hosp_comm						
hospital	.8715091	.2873331	-0.42	0.677	.4567033	1.663067
imp_gstt						
imp	.5273297	.223328	-1.51	0.131	.2299282	1.209407
_cons	.1092001	.1287626	-1.88	0.060	.0108277	1.101316

perineumsutured_n	RRR	Std. Err.	z	P> z	[95% Conf. Interval]
N					
(base outcome)					
Y					
mod_care_4					
standard	1.112761	.3182427	0.37	0.709	.6352775 1.949127
partial CoC	1.385216	.421072	1.07	0.284	.7634366 2.513403
ethnicity					
BA	.7708834	.2651535	-0.76	0.449	.3928339 1.512754
BC	.269638	.1339986	-2.64	0.008	.1018052 .7141541
B0	.6706158	.3609211	-0.74	0.458	.2335407 1.925684
M	.8595961	.4660841	-0.28	0.780	.2970038 2.487865
U	.8837837	.2565644	-0.43	0.670	.5003112 1.561175
WB	.5915086	.1759461	-1.77	0.078	.3301935 1.059629
W0	.965261	.2654912	-0.13	0.898	.5630217 1.654872
WP	1.84e-06	.0012618	-0.02	0.985	0 .
age_cat					
20-24	.798699	.5917033	-0.30	0.762	.1869753 3.411789
25-29	.5015208	.3563736	-0.97	0.331	.1245768 2.019021
30-34	.8990687	.6248345	-0.15	0.878	.2302635 3.510433
greater than 34	.6414886	.4470448	-0.64	0.524	.1636809 2.514084
0.parity	2.304907	.3774503	5.10	0.000	1.672096 3.177209
imd_3_score					
most deprived	1.757592	.4565189	2.17	0.030	1.056394 2.92422
3rd and 4th deciles	1.69888	.4119342	2.19	0.029	1.056254 2.73248
5th and 6th deciles	1.180738	.3106395	0.63	0.528	.7050362 1.977404
1.any_risk	.7191825	.1465629	-1.62	0.106	.4823608 1.072275
2.high_risk_num	.9997337	.3069234	-0.00	0.999	.5477231 1.824768
highriskatbirth					
Y	.4727616	.0920681	-3.85	0.000	.3227562 .692484
place_hosp_comm					
hospital	1.068514	.200658	0.35	0.724	.7394885 1.543934
imp_gstt					
imp	1.190468	.2602473	0.80	0.425	.7759992 1.827251
_cons	.6862734	.56616	-0.46	0.648	.1362307 3.457158

emergency_n	RRR	Std. Err.	z	P> z	[95% Conf. Interval]
N					
(base outcome)					
Y					
mod_care_4					
standard	1.212401	.3849705	0.61	0.544	.6506789 2.259051
partial CoC	1.297237	.4390327	0.77	0.442	.6682536 2.51824
ethnicity					
BA	.9435827	.3484149	-0.16	0.875	.45759 1.945734
BC	1.128439	.5047059	0.27	0.787	.4696447 2.711357
B0	1.082594	.6101973	0.14	0.888	.3586671 3.267683
M	2.164122	1.22615	1.36	0.173	.7128644 6.569864
U	.810642	.2534829	-0.67	0.502	.4392011 1.496218
WB	.7446961	.2400318	-0.91	0.360	.3959299 1.400683
W0	.6160014	.1871189	-1.60	0.111	.3396389 1.117239
WP	662783.7	5.31e+08	0.02	0.987	0 .
age_cat					
20-24	3.680307	4.186389	1.15	0.252	.3959434 34.20857
25-29	4.226353	4.664258	1.31	0.192	.4859245 36.75892
30-34	4.795626	5.235223	1.44	0.151	.5644394 40.74491
greater than 34	6.318725	6.90329	1.69	0.092	.7424731 53.77473
0.parity	1.942204	.362025	3.56	0.000	1.347819 2.798711
imd_3_score					
most deprived	1.686797	.5144371	1.71	0.086	.927822 3.066628
3rd and 4th deciles	2.012762	.5725886	2.46	0.014	1.152507 3.515131
5th and 6th deciles	1.606527	.493145	1.54	0.122	.8802381 2.93208
1.any_risk	.8846198	.2016578	-0.54	0.591	.5650703 1.382918
2.high_risk_num	1.037559	.3320154	0.12	0.908	.5541546 1.942649
highriskatbirth					
Y	1.7791	.3959177	2.59	0.010	1.150206 2.751853
place_hosp_comm					
hospital	.9409235	.1920925	-0.30	0.765	.6306362 1.403879
imp_gstt					
imp	.7958736	.2009976	-0.90	0.366	.4851471 1.305614
_cons	.0243025	.0292595	-3.09	0.002	.0022953 .2573189

Table 37 Maternal birth outcomes in relation to the place of antenatal care

modeofbirth_n	RRR	Std. Err.	z	P> z	[95% Conf. Interval]	
EL						
place_hosp_comm						
hospital	1.069383	.3453395	0.21	0.835	.5678736	2.013792
ethnicity						
BA	.9848958	.5058188	-0.03	0.976	.3599429	2.694927
BC	1.066797	.7056107	0.10	0.922	.2917915	3.90024
BO	3.589227	2.792281	1.64	0.100	.7813081	16.48861
M	3.14e-07	.0004281	-0.01	0.991	0	0
U	1.187519	.5300574	0.39	0.700	.4951093	2.848265
WB	1.627947	.7384356	1.07	0.283	.6691687	3.960451
WO	1.147041	.4759406	0.33	0.741	.5086165	2.586825
WP	.3249177	9764.76	-0.00	1.000	0	.
age_cat						
20-24	1211482	2.18e+09	0.01	0.994	0	.
25-29	3735981	6.73e+09	0.01	0.993	0	.
30-34	2560355	4.61e+09	0.01	0.993	0	.
greater than 34	4245792	7.65e+09	0.01	0.993	0	.
1.parity	.6269929	.1657012	-1.77	0.077	.3735147	1.052489
imd_3_score						
3rd and 4th deciles	.54413	.1719677	-1.93	0.054	.2928786	1.010922
5th and 6th deciles	1.126496	.3917792	0.34	0.732	.5697627	2.227231
least deprived	.9787639	.3801732	-0.06	0.956	.4571437	2.095575
1.any_risk	.9599079	.2917793	-0.13	0.893	.5290459	1.74167
2.high_risk_num	5.309404	2.50355	3.54	0.000	2.107064	13.3787
highriskatbirth						
Y	2.638762	.7991291	3.20	0.001	1.457539	4.777274
mod_care_4						
standard	1.988424	.9270006	1.47	0.140	.7974071	4.95836
partial CoC	.3654758	.1974017	-1.86	0.062	.126796	1.053445
imp_gstt						
imp	3.249368	1.290167	2.97	0.003	1.492203	7.075706
_cons	2.04e-08	.0000367	-0.01	0.992	0	.
EM						
place_hosp_comm						
hospital	1.124632	.2805966	0.47	0.638	.6896595	1.833943
ethnicity						
BA	1.072189	.4796031	0.16	0.876	.4461887	2.576464
BC	1.523698	.786476	0.82	0.415	.5540393	4.190418
BO	3.726289	2.509416	1.95	0.051	.9955136	13.94781
M	1.539684	1.105645	0.60	0.548	.3768646	6.290397
U	1.214313	.4596652	0.51	0.608	.5782522	2.550022
WB	.9929634	.3896035	-0.02	0.986	.4602057	2.142469
WO	.6021685	.2232768	-1.37	0.171	.2911406	1.24547
WP	1.24e+08	1.75e+12	0.00	0.999	0	.
age_cat						
20-24	1.256195	1.134053	0.25	0.801	.2138341	7.379673
25-29	3.667045	3.080068	1.55	0.122	.706911	19.0225
30-34	1.352147	1.112481	0.37	0.714	.2695854	6.781897
greater than 34	1.741082	1.439175	0.67	0.502	.3445226	8.798748
1.parity	.2035793	.0490161	-6.61	0.000	.1269955	.3263462
imd_3_score						
3rd and 4th deciles	.9444579	.2640395	-0.20	0.838	.5460275	1.633610
5th and 6th deciles	1.670417	.5332831	1.61	0.108	.893465	3.122902
least deprived	1.355745	.4839321	0.85	0.394	.6735073	2.729064
1.any_risk	1.01759	.276789	0.06	0.949	.5970931	1.734217
2.high_risk_num	2.235523	.8892387	2.02	0.043	1.025159	4.874917
highriskatbirth						
Y	4.263301	1.158708	5.34	0.000	2.502654	7.262582
mod_care_4						
standard	.9321215	.3406191	-0.19	0.847	.455432	1.90775
partial CoC	.6603151	.2556253	-1.07	0.284	.3091924	1.410177
imp_gstt						
imp	1.186022	.3687831	0.55	0.583	.6447912	2.181556
_cons	.181721	.1707507	-1.01	0.070	.0288131	1.146095
I						
place_hosp_comm						
hospital	1.248842	.3327203	0.83	0.404	.7408461	2.105171
ethnicity						
BA	.7544261	.4681297	-0.45	0.650	.223582	2.545638
BC	2.54e-07	.0002532	-0.02	0.988	0	.
BO	2.83843	2.385414	1.24	0.214	.5466752	14.73761
M	4.320395	3.133235	2.02	0.044	1.042835	17.89911
U	1.898378	.8304606	1.47	0.143	.8054111	4.474532
WB	1.684457	.7543278	1.16	0.244	.7002894	4.851745
WO	1.653689	.6936533	1.20	0.230	.7267928	3.76268
WP	.3718561	10554.3	-0.00	1.000	0	.
age_cat						
20-24	5.026635	5.995189	1.35	0.176	.4853585	52.05855
25-29	4.58526	5.330583	1.31	0.190	.4696796	44.76373
30-34	3.865602	4.38663	1.19	0.233	.418063	35.74313
greater than 34	4.943043	5.628099	1.40	0.160	.5306705	46.04303
1.parity	.1221499	.0334993	-7.67	0.000	.0713598	.2090898
imd_3_score						
3rd and 4th deciles	.6107625	.1785501	-1.69	0.092	.3443757	1.083209
5th and 6th deciles	.9708772	.3217168	-0.09	0.929	.5071123	1.858765
least deprived	.5251626	.198548	-1.70	0.088	.2503112	1.101811
1.any_risk	.6223668	.2030121	-1.45	0.146	.3283899	1.179514
2.high_risk_num	1.892585	.865699	1.39	0.163	.7721503	4.638833
highriskatbirth						
Y	1.812946	.5112702	2.11	0.035	1.043126	3.150887
mod_care_4						
standard	1.640082	.7290173	1.11	0.266	.6862877	3.91945
partial CoC	1.191898	.5634151	0.37	0.710	.4719244	3.010271
imp_gstt						
imp	1.062601	.3331844	0.19	0.846	.5747401	1.964577
_cons	.0730721	.0918889	-2.08	0.037	.0062138	.8593036
S	(base outcome)					

	PPH	RRR	Std. Err.	z	P> z	[95% Conf. Interval]
0		(base outcome)				
1						
	place_hosp_comm					
	hospital	.9254432	.1718141	-0.42	0.676	.6431601 1.33162
	ethnicity					
	BA	.7303601	.2480047	-0.93	0.355	.375404 1.420938
	BC	.5970923	.2549566	-1.21	0.227	.2585717 1.378802
	B0	2.071801	1.146086	1.32	0.188	.7006123 6.126585
	M	1.541091	.8385612	0.79	0.427	.5304689 4.477098
	U	.9067829	.2602315	-0.34	0.733	.5166812 1.591417
	WB	.624733	.1849427	-1.59	0.112	.3497109 1.11604
	W0	.7059758	.1932543	-1.27	0.203	.4128395 1.207253
	WP	143256.7	1.12e+08	0.02	0.988	0 .
	age_cat					
	20-24	1.689106	1.292864	0.68	0.493	.3768221 7.571425
	25-29	2.61295	1.911396	1.31	0.189	.622974 10.95954
	30-34	2.644228	1.896657	1.36	0.175	.6482574 10.78575
	greater than 34	3.242362	2.333206	1.63	0.102	.7912908 13.28577
	1.parity	.3108355	.0524186	-6.93	0.000	.22335 .4325888
	imd_3_score					
	3rd and 4th deciles	.7018294	.1399348	-1.78	0.076	.4748037 1.037407
	5th and 6th deciles	1.009971	.2352624	0.04	0.966	.6397789 1.594364
	least deprived	.7986907	.2052689	-0.87	0.382	.4826298 1.321731
	1.any_risk	1.03535	.2088922	0.17	0.863	.697186 1.537537
	2.high_risk_num	1.187858	.3532084	0.58	0.563	.6632245 2.127495
	highriskatbirth					
	Y	1.8402	.3559793	3.15	0.002	1.259516 2.688603
	mod_care_4					
	standard	1.028344	.2848161	0.10	0.920	.5975646 1.769669
	partial CoC	.7711754	.229218	-0.87	0.382	.4306742 1.380885
	imp_gstt					
	imp	1.777906	.3960228	2.58	0.010	1.148964 2.75113
	_cons	.5984384	.4783563	-0.64	0.521	.1249163 2.866947

	MOH	RRR	Std. Err.	z	P> z	[95% Conf. Interval]
0		(base outcome)				
1						
	place_hosp_comm					
	hospital	.8865276	.2921638	-0.37	0.715	.4646976 1.691274
	ethnicity					
	BA	.9652128	.5220975	-0.07	0.948	.3343458 2.786444
	BC	3.07e-07	.0002541	-0.02	0.986	0 .
	B0	.4259895	.4720243	-0.77	0.441	.0485525 3.737541
	M	.9970511	.8577121	-0.00	0.997	.1847023 5.382234
	U	.626936	.2947686	-0.99	0.321	.2494657 1.575562
	WB	.9418088	.4402921	-0.13	0.898	.3767291 2.354487
	W0	.4673649	.2217984	-1.60	0.109	.1843739 1.184712
	WP	1.94e-07	.0010486	-0.00	0.998	0 .
	age_cat					
	20-24	.4314061	.4490968	-0.81	0.419	.0560763 3.318892
	25-29	.4116905	.3876418	-0.94	0.346	.0650267 2.606453
	30-34	.4535383	.4051273	-0.89	0.376	.0787536 2.611907
	greater than 34	.720308	.6401823	-0.37	0.712	.1261835 4.111817
	1.parity	.6138167	.183045	-1.64	0.102	.3421399 1.101219
	imd_3_score					
	3rd and 4th deciles	1.285367	.4660812	0.69	0.489	.6315048 2.61624
	5th and 6th deciles	1.597294	.6487524	1.15	0.249	.7205489 3.540841
	least deprived	.753144	.3856209	-0.55	0.580	.2760897 2.054498
	1.any_risk	1.966166	.6566944	2.02	0.043	1.021694 3.783723
	2.high_risk_num	1.087346	.524883	0.17	0.862	.4221592 2.800653
	highriskatbirth					
	Y	1.803255	.6631753	1.60	0.109	.8770299 3.707659
	mod_care_4					
	standard	1.000867	.4390363	0.00	0.998	.4236346 2.364618
	partial CoC	.6892605	.3432011	-0.75	0.455	.2597452 1.829024
	imp_gstt					
	imp	.5244478	.2215146	-1.53	0.127	.2291788 1.200135
	_cons	.2268909	.2413701	-1.39	0.163	.028203 1.825319

perineumsutured_n	RRR	Std. Err.	z	P> z	[95% Conf. Interval]	
N	(base outcome)					
Y						
place_hosp_comm	1.085532	.2039835	0.44	0.662	.7510908	1.568891
hospital						
ethnicity						
BA	.7929567	.273619	-0.67	0.501	.403211	1.559432
BC	.2673104	.1329656	-2.65	0.008	.1008349	.7086317
B0	.6702537	.360692	-0.74	0.457	.233438	1.924451
M	.8664949	.4699413	-0.26	0.792	.2993085	2.508494
U	.8815498	.2557987	-0.43	0.664	.4991767	1.556824
WB	.5883957	.1753772	-1.78	0.075	.3280653	1.055306
W0	.9638086	.2649435	-0.13	0.893	.562344	1.651884
WP	1.84e-06	.0012645	-0.02	0.985	0	.
age_cat						
20-24	.831349	.6164472	-0.25	0.803	.1943638	3.555914
25-29	.4988974	.3541837	-0.98	0.327	.1240839	2.005891
30-34	.892262	.6195201	-0.16	0.870	.2288135	3.479391
greater than 34	.6341869	.4415821	-0.65	0.513	.1620051	2.482595
1.parity	.4313782	.0708077	-5.12	0.000	.3127082	.5950822
imd_3_score						
3rd and 4th deciles	.9661928	.1938324	-0.17	0.864	.6520792	1.431618
5th and 6th deciles	.6817666	.1609492	-1.62	0.105	.4292268	1.08289
least deprived	.572033	.1485743	-2.15	0.032	.3438257	.9517083
1.any_risk	.71196	.1452069	-1.67	0.096	.4773643	1.061845
2.high_risk_num	1.04608	.3227304	0.15	0.884	.5714225	1.915017
highriskatbirth						
Y	.4732925	.0922175	-3.84	0.000	.3230572	.6933936
mod_care_4						
standard	1.110431	.3176187	0.37	0.714	.6339002	1.945192
partial CoC	1.381663	.4197425	1.06	0.287	.761748	2.506069
imp_gstt						
imp	1.190563	.2602481	0.80	0.425	.775686	1.827336
_cons	2.766064	2.156172	1.31	0.192	.6002646	12.74623
emergency_n	RRR	Std. Err.	z	P> z 	[95% Conf. Interval]	
N	(base outcome)					
Y						
place_hosp_comm	.9172135	.1879084	-0.42	0.673	.6138833	1.370424
hospital						
ethnicity						
BA	.8976864	.3347952	-0.29	0.772	.4321815	1.864589
BC	1.144167	.5116155	0.30	0.763	.4762926	2.748559
B0	1.088099	.6129726	0.15	0.881	.3607037	3.282362
M	2.128391	1.204367	1.33	0.182	.7020888	6.452243
U	.8173745	.255466	-0.65	0.519	.4429785	1.508202
WB	.7418816	.2400696	-0.92	0.356	.39345	1.398877
W0	.618389	.1877579	-1.58	0.113	.3410486	1.121262
WP	529639.2	3.78e+08	0.02	0.985	0	.
age_cat						
20-24	3.3553	3.832089	1.06	0.289	.3577452	31.46943
25-29	4.264023	4.704559	1.31	0.189	.4905424	37.06488
30-34	4.859941	5.304164	1.45	0.147	.5723023	41.2702
greater than 34	6.40147	6.992445	1.70	0.089	.7524827	54.45816
1.parity	.5240415	.0979867	-3.46	0.001	.3632502	.7560066
imd_3_score						
3rd and 4th deciles	1.186262	.2618539	0.77	0.439	.7696398	1.828411
5th and 6th deciles	.9291987	.24336	-0.28	0.779	.5561299	1.552533
least deprived	.5907023	.1800028	-1.73	0.084	.3250759	1.073378
1.any_risk	.9007125	.2052714	-0.46	0.646	.5762332	1.407907
2.high_risk_num	.9721564	.3139769	-0.09	0.930	.5162071	1.830831
highriskatbirth						
Y	1.774128	.3948167	2.58	0.010	1.146984	2.744179
mod_care_4						
standard	1.208727	.3838953	0.60	0.551	.6486105	2.252539
partial CoC	1.302835	.4407897	0.78	0.434	.6712765	2.528584
imp_gstt						
imp	.7983801	.2016513	-0.89	0.373	.4866503	1.309792
_cons	.0805416	.0932572	-2.18	0.030	.008326	.7791235

Table 38 Use of analgesia in labour and obstetric interventions in relation to model of care received

opiod_n		RRR	Std. Err.	z	P> z	[95% Conf. Interval]	
N		(base outcome)					
Y							
mod_care_4							
standard		.5159074	.467983	-0.73	0.466	.0871849	3.052828
partial CoC		.2965263	.3232324	-1.12	0.265	.0350106	2.511463
ethnicity							
BA		1.796576	1.951462	0.54	0.590	.2137276	15.10187
BC		4.326628	4.827656	1.31	0.189	.4857112	38.54083
B0		1.73e-07	.0005925	-0.00	0.996	0	.
M		2.03e-07	.0007804	-0.00	0.997	0	.
U		.327436	.4140299	-0.88	0.377	.0274673	3.903346
WB		.9450061	.9167593	-0.06	0.954	.1411484	6.326934
W0		.999284	.8787229	-0.00	0.999	.1783129	5.600092
WP		7.86e-08	.0015831	-0.00	0.999	0	.
age_cat							
20-24		.6660875	3740.036	-0.00	1.000	0	.
25-29		7026087	3.72e+10	0.00	0.998	0	.
30-34		6678806	3.54e+10	0.00	0.998	0	.
greater than 34		2891675	1.53e+10	0.00	0.998	0	.
0.parity		4.813283	3.416905	2.21	0.027	1.19724	19.35091
imd_3_score							
most deprived		.6949564	.5828803	-0.43	0.664	.1342857	3.596543
3rd and 4th deciles		.7944578	.6292489	-0.29	0.771	.1682202	3.752006
5th and 6th deciles		.6026789	.5254395	-0.58	0.561	.1091376	3.328108
any_risk		.9165734	.6524563	-0.12	0.903	.2271148	3.69904
high_risk_num		5.05e-07	.0007206	-0.01	0.992	0	.
highriskatbirth							
Y		.7689297	.4715333	-0.43	0.668	.231154	2.55783
place_hosp_comm							
hospital		.5988517	.4872235	-0.63	0.529	.1215584	2.950215
imp_gstt							
imp		3.114576	2.664024	1.33	0.184	.5825476	16.652
_cons		.0075841	41.6167	-0.00	0.999	0	.

epidural_n		RRR	Std. Err.	z	P> z	[95% Conf. Interval]	
N		(base outcome)					
Y							
mod_care_4							
standard		1.015169	.2975506	0.05	0.959	.5715412	1.80314
partial CoC		.7129289	.2224273	-1.08	0.278	.3867934	1.314054
ethnicity							
BA		.7864023	.2781277	-0.68	0.497	.3931873	1.57286
BC		.6075416	.2674593	-1.13	0.258	.2563597	1.4398
B0		2.797424	1.769943	1.63	0.104	.8094667	9.667575
M		.7118376	.4055605	-0.60	0.551	.2330341	2.174414
U		1.274242	.3899618	0.79	0.428	.6994472	2.321394
WB		.8192877	.2526064	-0.65	0.518	.4477032	1.49928
W0		1.016229	.2937372	0.06	0.956	.5767065	1.790722
WP		24092.23	1.04e+07	0.02	0.981	0	.
age_cat							
20-24		4.651719	3.634942	1.97	0.049	1.0057	21.51585
25-29		4.966077	3.699879	2.15	0.031	1.153034	21.38871
30-34		5.709898	4.172898	2.38	0.017	1.363184	23.91674
greater than 34		5.856518	4.282639	2.42	0.016	1.396978	24.55214
0.parity		3.384508	.6058828	6.81	0.000	2.382958	4.807006
imd_3_score							
most deprived		1.177622	.3249988	0.59	0.554	.6856343	2.022645
3rd and 4th deciles		.7781907	.2000853	-0.98	0.329	.4701414	1.288082
5th and 6th deciles		1.02082	.2901128	0.07	0.942	.5848457	1.781793
any_risk		.8392927	.1800324	-0.82	0.414	.5512219	1.27791
high_risk_num		.9386313	.3078557	-0.19	0.847	.4935315	1.785152
highriskatbirth							
Y		4.575927	1.002946	6.94	0.000	2.977925	7.031442
place_hosp_comm							
hospital		.9151167	.1801144	-0.45	0.652	.6222172	1.345894
imp_gstt							
imp		1.10366	.2569143	0.42	0.672	.6993413	1.741732
_cons		.1128189	.104657	-2.35	0.019	.018313	.6950296

nonphrama_n	RRR	Std. Err.	z	P> z	[95% Conf. Interval]	
N	(base outcome)					
Y						
mod_care_4						
standard	.7368502	.2341587	-0.96	0.337	.3952588	1.373652
partial CoC	1.154997	.3867186	0.43	0.667	.5992112	2.226292
ethnicity						
BA	.0894168	.3578611	-0.29	0.771	.4042224	1.956998
BC	1.33481	.6244723	0.62	0.537	.5335766	3.339199
B0	.8436528	.5370499	-0.27	0.789	.242275	2.937778
M	.9507349	.5599938	-0.09	0.932	.2997036	3.015969
U	.6016413	.207558	-1.47	0.141	.3059742	1.183016
WB	.8987122	.3027123	-0.32	0.751	.4644204	1.739122
W0	.7056908	.2312622	-1.06	0.287	.3712503	1.341412
WP	.0000403	.0214464	-0.02	0.985	0	.
age_cat						
20-24	.0995807	.0807121	-2.85	0.004	.0203357	.4876307
25-29	.1136994	.0866174	-2.85	0.004	.0255449	.5060725
30-34	.0950476	.0711354	-3.14	0.002	.0219223	.4120944
greater than 34	.0952065	.0713134	-3.14	0.002	.0219322	.4132856
0.parity	.5591149	.1103652	-2.95	0.003	.3797345	.8232315
imd_3_score						
most deprived	.8312378	.2625249	-0.59	0.558	.4476055	1.543673
3rd and 4th deciles	1.190047	.3422565	0.60	0.545	.6772659	2.091072
5th and 6th deciles	1.23634	.3897263	0.67	0.501	.6665266	2.293288
any_risk	.809805	.2013668	-0.85	0.396	.4974162	1.318381
high_risk_num	1.039075	.3962614	0.10	0.920	.4920764	2.194122
highriskatbirth						
Y	.2901092	.0753516	-4.76	0.000	.1743711	.482668
place_hosp_comm						
hospital	1.012593	.218228	0.06	0.954	.6637264	1.54483
imp_gstt						
imp	.641804	.1603623	-1.77	0.076	.3932961	1.047334
_cons	9.577663	9.394997	2.30	0.021	1.400529	65.49783

water_n	RRR	Std. Err.	z	P> z	[95% Conf. Interval]	
N	(base outcome)					
Y						
mod_care_4						
standard	.11923	.1012153	-2.51	0.012	.0225836	.6294731
partial CoC	.6583195	.5170071	-0.53	0.594	.1412378	3.068474
ethnicity						
BA	.4559773	3830.645	-0.00	1.000	0	.
BC	.7071387	7312.929	-0.00	1.000	0	.
B0	.3348891	4267.84	-0.00	1.000	0	.
M	.122349	1742.333	-0.00	1.000	0	.
U	2.82e+07	1.70e+11	0.00	0.998	0	.
WB	5.96e+07	3.58e+11	0.00	0.998	0	.
W0	1.89e+07	1.13e+11	0.00	0.998	0	.
WP	7.30e+08	6.27e+13	0.00	1.000	0	.
age_cat						
20-24	2.561554	46398.84	0.00	1.000	0	.
25-29	9.26e+07	1.55e+12	0.00	0.999	0	.
30-34	2.36e+08	3.95e+12	0.00	0.999	0	.
greater than 34	2.03e+08	3.39e+12	0.00	0.999	0	.
0.parity	1.314795	.8912419	0.40	0.686	.3482298	4.964211
imd_3_score						
most deprived	.8189468	.7756098	-0.21	0.833	.127967	5.24009
3rd and 4th deciles	.5906508	.522202	-0.60	0.551	.1044173	3.341097
5th and 6th deciles	.8658705	.8390243	-0.15	0.882	.1296113	5.784463
any_risk	3.51906	2.735998	1.62	0.106	.7667164	16.15171
high_risk_num	12.09465	20.11472	1.50	0.134	.4644652	314.9442
highriskatbirth						
Y	2.03e-09	4.60e-06	-0.01	0.993	0	.
place_hosp_comm						
hospital	.7140591	.5847306	-0.41	0.681	.1434498	3.554416
imp_gstt						
imp	.2353423	.2186304	-1.56	0.119	.0381016	1.45364
_cons	2.41e-18	4.28e-14	-0.00	0.998	0	.

CTG_n	RRR	Std. Err.	z	P> z	[95% Conf. Interval]	
N	(base outcome)					
Y						
mod_care_4						
standard	.9214698	.4079462	-0.18	0.853	.38694	2.194414
partial CoC	.8087123	.3766297	-0.46	0.648	.3246209	2.014706
ethnicity						
BA	.5549567	.2459785	-1.33	0.184	.2327948	1.322954
BC	1.060362	.6784415	0.09	0.927	.3025787	3.715954
B0	2.450184	1.875768	1.17	0.242	.5464507	10.98617
M	1.529738	1.301191	0.50	0.617	.2887937	8.103015
U	1.572338	.6462079	1.10	0.271	.7026101	3.51866
WB	.6638654	.2734577	-0.99	0.320	.2961115	1.488349
W0	.8275236	.2981807	-0.53	0.599	.4083832	1.676845
WP	43409.31	2.55e+07	0.02	0.986	0	.
age_cat						
20-24	1.505877	1.606965	0.38	0.701	.1859719	12.19359
25-29	1.218975	1.272492	0.19	0.850	.1575517	9.431197
30-34	2.140555	2.199347	0.74	0.459	.2857236	16.03639
greater than 34	1.930702	1.984446	0.64	0.522	.2575247	14.47476
0.parity	1.680073	.3900975	2.23	0.025	1.065827	2.648313
imd_3_score						
most deprived	1.046489	.3687169	0.13	0.897	.5245959	2.087587
3rd and 4th deciles	1.029531	.3501633	0.09	0.932	.5286031	2.005162
5th and 6th deciles	1.001668	.3660319	0.00	0.996	.489413	2.050085
any_risk	.6755809	.1799115	-1.47	0.141	.4008639	1.138565
high_risk_num	.553434	.3026636	-1.08	0.279	.1894777	1.616492
highriskatbirth						
Y	3.064819	.71323	4.81	0.000	1.942305	4.836068
place_hosp_comm						
hospital	1.083039	.3172685	0.27	0.785	.6099447	1.92308
imp_gstt						
imp	49.54242	18.60523	10.39	0.000	23.73098	103.4281
_cons	.0284183	.0394744	-2.56	0.010	.0018674	.4324733

IOL_n	RRR	Std. Err.	z	P> z	[95% Conf. Interval]	
N	(base outcome)					
Y						
mod_care_4						
standard	1.102137	.311519	0.34	0.731	.6333497	1.917908
partial CoC	1.016469	.3062209	0.05	0.957	.5631989	1.834538
ethnicity						
BA	1.452221	.5006738	1.08	0.279	.7388718	2.85428
BC	.761845	.3319951	-0.62	0.532	.3242888	1.789787
B0	1.946842	1.045519	1.24	0.215	.6795277	5.577686
M	3.049538	1.653693	2.06	0.040	1.053531	8.827155
U	1.051368	.308726	0.17	0.865	.5912973	1.869405
WB	1.836683	.5448814	2.05	0.040	1.026861	3.285162
W0	1.157585	.3209866	0.53	0.598	.6722386	1.993345
WP	1277510	1.48e+09	0.01	0.990	0	.
age_cat						
20-24	1.923136	1.454112	0.86	0.387	.4369218	8.464794
25-29	1.4261	1.031472	0.49	0.624	.3455342	5.885844
30-34	1.281102	.9074113	0.35	0.727	.3196486	5.134455
greater than 34	1.506343	1.070248	0.58	0.564	.3742398	6.063142
0.parity	1.903039	.3197316	3.83	0.000	1.369104	2.645203
imd_3_score						
most deprived	.6983187	.1819586	-1.38	0.168	.4190433	1.16372
3rd and 4th deciles	.7412257	.1802992	-1.23	0.218	.4601508	1.19399
5th and 6th deciles	.7575113	.1996968	-1.05	0.292	.4518492	1.269944
any_risk	1.290596	.2625087	1.25	0.210	.8661685	1.922997
high_risk_num	1.129007	.3440688	0.40	0.689	.6219868	2.052235
highriskatbirth						
Y	3.759678	.7733294	6.44	0.000	2.512273	5.626452
place_hosp_comm						
hospital	.6657157	.1259259	-2.15	0.031	.4594907	.9644972
imp_gstt						
imp	.6418578	.1483805	-1.92	0.055	.4080033	1.00975
_cons	.2480957	.2218447	-1.56	0.119	.0430014	1.431381

Table 39 Use of analgesia in labour and obstetric interventions in relation to the place of antenatal care

opiod_n		RRR	Std. Err.	z	P> z	[95% Conf. Interval]	
N		(base outcome)					
Y							
place_hosp_comm	hospital	.5961514	.4851604	-0.64	0.525	.120957	2.938205
ethnicity							
	BA	1.797284	1.952008	0.54	0.589	.2138636	15.10415
	BC	4.331862	4.833012	1.31	0.189	.4864052	38.579
	B0	1.73e-07	.0005927	-0.00	0.996	0	.
	M	2.03e-07	.0007813	-0.00	0.997	0	.
	U	.3271373	.4136205	-0.88	0.377	.0274474	3.899046
	WB	.9526493	.9244819	-0.05	0.960	.1421999	6.382146
	W0	.9995235	.8788335	-0.00	1.000	.1783906	5.600336
	WP	7.83e-08	.0015748	-0.00	0.999	0	.
age_cat							
	20-24	.651912	3664.096	-0.00	1.000	0	.
	25-29	7001756	3.71e+10	0.00	0.998	0	.
	30-34	6651187	3.52e+10	0.00	0.998	0	.
	greater than 34	2899267	1.54e+10	0.00	0.998	0	.
1.parity		.2075143	.1472502	-2.22	0.027	.0516468	.8337825
imd_3_score							
	3rd and 4th deciles	1.147831	.8128975	0.19	0.846	.2864536	4.599404
	5th and 6th deciles	.8663583	.6990822	-0.18	0.859	.1781745	4.212593
	least deprived	1.434206	1.203134	0.43	0.667	.2770454	7.424581
1.any_risk							
	2.high_risk_num	.9170227	.6525873	-0.12	0.903	.2273179	3.69936
		5.03e-07	.0007227	-0.01	0.992	0	.
highriskatbirth							
	Y	.7685388	.4711403	-0.43	0.668	.2311268	2.555531
mod_care_4							
	standard	.519955	.4721465	-0.72	0.471	.0877062	3.082489
	partial CoC	.2976323	.3245076	-1.11	0.266	.0351251	2.521985
imp_gstt							
	imp	3.109346	2.658506	1.33	0.185	.5819528	16.61309
	_cons	1.28e-08	.0000679	-0.00	0.997	0	.

epidural_n		RRR	Std. Err.	z	P> z	[95% Conf. Interval]	
N		(base outcome)					
Y							
place_hosp_comm	hospital	.9028795	.1778813	-0.52	0.604	.6136629	1.328402
ethnicity							
	BA	.7777383	.2755691	-0.71	0.478	.3883603	1.557515
	BC	.6122986	.2693506	-1.12	0.265	.2585349	1.450132
	B0	2.80075	1.772171	1.63	0.104	.8103593	9.679902
	M	.7092959	.4039498	-0.60	0.546	.2323064	2.165677
	U	1.271842	.3891029	0.79	0.432	.6982634	2.316577
	WB	.8324794	.2572972	-0.59	0.553	.4542446	1.525658
	W0	1.017379	.2939844	0.06	0.952	.5774541	1.792455
	WP	23818.64	1.02e+07	0.02	0.981	0	.
age_cat							
	20-24	4.54856	3.555001	1.94	0.053	.9831131	21.04478
	25-29	4.976495	3.703767	2.16	0.031	1.157218	21.4009
	30-34	5.718368	4.174677	2.39	0.017	1.367273	23.91603
	greater than 34	5.925782	4.329694	2.44	0.015	1.415182	24.813
1.parity		.2951914	.0529662	-6.80	0.000	.2076694	.4195994
imd_3_score							
	3rd and 4th deciles	.665644	.1413216	-1.92	0.055	.4390613	1.009158
	5th and 6th deciles	.8595052	.2167067	-0.60	0.548	.524367	1.40884
	least deprived	.8435523	.2327489	-0.62	0.537	.4911934	1.448677
1.any_risk							
	2.high_risk_num	.8439958	.1810285	-0.79	0.429	.5543273	1.285033
		.914889	.3009482	-0.27	0.787	.4801423	1.743279
highriskatbirth							
	Y	4.565542	1.00085	6.93	0.000	2.970938	7.016026
mod_care_4							
	standard	1.024235	.3002329	0.08	0.935	.5766173	1.819329
	partial CoC	.7155595	.2231031	-1.07	0.283	.3883748	1.318379
imp_gstt							
	imp	1.102655	.2566285	0.42	0.675	.6907609	1.739986
	_cons	.422038	.3434545	-1.06	0.289	.0856335	2.079981

nonphrama_n	RRR	Std. Err.	z	P> z	[95% Conf. Interval]	
N	(base outcome)					
Y						
place_hosp_comm hospital	1.01155	.2179332	0.05	0.957	.6631326	1.54303
ethnicity						
BA	.9025756	.3638581	-0.25	0.799	.4095775	1.988983
BC	1.33763	.6256397	0.62	0.534	.5348227	3.345509
B0	.8444402	.5374656	-0.27	0.791	.2425493	2.939936
M	.9557426	.5628614	-0.08	0.939	.3013328	3.031346
U	.6006696	.2071816	-1.48	0.139	.3055211	1.180946
WB	.9140483	.3082044	-0.27	0.790	.472015	1.770038
W0	.7067462	.2315736	-1.06	0.289	.3718412	1.343289
WP	.0000397	.0211243	-0.02	0.985	0	.
age_cat						
20-24	.1013488	.0022219	-2.82	0.005	.0206661	.4970253
25-29	.113898	.0067803	-2.05	0.04	.0255844	.5070576
30-34	.0949805	.0710982	-3.14	0.002	.0219009	.4119139
greater than 34	.0961315	.0720204	-3.13	0.002	.0221309	.4174212
1.parity	1.766139	.3491401	2.88	0.004	1.198822	2.601927
imd_3_score						
3rd and 4th deciles	1.443867	.3506738	1.51	0.130	.8970052	2.324126
5th and 6th deciles	1.491305	.4243076	1.40	0.160	.8538503	2.604661
least deprived	1.198249	.3784193	0.57	0.567	.6452516	2.225181
1.any_risk	.8079529	.2008858	-0.86	0.391	.4963032	1.315301
2.high_risk_num	1.054574	.4028607	0.14	0.889	.4987782	2.229703
highriskatbirth Y	.2899218	.0752663	-4.77	0.000	.1743016	.482237
mod_care_4 standard	.7439475	.2363585	-0.93	0.352	.3991244	1.38668
partial CoC	1.155758	.3867969	0.43	0.665	.5997854	2.227092
imp_gstt						
imp	.6413129	.1601031	-1.78	0.075	.3931592	1.046096
_cons	4.585643	3.89553	1.79	0.073	.8675604	24.23822

Note: _cons estimates baseline relative risk for each outcome.

water_n	RRR	Std. Err.	z	P> z	[95% Conf. Interval]	
N	(base outcome)					
Y						
place_hosp_comm hospital	.7081465	.5802551	-0.42	0.674	.1421179	3.528559
ethnicity						
BA	.4525889	3811.152	-0.00	1.000	0	.
BC	.7091716	7324.81	-0.00	1.000	0	.
B0	.3357527	4272.809	-0.00	1.000	0	.
M	.123585	1758.421	-0.00	1.000	0	.
U	2.82e+07	1.69e+11	0.00	0.998	0	.
WB	6.00e+07	3.60e+11	0.00	0.998	0	.
W0	1.89e+07	1.13e+11	0.00	0.998	0	.
WP	7.16e+08	6.13e+13	0.00	1.000	0	.
age_cat						
20-24	2.501834	45366.71	0.00	1.000	0	.
25-29	9.25e+07	1.55e+12	0.00	0.999	0	.
30-34	2.36e+08	3.95e+12	0.00	0.999	0	.
greater than 34	2.05e+08	3.43e+12	0.00	0.999	0	.
1.parity	.7553293	.5121459	-0.41	0.679	.1999792	2.852908
imd_3_score						
3rd and 4th deciles	.7303133	.6510253	-0.35	0.724	.1272683	4.190813
5th and 6th deciles	1.057143	1.033879	0.06	0.955	.1554765	7.187916
least deprived	1.220223	1.155145	0.21	0.833	.1908249	7.802676
1.any_risk	3.516653	2.732434	1.62	0.106	.7669151	16.12545
2.high_risk_num	12.14769	20.20012	1.50	0.133	.4667131	316.1823
highriskatbirth Y	2.04e-09	4.59e-06	-0.01	0.993	0	.
mod_care_4 standard	.1210364	.102904	-2.48	0.013	.0228682	.6406184
partial CoC	.6607224	.5188433	-0.53	0.598	.1417747	3.07921
imp_gstt						
imp	.2362235	.219379	-1.55	0.120	.0382665	1.458235
cons	3.10e-17	5.51e-13	-0.00	0.998	0	.

CTG_n	RRR	Std. Err.	z	P> z	[95% Conf. Interval]	
N	(base outcome)					
Y						
place_hosp_comm hospital	1.08455	.3173704	0.28	0.781	.6111723	1.924578
ethnicity						
BA	.5585673	.2478478	-1.31	0.189	.2340884	1.332819
BC	1.059119	.6771583	0.09	0.928	.3024965	3.708249
B0	2.447227	1.871526	1.17	0.242	.5466568	10.95554
M	1.531015	1.301047	0.50	0.616	.2894899	8.097023
U	1.567339	.6436211	1.09	0.274	.7008429	3.505139
WB	.6668207	.2748053	-0.98	0.325	.2973159	1.495547
W0	.8271405	.2978594	-0.53	0.598	.4083715	1.675341
WP	42921.17	2.51e+07	0.02	0.985	0	.
age_cat						
20-24	1.512947	1.613638	0.39	0.690	.107056	12.23702
25-29	1.216337	1.268596	0.19	0.851	.1575002	9.393407
30-34	2.133248	2.189015	0.74	0.460	.2852784	15.95196
greater than 34	1.92878	1.900648	0.64	0.522	.2577455	14.43359
1.parity	.5934598	.1378222	-2.25	0.025	.3764545	.9355569
imd_3_score						
3rd and 4th deciles	.985976	.2703906	-0.05	0.959	.5760176	1.687706
5th and 6th deciles	.9593028	.3025309	-0.13	0.895	.5170306	1.779898
least deprived	.9549844	.336274	-0.13	0.896	.4789243	1.904258
1.any_risk	.6746108	.1796124	-1.48	0.139	.4003357	1.136795
2.high_risk_num	.5620941	.3077615	-1.05	0.293	.1922	1.643859
highriskatbirth Y	3.061845	.7124585	4.81	0.000	1.940519	4.83113
mod_care_4 standard	.9252846	.4094156	-0.18	0.861	.3887225	2.202475
partial CoC	.8106366	.3771855	-0.45	0.652	.3256611	2.017839
imp_gstt						
imp	49.38216	18.53145	10.39	0.000	23.66698	103.0379
_cons	.0276783	.0320992	-3.09	0.002	.0028509	.2687192

IOL_n	RRR	Std. Err.	z	P> z	[95% Conf. Interval]	
N	(base outcome)					
Y						
place_hosp_comm hospital	.6571177	.1243983	-2.22	0.027	.4534226	.9523208
ethnicity						
BA	1.421605	.4921763	1.02	0.310	.7212454	2.802044
BC	.7667964	.3339054	-0.61	0.542	.3266029	1.80028
B0	1.94457	1.044296	1.24	0.216	.6787366	5.571163
M	3.030508	1.642845	2.05	0.041	1.047315	8.769075
U	1.051489	.308559	0.17	0.864	.5915889	1.868915
WB	1.861211	.5530257	2.09	0.037	1.039624	3.332077
W0	1.158872	.3211345	0.53	0.595	.6732237	1.994856
WP	1268338	1.47e+09	0.01	0.990	0	.
age_cat						
20-24	1.886171	1.427544	0.84	0.402	.4279089	8.314015
25-29	1.432259	1.035661	0.50	0.619	.3471534	5.909108
30-34	1.286816	.9112594	0.36	0.722	.3211718	5.155791
greater than 34	1.52265	1.001697	0.59	0.554	.370358	6.127697
1.parity	.5265884	.0886847	-3.81	0.000	.3785448	.7325299
imd_3_score						
3rd and 4th deciles	1.067009	.2172286	0.32	0.750	.7159372	1.590235
5th and 6th deciles	1.07153	.2539717	0.29	0.771	.6733711	1.705118
least deprived	1.422184	.3704615	1.35	0.176	.8535402	2.369645
1.any_risk	1.298057	.264095	1.28	0.200	.8711904	1.934078
2.high_risk_num	1.098041	.3356919	0.31	0.760	.6031011	1.999157
highriskatbirth Y	3.75394	.7723421	6.43	0.000	2.508186	5.618431
mod_care_4 standard	1.10899	.3134012	0.37	0.714	.6373497	1.929646
partial CoC	1.018901	.3067441	0.06	0.950	.5647736	1.838186
imp_gstt						
imp	.641728	.1483	-1.92	0.055	.4079836	1.009391
_cons	.3728935	.2953549	-1.25	0.213	.0789551	1.761123

Table 40 Place of birth in relation to model of care received

placeofbirth_n	RRR	Std. Err.	z	P> z	[95% Conf. Interval]	
BBA						
mod_care_4						
standard	3.89e+08	2.22e+12	0.00	0.997	0	.
partial CoC	2.867054	17066.11	0.00	1.000	0	.
ethnicity						
BA	.7087708	5147.097	-0.00	1.000	0	.
BC	1.06e+08	5.02e+11	0.00	0.997	0	.
B0	2.00824	25864.36	0.00	1.000	0	.
M	2.88e+08	1.37e+12	0.00	0.997	0	.
U	9983465	4.74e+10	0.00	0.997	0	.
WB	1.23e+07	5.83e+10	0.00	0.997	0	.
W0	1.38e+07	6.54e+10	0.00	0.997	0	.
WP	4.26e+12	7.04e+17	0.00	1.000	0	.
age_cat						
20-24	2.13e-09	.0000127	-0.00	0.997	0	.
25-29	.0110587	32.60348	-0.00	0.999	0	.
30-34	.0023264	6.858664	-0.00	0.998	0	.
greater than 34	.0289378	85.31507	-0.00	0.999	0	.
0.parity	.4703576	.589865	-0.60	0.548	.0402676	5.494156
imd_3_score						
most deprived	1.554157	3.141481	0.22	0.827	.0295752	81.67004
3rd and 4th deciles	2.482224	4.64148	0.49	0.627	.0635608	96.93763
5th and 6th deciles	1.254036	2.426862	0.12	0.907	.0282507	55.66606
any_risk	6.680917	8.391706	1.51	0.131	.5697267	78.34398
high_risk_num	.0513789	159.177	-0.00	0.999	0	.
highriskatbirth						
Y	1.65e-06	.0024967	-0.01	0.993	0	.
place_hosp_comm						
hospital	.0143662	.0592143	-1.03	0.303	4.46e-06	46.32325
imp_gstt						
imp	38.04567	158.5661	0.87	0.383	.0107816	134254.4
_cons	9.43e-15	8.13e-11	-0.00	0.997	0	.
H						
mod_care_4						
standard	.1664986	.184318	-1.62	0.105	.0190156	1.457845
partial CoC	.3454662	.3805398	-0.96	0.335	.0398828	2.992441
ethnicity						
BA	1.287073	11950.91	0.00	1.000	0	.
BC	.9064762	11062.08	-0.00	1.000	0	.
B0	1.462661	21603.38	0.00	1.000	0	.
M	.0008212	400.6777	-0.00	1.000	0	.
U	2.58e+07	1.79e+11	0.00	0.998	0	.
WB	2.23e+07	1.54e+11	0.00	0.998	0	.
W0	5.89e+07	3.52e+11	0.00	0.998	0	.
WP	4.81e+08	6.33e+13	0.00	1.000	0	.
age_cat						
20-24	4.991902	135333.5	0.00	1.000	0	.
25-29	3.723636	97879.56	0.00	1.000	0	.
30-34	1.68e+08	4.32e+12	0.00	0.999	0	.
greater than 34	7.80e+07	2.00e+12	0.00	0.999	0	.
0.parity	1.731532	1.425294	0.67	0.505	.3449629	8.691379
imd_3_score						
most deprived	.3351004	.4383376	-0.84	0.403	.0258007	4.351243
3rd and 4th deciles	.4035987	.4217206	-0.87	0.385	.0520629	3.128751
5th and 6th deciles	.5396524	.630083	-0.52	0.602	.0531608	5.477365
any_risk	.6119633	.7192101	-0.42	0.676	.0611435	6.124918
high_risk_num	17.43296	29.43875	1.69	0.091	.6367387	477.2886
highriskatbirth						
Y	.0936486	.1726643	-1.28	0.199	.0025241	3.474577
place_hosp_comm						
hospital	.5838035	.6216304	-0.51	0.613	.072429	4.705664
imp_gstt						
imp	2.107602	2.273211	0.69	0.489	.2545387	17.45245
_cons	4.45e-18	1.18e-13	-0.00	0.999	0	.
LW						
mod_care_4						
standard	1.117555	.3654722	0.34	0.734	.5887108	2.121466
partial CoC	.7660465	.2723805	-0.75	0.454	.3815895	1.53785
ethnicity						
BA	1.035048	.4477129	0.00	0.937	.4433749	2.416296
BC	.8749342	.4551294	-0.26	0.797	.3156395	2.425266
B0	2.500562	1.85467	1.24	0.217	.5843865	10.69978
M	3.794071	2.663963	1.90	0.058	.9581735	15.02335
U	1.499655	.5357029	1.13	0.257	.7446072	3.020337
WB	1.031103	.3731335	0.00	0.933	.5073074	2.09572
W0	1.201722	.4258164	0.52	0.604	.600054	2.408675
WP	1.08e+07	2.75e+11	0.00	0.999	0	.
age_cat						
20-24	13.7976	13.12251	2.76	0.006	2.139191	88.99331
25-29	7.387444	6.589228	2.24	0.025	1.286072	42.43489
30-34	6.44161	5.629497	2.13	0.033	1.161733	35.71762
greater than 34	7.927182	6.940634	2.36	0.018	1.425117	44.09479
0.parity	2.623324	.5577458	4.54	0.000	1.729329	3.979479
imd_3_score						
most deprived	.684798	.2237941	-1.16	0.247	.3609002	1.299385
3rd and 4th deciles	.6428039	.1971073	-1.44	0.150	.3524267	1.172433
5th and 6th deciles	1.028838	.3559558	0.00	0.935	.522215	2.026956
any_risk	.8428841	.2187605	-0.66	0.510	.5068141	1.401803
high_risk_num	.6010667	.2630303	-1.16	0.245	.2549364	1.417142
highriskatbirth						
Y	12.74871	4.536627	7.15	0.000	6.346967	25.60744
place_hosp_comm						
hospital	1.318909	.2895054	1.26	0.207	.8577742	2.027948
imp_gstt						
imp	4.168287	1.110505	5.36	0.000	2.472763	7.026398
_cons	.0956825	.1058108	-2.12	0.034	.0109529	.8358659
MW						
(base outcome)						

Table 41 Place of birth in relation to place of antenatal care

placeofbirth_n	RRR	Std. Err.	z	P> z	[95% Conf. Interval]
BBA					
place_hosp_comm					
hospital	4.45e-07	.0004452	-0.01	0.988	0
ethnicity					
BA	.3391886	2757.724	-0.00	1.000	0
BC	4.11e+07	1.90e+11	0.00	0.997	0
BO	1.216886	14781.2	0.00	1.000	0
M	6.44e+07	2.95e+11	0.00	0.997	0
U	5933697	2.72e+10	0.00	0.997	0
WB	.7041411	3735.823	-0.00	1.000	0
WO	7097394	3.25e+10	0.00	0.997	0
WP	1.12e+23	3.01e+28	0.00	1.000	0
age_cat					
20-24	2.18e-22	2.14e-18	-0.01	0.996	0
25-29	5.92e-16	4.88e-12	-0.00	0.997	0
30-34	1.85e-16	1.50e-12	-0.00	0.996	0
greater than 34	5.67e-16	4.59e-12	-0.00	0.997	0
1.parity	1.55e+10	2.51e+13	0.01	0.988	0
imd_3_score					
3rd and 4th deciles	.4731612	.8655389	-0.41	0.682	.01312 17.06417
5th and 6th deciles	.8925787	2.04687	-0.05	0.960	.0090666 79.77506
least deprived	1.951487	5.72152	0.23	0.820	.0062337 610.9193
1.any_risk	7.287851	11.35152	1.28	0.202	.3441697 154.3215
2.high_risk_num	.1767641	622.2298	-0.00	1.000	0
highriskatbirth					
Y	6.43e-07	.0017636	-0.01	0.996	0
mod_care_4					
standard	1.12e+08	4.56e+11	0.00	0.996	0
partial CoC	.0000256	.1144621	-0.00	0.998	0
imp_gstt					
imp	1210942	1.21e+09	0.01	0.989	0
_cons	1.67e-11	1.66e-07	-0.00	0.998	0
H					
place_hosp_comm					
hospital	.5835313	.6211699	-0.51	0.613	.0724368 4.700774
ethnicity					
BA	1.31623	17937.26	0.00	1.000	0
BC	.7639635	14608.36	-0.00	1.000	0
BO	1.467578	31943.22	0.00	1.000	0
M	.0037457	1263.644	-0.00	1.000	0
U	5.62e+07	5.74e+11	0.00	0.999	0
WB	4.86e+07	4.97e+11	0.00	0.999	0
WO	1.11e+08	1.13e+12	0.00	0.999	0
WP	1.05e+09	2.02e+14	0.00	1.000	0
age_cat					
20-24	73.71889	1.10e+07	0.00	1.000	0
25-29	54.6493	8099739	0.00	1.000	0
30-34	5.57e+09	8.24e+14	0.00	1.000	0
greater than 34	2.58e+09	3.82e+14	0.00	1.000	0
1.parity	.5808516	.4780972	-0.66	0.509	.1157294 2.915322
imd_3_score					
3rd and 4th deciles	1.286845	1.529962	0.15	0.882	.1005894 14.47941
5th and 6th deciles	1.607909	2.174398	0.35	0.725	.113566 22.76762
least deprived	2.987509	3.900312	0.84	0.403	.230013 38.08307
1.any_risk	.6118759	.719036	-0.42	0.676	.0611488 6.122644
2.high_risk_num	17.36485	29.3199	1.69	0.091	.6345255 475.2181
highriskatbirth					
Y	.0932687	.1719392	-1.29	0.198	.0025151 3.458687
mod_care_4					
standard	.1660875	.1838102	-1.62	0.105	.0189805 1.453341
partial CoC	.345331	.3802737	-0.97	0.334	.0398937 2.989281
imp_gstt					
imp	2.105338	2.269489	0.69	0.490	.2545382 17.41369
_cons	6.23e-19	9.25e-14	-0.00	1.000	0
LW					
place_hosp_comm					
hospital	1.314999	.2885793	1.25	0.212	.8553179 2.021731
ethnicity					
BA	1.024288	.443603	0.06	0.956	.4383088 2.393669
BC	.8706581	.4522431	-0.27	0.790	.3145653 2.409819
BO	2.496698	1.851314	1.23	0.217	.5837081 10.67914
M	3.744273	2.628977	1.88	0.060	.945008 14.826
U	1.498456	.5349156	1.13	0.257	.7443614 3.016505
WB	1.033655	.3743102	0.09	0.927	.5083187 2.101916
WO	1.198464	.4243245	0.51	0.609	.5987577 2.398826
WP	2.29e+07	8.48e+11	0.00	1.000	0
age_cat					
20-24	13.56659	12.90235	2.74	0.006	2.103515 87.49757
25-29	7.373564	6.5722	2.24	0.025	1.285242 42.30287
30-34	6.411363	5.998523	2.13	0.033	1.157084 35.50659
greater than 34	7.893117	6.906211	2.36	0.018	1.420613 43.85521
1.parity	.3854305	.0819682	-4.48	0.000	.2540528 .5847473
imd_3_score					
3rd and 4th deciles	.9388534	.2284489	-0.26	0.795	.582743 1.512581
5th and 6th deciles	1.496619	.454854	1.33	0.185	.8249222 2.715246
least deprived	1.460322	.4768486	1.16	0.246	.7700169 2.769473
1.any_risk	.8448656	.2191216	-0.65	0.516	.508186 1.4046
2.high_risk_num	.593352	.2598707	-1.19	0.233	.2514845 1.399953
highriskatbirth					
Y	12.73997	4.532126	7.15	0.000	6.343975 25.58441
mod_care_4					
standard	1.116327	.3647807	0.34	0.736	.588363 2.118056
partial CoC	.7663615	.2722243	-0.75	0.454	.3820083 1.537427
imp_gstt					
imp	4.155513	1.105692	5.35	0.000	2.466826 7.000207
_cons	.103815	.1027483	-2.29	0.022	.0149212 .7222966
MW					
(base outcome)					

Table 42 Neonatal outcomes in relation to the model of care received

LBW	RRR	Std. Err.	z	P> z	[95% Conf. Interval]	
0	(base outcome)					
1						
mod_care_4						
standard	1.165428	.6312018	0.28	0.777	.4031532	3.368997
partial CoC	1.304358	.7344929	0.47	0.637	.4325932	3.932912
ethnicity						
BA	1.233413	.6000958	0.43	0.666	.4753037	3.200707
BC	1.034717	.6358047	0.06	0.956	.3103004	3.450334
B0	.9806514	.7299233	-0.03	0.979	.2280048	4.217793
M	2.32e-07	.000331	-0.01	0.991	0	.
U	.4722821	.2244516	-1.58	0.114	.1860668	1.198765
WB	.5639937	.2637265	-1.22	0.221	.2255226	1.410265
W0	.5746568	.2430354	-1.31	0.190	.2508511	1.31644
WP	4.50e-08	.000314	-0.00	0.998	0	.
age_cat						
20-24	4505805	8.81e+09	0.01	0.994	0	.
25-29	5504515	1.08e+10	0.01	0.994	0	.
30-34	3408141	6.66e+09	0.01	0.994	0	.
greater than 34	4659383	9.11e+09	0.01	0.994	0	.
0.parity	1.853509	.5190371	2.20	0.028	1.070615	3.2089
imd_3_score						
most deprived	1.045431	.4908544	0.09	0.925	.4165201	2.623944
3rd and 4th deciles	1.676803	.7017204	1.24	0.217	.738355	3.808017
5th and 6th deciles	1.403664	.6262688	0.76	0.447	.5854432	3.365436
any_risk	1.006854	.3392716	0.02	0.984	.5201686	1.948898
high_risk_num	1.478001	.6850058	0.84	0.399	.5958957	3.665888
highriskatbirth						
Y	2.837171	.9875915	3.00	0.003	1.434137	5.612812
place_hosp_comm						
hospital	2.336694	.7409755	2.68	0.007	1.255111	4.350322
imp_gstt						
imp	.7412421	.2925401	-0.76	0.448	.3419977	1.60656
_cons	3.72e-09	7.28e-06	-0.01	0.992	0	.
preterm						
0	(base outcome)					
1						
mod_care_4						
standard	.8092228	.3698435	-0.46	0.643	.330399	1.981972
partial CoC	.9877233	.4683193	-0.03	0.979	.3899837	2.501636
ethnicity						
BA	.9156366	.4580203	-0.18	0.860	.3435063	2.440685
BC	.925874	.5997122	-0.12	0.905	.2601399	3.295314
B0	1.111203	.8206801	0.14	0.886	.2612992	4.725514
M	.4226637	.4703971	-0.77	0.439	.0477159	3.743922
U	.7482993	.3267058	-0.66	0.507	.3180114	1.760792
WB	.8709406	.3745142	-0.32	0.748	.3749405	2.023088
W0	.7222394	.2903045	-0.81	0.418	.3285037	1.587896
WP	1.97e-06	.0023259	-0.01	0.991	0	.
age_cat						
20-24	.2713794	.285418	-1.24	0.215	.0345416	2.13212
25-29	.4324585	.406372	-0.89	0.372	.0685628	2.727724
30-34	.5135564	.4603056	-0.74	0.457	.0886437	2.975284
greater than 34	.764818	.6842938	-0.30	0.764	.1324268	4.417133
0.parity	1.264699	.3248143	0.91	0.361	.7644899	2.092196
imd_3_score						
most deprived	.6762965	.2839028	-0.93	0.351	.2970372	1.539797
3rd and 4th deciles	1.10479	.4031993	0.27	0.785	.5402925	2.259074
5th and 6th deciles	1.462934	.5466451	1.02	0.309	.7033341	3.0429
any_risk	1.429143	.4290233	1.19	0.234	.7935024	2.573968
high_risk_num	1.043378	.4533787	0.10	0.922	.4452144	2.445198
highriskatbirth						
Y	2.491539	.7664253	2.97	0.003	1.363417	4.553096
place_hosp_comm						
hospital	2.423857	.7222956	2.97	0.003	1.351617	4.346706
imp_gstt						
imp	.8255017	.2960378	-0.53	0.593	.4087556	1.66714
_cons	.0809254	.0985934	-2.06	0.039	.007431	.8813018

lowppgar	RRR	Std. Err.	z	P> z	[95% Conf. Interval]	
0	(base outcome)					
1						
mod_care_4						
standard	1.464543	.9710781	0.58	0.565	.3993054	5.37154
partial CoC	1.42396	1.009138	0.50	0.618	.3550293	5.711251
ethnicity						
BA	5.262472	6.110451	1.43	0.153	.5405404	51.23319
BC	11.86664	13.71319	2.14	0.032	1.232174	114.2835
B0	3.233924	4.995881	0.76	0.447	.1565898	66.78766
M	3.69e-06	.0046653	-0.01	0.992	0	.
U	4.095306	4.54932	1.27	0.204	.4642145	36.12884
WB	4.80893	5.296797	1.43	0.154	.5552547	41.649
W0	3.216305	3.517276	1.07	0.285	.3771407	27.42908
WP	3.22e-06	.0198414	-0.00	0.998	0	.
age_cat						
20-24	8712915	1.51e+10	0.01	0.993	0	.
25-29	3987614	6.91e+09	0.01	0.993	0	.
30-34	763445.1	1.32e+09	0.01	0.994	0	.
greater than 34	1960545	3.40e+09	0.01	0.993	0	.
0.parity	1.450723	.5949519	0.91	0.364	.6493822	3.24092
imd_3_score						
most deprived	.5197679	.3338192	-1.02	0.308	.1476142	1.830167
3rd and 4th deciles	.6326436	.368254	-0.79	0.432	.2021554	1.979853
5th and 6th deciles	.514101	.3414462	-1.00	0.316	.1398663	1.889661
any_risk	2.520938	1.151305	2.02	0.043	1.029961	6.17026
high_risk_num	.7791925	.5023664	-0.39	0.699	.2202177	2.757003
highriskatbirth						
Y	2.506216	1.271707	1.81	0.070	.9270454	6.775419
place_hosp_comm						
hospital	1.348383	.6117127	0.66	0.510	.5541839	3.280746
imp_gstt						
imp	.2935104	.1694022	-2.12	0.034	.0946989	.9097084
_cons	4.02e-09	6.96e-06	-0.01	0.991	0	.
N	(base outcome)					
Y						
mod_care_4						
standard	1.316191	.7145642	0.51	0.613	.4541495	3.814511
partial CoC	1.598623	.8971214	0.84	0.403	.5321882	4.802049
ethnicity						
BA	3.997758	2.180916	2.54	0.011	1.372323	11.64599
BC	2.516597	1.647542	1.41	0.159	.6975209	9.079672
B0	2.345608	1.876045	1.07	0.286	.4891638	11.24752
M	3.40e-06	.0018855	-0.02	0.982	0	.
U	1.696384	.895335	1.00	0.317	.6029321	4.772875
WB	2.091866	1.072173	1.44	0.150	.7660479	5.712311
W0	1.089105	.5552637	0.17	0.867	.4009566	2.958298
WP	8.37e-07	.002269	-0.01	0.996	0	.
age_cat						
20-24	2.318335	2.748911	0.71	0.478	.2269258	23.68473
25-29	1.399698	1.625974	0.29	0.772	.1436241	13.64085
30-34	.7680954	.8803587	-0.23	0.818	.0812463	7.261504
greater than 34	.9248051	1.060465	-0.07	0.946	.0977206	8.752145
0.parity	1.682419	.4497578	1.95	0.052	.9962863	2.841085
imd_3_score						
most deprived	.5925083	.241062	-1.29	0.198	.2669212	1.315242
3rd and 4th deciles	.6753428	.2502694	-1.06	0.289	.3266517	1.396252
5th and 6th deciles	.6893081	.2729165	-0.94	0.347	.3172478	1.497711
any_risk	.7501778	.2497144	-0.86	0.388	.3906804	1.440479
high_risk_num	1.297279	.5757987	0.59	0.558	.5435341	3.096279
highriskatbirth						
Y	4.062406	1.363678	4.18	0.000	2.10402	7.843624
place_hosp_comm						
hospital	1.799288	.5296631	2.00	0.046	1.010484	3.203849
imp_gstt						
imp	.9480546	.3609652	-0.14	0.889	.4495151	1.999505
_cons	.013075	.0192113	-2.95	0.003	.0007341	.2328764

Table 43 Neonatal outcomes in relation to the place of antenatal care

preterm	RRR	Std. Err.	z	P> z	[95% Conf. Interval]
0	(base outcome)				
1					
place_hosp_comm	2.381529	.7117024	2.90	0.004	1.325808 4.277906
hospital					
ethnicity					
BA	.8191301	.4214471	-0.39	0.698	.2988167 2.245437
BC	.9176031	.5934867	-0.13	0.894	.2582946 3.259826
B0	1.090861	.8047451	0.12	0.906	.256936 4.631418
M	.4159411	.4625129	-0.79	0.430	.0470461 3.677393
U	.7532375	.3283144	-0.65	0.516	.3205663 1.769889
WB	.8925671	.3833495	-0.26	0.791	.3846428 2.07121
W0	.7249219	.2980837	-0.80	0.423	.3302404 1.591301
WP	5.34e-06	.003842	-0.02	0.987	0 .
age_cat					
20-24	.284731	.2988169	-1.20	0.231	.0364018 2.227133
25-29	.4398399	.4121156	-0.88	0.381	.0701046 2.759578
30-34	.5282783	.4649413	-0.73	0.465	.0902752 2.998493
greater than 34	.7605585	.6785406	-0.31	0.759	.13235 4.370603
1.parity	.8135131	.2099559	-0.80	0.424	.4905482 1.34911
imd_3_score					
3rd and 4th deciles	1.632102	.5619675	1.42	0.155	.8311138 3.205045
5th and 6th deciles	2.059416	.7667728	1.94	0.052	.9927053 4.272362
least deprived	1.458309	.6113832	0.90	0.368	.6411962 3.316716
1.any_risk	1.443632	.4338455	1.22	0.222	.8010332 2.601733
2.high_risk_num	.9826803	.4314382	-0.04	0.968	.4156223 2.323409
highriskatbirth					
Y	2.505589	.7698161	2.99	0.003	1.372104 4.575437
mod_care_4					
standard	.8136428	.3721219	-0.45	0.652	.3319971 1.994037
partial CoC	.9966164	.4722441	-0.01	0.994	.3937208 2.522712
imp_gstt					
imp	.8251884	.2955788	-0.54	0.592	.4089371 1.665136
_cons	.0727941	.07737	-2.47	0.014	.0090654 .5845274
LBW					
RRR					
Std. Err.					
z					
P> z					
[95% Conf. Interval]					
0	(base outcome)				
1					
place_hosp_comm	2.316639	.7365894	2.64	0.008	1.242263 4.320192
hospital					
ethnicity					
BA	1.143143	.5669418	0.27	0.787	.4324613 3.021719
BC	1.018667	.6259046	0.03	0.976	.3055092 3.396567
B0	.9565287	.7117499	-0.06	0.952	.2224957 4.112201
M	7.92e-07	.000607	-0.02	0.985	0 .
U	.4721906	.2243593	-1.58	0.114	.1860684 1.19829
WB	.5904901	.2753441	-1.13	0.259	.2367551 1.472739
W0	.5748032	.2428715	-1.31	0.190	.2511083 1.315762
WP	1.54e-07	.00058	-0.00	0.997	0 .
age_cat					
20-24	1421827	1.50e+09	0.01	0.989	0 .
25-29	1617319	1.70e+09	0.01	0.989	0 .
30-34	995899.2	1.05e+09	0.01	0.990	0 .
greater than 34	1339906	1.41e+09	0.01	0.989	0 .
1.parity	.5495315	.1545614	-2.13	0.033	.3166528 .9536782
imd_3_score					
3rd and 4th deciles	1.618541	.5660569	1.38	0.169	.8155126 3.212305
5th and 6th deciles	1.276656	.5185241	0.60	0.548	.5759058 2.830064
least deprived	.9435921	.4426853	-0.12	0.902	.3762218 2.366599
1.any_risk	1.007332	.340243	0.02	0.983	.5195952 1.9529
2.high_risk_num	1.426278	.6665902	0.76	0.447	.5706683 3.564714
highriskatbirth					
Y	2.86121	.9946708	3.02	0.002	1.447565 5.655375
mod_care_4					
standard	1.184388	.6420665	0.31	0.755	.4093082 3.427184
partial CoC	1.317836	.7421008	0.49	0.624	.437051 3.973659
imp_gstt					
imp	.737539	.2906095	-0.77	0.440	.3407136 1.596542
_cons	3.66e-08	.0000385	-0.02	0.987	0 .

lowppgar	RRR	Std. Err.	z	P> z	[95% Conf. Interval]	
0	(base outcome)					
1						
place_hosp_comm	1.259183	.574852	0.50	0.614	.5146263	3.080959
hospital						
ethnicity						
BA	5.388081	6.259533	1.45	0.147	.5527919	52.51779
BC	12.24133	14.13831	2.17	0.030	1.272683	117.7435
B0	3.467619	5.346675	0.81	0.420	.1688788	71.20124
M	7.44e-06	.0065094	-0.01	0.989	0	.
U	4.248517	4.72449	1.30	0.193	.4804777	37.56656
WB	4.354473	4.833294	1.33	0.185	.4944646	38.3474
W0	3.281218	3.586927	1.09	0.277	.3850593	27.96035
WP	7.15e-06	.0307169	-0.00	0.998	0	.
age_cat						
20-24	3680909	4.51e+09	0.01	0.990	0	.
25-29	1932131	2.37e+09	0.01	0.991	0	.
30-34	382542.4	4.69e+08	0.01	0.992	0	.
greater than 34	987804.9	1.21e+09	0.01	0.991	0	.
1.parity	.7173944	.2974577	-0.80	0.423	.3182871	1.616951
imd_3_score						
3rd and 4th deciles	1.150704	.5782658	0.28	0.780	.4297415	3.081199
5th and 6th deciles	1.013342	.624625	0.02	0.983	.302743	3.391857
least deprived	1.990887	1.276692	1.07	0.283	.5664978	6.996725
1.any_risk	2.615861	1.194025	2.11	0.035	1.069248	6.399569
2.high_risk_num	.7079708	.4661238	-0.52	0.600	.1948001	2.57301
highriskatbirth						
Y	2.456263	1.242613	1.78	0.076	.911288	6.62055
mod_care_4						
standard	1.39612	.9207267	0.51	0.613	.3833225	5.084887
partial CoC	1.466213	1.028769	0.55	0.585	.3706392	5.800197
imp_gstt						
imp	.3044073	.1751553	-2.07	0.039	.0985543	.9402312
cons	5.08e-09	6.22e-06	-0.02	0.988	0	.
NNU_n	RRR	Std. Err.	z	P> z 	[95% Conf. Interval]	
N	(base outcome)					
Y						
place_hosp_comm	1.746339	.5158268	1.89	0.059	.9788227	3.115682
hospital						
ethnicity						
BA	3.712117	2.04407	2.38	0.017	1.261564	10.9228
BC	2.574064	1.681803	1.45	0.148	.7152768	9.263273
B0	2.36249	1.88707	1.08	0.282	.4936983	11.30521
M	1.05e-06	.0010394	-0.01	0.989	0	.
U	1.742138	.9186878	1.05	0.292	.6197487	4.89722
WB	2.078099	1.068164	1.42	0.155	.7588224	5.691049
W0	1.10476	.5627456	0.20	0.845	.4070806	2.998163
WP	2.77e-07	.0013283	-0.00	0.997	0	.
age_cat						
20-24	2.139969	2.543722	0.64	0.522	.2082608	21.98909
25-29	1.432384	1.660395	0.31	0.757	.1476934	13.89178
30-34	.7922269	.9061981	-0.20	0.839	.0841768	7.456011
greater than 34	.9354445	1.070838	-0.06	0.954	.0992238	8.81902
1.parity	.61911	.1665456	-1.78	0.075	.3654161	1.048934
imd_3_score						
3rd and 4th deciles	1.119829	.3771868	0.34	0.737	.5786896	2.166996
5th and 6th deciles	1.108735	.4242844	0.27	0.787	.5237148	2.347258
least deprived	1.680805	.6816183	1.28	0.200	.7591522	3.721396
1.any_risk	.7751602	.2576455	-0.77	0.444	.4040839	1.487002
2.high_risk_num	1.187856	.5340333	0.38	0.702	.492133	2.867113
highriskatbirth						
Y	4.03484	1.351712	4.16	0.000	2.092499	7.780141
mod_care_4						
standard	1.290876	.6997659	0.47	0.638	.4461284	3.735158
partial CoC	1.605975	.8981171	0.85	0.397	.5366822	4.805741
imp_gstt						
imp	.9517375	.3619079	-0.13	0.896	.4516886	2.005373
cons	.0172826	.0233061	-3.01	0.003	.0012295	.2429301

sbndd_n	RRR	Std. Err.	z	P> z	[95% Conf. Interval]	
N	(base outcome)					
Y						
place_hosp_comm	.9883627	.7887072	-0.01	0.988	.2068535	4.722477
hospital						
ethnicity						
BA	3.40e+07	7.95e+10	0.01	0.994	0	.
BC	1.339082	5349.818	0.00	1.000	0	.
B0	.9323299	4410.905	-0.00	1.000	0	.
M	1.749027	9923.461	0.00	1.000	0	.
U	3337780	7.80e+09	0.01	0.995	0	.
WB	3491043	8.16e+09	0.01	0.995	0	.
W0	1.10e+07	2.56e+10	0.01	0.994	0	.
WP	2.716189	79616.61	0.00	1.000	0	.
age_cat						
20-24	1.27e+07	9.99e+10	0.00	0.998	0	.
25-29	5457002	4.20e+10	0.00	0.998	0	.
30-34	1968017	1.54e+10	0.00	0.999	0	.
greater than 34	1.35e+07	1.06e+11	0.00	0.998	0	.
1.parity	1.056576	.8417782	0.07	0.945	.2216896	5.035659
imd_3_score						
3rd and 4th deciles	2.797845	3.516516	0.82	0.413	.2382196	32.86017
5th and 6th deciles	5.887274	8.029598	1.30	0.194	.4064139	85.28252
least deprived	7.359603	10.67461	1.38	0.169	.4287888	126.318
1.any_risk	6.82828	6.341514	2.07	0.039	1.106007	42.15349
2.high_risk_num	.3541763	.5191091	-0.71	0.479	.0200277	6.263378
highriskatbirth						
Y	1.937258	1.914908	0.67	0.504	.2791299	13.44524
mod_care_4						
standard	8176785	1.84e+10	0.01	0.994	0	.
partial CoC	1.57e+07	3.54e+10	0.01	0.994	0	.
imp_gstt						
imp	.1210106	.1436357	-1.78	0.075	.0118161	1.239288
_cons	6.03e-24	5.12e-20	-0.01	0.995	0	.

Table 44 Feeding method and skin-to-skin in relation to the model of care

feedingmethod_n	RRR	Std. Err.	z	P> z	[95% Conf. Interval]
A					
mod_care_4					
standard	1.690786	.9596254	0.93	0.355	.5558779 5.142781
partial CoC	2.477645	1.44672	1.55	0.120	.7888864 7.781506
ethnicity					
BA	3.131681	3.71797	0.96	0.336	.3056474 32.08739
BC	11.58444	13.27009	2.14	0.032	1.22692 109.3791
B0	.0000236	.0127057	-0.02	0.984	0
M	5.241466	7.745767	1.12	0.262	.2894401 94.91762
U	4.626134	5.022236	1.41	0.158	.5509785 38.84202
WB	11.30783	11.99256	2.29	0.022	1.414601 90.39086
W0	10.08915	10.51422	2.22	0.027	1.308549 77.78912
WP	.0000119	.0290923	-0.00	0.996	0
age_cat					
20-24	2.287527	2.212551	0.86	0.392	.3436002 15.22891
25-29	.8367789	.7939996	-0.19	0.851	.1302944 5.373975
30-34	.6411509	.5847922	-0.49	0.626	.1072955 3.831238
greater than 34	.5603504	.5179553	-0.63	0.531	.09155 3.429737
0.parity	1.493181	.4700249	1.27	0.203	.8056946 2.767289
imd_3_score					
most deprived	2.390902	1.191959	1.75	0.080	.8999203 6.35213
3rd and 4th deciles	1.330779	.6389096	0.60	0.552	.5193291 3.410119
5th and 6th deciles	1.187982	.6231595	0.33	0.743	.4249224 3.321316
any_risk	1.700728	.616963	1.46	0.143	.8353139 3.462743
high_risk_num	1.025801	.5256063	0.05	0.960	.3757678 2.800316
highriskatbirth					
Y	2.806337	1.063747	2.72	0.006	1.335029 5.899147
place_hosp_comm					
hospital	1.923858	.6570637	1.92	0.055	.9850499 3.757401
imp_gstt					
imp	.3668338	.1590468	-2.31	0.021	.1568256 .8580679
_cons	.0036769	.0060562	-3.40	0.001	.0001457 .0927876
B (base outcome)					
M					
mod_care_4					
standard	1.124301	.3443142	0.38	0.702	.6168851 2.049089
partial CoC	1.169965	.3901618	0.47	0.638	.6085735 2.249225
ethnicity					
BA	1.136333	.4244264	0.34	0.732	.5464836 2.362838
BC	1.476273	.6624491	0.87	0.385	.6126411 3.557353
B0	4.374267	2.369575	2.72	0.006	1.512874 12.64759
M	1.382221	.7936295	0.56	0.573	.4485834 4.25904
U	.9121857	.2905847	-0.29	0.773	.4885687 1.703103
WB	1.131655	.3661357	0.38	0.702	.6002284 2.133595
W0	.8089873	.2520143	-0.68	0.496	.4393159 1.489726
WP	1.48e-06	.0019659	-0.01	0.992	0
age_cat					
20-24	7.0321	8.037789	1.71	0.088	.7484274 66.07244
25-29	3.882627	4.334988	1.21	0.224	.4352625 34.63379
30-34	2.636163	2.919502	0.88	0.381	.3008028 23.10269
greater than 34	3.952849	4.375841	1.24	0.214	.4514629 34.60975
0.parity	1.185958	.220722	0.92	0.359	.8234735 1.708004
imd_3_score					
most deprived	1.512008	.4477741	1.40	0.163	.846203 2.701677
3rd and 4th deciles	1.231909	.3445685	0.75	0.456	.7120248 2.131386
5th and 6th deciles	1.160889	.3522591	0.49	0.623	.6404762 2.104159
any_risk	1.178171	.2694043	0.72	0.473	.7526102 1.844365
high_risk_num	.8844236	.289621	-0.38	0.708	.4654987 1.680359
highriskatbirth					
Y	1.785921	.4133731	2.51	0.012	1.134596 2.811145
place_hosp_comm					
hospital	1.236963	.2587033	1.02	0.309	.8209806 1.863718
imp_gstt					
imp	.3735837	.0968607	-3.80	0.000	.2247466 .6209872
cons	.0807265	.101202	-2.01	0.045	.006917 .9421411

skintoskin_n	RRR	Std. Err.	z	P> z	[95% Conf. Interval]	
N	(base outcome)					
Y						
mod_care_4						
standard	.3452837	.1488199	-2.47	0.014	.1483548	.8036195
partial CoC	.3144716	.1391835	-2.61	0.009	.1320821	.7487189
ethnicity						
BA	.4970995	.1880826	-1.85	0.065	.2360006	1.043528
BC	.4021858	.1870253	-1.96	0.050	.1616587	1.000586
BO	.7378651	.4262958	-0.53	0.599	.2377945	2.28956
M	1.272916	.946776	0.32	0.746	.2962706	5.469037
U	1.128158	.3951008	0.34	0.731	.56789	2.241175
WB	.9164385	.3208347	-0.25	0.803	.4614315	1.820117
WO	1.080527	.3420934	0.24	0.807	.5809605	2.009671
WP	272945.3	1.56e+08	0.02	0.982	0	.
age_cat						
20-24	.1726608	.1974408	-1.54	0.125	.0183582	1.623897
25-29	.246175	.2776246	-1.24	0.214	.026996	2.244059
30-34	.353376	.3943775	-0.93	0.351	.0396527	3.149211
greater than 34	.3087748	.3451261	-1.05	0.293	.0345327	2.760917
0.parity	.764053	.1499571	-1.37	0.170	.5200704	1.122496
imd_3_score						
most deprived	.8618758	.2634596	-0.49	0.627	.4734216	1.569066
3rd and 4th deciles	1.009359	.2932875	0.03	0.974	.5711016	1.783929
5th and 6th deciles	1.030177	.3203375	0.10	0.924	.5600511	1.894944
any_risk	.5976973	.1342347	-2.29	0.022	.384869	.9282172
high_risk_num	.8591101	.3069841	-0.42	0.671	.4264722	1.730641
highriskatbirth						
Y	.3262998	.0713044	-5.13	0.000	.2126223	.5007545
place_hosp_comm						
hospital	.6797166	.151377	-1.73	0.083	.4392989	1.051709
imp_gstt						
imp	.3951196	.109959	-3.34	0.001	.2290051	.6817293
_cons	192.3625	256.6964	3.94	0.000	14.06833	2630.258

Table 45 Feeding method and skin-to-skin in relation to place of antenatal care

feedingmethod_n	RRR	Std. Err.	z	P> z	[95% Conf. Interval]	
A						
place_hosp_comm hospital	1.856233	.6411467	1.79	0.073	.9432479	3.652913
ethnicity						
BA	1.996295	2.507061	0.55	0.582	.170309	23.3998
BC	11.96376	13.69667	2.17	0.030	1.268738	112.814
B0	8.27e-06	.0074926	-0.01	0.990	0	.
M	5.044739	7.454602	1.10	0.273	.2786247	91.33931
U	4.964623	5.390833	1.48	0.140	.5910302	41.70258
WB	11.49511	12.22062	2.30	0.022	1.430829	92.35031
W0	10.36067	10.79978	2.24	0.025	1.343107	79.92184
WP	4.65e-06	.0190253	-0.00	0.998	0	.
age_cat						
20-24	2.070798	2.02026	0.75	0.456	.305992	14.01411
25-29	.8793956	.834213	-0.14	0.892	.1369988	5.644841
30-34	.6078624	.6275002	-0.41	0.682	.1150789	4.111566
greater than 34	.5613196	.5202021	-0.62	0.533	.0912768	3.451914
1.parity	.7381593	.2350118	-0.95	0.340	.3955018	1.377691
imd_3_score						
3rd and 4th deciles	.5390086	.1972661	-1.69	0.091	.2630712	1.104379
5th and 6th deciles	.436744	.196748	-1.84	0.066	.1806221	1.056047
least deprived	.4210667	.2092085	-1.74	0.082	.1590114	1.114997
1.any_risk	1.802148	.6544126	1.62	0.105	.8844926	3.671864
2.high_risk_num	.8453254	.4421057	-0.32	0.748	.3032808	2.35615
highriskatbirth Y	2.84376	1.079241	2.75	0.006	1.351611	5.98321
mod_care_4 standard	1.622534	.921532	0.85	0.394	.5330235	4.939022
partial CoC	2.493893	1.451508	1.57	0.116	.7969977	7.803663
imp_gstt						
imp	.372482	.1615774	-2.28	0.023	.1591718	.8716546
_cons	.0133129	.0196832	-2.92	0.003	.0007341	.2414226
B (base outcome)						
M						
place_hosp_comm hospital	1.237324	.2586994	1.02	0.308	.821324	1.864028
ethnicity						
BA	1.152319	.431363	0.38	0.705	.5532619	2.400017
BC	1.474364	.6618635	0.86	0.387	.6116292	3.554033
B0	4.37767	2.373613	2.72	0.006	1.512564	12.66988
M	1.386149	.7963398	0.57	0.570	.4495688	4.273892
U	.90542	.2886467	-0.31	0.755	.4847169	1.691266
WB	1.149608	.3723174	0.43	0.667	.6093627	2.168822
W0	.805501	.2510716	-0.69	0.488	.4372702	1.483824
WP	5.37e-07	.0011739	-0.01	0.995	0	.
age_cat						
20-24	7.159355	8.186016	1.72	0.085	.7613929	67.3192
25-29	3.887322	4.341821	1.22	0.224	.4354394	34.70349
30-34	2.632559	2.916472	0.87	0.382	.3001768	23.08762
greater than 34	3.990055	4.418329	1.25	0.211	.4554212	34.95783
1.parity	.8330479	.155372	-0.98	0.327	.577979	1.200682
imd_3_score						
3rd and 4th deciles	.8240379	.1837385	-0.87	0.385	.5322945	1.275682
5th and 6th deciles	.773278	.2040045	-0.97	0.330	.4610771	1.296874
least deprived	.658608	.1952524	-1.41	0.159	.3683646	1.177541
1.any_risk	1.172483	.2684979	0.69	0.487	.7484831	1.83667
2.high_risk_num	.8931957	.2933167	-0.34	0.731	.4692674	1.700094
highriskatbirth Y	1.701536	.4125314	2.49	0.013	1.131595	2.804777
mod_care_4 standard	1.134325	.3475715	0.41	0.681	.6221039	2.060028
partial CoC	1.166511	.3892703	0.46	0.644	.6065113	2.243566
imp_gstt						
imp	.3726801	.0966059	-3.81	0.000	.2242272	.6194184
cons	.1271614	.1491418	-1.76	0.079	.012765	1.266749

skintoskin_n	RRR	Std. Err.	z	P> z	[95% Conf. Interval]	
N	(base outcome)					
Y						
place_hosp_comm hospital	.6948574	.1554547	-1.63	0.104	.4481913	1.077278
ethnicity						
BA	.5242778	.1997085	-1.70	0.090	.2484969	1.10612
BC	.3975917	.1847058	-1.99	0.047	.1599565	.9882637
B0	.7340237	.4241422	-0.54	0.593	.2365151	2.27804
M	1.291476	.9617869	0.34	0.731	.3000405	5.558946
U	1.112265	.3896225	0.30	0.761	.5598032	2.209943
WB	.9249629	.3253006	-0.22	0.824	.4642639	1.842824
W0	1.072446	.3396925	0.22	0.825	.5764493	1.995215
WP	267844.8	1.53e+08	0.02	0.983	0	.
age_cat						
20-24	.1839093	.2107001	-1.48	0.139	.0194717	1.737014
25-29	.2438442	.2751647	-1.25	0.211	.0267041	2.226622
30-34	.3483047	.3889898	-0.94	0.345	.0390238	3.108773
greater than 34	.3069693	.3433593	-1.06	0.291	.0342757	2.749179
1.parity	1.275445	.2512952	1.23	0.217	.8668692	1.876594
imd_3_score						
3rd and 4th deciles	1.182812	.2790913	0.71	0.477	.7448521	1.878286
5th and 6th deciles	1.228581	.3390083	0.75	0.456	.7153649	2.109988
least deprived	1.160259	.3544411	0.49	0.627	.6375671	2.111464
1.any_risk	.5887899	.1321989	-2.36	0.018	.379178	.9142764
2.high_risk_num	.9277121	.3357983	-0.21	0.836	.4563615	1.885895
highriskatbirth Y	.3270671	.0713918	-5.12	0.000	.2132248	.5016906
mod_care_4 standard	.3509345	.1511959	-2.43	0.015	.1508329	.8164996
partial CoC	.3161375	.1398361	-2.60	0.009	.1328515	.7522902
imp_gstt imp _cons	.3955506 106.4569	.1100635 129.9362	-3.33 3.82	0.001 0.000	.2292724 9.732804	.6824208 1164.421

Table 46 Womens service use in relation to the model of care received

ANadmission_n	RRR	Std. Err.	z	P> z	[95% Conf. Interval]	
0	(base outcome)					
1						
mod_care_4 standard	.8955716	.3342149	-0.30	0.768	.4309667	1.861045
partial CoC	.8190972	.3213637	-0.51	0.611	.3796435	1.767237
ethnicity						
BA	1.037992	.4349964	0.09	0.929	.4565378	2.359996
BC	2.863948	1.384825	2.18	0.030	1.11014	7.388436
B0	3.59773	2.079687	2.21	0.027	1.158742	11.17044
M	1.508586	1.072943	0.58	0.563	.3742613	6.080865
U	.945199	.3603632	-0.15	0.882	.4477104	1.995489
WB	1.056641	.4044219	0.14	0.886	.4990405	2.237272
W0	1.042435	.3561515	0.12	0.903	.5336214	2.036409
WP	1086416	7.16e+08	0.02	0.983	0	.
age_cat						
20-24	.4264823	.3867845	-0.94	0.347	.0720993	2.522731
25-29	.4569545	.3993611	-0.90	0.370	.0824053	2.533909
30-34	.5442326	.4619539	-0.72	0.474	.1031027	2.872757
greater than 34	.589815	.5021845	-0.62	0.535	.111168	3.129334
0.parity	1.044346	.2204953	0.21	0.837	.6904436	1.579649
imd_3_score						
most deprived	.974594	.3132022	-0.08	0.936	.5191296	1.829665
3rd and 4th deciles	.6650656	.20915	-1.30	0.195	.3590694	1.23183
5th and 6th deciles	1.029776	.3323608	0.09	0.928	.5470373	1.938512
any_risk	1.450555	.3447757	1.56	0.118	.9103661	2.311279
high_risk_num	1.282441	.5090802	0.63	0.531	.5890375	2.792107
highriskatbirth Y	2.643719	.6191286	4.15	0.000	1.670605	4.183665
place_hosp_comm hospital	.9977796	.2511358	-0.01	0.993	.6092447	1.634096
imp_gstt imp _cons	3.467719 .0928912	1.112599 1.053416	3.88 -2.10	0.000 0.036	1.849015 .010062	6.503502 .857561

lengthofPNstay	RRR	Std. Err.	z	P> z	[95% Conf. Interval]
1	(base outcome)				
2					
mod_care_4					
standard	.8555395	.2964759	-0.45	0.653	.433778 1.687379
partial CoC	.5296118	.2002858	-1.68	0.093	.2523799 1.111375
ethnicity					
BA	1.092288	.4489342	0.21	0.830	.4880791 2.444466
BC	2.013998	.9889311	1.43	0.154	.7692978 5.272584
BO	.2482423	.2750014	-1.26	0.208	-.0283087 2.176867
M	3.010724	1.957961	1.69	0.090	.8416082 10.7704
U	.7374455	.2551328	-0.88	0.379	-.3743184 1.452843
WB	.605911	.2162931	-1.40	0.160	-.3009913 1.21973
WO	.6501028	.2125871	-1.32	0.188	-.3424795 1.234041
WP	176538.3	9.09e+07	0.02	0.981	0
age_cat					
20-24	.2982083	.3135712	-1.15	0.250	-.0379723 2.341925
25-29	.4222841	.4290444	-0.85	0.396	-.057647 3.093379
30-34	.3002293	.3006974	-1.20	0.230	-.0421623 2.137873
greater than 34	.3449824	.3465688	-1.06	0.289	-.0481594 2.471228
0.parity	2.925344	.6193203	5.07	0.000	1.931837 4.429795
imd_3_score					
most deprived	1.157498	.3684936	0.46	0.646	.6202082 2.160247
3rd and 4th deciles	.7342083	.2297235	-0.99	0.323	-.3976402 1.355652
5th and 6th deciles	1.323023	.434899	0.85	0.394	.6946462 2.519829
any_risk	.7246481	.1856777	-1.26	0.209	-.4385534 1.19738
high_risk_num	2.388363	.8973421	2.32	0.020	1.143646 4.987799
highriskatbirth					
Y	2.111021	.5106891	3.09	0.002	1.131934 3.391654
place_hosp_comm					
hospital	.9343758	.2214799	-0.29	0.775	-.5871605 1.486915
imp_gstt					
imp	1.639918	.4678727	1.73	0.083	.9375021 2.868614
_cons	.3065311	.3717325	-0.98	0.330	-.0284588 3.301664
3					
mod_care_4					
standard	.9111408	.3967498	-0.21	0.831	.3800931 2.13912
partial CoC	.8695701	.3996183	-0.30	0.761	.3532871 2.140333
ethnicity					
BA	1.512134	.7974153	0.78	0.433	.5379151 4.25076
BC	1.461653	1.016632	0.55	0.585	-.373941 5.713281
BO	3.547917	2.428311	1.85	0.064	.9276481 13.5695
M	1.855698	1.702988	0.67	0.501	.3071518 11.21144
U	.6566085	.3122031	-0.88	0.376	-.2585703 1.667379
WB	.7120229	.3340299	-0.72	0.469	-.283904 1.785733
WO	1.043979	.4403241	0.10	0.919	.4567474 2.386202
WP	.3975565	457.156	-0.00	0.999	0
age_cat					
20-24	.1202726	.1340892	-1.90	0.057	-.0135264 1.069429
25-29	.2853618	.291639	-1.23	0.220	-.0385008 2.115855
30-34	.2181961	.2178938	-1.52	0.127	-.0308195 1.544789
greater than 34	.2323843	.2338801	-1.45	0.147	-.0323241 1.670657
0.parity	2.979282	.7913262	4.11	0.000	1.770208 5.01417
imd_3_score					
most deprived	.5704907	.2431525	-1.32	0.180	-.2474364 1.315363
3rd and 4th deciles	.9598783	.356583	-0.11	0.912	.4634525 1.980049
5th and 6th deciles	1.169377	.4731537	0.39	0.699	.529104 2.584449
any_risk	1.187599	.3576939	0.57	0.568	.6501061 2.143107
high_risk_num	1.702387	.768527	1.18	0.239	.7027347 4.124064
highriskatbirth					
Y	2.584223	.7917126	3.10	0.002	1.417596 4.710938
place_hosp_comm					
hospital	.8415628	.2411004	-0.60	0.547	-.4799818 1.475531
imp_gstt					
imp	.9508051	.337968	-0.14	0.887	.4737269 1.908337
_cons	.295809	.3862814	-0.93	0.351	-.0228808 3.824289
4					
mod_care_4					
standard	.6184352	.2472636	-1.20	0.229	.2824657 1.354013
partial CoC	.7205611	.3065392	-0.77	0.441	.3130076 1.658772
ethnicity					
BA	2.222506	1.129174	1.57	0.116	.8210668 6.015992
BC	1.862075	1.235367	0.94	0.349	.5073168 6.834628
BO	3.290904	2.371362	1.66	0.097	.8063018 13.49714
M	4.190188	3.250811	1.85	0.065	.915922 19.1694
U	1.356975	.5865217	0.71	0.480	.5816463 3.165807
WB	-.00637	.3608591	-0.48	0.631	-.3354303 1.938457
WO	.7393933	.3185751	-0.70	0.483	-.3177801 1.72038
WP	.344827	364.0273	-0.00	0.999	0
age_cat					
20-24	.4708804	.5473264	-0.65	0.517	-.0482524 4.595176
25-29	.7232623	.7967523	-0.29	0.769	-.0834842 6.265954
30-34	.5716616	.6170231	-0.52	0.604	-.0689278 4.741149
greater than 34	.8540676	.9237623	-0.15	0.884	-.102525 7.114667
0.parity	5.231877	1.363901	6.35	0.000	3.138754 8.72083
imd_3_score					
most deprived	.5472946	.2069009	-1.59	0.111	-.2608738 1.148185
3rd and 4th deciles	.6719351	.2279602	-1.17	0.241	-.3455806 1.306488
5th and 6th deciles	1.012936	.3665708	0.04	0.972	.4983575 2.058841
any_risk	.9309919	.2803946	-0.24	0.812	.5159201 1.68
high_risk_num	1.057233	.4468973	0.13	0.895	.4617042 2.420904
highriskatbirth					
Y	3.912098	1.163387	4.59	0.000	2.184126 7.007153
place_hosp_comm					
hospital	1.188421	.315978	0.65	0.516	.7057528 2.00119
imp_gstt					
imp	.5565232	.1839019	-1.77	0.076	-.2912095 1.063557
_cons	.1781345	.2371776	-1.30	0.195	-.0131043 2.421488

Table 47 Women service use in relation to the place of antenatal care

lengthofPNstay	RRR	Std. Err.	z	P> z	[95% Conf. Interval]
1	(base outcome)				
2					
place_hosp_comm	.9338106	.2212086	-0.29	0.773	.5869746 1.485588
hospital					
ethnicity					
BA	1.111655	.4570004	0.26	0.797	.4966399 2.488274
BC	2.018045	.9876843	1.42	0.155	.767868 5.265877
BO	.2472023	.2739325	-1.26	0.207	.0281715 2.169177
M	3.014913	1.960803	1.70	0.090	.8427147 10.78622
U	.7306155	.2529422	-0.91	0.365	.3706801 1.440053
WB	.6154735	.2198788	-1.36	0.174	.305574 1.239659
WO	.6490342	.2122846	-1.32	0.186	.3410661 1.232187
WP	171065.3	8.74e+07	0.02	0.981	0 .
age_cat					
20-24	.3034344	.3189523	-1.13	0.257	.0386663 2.381209
25-29	.4223036	.4289072	-0.85	0.396	.0576916 3.091268
30-34	.2994783	.2998433	-1.20	0.228	.0420849 2.131103
greater than 34	.3480579	.3495448	-1.05	0.293	.0486199 2.491663
1.parity	.3386487	.0718022	-5.11	0.000	.2234977 .5131282
imd_3_score					
3rd and 4th deciles	.6411114	.1576914	-1.81	0.071	.3958832 1.038245
5th and 6th deciles	1.148657	.3191356	0.50	0.618	.6663428 1.90008
least deprived	.8597845	.2738906	-0.47	0.635	.4605038 1.605262
1.any_risk	.7217371	.1851586	-1.27	0.204	.4365227 1.193304
2.high_risk_num	2.405506	.9852523	2.33	0.020	1.150477 5.029617
highriskatbirth					
Y	2.106844	.5097489	3.08	0.002	1.311248 3.385164
mod_care_4					
standard	.8667809	.3085088	-0.41	0.680	.439273 1.710031
partial CoC	.5324837	.2013181	-1.67	0.096	.2537987 1.11718
imp_gstt					
imp	1.632562	.4654098	1.72	0.086	.9337054 2.854498
_cons	2.455524	2.673329	0.83	0.409	.2906975 20.74183
3					
place_hosp_comm	.8381017	.2399543	-0.62	0.537	.4781804 1.468932
hospital					
ethnicity					
BA	1.531462	.8083446	0.81	0.419	.5442773 4.309154
BC	1.464127	1.018454	0.55	0.584	.374523 3.723726
BO	3.546386	2.428466	1.85	0.065	.9266313 13.57266
M	1.858192	1.70541	0.68	0.500	.3075215 11.22088
U	.6525591	.3183614	-0.98	0.369	.256911 1.657513
WB	.7231824	.3394512	-0.69	0.490	.2882082 1.814636
WO	1.043149	.4400259	0.10	0.920	.4563397 2.384537
WP	.3931304	448.0795	-0.00	0.999	0 .
age_cat					
20-24	.1218025	.1357816	-1.89	0.059	.0137013 1.082802
25-29	.2851161	.2913645	-1.23	0.219	.0384747 2.112878
30-34	.2179833	.2176662	-1.53	0.127	.0307936 1.543073
greater than 34	.2346578	.2361432	-1.44	0.150	.0326471 1.686649
1.parity	.3327755	.0885073	-4.14	0.000	.1975877 .5604576
imd_3_score					
3rd and 4th deciles	1.694201	.5686388	1.59	0.111	.8057039 3.24072
5th and 6th deciles	2.058165	.7831291	1.87	0.061	.867082 4.380231
least deprived	1.742799	.7430302	1.30	0.193	.7556897 4.019307
1.any_risk	1.184983	.3572247	0.56	0.573	.6563104 2.139514
2.high_risk_num	1.706578	.7717399	1.18	0.237	.7033962 4.140493
highriskatbirth					
Y	2.572908	.7077695	3.09	0.002	1.411902 4.680609
mod_care_4					
standard	.9207413	.40088	-0.19	0.850	.3922243 2.161428
partial CoC	.8702679	.3997162	-0.30	0.762	.3537479 2.140977
imp_gstt					
imp	.9511121	.3376435	-0.14	0.888	.4743035 1.907248
_cons	.8515075	.9020035	-0.14	0.889	.0808520 0.161832
4					
place_hosp_comm	1.14884	.3067355	0.52	0.603	.6807572 1.938772
hospital					
ethnicity					
BA	2.079455	1.068131	1.43	0.154	.7598398 5.690849
BC	1.911489	1.26655	0.98	0.328	.5216257 7.004491
BO	3.347351	2.403375	1.68	0.092	.8194916 13.67282
M	4.081942	3.162262	1.82	0.069	.8942214 18.63325
U	1.380895	.5961826	0.75	0.455	.5924694 3.218514
WB	.7928194	.3566227	-0.52	0.606	.3283147 1.914513
WO	.7462788	.3211129	-0.68	0.496	.3211008 1.734446
WP	.3469359	365.4385	-0.00	0.999	0 .
age_cat					
20-24	.3973915	.467282	-0.78	0.433	.0396564 3.982206
25-29	.7454249	.820082	-0.27	0.789	.0862882 6.439564
30-34	.5926621	.6388789	-0.49	0.627	.0716518 4.902153
greater than 34	.8822099	.9531852	-0.12	0.908	.1061426 7.332533
1.parity	.1962554	.0513059	-6.23	0.000	.1175702 .3276017
imd_3_score					
3rd and 4th deciles	1.207948	.3755332	0.61	0.543	.6567839 2.221643
5th and 6th deciles	1.786016	.6275955	1.65	0.099	.8969701 3.556252
least deprived	1.815783	.6850892	1.58	0.114	.8667791 3.803817
1.any_risk	.9622123	.2894094	-0.13	0.898	.533643 1.734966
2.high_risk_num	.9572546	.4095907	-0.10	0.919	.4138164 2.214355
highriskatbirth					
Y	3.897534	1.159063	4.57	0.000	2.175988 6.981091
mod_care_4					
standard	.612622	.2449142	-1.23	0.220	.2798331 1.341177
partial CoC	.7299997	.3098827	-0.74	0.458	.3176802 1.677472
imp_gstt					
imp	.5583362	.1845436	-1.76	0.078	.2921145 1.067182
_cons	.5430236	.6565633	-0.51	0.614	.050774 5.807593

Table 48 Referrals to support services in relation to the model of care received

REFHVFNP	RRR	Std. Err.	z	P> z	[95% Conf. Interval]	
N	(base outcome)					
Y						
mod_care_4						
standard	.02256	.0188082	-4.55	0.000	.0044025	.1156063
partial CoC	.4310735	.2340897	-1.55	0.121	.1487016	1.249646
ethnicity						
BA	4.26e-07	.0004831	-0.01	0.990	0	.
BC	10.79461	14.35874	1.79	0.074	.796082	146.3713
B0	1.580594	2.620042	0.28	0.782	.0613539	40.71913
M	3.14926	5.091797	0.71	0.478	.1324239	74.89467
U	8.460986	10.33708	1.75	0.080	.7717542	92.76048
WB	5.435105	6.506499	1.41	0.157	.5202516	56.78092
W0	2.968158	3.476571	0.93	0.353	.2988711	29.47747
WP	.0000174	.2359175	-0.00	0.999	0	.
age_cat						
20-24	.0647409	.0756855	-2.34	0.019	.0065476	.6401439
25-29	.0648182	.0730998	-2.43	0.015	.0071079	.5910895
30-34	.0549994	.0598472	-2.67	0.008	.0065182	.4640738
greater than 34	.0212772	.0247531	-3.31	0.001	.002176	.2080527
0.parity	2.100031	1.122133	1.39	0.165	.736875	5.984912
imd_3_score						
most deprived	.768689	.6600953	-0.31	0.759	.1428234	4.137156
3rd and 4th deciles	1.055176	.8463388	0.07	0.947	.2190736	5.082289
5th and 6th deciles	.3497662	.3668892	-1.00	0.317	.0447616	2.733068
1.any_risk	27.68004	17.39306	5.28	0.000	8.078023	94.84807
2.high_risk_num	.9326898	.7520928	-0.09	0.931	.1920234	4.530231
highriskatbirth						
Y	2.260504	1.259578	1.46	0.143	.7584137	6.737585
place_hosp_comm						
hospital	2.528013	1.44647	1.62	0.105	.8236479	7.759201
imp_gstt						
imp	.6612705	.467558	-0.58	0.559	.1653973	2.643807
_cons	.0778909	.1460937	-1.36	0.174	.0019722	3.076215
REFSC						
N	(base outcome)					
Y						
mod_care_4						
standard	.0981729	.0610329	-3.73	0.000	.0290275	.3320268
partial CoC	.6475615	.3647179	-0.77	0.440	.2147185	1.952956
ethnicity						
BA	1.834631	1.750118	0.64	0.525	.2828511	11.89979
BC	1.890713	2.106443	0.57	0.568	.2129618	16.78608
B0	3.46e-07	.0005113	-0.01	0.992	0	.
M	10.04697	12.45407	1.86	0.063	.8849088	114.07
U	1.07669	1.094118	0.07	0.942	.1469302	7.88988
WB	1.771744	1.840311	0.55	0.582	.2313437	13.56889
W0	1.372513	1.265012	0.34	0.731	.2254158	8.356961
WP	.0000134	.1739957	-0.00	0.999	0	.
age_cat						
20-24	.0159718	.0234402	-2.82	0.005	.0008998	.2835173
25-29	.0465346	.0650231	-2.20	0.028	.0030087	.7197257
30-34	.0234848	.0330115	-2.67	0.008	.0014938	.3692176
greater than 34	.0245637	.0343022	-2.65	0.008	.0015908	.3792805
0.parity	1.749395	.857977	1.14	0.254	.6689952	4.574598
imd_3_score						
most deprived	12.21725	14.5383	2.10	0.035	1.18593	125.06
3rd and 4th deciles	3.814762	4.520874	1.13	0.259	.3738595	38.9248
5th and 6th deciles	2.176587	2.789314	0.61	0.544	.1765852	26.82858
1.any_risk	140.2826	126.5342	5.48	0.000	23.94553	821.832
2.high_risk_num	1.728971	1.399017	0.68	0.499	.3540202	8.44398
highriskatbirth						
Y	1.333495	.7155181	0.54	0.592	.465864	3.817013
place_hosp_comm						
hospital	7.39575	4.564156	3.24	0.001	2.20637	24.79055
imp_gstt						
imp	.2666639	.1853154	-1.90	0.057	.0683015	1.041113
_cons	.0104903	.0229836	-2.08	0.038	.0001432	.7686198

REFDV	RRR	Std. Err.	z	P> z	[95% Conf. Interval]
N	(base outcome)				
Y					
mod_care_4					
standard	.2772501	.5016211	-0.71	0.478	.0079949 9.614522
partial CoC	6.673113	9.745956	1.30	0.194	.3812103 116.8133
ethnicity					
BA	862477.2	9.11e+09	0.00	0.999	0 .
BC	1978278	2.09e+10	0.00	0.999	0 .
B0	.0153401	346.6688	-0.00	1.000	0 .
M	4.49e+08	4.75e+12	0.00	0.998	0 .
U	2.14e+07	2.26e+11	0.00	0.999	0 .
WB	2.58e+07	2.72e+11	0.00	0.999	0 .
W0	8255814	8.72e+10	0.00	0.999	0 .
WP	1.91e+12	3.48e+17	0.00	1.000	0 .
age_cat					
20-24	.6713991	1.609415	-0.17	0.868	.0061173 73.60886
25-29	.4092233	1.218583	-0.29	0.774	.0037093 64.52458
30-34	.332907	.7472977	-0.49	0.624	.0040806 27.10625
greater than 34	.0095397	.030967	-1.43	0.152	.0000165 5.528719
0.parity	.1328238	.2518816	-1.06	0.287	.0032292 5.463352
imd_3_score					
most deprived	1.19e+09	6.77e+12	0.00	0.997	0 .
3rd and 4th deciles	4.90e+07	2.78e+11	0.00	0.998	0 .
5th and 6th deciles	1.189507	9676.367	0.00	1.000	0 .
1.any_risk	1.37e+10	3.97e+13	0.01	0.994	0 .
2.high_risk_num	17.65134	49.11269	1.03	0.302	.0755812 4122.319
highriskatbirth					
Y	.2207544	.4982285	-0.67	0.503	.0026473 18.40843
place_hosp_comm					
hospital	33.51317	63.62858	1.85	0.064	.8111703 1384.583
imp_gstt					
imp	.0144318	.0298431	-2.05	0.040	.0002507 .8308012
_cons	8.61e-27	1.06e-22	-0.00	0.996	0 .
REFMH	RRR	Std. Err.	z	P> z	[95% Conf. Interval]
N	(base outcome)				
Y					
mod_care_4					
standard	.1430572	.0822251	-3.38	0.001	.0463728 .441322
partial CoC	.8342954	.4448841	-0.34	0.734	.2933733 2.37257
ethnicity					
BA	.5049925	.5172364	-0.67	0.505	.0678337 3.759452
BC	4.016347	3.840109	1.45	0.146	.6165672 26.16267
B0	1.56354	2.062963	0.34	0.735	.1177655 20.75869
M	1.874731	2.554123	0.46	0.645	.1297976 27.07767
U	1.191172	1.068591	0.20	0.845	.2052901 6.911632
WB	5.39528	4.314503	2.11	0.035	1.125445 25.86448
W0	1.936183	1.506658	0.85	0.396	.4212853 8.898496
WP	5.62e-06	.0457137	-0.00	0.999	0 .
age_cat					
20-24	3603106	5.31e+09	0.01	0.992	0 .
25-29	1.62e+07	2.40e+10	0.01	0.991	0 .
30-34	5022475	7.41e+09	0.01	0.992	0 .
greater than 34	8322899	1.23e+10	0.01	0.991	0 .
0.parity	1.176732	.5025353	0.38	0.703	.5095228 2.717639
imd_3_score					
most deprived	1.706425	1.115797	0.82	0.414	.4737007 6.147104
3rd and 4th deciles	.7361506	.482046	-0.47	0.640	.2039778 2.656748
5th and 6th deciles	.7432719	.5545643	-0.40	0.691	.172209 3.208039
1.any_risk	23.94444	12.55823	6.06	0.000	8.565874 66.93258
2.high_risk_num	1.622666	1.170515	0.67	0.502	.3946503 6.671844
highriskatbirth					
Y	2.084504	1.049904	1.46	0.145	.7767429 5.594076
place_hosp_comm					
hospital	4.431781	2.259608	2.92	0.004	1.631476 12.03859
imp_gstt					
imp	.5496638	.3487665	-0.94	0.346	.1584902 1.906303
_cons	5.13e-10	7.57e-07	-0.01	0.988	0 .

REFHOUSINGFINANCE	RRR	Std. Err.	z	P> z	[95% Conf. Interval]	
N	(base outcome)					
Y						
mod_care_4						
standard	1.17e-08	.0000299	-0.01	0.994	0	.
partial CoC	2.099711	2.214359	0.70	0.482	.2657547	16.58968
ethnicity						
BA	2.63e+07	1.35e+11	0.00	0.997	0	.
BC	7.61e+07	3.91e+11	0.00	0.997	0	.
B0	.271791	3340.805	-0.00	1.000	0	.
M	2.56e+08	1.31e+12	0.00	0.997	0	.
U	3.12e+07	1.60e+11	0.00	0.997	0	.
WB	3.09e+07	1.59e+11	0.00	0.997	0	.
W0	2.48e+07	1.27e+11	0.00	0.997	0	.
WP	8.53e+14	8.33e+19	0.00	1.000	0	.
age_cat						
20-24	1.17e+09	2.25e+13	0.00	0.999	0	.
25-29	14.67146	289951.6	0.00	1.000	0	.
30-34	1.42e+09	2.72e+13	0.00	0.999	0	.
greater than 34	7.64e+08	1.47e+13	0.00	0.999	0	.
0.parity	1.59827	1.688619	0.44	0.657	.2015258	12.67563
imd_3_score						
most deprived	2.35e+07	1.05e+11	0.00	0.997	0	.
3rd and 4th deciles	9020559	4.01e+10	0.00	0.997	0	.
5th and 6th deciles	2.42e+07	1.08e+11	0.00	0.997	0	.
1.any_risk	2.21e+08	5.15e+11	0.01	0.993	0	.
2.high_risk_num	1.385091	2.267231	0.20	0.842	.0559966	34.26058
highriskatbirth						
Y	1.689849	1.73819	0.51	0.610	.2250588	12.68819
place_hosp_comm						
hospital	2.371757	3.175683	0.65	0.519	.1719282	32.71849
imp_gstt						
imp	.2839749	.4012512	-0.89	0.373	.0178053	4.529098
_cons	8.45e-34	1.73e-29	-0.00	0.997	0	.
REFOTHER	RRR	Std. Err.	z	P> z 	[95% Conf. Interval]	
N	(base outcome)					
Y						
mod_care_4						
standard	.4582164	.2676201	-1.34	0.181	.1458574	1.439503
partial CoC	1.333443	.7533045	0.51	0.610	.44066	4.035017
ethnicity						
BA	2.112466	1.913077	0.83	0.409	.358039	12.46376
BC	3.509107	3.586409	1.23	0.219	.4734171	26.01053
B0	1.904468	2.539782	0.48	0.629	.1395144	25.99731
M	4.320611	4.981935	1.27	0.204	.4508752	41.4032
U	2.148638	1.937377	0.85	0.396	.3669905	12.57975
WB	2.791437	2.459493	1.17	0.244	.4964173	15.69671
W0	1.066329	.9229396	0.07	0.941	.195502	5.816095
WP	.0001292	.1592815	-0.01	0.994	0	.
age_cat						
20-24	1.57515	2.055526	0.35	0.728	.1220473	20.32898
25-29	1.954864	2.485507	0.53	0.598	.1617553	23.62515
30-34	1.665496	2.066697	0.41	0.681	.1463173	18.95794
greater than 34	1.435774	1.79439	0.29	0.772	.123959	16.63006
0.parity	1.815587	.7800118	1.39	0.165	.7822111	4.21415
imd_3_score						
most deprived	1.38725	.9273986	0.49	0.624	.3742078	5.142763
3rd and 4th deciles	.7013002	.4838061	-0.51	0.607	.1814201	2.710957
5th and 6th deciles	.5314225	.4374085	-0.77	0.442	.1058826	2.667198
1.any_risk	8.524976	3.924582	4.66	0.000	3.458053	21.01623
2.high_risk_num	1.331333	1.012209	0.38	0.707	.2999992	5.908172
highriskatbirth						
Y	1.173431	.560113	0.34	0.738	.4604201	2.990618
place_hosp_comm						
hospital	.9399507	.4452195	-0.13	0.896	.3714691	2.378414
imp_gstt						
imp	1.225911	.7133596	0.35	0.726	.3918715	3.83508
cons	.0044977	.0080898	-3.00	0.003	.0001324	.1527569

Table 49 Referrals to support services in relation to the place of antenatal care

REFHVFNP	RRR	Std. Err.	z	P> z	[95% Conf. Interval]	
N	(base outcome)					
Y						
place_hosp_comm hospital	2.529855	1.447519	1.62	0.105	.8242511	7.764825
ethnicity						
BA	6.88e-07	.0006138	-0.02	0.987	0	.
BC	10.78039	14.33826	1.79	0.074	.795259	146.1369
B0	1.580147	2.619113	0.28	0.783	.0613507	40.69817
M	3.151215	5.094355	0.71	0.478	.1325557	74.91309
U	8.446799	10.31924	1.75	0.081	.7705494	92.59421
WB	5.440119	6.511454	1.42	0.157	.5289281	56.81186
W0	2.965737	3.473393	0.93	0.353	.2986947	29.44676
WP	.0000251	.2824208	-0.00	0.999	0	.
age_cat						
20-24	.0649623	.0759709	-2.34	0.019	.0065647	.6420483
25-29	.0648771	.0731565	-2.43	0.015	.0071165	.5914525
30-34	.0550131	.0590547	-2.67	0.008	.0065216	.4640657
greater than 34	.0213049	.0247631	-3.31	0.001	.0021793	.2082794
1.parity	.4757982	.2541985	-1.39	0.164	.1669792	1.355761
imd_3_score						
3rd and 4th deciles	1.373336	.7466162	0.58	0.560	.4731727	3.985968
5th and 6th deciles	.4549092	.3920854	-0.91	0.361	.0839993	2.46362
least deprived	1.298859	1.115519	0.30	0.761	.2412746	6.992175
1.any_risk	27.62799	17.36209	5.28	0.000	8.061833	94.6814
2.high_risk_num	.9343368	.7534584	-0.08	0.933	.1923473	4.538588
highriskatbirth Y	2.260087	1.2592	1.46	0.143	.7583694	6.735493
mod_care_4 standard	.0226515	.0188922	-4.54	0.000	.0044173	.1161537
partial CoC	.4310026	.2340272	-1.55	0.121	.1486934	1.249304
imp_gstt						
imp	.6610867	.467396	-0.59	0.558	.1653671	2.642821
_cons	.1258241	.2118901	-1.23	0.218	.0046379	3.413522
REFSC	RRR	Std. Err.	z	P> z	[95% Conf. Interval]	
N	(base outcome)					
Y						
place_hosp_comm hospital	7.395323	4.56281	3.24	0.001	2.206875	24.78201
ethnicity						
BA	1.836063	1.75152	0.64	0.524	.2830611	11.90954
BC	1.890622	2.106057	0.57	0.567	.2130147	16.78031
B0	3.36e-07	.0005037	-0.01	0.992	0	.
M	10.04508	12.44832	1.86	0.063	.8853302	113.9728
U	1.076115	1.093373	0.07	0.942	.1468947	7.883354
WB	1.77268	1.841105	0.55	0.581	.2315114	13.57338
W0	1.372194	1.26455	0.34	0.731	.2254178	8.353011
WP	.000013	.1709379	-0.00	0.999	0	.
age_cat						
20-24	.0160166	.023499	-2.82	0.005	.0009031	.2840701
25-29	.0465955	.0650705	-2.20	0.028	.0030175	.7195234
30-34	.0235102	.0330281	-2.67	0.008	.0014978	.3690275
greater than 34	.0246065	.0343437	-2.65	0.008	.0015959	.3793917
1.parity	.5712753	.2801298	-1.14	0.254	.2185	1.493618
imd_3_score						
3rd and 4th deciles	.3124991	.1506324	-2.41	0.016	.1214921	.8038025
5th and 6th deciles	.1784362	.1329895	-2.31	0.021	.0414074	.7689326
least deprived	.0818378	.0973794	-2.10	0.035	.0079452	.8429566
1.any_risk	139.7606	126.0635	5.48	0.000	23.85638	818.7759
2.high_risk_num	1.73159	1.401173	0.68	0.497	.3545416	8.457127
highriskatbirth Y	1.333003	.715177	0.54	0.592	.4657449	3.815172
mod_care_4 standard	.0982882	.0611038	-3.73	0.000	.029062	.3324118
partial CoC	.6474338	.3645818	-0.77	0.440	.2147179	1.952192
imp_gstt						
imp	.2667488	.1853444	-1.90	0.057	.0683383	1.041215
_cons	.2245417	.3981871	-0.84	0.400	.0069476	7.257051

REFDV	RRR	Std. Err.	z	P> z	[95% Conf. Interval]	
N	(base outcome)					
Y						
place_hosp_comm hospital	33.51835	63.64107	1.85	0.064	.8111704	1385.011
ethnicity						
BA	758406.4	7.51e+09	0.00	0.999	0	.
BC	1739654	1.72e+10	0.00	0.999	0	.
B0	.0153392	325.0884	-0.00	1.000	0	.
M	3.95e+08	3.92e+12	0.00	0.998	0	.
U	1.88e+07	1.86e+11	0.00	0.999	0	.
WB	2.27e+07	2.25e+11	0.00	0.999	0	.
W0	7260968	7.19e+10	0.00	0.999	0	.
WP	1.69e+12	2.89e+17	0.00	1.000	0	.
age_cat						
20-24	.6713256	1.609264	-0.17	0.868	.0061162	73.68611
25-29	.4891624	1.218455	-0.29	0.774	.0037085	64.52263
30-34	.3320651	.7472184	-0.49	0.624	.0040077	27.10519
greater than 34	.0095373	.0309602	-1.43	0.152	.0000165	5.52851
1.parity	7.529752	14.27966	1.06	0.287	.1830355	309.7606
imd_3_score						
3rd and 4th deciles	.0411183	.0708367	-1.85	0.064	.0014048	1.203497
5th and 6th deciles	1.13e-09	6.18e-06	-0.00	0.997	0	.
least deprived	9.53e-10	5.08e-06	-0.00	0.997	0	.
1.any_risk	1.22e+10	3.32e+13	0.01	0.993	0	.
2.high_risk_num	17.65294	49.11814	1.03	0.302	.0755796	4123.152
highriskatbirth Y	.2207481	.4982237	-0.67	0.503	.002647	18.40946
mod_care_4 standard	.277225	.5015855	-0.71	0.478	.0079937	9.614318
partial CoC	6.673129	9.746106	1.30	0.194	.3811971	116.8179
imp_gstt						
imp	.0144299	.0298401	-2.05	0.040	.0002506	.830801
_cons	1.75e-18	1.80e-14	-0.00	0.997	0	.

REFMH	RRR	Std. Err.	z	P> z	[95% Conf. Interval]	
N	(base outcome)					
Y						
place_hosp_comm hospital	4.434639	2.26089	2.92	0.003	1.632655	12.04542
ethnicity						
BA	.5058126	.518092	-0.67	0.506	.0679397	3.765784
BC	4.007313	3.829553	1.45	0.146	.6157581	26.07933
B0	1.561364	2.059258	0.34	0.735	.1177248	20.70811
M	1.877051	2.556158	0.46	0.644	.1301112	27.07932
U	1.188256	1.065671	0.19	0.847	.2048906	6.891255
WB	5.398535	4.31484	2.11	0.035	1.127051	25.85879
W0	1.932356	1.503168	0.85	0.397	.4206713	8.876291
WP	5.59e-06	.0453847	-0.00	0.999	0	.
age_cat						
20-24	3647066	5.39e+09	0.01	0.992	0	.
25-29	1.63e+07	2.41e+10	0.01	0.991	0	.
30-34	5043329	7.46e+09	0.01	0.992	0	.
greater than 34	8366819	1.24e+10	0.01	0.991	0	.
1.parity	.8478978	.3620506	-0.39	0.699	.3671828	1.957964
imd_3_score						
3rd and 4th deciles	.4324593	.2033028	-1.78	0.075	.1721029	1.086682
5th and 6th deciles	.435674	.2741112	-1.32	0.187	.1269447	1.495232
least deprived	.5848196	.3824183	-0.82	0.412	.1623358	2.10683
1.any_risk	23.87012	12.51775	6.05	0.000	8.540344	66.71658
2.high_risk_num	1.628417	1.174698	0.68	0.499	.3960326	6.695766
highriskatbirth Y	2.082693	1.048578	1.46	0.145	.7763708	5.587036
mod_care_4 standard	.1436686	.0825986	-3.37	0.001	.0465571	.4433414
partial CoC	.8339692	.4445164	-0.34	0.733	.2933921	2.370563
imp_gstt						
imp	.5495755	.3485738	-0.94	0.345	.158542	1.905068
_cons	1.03e-09	1.52e-06	-0.01	0.989	0	.

REFHOUSFINANCE	RRR	Std. Err.	z	P> z	[95% Conf. Interval]	
N	(base outcome)					
Y						
place_hosp_comm hospital	2.371758	3.175681	0.65	0.519	.1719286	32.71843
ethnicity						
BA	2.62e+07	1.34e+11	0.00	0.997	0	.
BC	7.57e+07	3.88e+11	0.00	0.997	0	.
B0	2.705539	3322.286	-0.00	1.000	0	.
M	2.54e+08	1.30e+12	0.00	0.997	0	.
U	3.10e+07	1.59e+11	0.00	0.997	0	.
WB	3.07e+07	1.57e+11	0.00	0.997	0	.
W0	2.46e+07	1.26e+11	0.00	0.997	0	.
WP	8.54e+14	8.32e+19	0.00	1.000	0	.
age_cat						
20-24	1.17e+09	2.26e+13	0.00	0.999	0	.
25-29	14.69799	290646.1	0.00	1.000	0	.
30-34	1.42e+09	2.73e+13	0.00	0.999	0	.
greater than 34	7.65e+08	1.47e+13	0.00	0.999	0	.
1.parity	.6256763	.661045	-0.44	0.657	.0788916	4.962135
imd_3_score						
3rd and 4th deciles	.3837729	.3464991	-1.06	0.289	.0653951	2.252181
5th and 6th deciles	1.030233	1.221093	0.03	0.980	.100935	10.51549
least deprived	4.27e-08	.0001897	-0.00	0.997	0	.
1.any_risk	2.21e+08	5.16e+11	0.01	0.993	0	.
2.high_risk_num	1.38509	2.267228	0.20	0.842	.0559967	34.26051
highriskatbirth Y	1.68985	1.73819	0.51	0.610	.2250592	12.68818
mod_care_4 standard partial CoC	1.17e-08	.0000299	-0.01	0.994	0	.
	2.099713	2.21436	0.70	0.482	.2657553	16.58968
imp_gstt imp _cons	.2839748	.4012507	-0.89	0.373	.0178053	4.529087
	3.18e-26	6.37e-22	-0.00	0.998	0	.
REFOTHER	RRR	Std. Err.	z	P> z 	[95% Conf. Interval]	
N	(base outcome)					
Y						
place_hosp_comm hospital	.9413028	.4457497	-0.13	0.898	.3720889	2.381289
ethnicity						
BA	2.117568	1.917639	0.83	0.407	.3589231	12.49319
BC	3.503221	3.579138	1.23	0.220	.4729552	25.94867
B0	1.902513	2.53638	0.48	0.629	.1394851	25.94939
M	4.329256	4.989001	1.27	0.204	.4523713	41.43157
U	2.140829	1.929978	0.84	0.398	.3657762	12.52992
WB	2.801081	2.467096	1.17	0.242	.4984446	15.74108
W0	1.065082	.921577	0.07	0.942	.1953749	5.806268
WP	.0002401	.2160755	-0.01	0.993	0	.
age_cat						
20-24	1.581646	2.063517	0.35	0.725	.1226244	20.40054
25-29	1.951041	2.479599	0.53	0.599	.161609	23.55415
30-34	1.660923	2.060208	0.41	0.683	.146056	18.88772
greater than 34	1.435489	1.793189	0.29	0.772	.1240774	16.6076
1.parity	.5493664	.2359234	-1.39	0.163	.2367646	1.274698
imd_3_score						
3rd and 4th deciles	.5069799	.2333238	-1.48	0.140	.2057066	1.249491
5th and 6th deciles	.3839895	.2621836	-1.40	0.161	.100723	1.463895
least deprived	.7189507	.4806489	-0.49	0.622	.1939255	2.665405
1.any_risk	8.495591	3.909595	4.65	0.000	3.447294	20.93673
2.high_risk_num	1.340308	1.019666	0.39	0.700	.3017423	5.953507
highriskatbirth Y	1.172059	.5593201	0.33	0.739	.4599874	2.986432
mod_care_4 standard partial CoC	.4601309	.2687237	-1.33	0.184	.1464759	1.445428
	1.333699	.7531276	0.51	0.610	.4409527	4.033885
imp_gstt imp _cons	1.225135	.7124614	0.35	0.727	.3919034	3.829915
	.0113602	.0183283	-2.78	0.006	.0004809	.2683448

Table 50 Social care involvement at discharge in relation to the model of care received

SCatDisc_n	RRR	Std. Err.	z	P> z	[95% Conf. Interval]	
N	(base outcome)					
Y						
mod_care_4						
standard	.1587437	.0733561	-3.98	0.000	.0641731	.3926812
partial CoC	1.029968	.4496342	0.07	0.946	.4377543	2.423356
ethnicity						
BA	1.129168	.8990247	0.15	0.879	.2371626	5.376146
BC	2.749752	2.294285	1.21	0.225	.5359009	14.10921
B0	1.290329	1.445052	0.23	0.820	.1436918	11.58695
M	2.922527	2.883994	1.09	0.277	.4224547	20.21795
U	1.281073	.9544105	0.33	0.740	.2974548	5.517299
WB	2.820609	2.026182	1.44	0.149	.6900542	11.52929
W0	.7318405	.5382992	-0.42	0.671	.17311	3.093932
WP	.0001127	.1985685	-0.01	0.996	0	.
age_cat						
20-24	.0324779	.0405312	-2.75	0.006	.002814	.3748477
25-29	.0309756	.0371678	-2.90	0.004	.0029489	.3253727
30-34	.0248071	.0294801	-3.11	0.002	.0024156	.2547535
greater than 34	.0170025	.0203689	-3.40	0.001	.0016247	.1779286
0.parity	1.810385	.6678876	1.61	0.108	.8785073	3.730752
imd_3_score						
most deprived	6.878708	4.979019	2.66	0.008	1.664873	28.42056
3rd and 4th deciles	2.417954	1.714162	1.25	0.213	.6025667	9.702662
5th and 6th deciles	2.184541	1.698933	1.00	0.315	.4757456	10.03103
any_risk	12.90027	5.28523	6.24	0.000	5.779124	28.79621
high_risk_num	.9831978	.5597157	-0.03	0.976	.3221575	3.000638
highriskatbirth						
Y	1.912654	.8523798	1.46	0.146	.7985391	4.581175
place_hosp_comm						
hospital	2.791804	1.123454	2.55	0.011	1.268679	6.143533
imp_gstt						
imp	.1075698	.0581829	-4.12	0.000	.0372639	.3105222
_cons	.4285405	.7235509	-0.50	0.616	.0156609	11.72646

Table 51 Social care involvement at discharge in relation to the place of antenatal care

SCatDisc_n	RRR	Std. Err.	z	P> z	[95% Conf. Interval]	
N	(base outcome)					
Y						
place_hosp_comm						
hospital	2.681737	1.086153	2.44	0.015	1.21245	5.931555
ethnicity						
BA	1.13015	.903581	0.15	0.878	.2358198	5.41616
BC	2.858161	2.397647	1.25	0.211	.5521191	14.79587
B0	1.319014	1.476968	0.25	0.805	.1469318	11.84086
M	2.802879	2.792242	1.03	0.301	.3977713	19.75038
U	1.333856	.9992901	0.38	0.701	.3071925	5.791713
WB	2.627077	1.90736	1.33	0.183	.6330931	10.9013
W0	.7448214	.5498398	-0.40	0.690	.1752591	3.165363
WP	.0001496	.2465575	-0.01	0.996	0	.
age_cat						
20-24	.0270861	.0338653	-2.89	0.004	.0023362	.3140434
25-29	.0322854	.0385568	-2.87	0.004	.0031079	.3353922
30-34	.0266693	.0315259	-3.07	0.002	.0026291	.2705325
greater than 34	.0181773	.0216773	-3.36	0.001	.0017556	.1882035
1.parity	.5765443	.2147424	-1.48	0.139	.2778371	1.196397
imd_3_score						
3rd and 4th deciles	.3334985	.1337037	-2.74	0.006	.1519976	.7317304
5th and 6th deciles	.3242065	.1695138	-2.15	0.031	.1163495	.9033973
least deprived	.1521133	.1101546	-2.60	0.009	.0367925	.6288899
1.any_risk	13.52597	5.594315	6.30	0.000	6.0133	30.42452
2.high_risk_num	.884051	.5090977	-0.21	0.831	.2859543	2.733116
highriskatbirth						
Y	1.919128	.8578905	1.46	0.145	.7990963	4.609023
mod_care_4						
standard	.1464305	.0688339	-4.09	0.000	.0582773	.3679284
partial CoC	1.076267	.4698522	0.17	0.866	.4574273	2.532318
imp_gstt						
imp	.105928	.057544	-4.13	0.000	.0365264	.3071955
_cons	5.085633	7.259272	1.14	0.255	.3099798	83.43662

Table 53 Subgroup analysis by model of care received

water_n	RRR	Std. Err.	z	P> z	[95% Conf. Interval]	
N	(base outcome)					
Y						
mod_care_4						
standard	.4573953	.6359986	-0.56	0.574	.0299719	6.98023
partial CoC	1.908898	2.520172	0.49	0.624	.143551	25.38395
ethnicity						
BA	.6385443	6255.169	-0.00	1.000	0	.
BC	.8834197	10929.67	-0.00	1.000	0	.
B0	.9368349	13940.78	-0.00	1.000	0	.
M	.4623652	7899.189	-0.00	1.000	0	.
U	5.83e+07	3.92e+11	0.00	0.998	0	.
WB	2.87e+08	1.93e+12	0.00	0.998	0	.
W0	5.76e+07	3.87e+11	0.00	0.998	0	.
WP	1.125721	114681.6	0.00	1.000	0	.
age_cat						
20-24	5.046443	137527.5	0.00	1.000	0	.
25-29	5.70e+08	1.47e+13	0.00	0.999	0	.
30-34	1.01e+09	2.61e+13	0.00	0.999	0	.
greater than 34	8.05e+08	2.08e+13	0.00	0.999	0	.
0.parity	2.324289	2.249529	0.87	0.384	.3487123	15.4922
imd_3_score						
most deprived	6.24e+07	4.80e+11	0.00	0.998	0	.
3rd and 4th deciles	6.85e+07	5.27e+11	0.00	0.998	0	.
5th and 6th deciles	1.52e+08	1.17e+12	0.00	0.998	0	.
1.any_risk	3.457546	3.558448	1.21	0.228	.4599658	25.99024
2.high_risk_num	4.74e-09	.0000329	-0.00	0.998	0	.
place_hosp_comm						
hospital	1.83737	2.190721	0.51	0.610	.1775405	19.01497
imp_gstt						
imp	.1549669	.1918727	-1.51	0.132	.0136874	1.754512
cons	5.14e-27	1.43e-22	-0.00	0.998	0	.
skintoskin_n	RRR	Std. Err.	z	P> z	[95% Conf. Interval]	
N	(base outcome)					
Y						
mod_care_4						
standard	.3250418	.1430419	-2.55	0.011	.1371984	.7700684
partial CoC	.364529	.1670374	-2.20	0.028	.1484867	.8949039
ethnicity						
BA	.5017495	.1889357	-1.83	0.067	.2398632	1.049567
BC	.3841826	.1783241	-2.06	0.039	.154682	.9541917
B0	.7480984	.4305328	-0.50	0.614	.2421529	2.311148
M	1.268956	.9229267	0.33	0.743	.3050407	5.278803
U	1.115925	.4375335	0.28	0.780	.5174812	2.406442
WB	.8326336	.3488405	-0.44	0.662	.3662978	1.892664
W0	1.197932	.435313	0.50	0.619	.5876469	2.442012
WP	243297.6	1.43e+08	0.02	0.983	0	.
age_cat						
20-24	.2578999	.299647	-1.17	0.243	.0264523	2.514429
25-29	.3234015	.3720194	-0.98	0.326	.0339294	3.08253
30-34	.4863582	.5540891	-0.63	0.527	.0521453	4.536252
greater than 34	.3490292	.3968912	-0.93	0.355	.0375782	3.241811
0.parity	.7846029	.1788664	-1.06	0.287	.5018813	1.226588
imd_3_score						
most deprived	.7741685	.3458667	-0.57	0.567	.3225177	1.858307
3rd and 4th deciles	.8315856	.3725853	-0.41	0.681	.3455675	2.001156
5th and 6th deciles	.6721141	.3378541	-0.79	0.429	.2509379	1.800196
any_risk	.5777763	.138364	-2.29	0.022	.3613406	.9238526
2.high_risk_num	.3505961	.1339963	-2.74	0.006	.1657607	.7415367
place_hosp_comm						
hospital	.6442761	.1724613	-1.64	0.101	.3812593	1.088739
imp_gstt						
imp	.2184279	.0703688	-4.72	0.000	.1161675	.4107065
_cons	136.5741	184.2682	3.64	0.000	9.703147	1922.314

SCatDisc_n	RRR	Std. Err.	z	P> z	[95% Conf. Interval]
N	(base outcome)				
Y					
mod_care_4					
standard	.1389409	.0678388	-4.04	0.000	.0533611 .3617719
partial CoC	.9486388	.4285075	-0.12	0.907	.3913871 2.299298
ethnicity					
BA	1.048833	.8356423	0.06	0.952	.2200513 4.999064
BC	2.43188	2.027885	1.07	0.287	.4744016 12.46631
B0	1.06184	1.177725	0.05	0.957	.1207704 9.335928
M	2.44514	2.445002	0.09	0.371	.344469 17.35631
U	1.107453	.8443308	0.13	0.894	.2485205 4.93501
WB	3.237092	2.46966	1.54	0.124	.725691 14.43971
W0	.6894873	.5255355	-0.49	0.626	.1547855 3.0713
WP	2.56e-06	.0266582	-0.00	0.999	0 .
age_cat					
20-24	.0400059	.0490954	-2.63	0.009	.0036348 .4420055
25-29	.0330012	.039958	-2.82	0.005	.0031005 .3529616
30-34	.0369932	.0440764	-2.77	0.006	.0035004 .3822139
greater than 34	.0260437	.0309014	-3.07	0.002	.00253 .2680934
0.parity	1.600552	.6372753	1.18	0.237	.7334246 3.492882
imd_3_score					
most deprived	1.85e+07	2.46e+10	0.01	0.990	0 .
3rd and 4th deciles	8734997	1.16e+10	0.01	0.990	0 .
5th and 6th deciles	5781756	7.67e+09	0.01	0.991	0 .
any_risk	11.27353	5.018927	5.44	0.000	4.710953 26.97809
high_risk_num	1.373738	.6497819	0.67	0.502	.5436047 3.47156
place_hosp_comm					
hospital	2.963069	1.309464	2.46	0.014	1.246154 7.0455
imp_gstt					
imp	.1490412	.0787175	-3.60	0.000	.0529342 .4196396
_cons	1.17e-07	.0001557	-0.01	0.990	0 .

Table 54 Subgroup analysis by place of antenatal care

IOL_n	RRR	Std. Err.	z	P> z	[95% Conf. Interval]
N	(base outcome)				
Y					
place_hosp_comm					
hospital	.872132	.200594	-0.59	0.552	.5556512 1.36887
ethnicity					
BA	1.453021	.502037	1.08	0.280	.738195 2.860044
BC	.8041955	.3464641	-0.51	0.613	.3456578 1.871013
B0	1.838314	.9614856	1.16	0.244	.6595067 5.124129
M	2.580451	1.376547	1.78	0.076	.9070269 7.341267
U	.9890368	.3294859	-0.03	0.974	.5148074 1.900116
WB	1.560144	.5632621	1.23	0.218	.7688709 3.165744
W0	1.212847	.3875289	0.60	0.546	.6483805 2.268725
WP	1354014	1.39e+09	0.01	0.989	0 .
age_cat					
20-24	.8869473	.6858624	-0.16	0.877	.1948395 4.037556
25-29	.760446	.5675042	-0.37	0.714	.1761308 3.283232
30-34	.6706957	.4940445	-0.54	0.588	.1583134 2.841406
greater than 34	.9630811	.7075812	-0.05	0.959	.2281814 4.06486
1.parity	.5413981	.1088246	-3.05	0.002	.3651065 .8028119
imd_3_score					
3rd and 4th deciles	1.09321	.229694	0.42	0.671	.7241988 1.650248
5th and 6th deciles	1.565214	.5012421	1.40	0.162	.8355766 2.931983
least deprived	1.197362	.4705191	0.46	0.647	.5542871 2.586522
1.any_risk	1.304333	.2020167	1.23	0.219	.8537795 1.992651
2.high_risk_num	2.984546	.9033502	3.61	0.000	1.649074 5.401526
mod_care_4					
standard	.9801375	.3050366	-0.06	0.949	.5325711 1.803833
partial CoC	.7556955	.2534507	-0.84	0.404	.3916198 1.45824
imp_gstt					
imp	1.014746	.2595983	0.06	0.954	.6146081 1.675393
cons	.8571549	.7039754	-0.19	0.851	.1713853 4.286918

preterm	RRR	Std. Err.	z	P> z	[95% Conf. Interval]	
0	(base outcome)					
1						
place_hosp_comm	3.117654	1.16976	3.03	0.002	1.494352	6.504339
hospital						
ethnicity						
BA	.9384902	.4790141	-0.12	0.901	.3451187	2.55206
BC	.893597	.5853479	-0.17	0.864	.2474941	3.226403
B0	1.045866	.774502	0.06	0.952	.2449801	4.465003
M	.3965176	.4408451	-0.83	0.405	.0448645	3.504464
U	.81556	.4101851	-0.41	0.685	.3043301	2.185581
WB	.9038519	.4967548	-0.18	0.854	.3078074	2.654089
W0	.804246	.3900185	-0.45	0.653	.3108847	2.000551
WP	7.82e-06	.0055062	-0.02	0.987	0	.
age_cat						
20-24	.2139007	.2344485	-1.41	0.159	.0249628	1.833005
25-29	.3066141	.3098567	-1.17	0.242	.0423047	2.222263
30-34	.4004675	.3942396	-0.93	0.354	.0616035	2.70038
greater than 34	.535752	.5114382	-0.65	0.513	.0824802	3.479651
1.parity	.9489834	.2948484	-0.17	0.866	.5161679	1.744722
imd_3_score						
3rd and 4th deciles	1.839143	.6445212	1.74	0.082	.9253691	3.655242
5th and 6th deciles	2.514583	1.150715	2.02	0.044	1.025515	6.16581
least deprived	1.77441	1.020699	1.00	0.319	.5746655	5.478894
1.any_risk	1.306583	.4317081	0.81	0.418	.6837408	2.496793
2.high_risk_num	2.507224	1.132755	2.03	0.042	1.034245	6.078033
mod_care_4						
standard	.8735958	.4364643	-0.27	0.787	.3281216	2.325874
partial CoC	.9651732	.5103799	-0.07	0.947	.342368	2.72093
imp_gstt						
imp	1.124727	.462486	0.29	0.775	.5023827	2.518024
_cons	.0854826	.0975961	-2.15	0.031	.0091213	.8011257
LBW						
0	(base outcome)					
1						
place_hosp_comm	2.093094	.7809887	1.98	0.048	1.007356	4.349051
hospital						
ethnicity						
BA	1.151253	.5692781	0.28	0.776	.4367813	3.034434
BC	1.042556	.6434137	0.07	0.946	.3110144	3.49477
B0	.956464	.7105963	-0.06	0.952	.2229852	4.102619
M	4.18e-07	.0004219	-0.01	0.988	0	.
U	.6225671	.3147047	-0.94	0.348	.2311575	1.676735
WB	.2649019	.1898786	-1.85	0.064	.0650061	1.079484
W0	.555894	.2848003	-1.15	0.252	.2036561	1.517353
WP	9.79e-08	.0004773	-0.00	0.997	0	.
age_cat						
20-24	2669349	3.65e+09	0.01	0.991	0	.
25-29	2637774	3.61e+09	0.01	0.991	0	.
30-34	1372865	1.88e+09	0.01	0.992	0	.
greater than 34	3008366	4.12e+09	0.01	0.991	0	.
1.parity	.5944525	.1925674	-1.61	0.108	.3150491	1.121647
imd_3_score						
3rd and 4th deciles	1.896899	.6714073	1.81	0.070	.9478975	3.796007
5th and 6th deciles	1.525638	.7607704	0.85	0.397	.5741085	4.054238
least deprived	.4908019	.4068028	-0.86	0.391	.0966908	2.491308
1.any_risk	1.090023	.3890654	0.24	0.809	.5415188	2.194107
2.high_risk_num	3.124548	1.41714	2.51	0.012	1.284471	7.600635
mod_care_4						
standard	1.406781	.7785511	0.62	0.537	.4754975	4.162025
partial CoC	1.118125	.6721072	0.19	0.853	.3442159	3.632029
imp_gstt						
imp	1.014211	.4275991	0.03	0.973	.4438692	2.317402
_cons	2.52e-08	.0000345	-0.01	0.990	0	.

SCatDisc_n	RRR	Std. Err.	z	P> z	[95% Conf. Interval]	
N	(base outcome)					
Y						
place_hosp_comm	3.152629	1.423914	2.54	0.011	1.300828	7.640572
hospital						
ethnicity						
BA	.9881491	.7953116	-0.01	0.988	.2040483	4.78533
BC	2.447642	2.081401	1.05	0.293	.462287	12.95938
B0	1.003787	1.147846	0.00	0.997	.1067283	9.44069
M	2.741195	2.773815	1.00	0.319	.3772327	19.91914
U	1.205837	.9340719	0.24	0.809	.264196	5.503651
WB	3.706372	2.8785	1.69	0.092	.8088642	16.98331
W0	.7116	.5462431	-0.44	0.658	.1580633	3.203619
WP	2.27e-06	.0222219	-0.00	0.999	0	.
age_cat						
20-24	.054129	.0659164	-2.39	0.017	.0049758	.5080358
25-29	.0443044	.0531337	-2.60	0.009	.0042485	.4636064
30-34	.0520998	.061471	-2.50	0.012	.0051586	.5261899
greater than 34	.0352123	.0414724	-2.84	0.004	.0035008	.3541811
1.parity	.6428372	.2594749	-1.09	0.274	.2914217	1.418013
imd_3_score						
3rd and 4th deciles	.4498243	.1793037	-2.00	0.045	.205943	.9825142
5th and 6th deciles	.2789954	.1790765	-1.99	0.047	.0792945	.9816369
least deprived	5.69e-08	.0000695	-0.01	0.989	0	.
1.any_risk	11.94497	5.450456	5.44	0.000	4.884093	29.21366
2.high_risk_num	.6051951	.3862152	-0.79	0.431	.1732555	2.113994
highriskatbirth						
Y	2.536549	1.240595	1.90	0.057	.9725923	6.615392
mod_care_4						
standard	.1346149	.0665135	-4.06	0.000	.0511108	.3545467
partial CoC	.9615219	.4419745	-0.09	0.932	.3905662	2.367139
imp_gstt						
imp	.0950751	.0570948	-3.92	0.000	.0293022	.3084846
_cons	2.833071	4.085579	0.72	0.470	.1677789	47.83849

26th September 2017 – SMH (Imperial) 3 Service users with complex social factors

Activity	Suggestions	Response
<p>Introduce Project, background to current maternity services, different models of care discussed. Gaps in knowledge discussed.</p>	<p>All felt subject area is important and agreed that filling gaps in knowledge would be useful to service users if findings were incorporated into future service development. They particularly felt the life-course aspect of the research was important as all felt that they had been ‘dropped’ by maternity services without a supportive postnatal network and this may have had an impact on their use of early years services available to them. They felt relationships with health visitors were an important topic area.</p> <p>Happy to remain involved throughout the project if not too many meetings and some can be over email/skype.</p> <p>Discussed some brief training/introduction to what research is. All 3 felt this would be useful going forward and increase confidence during meetings and involvement with dissemination.</p>	<p>Life-course research has been developed into ethics application in order to be able to follow the cohort through early years services.</p> <p>Relationships with other healthcare providers/ multi-disciplinary team added to logic model and initial programme theories</p> <p>Incorporated into future PPI plans.</p> <p>Currently in discussion with Mary Newburn re:training package. A pump priming event will be held in November to further discuss this option. Funding for training is included in NIHR grant.</p>
<p>Review Logic Model</p>	<p>Lots of questions around service activities/inputs followed by long discussion around how services might impact on outcomes. The group identified how other context might often be more relevant, for example home life/previous experience of services/school/work commitments/ family and peers’ previous experiences of services/ family and peer advice that differs from professionals/ cultural norms/ importance placed on health/ perceptions of how helpful and/or useful services are.</p> <p>Definition of complex social factors discussed at length- particularly how</p>	<p>See updated logic model and initial programme theories that reflect the PPI groups input.</p> <p>Discussed w/ Justin Jagosh (Realist methodology expert)– to consider a rapid realist review about women w/complex social factors needs/values/experiences of maternity services</p> <p>To discuss with supervision team</p>

	women may not identify their situation as 'complex', or to be 'at risk'.	
Discuss initial programme theories	Some programme theories developed through above discussion	See document w/programme theories for PPI informed 'if/then' sentences drawn from discussion and logic model
Review patient Information leaflet	<p>Language discussed at length, many words and terms seemed confusing or unnecessarily complex, for example 'stigmatizing', 'access and engagement', 'fragmented', 'clinical outcomes', 'anonymised'.</p> <p>Long discussion around title of project. The group felt that women may not relate to the title or find it offensive. Additional to this we discussed safety, for example for women experiencing domestic violence it would not be safe for them to take this information home as it may cause suspicion of disclosure. More appropriate, generic titles discussed that relate to the life-course nature of the study to add a sense of 'being an important part of something'. Suggestions included 'Project 20' – relating to the experience of the 20 families involved</p>	<p>Leaflet language/wording changed to reflect groups thoughts-see version 2 of patient information leaflet. This will be reviewed by GSTT PPI group.</p> <p>To discuss with supervision team</p>
Review consent and withdrawal forms	Happy with these, although they felt 'models of care for women experiencing complex social factors' was not an appropriate title for the information leaflet, it was important that this should be on the consent form and made clear why women had been chosen to participate.	This will be important to ethics application and full explanation of the project, including why potential participants are chosen will be made explicit prior to gaining consent.
Discuss future PPI plans	Plan to meet at each stage of project planning, not more than 3x a year. Group happy to liaise via email. Would prefer to meet in NW London rather than travel to GSTT. Discussed option of crèche if required.	Groups preference to be built into future PPI project plan. Likely to be a separate PPI group at each trust for ease of travel.

Other PPI activity:

Meeting with Mary Newburn 6/10/17

PPI pump priming event 29/11/17

Meeting with Ginny Brunton 26/9/17- happy to be included on expert panel

Joined Maternity Voice Partnerships

Meeting with young parents' midwives at GSTT – 5/10/17

16th November 2017- Coin Street Young Mums group

Activity	Suggestions	Response
Introduce Project, background to current maternity services, different models of care discussed. Gaps in knowledge discussed.	<p>3 women attending the group and 2 of their family members were happy to be involved in the project. They would like meetings to take place during or after the young mums group at Coin St. Decided on meeting twice a year to discuss project and gain their perspective on questions/methodology and findings.</p> <p>Also spoke to 2 family nurse practitioners who were interested in the project and would like to be kept informed of its progress.</p> <p>Discussed methods of keeping PPI groups informed of progress.</p>	<p>Incorporated into future PPI plans. They would like meetings to take place during or after the young mums group at Coin St. Decided on meeting twice a year to discuss project and gain their perspective on questions/methodology and findings.</p> <p>Invited to PPI pump priming event on 29th November 2017 w/ Mary Newburn</p> <p>Input/relationships with other support services added to logic model and considered for initial programme theories and rapid realist review</p> <p>Decided a newsletter emailed to PPI group is more accessible than a website. This will be sent out annually unless it is deemed necessary to inform group of something important, in which case an ad hoc newsletter will be sent out.</p>
Review PIS, consent and withdrawal forms	Good feedback from group re; study documents clarity. They felt the title is appropriate and content, although	Study documents sent to sponsor for review

	wordy, is understandable and gives an overview of the project.	
Rapid Realist Review questions discussed and search terms reviewed.	All felt the 2 review questions were appropriate and important. Again, lots of discussion around 'complex social factors' and 'socioeconomic deprivation'. Group asked what words they could think of to describe poverty.	Search terms updated

17th March 2018- CLAHRC South London, Active Involvement in Research Day (AIRD) 2018

Activity	Suggestions	Response
Presented project to approximately 100 patient participants/patient group representatives with opportunity for audience to ask questions and give feedback.	<p>Excellent feedback on usefulness and relevance of project, prompted a lot of discussion around how to define poverty and social risk.</p> <p>Discussed how effectiveness of referrals to support services and multi-disciplinary working will be measured</p> <p>Child health outcomes discussed for life-course research proposal- suggested measures include: A&E and outpatient hospital visits, inpatient stays in hospital, child deaths, self-reported health, 'flare-ups' in long term health conditions (for example asthma), attendance and participation at school, self-care, confidence and satisfaction with healthcare, compliance with evidence-based healthcare (for example immunisation programme)</p> <p>Audience indicated that they are often aware of research being carried out but are not informed of results or the impact of that research once completed. Advised to work with local organisations</p>	<p>Use of IMD score and level of education justified and felt to be reasonable to the audience.</p> <p>Audience suggested the project focuses on – was a referral made? was it appropriate? Was it requested? Was it discussed? Consent? Was the referral chased/ followed up? Did pt attend? Did they find it useful? These very useful suggestions will be incorporated into the evaluation of case study sites and the post-doctoral life-course research proposal.</p> <p>List of organisations made and to be contacted once initial findings available to disseminate.</p>

	<p>and patient groups in the dissemination of findings throughout the project.</p> <p>3 more members recruited to the projects PPI group who reflect the projects inclusion criteria of social risk factors</p> <p>Invited to speak at the Streatham PPG Network</p>	<p>To include PPI group and local gatekeepers in dissemination plan</p> <p>Added to PPI contact list and project directory</p> <p>Accepted- to arrange date</p>
<p>Workshop with patient representatives to map social determinants of health</p>	<p>Using an example of a patient with multiple health and social needs we worked together in small groups to map social determinants of health using a spider diagram to identify what is deemed of most interest and identifying research questions. These ideas were presented to the wider audience and ideas were compared and contrasted to make a map of social determinants and their perceived importance.</p>	<p>Physical environment, access to local facilities/support groups/leisure activities, social support, and joined up working between health and social care professionals was deemed particularly important to the patient representatives. These factors will be incorporated into the initial programme theories (see updated logic model) and tested through the proposed realist evaluation by integrating them into the interview guide for women and healthcare professionals.</p>

March 2019- Event organised- PPI in maternity using participatory appraisal (Report below by Emily Ahmed - Participatory Appraisal Trainer and researcher)

Purpose

To engage a diverse group of women including those with socially and/ or clinically complex pregnancy to discuss their experiences of maternity care and discover their views about services.

To make attendance at the workshop appealing and effective by providing play activities for young children with an experienced play leader in the same room.

To use Participatory Appraisal (PA) methods, led by a facilitator experienced in PA and two PA-trained, peer researchers, to make the workshop accessible, relevant and enjoyable for women to engage.

To hear women's answers to questions generated by a research project on different models of midwifery care and to find out whether they have other ideas about what would make maternity care more accessible, acceptable and relevant for themselves or women like them.

To introduce women to other maternity researchers and to Maternity Voices Partnerships (MVPs), multidisciplinary organisations that exist to make parents' voices heard in maternity care and improve quality of services.

To deliver, and enable researchers and MVP chairs to observe, a coproduction workshop with several good practice and innovatory elements: 1) held in a children's centre where women with young children attend regularly; 2) a purpose-designed meeting and play space with toys and an experienced play leader; *method* 3) co-facilitated between a researcher, a trained PA facilitator and peer researchers with the children's centre family support and outreach coordinator; 4) A reflection and de-brief session afterwards.

Methods

Participants to feel welcome, valued and enabled to participate actively throughout the workshop.

A practical icebreaker activity to bring individuals together as a group in a fun way from the start. Short clear introductions to the people and the tasks to be completed, with attention to safety (eg Fire exits/drill, kitchen for drinks and snacks, no hot drinks in the same room as the children; no photography inside the children's centre but some outside for those who are willing to participate) and comfort (toilets; come and go; drink and snacks after 90 minutes).

Working by moving around, drawing and writing on flipcharts/a timeline using coloured pens and stickers on the researcher's and facilitator's questions, with peer researchers/ others feeding back.

Participatory Appraisal facilitation: Using three-person Facilitator, Observer and Anti-saboteur. Running an audio-recorded de-brief for the team just after the workshop and reporting all in writing.

About Participatory Appraisal

Participatory Appraisal (PA) activities were facilitated by PA Trainer & Researcher Emily Ahmed and Peer Researchers Katrin McEntee and Abuk Deng. The aim of using these PA activities was to inspire and inform participants about peer research, introduce them to PA and facilitate an opportunity for users of maternity services to share their experiences of maternity care.

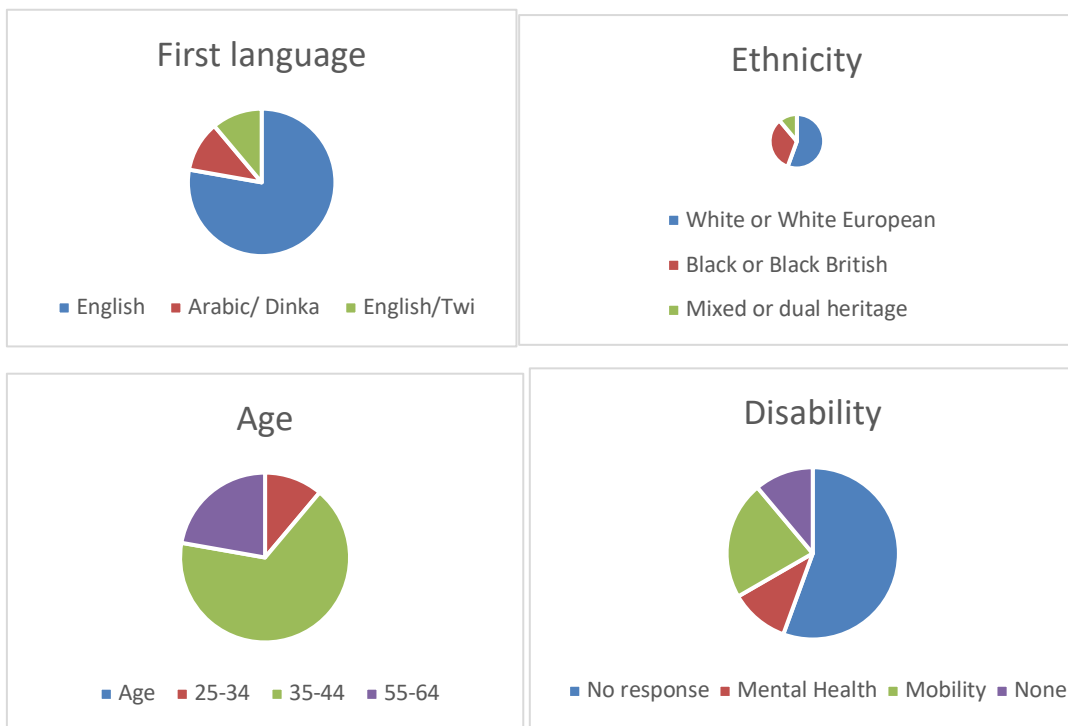
Participatory Appraisal (PA) is a community-based approach to qualitative research that values people as 'experts in the own lives'. It actively engages communities to identify, explore and find solutions to issues that affect them. PA uses visual and creative tools such as mapping, timelines and causal impact activities that enable people to overcome barriers to participation, explore their experiences, feelings and opinions. It's been used extensively in international development, health and education.

PA is usually carried out by a team of people, in which there are usually 3 main roles. The 'Facilitator' who introduces and guides the activities; the 'Anti-saboteur' who will problem solve issues/barriers to participant's engagement; and the 'Observer' who will record main conversations/comments that arise and observe the groups interaction with the activity.

Workshop Participants

There were 9 workshop participants (of which 5 were involved in co-facilitating). The participants were a mixed group of recent service users, volunteers and professionals working within maternity services. 77% had personal experience of using maternity services within the last 3 years. One participant was a recent maternity service user and parent from the Coin St Community Centre. The other participants were there in a professional capacity, they represented a mixed group of peer-researchers, Maternity Voice Partnership (MVP) chairs, midwives, academics, a senior Midwifery teaching fellow and patient/public involvement specialists.

All participants filled in an anonymous demographic form. The group represented people from boroughs across London (including Camden, Greenwich, Haringey, Islington, Lambeth, Lewisham and Richmond) and with personal and professional experience of a range of maternity units/hospitals (including Guys & St Thomas (GSTT), Kings College (KCL), Kingston, Queens Elizabeth's (QEH), University College (UCLH) and The Whittington. 100% of participants were female. The range of ages, ethnicities, first language spoken and disabilities are indicated below:



Workshop Activities

Appreciation Line- 'washing line of socks'

An appreciation line is a PA tool used to share and collect basic information on an issue. In this session we asked people to rate how good their maternity care was by placing a sock on the line which ranged from good to bad. People were encouraged to place a sock for each birth. The 'Observer' and 'Facilitators' noted any comments and conversations it sparked and this group gave further feedback and reflections during the session debrief. The line of socks created a visual representation that indicates a great variation in the experiences of maternity care.



Key themes:

Remembering birth: As participants commented on 'remembering the birth' and how experiences of maternity care can stay with you throughout your life and memories can be triggered by hearing the stories of others, or even just seeing a baby. People commented that it was hard to separate the actual birth from the maternity care.

Differences in care: The differences in experiences of good and bad care was visually represented on the line. This also stimulated conversations about how different services could be across areas/boroughs. Also how the quality of care and birth experiences varied with each birth/pregnancy. Some people commented that the 'bad things' can stick in your mind more.

Learning and reflections:

This activity worked well to get people into the right head space and promoted initial conversations. It was simple, fun and physical. Participants said they would like to use this activity with other groups.

Programme Theory - Dot Voting

Dot voting is a PA tool used for prioritisation and helping to focus a conversation. The group explored different programme theories presented by HRJ and used stickers for dot voting “which is most important to you” and discussed why. Each person had 3 dot votes. HRJ made collected feedback to inform her PHD research, in addition EA made observation notes from key conversations and comments by participants on the programme theory that elicited the most dots and conversation: ‘Continuity of care (COC) to build a trusting relationship with their midwife or small team of midwives’.

Key themes:

Relationships and trust: Participants spoke of the impact of building relationships and trust with a known midwife/team of midwives. That it can enable better conversations and means you are more likely to ask questions and expect an honest answer.

Decision-making: COC can make it easier for women to make decisions. A wide variation of opinions from different midwives may mean women are less likely to trust advice and could lead to women seeking less professional advice and information.

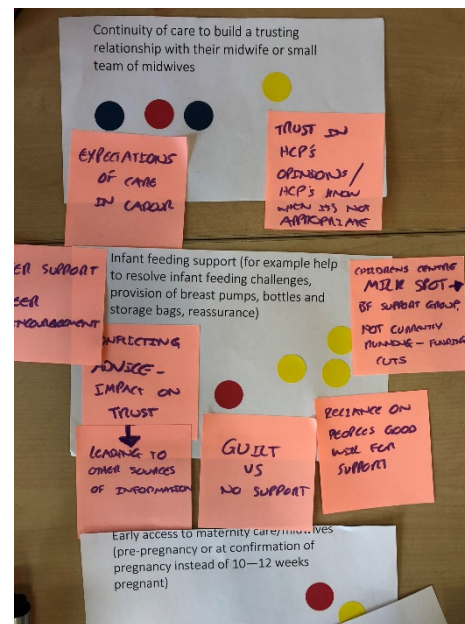
Importance of listening to women: This theme was raised as an important skill for midwives. The importance of listening to women and respecting their knowledge of their bodies and not making assumptions based on ‘perceptions’ of what it is to be in labour.

Expectations: The importance of women being given clear information and realistic expectations of what Continuity of Carer may mean, and that there may be gaps in the continuity.

Learning and reflections:

“There was a gap in continuity of carer from the antenatal care/birth/and postnatal care. I thought I’d have the same person because I was on a continuity of carer caseload team, but this is not always the case.” [Quote from participant](#)

This activity helped give direction for conversation, but would have been better in small groups.





Main memories of maternity care - Timeline

A timeline is a PA tool that can be used to explore the history of an area/service/experience. In this session we asked people to map out the main memories of their maternity care from finding out they were pregnant, antenatal, birth, postnatal (with the option of writing happy/sad faces on to specify positive/negative experiences).

Key themes:

Empowerment: Negative experiences often involved a lack of power where things were done ‘to’ or ‘for’ rather than ‘with’ or when women did not feel they had the information and knowledge needed to access support. Descriptions included “being told”, “being induced”, “being told off”, “not believed”, “pressure to”, “wouldn’t let me”, “trying to force me”. In contrast positive experiences described “empowering” births with kind and supportive midwives.

Importance of listening to women: This theme was raised again as women gave examples of when they felt they had or hadn’t been listened to. Some positive examples of relaxed and supportive atmospheres were specified as the woman being in her own home/in community.

Emotions: Many comments described memories of emotions and mental health. Feelings of anxiety or feeling alone as well as joy and happiness. References to ‘mental trauma’ and need for ‘counselling’ was a reminder of how emotional maternity experiences can be.

Learning and reflections:

The group only spent 10 minutes doing this, yet the memories it triggered and the comments written demonstrated just how powerful this tool can be.

Peer researchers experience

The group heard a short presentation about a Participatory Appraisal peer-research project done within the North

“Midwives at home birth all amazing, had the best danced, felt relaxed” [Quote from participant](#)



Central London Better Births programme (2018). Two of the peer-researchers from that project

and shared their experiences of being involved in the project and of their experience of maternity care.

Key themes:

Empowerment: The peer-researchers said they found their involvement in the project an empowering experience.

Importance of listening to women: The project enabled them to hear from seldom-heard women who “are not usually given a space to speak”.

Humanity: They found that what can change someone’s experience is often very simple and highlighted the importance of “being treated like a human being”.

Learning and reflections:

The involvement of the peer researchers in co-facilitating session activities and in sharing their experience was a great introduction of the Participatory Appraisal approach and the value of peer researchers. It stimulated further interest in looking at how this methodology can be used.

Reflections & Learning

Session Debrief

At the end of a PA workshop session facilitators usually do a written and/or audio recorded debrief. It is a chance for the team to capture any comments, reflections and learning from the session. This acknowledges the importance of the verbal and non-verbal communications from the session and creates an opportunity to record them. The debrief was observed by the other maternity professionals and they were then invited to give their feedback at the end.

What went well

A great mix of people and shared diverse experiences of PPI in maternity research

Opportunity to showcase the PA tools and how they generate and can direct conversation

The group enjoyed the opportunity to speak about their own experiences

Participants seemed comfortable, at ease and were able to contribute confidently

“I didn’t know who to speak to about my experience. I got involved in the Better Births project and this gave me an opportunity to speak to other women, hear their experiences and share my own. It also gave me an opportunity to speak to midwives and tell them about my experiences” [Quote from peer-researcher](#)

Created a positive atmosphere of sharing and listening

What didn’t go so well

Did not have as many parents from Coin St Centre attending as had hoped for

Needed more time for activities

It was challenging having children in the same room



What we learnt

What is important to women and what makes a difference to maternity care

New concepts regarding programme theories such as expectations of services and the consequences of women feel let down by a service that promises 'Continuity of Carer'

The impact and power of doing a structured debrief session

Impact of sharing experiences and vulnerability to model sharing stories

What we will do differently

Break up into smaller groups to enable more voices to be heard

Run the next session during a Stay & Play session to ensure more users are present and have play practitioners to support with children

Focus more on how to advertise and with support of a 'gate-keeper' local service user to help

Explicitly offer lunch as an incentive

Next steps

A Whats App Group was set up for participants to share feedback, ideas and plan future activities

Another workshop will be planned at Coin St Centre using this learning

This report will be submitted to CLAHRC South London

Learning from the workshop will be shared at the Normal Birth Research Conference

Participants plan to use learned PA tools to use for other facilitating other PPI groups

Biographies of workshop facilitators

Mary Newburn, Consultant, service user researcher / Public & parent involvement lead for Maternity theme, King's College London, CLAHRC South London. Maternity Transformation Stakeholder Council member. Mary had her first two children in Cumbria when she was 18 and 19. She had two more in London when she was in her 30s. She now has four grandchildren. She worked as an antenatal teacher and then in a policy role for the maternity charity, NCT (formerly known as the National Childbirth Trust). Her academic background is Sociology and Public Health: Health services research. Now she works with King's College London supporting patient and public involvement in maternity research.

Hannah Rayment-Jones, Midwife Researcher. Hannah is a midwife, mum of two young children, and current PhD student at King's College London. Her clinical background involved caring for pregnant women with social risk factors throughout their pregnancy birth and postnatal period. She has used this experience to develop a research project that aims to improve the pregnancy outcomes and experiences for women who live socially complex lives, this research is funded by the National Institute for Healthcare Research. She is committed to ensuring service users voices shape how this research is carried out and is currently exploring how to widen participation in the design and dissemination of research to reflect the population of women her own research is focusing on.

Emily Ahmed, Empowerment and Engagement Project Manager at NEL CSU. Emily is a mum of two young children and has a wide range of experience in maternity research and patient involvement. In 2018 she led the design, development and delivery of the patient and public involvement strategy for North Central London (NCL) Better Births maternity transformation. A key aspect of this was her innovative approach to Participatory Appraisal peer-research and engagement in service design, on which she presented at the 2018 NHS EXPO, sharing learning on how to ensure diversity in engagement. She also works as a Participatory Appraisal Trainer and Facilitator, Social Enterprise Mentor and Action Learning Set Facilitator. Emily believes that valuing lived experience, shared decision-making and co-creating services are the most effective ways to improve individual and strategic outcomes in healthcare. Her academic background is in Applied Anthropology, Community and Youth Work.

Abuk Deng, recent maternity service user and Better Births Peer Researcher. Abuk is a single mother who works hard to support her four girls 16yrs, 15yrs, 12yrs and 23 months old (all born at University College Hospital). She currently works part time as a Sale Assistant at Marks and Spencer and is an active volunteer in her local community. This has included supporting families through Home Start Camden and volunteering for many years with South Sudan Women Skills Development as an Events Manager. In 2018 she trained in Participatory Appraisal and worked with NCL Better Births as a peer-researcher finding out what women and families need and want

from maternity services in North Central London. She is a graduate in Business Management and Human Resources Management.

Katrin McEntee, recent maternity service user and Better Births Peer Researcher. Katrin has a two year old daughter and her own experience of maternity services, as well as her passion for supporting people to be heard, motivated her to get involved in the Better Births project. In 2018 she trained in Participatory Appraisal and worked with NCL Better Births as a peer-researcher. She also works as a Human Rights Officer for the British Institute of Human Rights and one of her key roles is to empower others to understand and use their rights and to encourage professionals to work in a person centred way. She is also a qualified dance movement psychotherapist and has worked with women fleeing domestic violence as well as women with alcohol addiction.

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ORIGINAL ARTICLE

How do women with social risk factors experience United Kingdom maternity care? A realist synthesis

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Abstract

Background: Echoing international trends, the most recent United Kingdom reports of infant and maternal mortality found that pregnancies to women with social risk factors are over 50% more likely to end in stillbirth or neonatal death and carry an increased risk of premature birth and maternal death. The aim of this realist synthesis was to uncover the mechanisms that affect women's experiences of maternity care.

Methods: Using realist methodology, 22 papers exploring how women with a wide range of social risk factors experience maternity care in the United Kingdom were included. The data extraction process identified contexts (C), mechanisms (M), and outcomes (O).

Results: Three themes, Resources, Relationships, and Candidacy, overarched eight CMO configurations. Access to services, appropriate education, interpreters, practical support, and continuity of care were particularly relevant for women who are unfamiliar with the United Kingdom system and those living chaotic lives. For women with experience of trauma, or those who lack a sense of control, a trusting relationship with a health care professional was key to regaining trust. Many women who have social care involvement during their pregnancy perceive health care services as a system of surveillance rather than support, impacting on their engagement. This, as well as experiences of paternalistic care and discrimination, could be mitigated through the ability to develop trusting relationships.

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Conclusions: The findings provide underlying theory and practical guidance on how to develop safe services that aim to reduce inequalities in women's experiences and birth outcomes.

KEY WORDS

experiences of care, maternity services, socioeconomic status and ethnicity

1 | INTRODUCTION

Women living in areas with the highest levels of poverty in the United Kingdom are 50% more likely to experience a stillbirth or neonatal death.^{1,2} These women experience increased rates of premature birth, low birthweight, cesarean, and maternal death.³⁻⁶ As socioeconomic status decreases, women are more likely to report that they were not treated respectfully, that they were not spoken to in a way they could understand during their maternity care, and that their concerns are not listened to.^{5,8} Health inequalities between socioeconomic groups are well documented^{7,8} and have been a key priority in many international and United Kingdom initiatives, including the World Health Organization's (WHO) "Global strategy for women's and children's health"⁹ and the "Better Births" National Maternity Review.¹⁰

Lower socioeconomic status is often accompanied by other complex social factors associated with adverse outcomes^{5,11-15} (Table 1). It is hypothesized that a lack of antenatal care and engagement with maternity services is directly linked to poor maternal and neonatal outcomes; therefore, policies are often focused on improving access to care.^{9,16-18} A secondary analysis of the United Kingdom's National Maternity Survey⁵ showed that the most deprived women in the United Kingdom were 60% less likely to have received any antenatal care when compared to the

least deprived women. Reviews of maternal and neonatal deaths^{2,4,14} have found that women with social risk factors present real challenges for maternity services, with communication lapses between hospitals and the community health care setting.

Marmots' review of the social determinants of health encourages the development of partnerships, with those affected by social inequities working with their health practitioners.¹¹ Central to this approach is the development of a system that empowers women to have a real say in decisions that affect their lives, and that recognizes their fundamental human rights.^{18,19} These values are echoed in the National Institute of Clinical Excellence (NICE) guidelines for women with complex social factors,²⁰ which called for a reorganization of maternity services to improve antenatal care for this population and identified gaps in evidence with respect to effective service provision. Continuity of caregiver is a key government priority in an attempt to improve poor outcomes for women, with priority to be given to black and minority ethnic women alongside those living in the most deprived areas.^{16,17} This is currently a far cry from the reality of a fragmented United Kingdom maternity system. A large, national United Kingdom survey²¹ reported 65% of women did not have a named midwife during pregnancy, and subgroup analysis of disadvantaged groups found inequalities in access to care, information, and interactions.²¹

Compared to women receiving standard care, a recently updated Cochrane review²⁴ found that women who received continuity of care from a known midwife experienced significantly fewer preterm births, fetal losses, neonatal deaths, and clinical interventions and greater satisfaction. The review does not report on whether outcomes differed for socially disadvantaged women but recommended that future research should explore this population and the mechanisms underpinning the improved outcomes. Positive outcomes, including less clinical intervention, shorter hospital stays, fewer neonatal unit admissions, and increased liaison with multidisciplinary services for women with social factors, have been associated with continuity of care models in the United Kingdom.^{25,26} There remains a paucity of evidence and professional agreement with respect to what models of care are effective in meeting specific population needs, and why some are more effective than others. Group antenatal care has also been identified as a possible way of reducing health inequalities for socially disadvantaged women, but the evidence to date is limited.^{27,28} It is not known

TABLE 1 Social factors associated with increased risk divided into two groups^{2-5,13,15,16,19,22,25}

Women who find services hard to access	Women needing multiagency services
Socially isolated	Safeguarding concerns
Poverty/deprivation/homelessness	Substance and/or alcohol abuse
Refugees/asylum seekers	Physical/emotional and/or learning disability
Non-native language speakers	Female genital mutilation
Victims of abuse	HIV-positive status
Sex workers	Perinatal mental health
Young mothers	
Single mothers	
Traveling community	

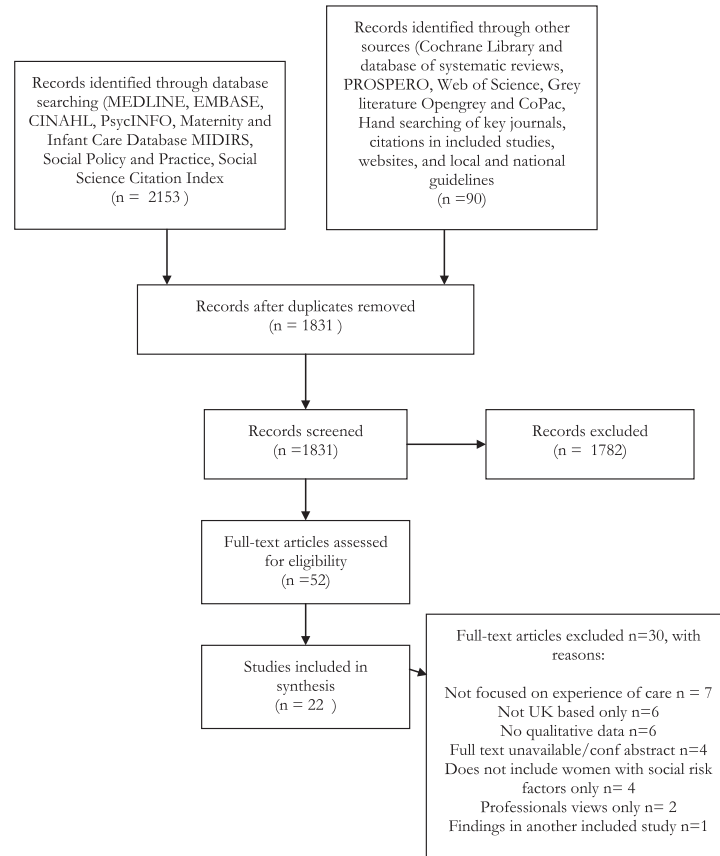


FIGURE 1 PRISMA Flow diagram

people respond to interventions using contexts, mechanisms, and outcome configurations,³⁰ for example, how women in a particular context respond to an aspect of their maternity care (the mechanism), and what is the outcome of this response. This was thought to be the most appropriate methodology for the review question posed as it not only recognizes the complexity of social risk factors and maternity services, but also allows the structured development of program theories to break these complex phenomena down into more manageable hypotheses to test what works in improving women's experiences of maternity care.

This synthesis was undertaken through regular collaboration with a patient panel consisting of recent maternity service users with social risk factors, and a panel of international experts in health inequalities and maternity care. Both panels

advised on the review aims, search criteria, data extraction process, analysis, and identified gaps in the literature.

2.1 | Literature search

This realist-informed, systematic synthesis of qualitative primary studies focused on the maternity care experiences of women with social risk factors using Pawson's³⁰ 5 stages of a realist synthesis. Two independent researchers reviewed 1830 papers by title and abstract according to the search strategy and inclusion criteria (Table 2). Fifty-two full-text papers were reviewed and 22 papers included (Figure 1) (See Table S1 for an overview of included studies). Included studies were quality-appraised using a validated checklist⁵³ and generally assessed as high quality (Table 3). Although it was important to report on the quality of the studies, they were not weighted

TABLE 3 Quality assessment of included papers in synthesis of how women with social risk factors experience United Kingdom maternity care⁵⁴

References	Was there a clear statement of the aims of the research?		Was the research design appropriate to address the aims of the research?		Was the recruitment strategy appropriate to the aims of the research?		Was the data collected in a way that addressed the research issue?		Has the relationship between researcher and participants been considered?		Have ethical issues been taken into consideration?		Was the data analysis sufficiently rigorous?		Is there a clear statement of findings?		How valuable is the research?	
	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N
Alshawish et al. 2013 ³¹	Y		Y		Y		Y		Y		Y		Y		Y		Y	
Baalam and Thomson 2018 ³²	Y		Y		Y		Y		N		Y		Y		Y		Y	
Beake et al. 2013 ³³	Y		Y		Y		N		N		Y		Y		Y		Y	
Bick et al. 2017 ³⁴	Y		Y		Y		Y		N		Y		Y		Y		Y	
Binder et al. 2012 ³⁵	N		Y		N		Y		N		Y		Y		Y		Y	
Bradbury-Jones et al. 2015 ³⁶	Y		Y		Y		Y		N		Y		Y		Y		Y	
Callaghan et al. 2011 ³⁷	Y		Y		Y		Y		N		Y		Y		Y		Y	
Doeherty et al. 2012 ³⁸	Y		Y		Y		Y		N		N		Y		Y		Y	
Goodwin et al. 2018 ³⁹	Y		Y		Y		Y		N		Y		Y		Y		Y	
Feldman et al. 2013 ⁴⁰	Y		Y		N		Y		N		N		Y		N		Y	
HESTA 2018 ⁴¹	N		Y		N		Y		N		N		N		N		Y	
Hatherall et al. 2016 ⁴²	Y		Y		Y		Y		N		Y		Y		Y		Y	
Joneen and Redshaw 2013 ⁴³	Y		Y		Y		Y		N/A		Y		Y		Y		Y	
Lephard and Haith-Cooper 2016 ⁴⁴	Y		Y		Y		Y		N		Y		Y		Y		Y	
Malouf et al. 2017 ⁴⁵	Y		Y		Y		Y		N		Y		Y		Y		Y	
McLeish and Redshaw 2018 ⁴⁶	Y		Y		Y		Y		N		Y		Y		Y		Y	
Montgomery et al. 2015 ⁴⁷	Y		Y		Y		Y		N		Y		Y		Y		Y	
Moxey et al. 2016 ⁴⁸	Y		Y		N		Y		Y		Y		Y		Y		Y	
Phillimore 2016 ⁴⁹	Y		Y		Y		Y		N		Y		Y		Y		Y	
Phillips and Thomas 2015 ⁵⁰	Y		Y		Y		Y		Y		Y		Y		Y		Y	
Puthussery et al. 2010 ⁵¹	Y		Y		Y		Y		N		Y		Y		Y		Y	
Thomson et al. 2013 ⁵²	Y		Y		Y		Y		N		Y		Y		Y		Y	

Abbreviations: N/A, Not applicable; N, No; Y, Yes.

according to quality during the analysis as the purpose of this synthesis was to collate program theories and CMO configurations ready to test in a subsequent realist evaluation.

2.2 | Data extraction

A data extraction tool was devised and completed for each paper to identify explanatory contexts (C), mechanisms (M), and outcomes (O), and to develop program theories arising from these configurations. Program theories were constructed using “if....., then...” sentences. For example, “migrants who arrived in the country late in their pregnancy or had re-located or been re-dispersed from elsewhere in the UK (C), were unable to register with a GP in sufficient time to access maternity services before birth (O)” was converted into the following program theory: “If women who arrive in the country late in their pregnancy or have been re-located or re-dispersed from elsewhere in the UK are able to book maternity care directly with a midwife, then barriers to early access will be overcome and those who have difficulty registering with a GP will not be excluded.”

This process ensured transparency in converting findings into tangible, testable hypotheses or “program theory.” A total of 354 program theories were constructed from the findings of the 22 included studies. This collected the voices of 936 women with various social risk factors. Program theories were organized using data analysis software⁵³ to uncover themes and develop middle-range theories as recommended by Forster et al⁵⁵ to increase transparency in decision making. This process enabled similar theories to be condensed, the extraction of theories specific to certain social risk factors, and the identification of conflicting theories. These conflicting theories give insight into what works in different contexts and for different populations.⁵⁶ Once all papers had been classified according to the social risk factors included and the model of maternity care received and similar program theories condensed, 85 program theories remained. These final theories were grouped into the most commonly occurring themes and further refined into eight CMO configurations.

Middle-range theories help conceptualize complex reality so that empirical testing of the more specific program theories becomes possible and generalizable.⁵⁷⁻⁵⁹ This conceptualization aided the development of the final CMO headings and has enabled a theoretically informed approach to the design of the subsequent realist evaluation, with the theories incorporated into the interview guides.

3 | RESULTS

The full findings of this synthesis are detailed in 85 program theories (45 general theories and 40 that are specific to different social risk factors) and referenced to relevant included studies to demonstrate transparency (see Table S2). For the

purpose of presenting a concise overview, the program theories were refined into eight overarching CMO configurations under three thematic headings (Table 4): System Resources, Relationships, and Candidacy. The CMO configurations are not ordered in relation to importance as all are thought to be important in impacting outcomes depending on the specific contexts identified. Quotes from women are included to add meaning and illustrate findings in the included studies.

The Resource theme included (a) access to maternity services and (b) appropriate antenatal education, (c) interpreter services, (d) practical support, and (e) continuity of care, these were particularly relevant for women who are unfamiliar with the National Health Service (NHS) system and those living chaotic lives. For women with experience of trauma, abuse, and discrimination, or those who lack a sense of control, (e) the ability to build a relationship with a health care professional was key to regaining trust in the system and control over what happens to them and their baby. The “Candidacy” theme recognized that women with social risk factors are more likely to experience paternalistic care and highlighted the impact of (f) health care professionals’ assumptions based on race, class, ability, age, and other sources of oppression. This might be overcome by placing services in local communities where health care professionals are immersed in local cultures and recognize the strengths and assets held by women and their communities. Lastly, many women with social risk factors perceive health care services as a system of (g) surveillance rather than support, impacting on engagement and meaningful support. This could be mitigated through the ability to develop trusting relationships, health care professionals’ knowledge of safeguarding and reporting mechanisms, and processes put in place to ensure women’s safety.

4 | DISCUSSION

This synthesis systematically identified qualitative literature that focused on the experiences of maternity care in the United Kingdom for women with social risk factors and used realist methodology to uncover the contexts and mechanisms that led to positive or negative experiences. These contexts and mechanisms were coded and developed into CMO configurations, providing a set of program theories to test and compare women’s experiences in future research and evaluation of services. The findings contribute to knowledge by providing detailed insight into how different social risk factors affect women’s ability and willingness to access and engage with services. The realist methodology takes the findings of the 22 included papers deeper by unearthing potential mechanisms that may improve or worsen experiences.

Twenty of the 22 included studies reflected the views of standard maternity care in the United Kingdom reflecting the availability of specialist models of care for women with

TABLE 4 Context, mechanism, and outcome configurations. Results of realist synthesis of literature exploring how women with social risk factors experience United Kingdom maternity care

	Context	Mechanisms	Outcomes	Supportive quotations
CMO Configuration 1—access	Women who are unfamiliar with the NHS system, do not speak English and/or do not have a permanent United Kingdom address, asylum seekers, refugees, trafficked women, those experiencing domestic abuse	<ol style="list-style-type: none"> 1. Written information (in a woman's preferred language) about how to access health services 2. Direct access to maternity services rather than referral from a general practitioner (GP) 3. The ability to access antenatal care without extensive documentation and without fear of disclosure to agencies or individuals who might put them at risk (eg, border agencies or embassies) 4. Early access to maternity care (from conception/confirmation of pregnancy) 5. Ability to rebook missed appointments with ease and without reproach 	Earlier access to services; avoidance of denial of service, increased candidacy, increased autonomous choice through early access to safe abortion and family planning services	<p>"When I was 4-5 months pregnant... I snuck out of the house and went to the local GP [family doctor] practice. When I arrived, they told me I needed a passport and proof of address. I explained that I didn't have this documentation and they turned me away."³⁴</p> <p>"They said to me, until we are sure that it's safe you see, to carry on with the pregnancy, then you can have a booking"⁴²</p>
CMO Configuration 2—interpreter services	Women who do not speak English and those who have difficulties communicating (learning or physical disabilities)	<ol style="list-style-type: none"> 1. Uncomplicated telephone access to interpreter services or online provision to register with services, arrange or reschedule appointments, organize travel to appointments, and to access advice from a health care professional 2. Access to properly translated, language appropriate materials 3. Choice of interpreter, for example, a female, an anonymous, or a trusted interpreter. <p>Access to interpretation services throughout antenatal, intrapartum, and postnatal period, including emergency admissions</p>	Earlier access to services, avoidance of denial of service, improved safety, flexibility, inequity in information received, increased confidence in help-seeking and self-disclosure	<p>"The problem we asked about an interpreter but unfortunately I didn't see her during my pregnancy 9 months."³¹</p> <p>"I asked them, '[Can] we cancel the meeting until we get an interpreter... I didn't understand you and you didn't understand me'. She said, 'No, it's OK, we can go on—you understand English'."⁴⁴</p>
CMO Configuration 3—antenatal education	Women who may have limited education, unfamiliar with the system, language barriers, learning difficulties, caring responsibilities, no support, engage in "risky" behaviors	<ol style="list-style-type: none"> 1. Culturally sensitive antenatal education (eg, child-friendly settings and classes without the presence of men), with an opportunity for women to openly discuss cultural beliefs and advice received elsewhere 2. Understandable, evidence-based information that is well translated, about maintaining a healthy pregnancy, the impact of risky behaviors, routine procedures, and help-seeking/support seeking 	Increased candidacy, engagement with services, knowledge, choice, informed consent, help-seeking, and lifestyle/behavior change	<p>"I never attended the antenatal class, because no one takes care of [my] other two kids. Where [can I leave] them?"³³</p> <p>Not enough information provided they give you leaflets and tell you some risks, but I would have liked to have talked to someone. It is different reading it than talking to someone and sometimes you don't understand the leaflets. So talking is better.²⁵</p>

(Continues)

TABLE 4 (Continued)

	Context	Mechanisms	Outcomes	Supportive quotations
CMO Configuration 4—practical support	Women with a lack of resources/money/support, unfamiliarity with the United Kingdom culture and systems, frequent dispersal, socially isolated, learning disabilities, drug/alcohol abuse, undergoing child protection assessments	<ol style="list-style-type: none"> 1. Provision of new skills/resources, for example, infant feeding support, provision of breast pumps, bottles and storage bags, reassurance, and motivation to abstain from illegal substances 2. HCP's knowledge, time, and skill to coordinate and facilitate practical support to meet women's wider needs, for example, providing information about statutory procedures, contacting social workers, writing letters on women's behalf, coordinating and attending meetings with other statutory agencies (eg, social care, housing departments, home office) 3. HCP's knowledge of maternity benefits and local support available to enable the provision of advice around practical matters such as housing, employment, education, and care of other children and family members 	Women better prepared and supported for the challenges of parenthood and able to demonstrate their ability in parenting assessments, evidence of care and empathy from HCP's, increased agency, value in engaging with services, avoidance of further financial hardship, distress, and isolation. Development of a supportive network	<p>"[They] came to meetings when Social Services came to see us on the ward. They'd chat to us before and afterwards. They'd give us private rooms... to go and talk in if we needed to, away from the ward. They were fantastic emotionally, they were really supportive."³²</p> <p>"I have asthma and I couldn't afford medication. I struggled when I was pregnant. I felt like I couldn't breathe and worried I'd harm my baby. My advocate helped me get the HC2 form so I could have my medication for free. I wish I'd known from the start."³⁴</p>
CMO Configuration 5—Continuity of care	Women living chaotic lives who struggle to access and engage with current, fragmented maternity services, social isolation, lack of resource, frequent dispersal, temporary accommodation, lack of support, complex social and/or medical history, disempowered, previous trauma or adverse experiences with services	<ol style="list-style-type: none"> 1. Access to a known midwife or small team of midwives 24/7 by means of a phone call, text message, or free technology (freephone number, WhatsApp, Skype, etc) 2. Continued supportive presence throughout pregnancy and the perinatal period, with a known midwife, GP, or other HCP who will coordinate communication across different trusts and services such as GP, gynecology, maternity services, social care, and mental health services 3. HCP's work in a small geographical area where they are visible and become known by other members of the community, religious networks and other "gatekeepers," local charities, food banks, befriending programs, and support services 4. Flexible, needs-led care, where the time and place of appointments is co-planned (eg, at home, community, or a hospital setting, not at school times for single mothers, outside working hours for women working illegally) 	Personalized, holistic care, increased engagement, trust, agency, candidacy, empowerment, sense of control, support, community integration, safety. Women are less likely to have to repeat their history and experience a variation of responses/advice, fragmentation/disassociation between services, and reduce stress/anxiety	<p>"Every time I saw the midwife during pregnancy and labour, I felt that I was just being processed, there was no opportunity to develop a relationship."³⁴</p> <p>"Have one midwife—I think it would be much better for me. You understand... so I can... because the midwives there is different, and I don't know how to open to them. I can't be open up to a lot... every different people. When it's one person, then you can open up."³⁷</p>

(Continues)

TABLE 4 (Continued)

	Context	Mechanisms	Outcomes	Supportive quotations
CMO Configuration 6—relationship/trust building	Women with previous and/or current experience of trauma, abuse, and discrimination, perceptions of previous manipulation and coercion by professionals, social isolation, lack of resources and support, limited education, unfamiliarity with systems and processes, complex social and/or medical history, disempowered, lack of sense of control, social care involvement/parenting assessments	<ol style="list-style-type: none"> 1. Development of a trusting relationship with a known HCP through continuity, open discussion and story sharing, and the provision of meaningful, relevant information 2. Provision of advocacy through known HCP attendance at meetings, and other forms of emotional support during interactions with social care 3. Women are informed of their right to choice through education and provision of the evidence-based information required to exercise that choice 4. The perception of a health care professional to be respectful, understanding, kind, and helpful. Conflicting theory: It is more important that the whole service is perceived as safe, respectful, understanding, and kind, rather than one trusted HCP in a wider toxic environment 	<p>Meaningful interactions, self-disclosure, increased perceptions of trust, empowerment, control, support, self-confidence, shared decision making, knowledge of unfamiliar processes. Restore previously broken trust in systems/services and quash the belief that accessing care equates to relinquishing control and feeling violated.</p> <p>Avoidance of labeling women or making assumptions about their needs based on a perceived cultural background</p>	<p>"I had built a relationship with her. I felt looked after and I had confidence in who was providing my care."⁵²</p> <p>"I would ask why was that and they were like, 'Oh, it's our choice. It's our decision.' And just felt like we didn't have a say in it how... we could have our son... felt like we were invisible really... no need for us to even be there because they'd already made a decision."⁴⁵</p>
CMO Configuration 7—overcoming assumptions	Women who experience disadvantage, discrimination, stigma, and stereotyping based on their race, class, ability, age, and other sources of oppression	<ol style="list-style-type: none"> 1. HCP's recognition of strengths and assets held by women and communities and respect for women's expertise of their own body, needs, and baby 2. Recognition that women with social risk factors are more likely to experience paternalistic care, as passive recipients 3. Women are encouraged to raise concerns in an easy and confidential manner and escalate those concerns if they are not satisfied with the response 4. HCP's work within a community where they are immersed in local cultures and acknowledge the importance of culture and the influence of family members on women's experience of pregnancy 	<p>Women will not feel their cultural needs are being disregarded in favor of the Western medical model and inequities in access, engagement, the uptake of screening, and antenatal education will be reduced.</p> <p>Increased perception of being cared for on a personal level and involved in decision making. Avoidance of disempowerment, feelings of being pressurized, ignored, and excluded, long-lasting psychological trauma, and increased control, bonding between a mother and her baby, improved self-confidence, and potential adverse outcomes could be avoided</p>	<p>"I were drip grey, my veins were closing up, and [the doctor] said, 'Right, we'll break your waters now.' I said, 'There's no way you can break my waters now. I need to go on a glucose drip. I'm really quite poorly,' and he said, 'Oh, are you a doctor now?' ... And I said, 'No I'm not a doctor, but I have lived with this condition since I were 15,' and he actually looked at me and said, 'What condition?'"⁴⁶</p> <p>"Sometimes there is quite a lot of jargon and when I go to my appointments you know when I'm being measured and stuff like that and they're checking for the foetal position and stuff they're not really telling back to me. I've got to come back and check my notes."³⁸</p>

(Continues)

TABLE 4 (Continued)

	Context	Mechanisms	Outcomes	Supportive quotations
CMO Configuration 8—surveillance	Women who fear judgment of health care professionals or perceive maternity services as a system of surveillance rather than support, for example, those with immigration issues who are worried that they can be tracked by authorities and their babies removed if they registered with services, trafficked women, young mothers, those with disabilities, women experiencing abuse, drug, and alcohol abuse, known to social care/undergoing parenting assessments	<ol style="list-style-type: none"> HCP's knowledge about reporting mechanisms for women with immigration issues, including processes of payment as a non-United Kingdom resident, and ability to signpost women to confidential advice HCP's ability to explain the reasoning behind reporting safeguarding concerns, the process of assessment, and discussion of what "meaningful support" means to the woman Women's involvement in the process of reporting safeguarding concerns in an open manner that encourages them to identify their needs Processes are in place that protect the woman from being put at risk of harm, for example, women whose abusers or traffickers may control or observe access to services are given the opportunity to self-disclose in safe environment and disclosures are followed up safely and sensitively 	Increased access and engagement, self-disclosure, trust, safety, development of meaningful support networks, improved long-term outcomes for mother and child. Decreased intergenerational vulnerability, discrimination, disconnection, fear, and anxiety	<p>"I thought if you said something how you'd exactly feeling, and if you was feeling a bit down that particular day, that they would use that against you"⁴⁵</p> <p>"It is safer not to ask for help, you'd better Google rather than ask midwives... I didn't want them thinking, 'Oh, she can't do it!'"⁴⁶</p>

social risk factors. The included studies covered a range of social risk factors that were often multiple and overlapping. Black and minority ethnicity, and asylum seeker/refugee status were the risk factors most commonly focused on, and although the vast majority of the studies found that the participants were socially deprived, only four of the 22 papers used social deprivation in their inclusion criteria. By focusing on single social risk factors when designing research or services, the complexity of social deprivation and oppression may be overlooked and deficits within the system disregarded. For example, the growing body of literature on the "healthy migrant" phenomenon shows that many first-generation immigrants often have better physical and mental health than the indigenous populations of many developed countries.^{60,61} This suggests that it is not that a person is not native to a country that puts them at risk of health inequalities, but it is growing up in a place where that person might be perceived as different that has a greater bearing. This synthesis found that for black and minority ethnic women, asylum seekers, and refugees, it was the language barrier and unfamiliarity with the United Kingdom system that had the biggest impact on how they accessed, engaged, and experienced their maternity care. This leads us to the concept of intersectionality. Although intersectionality was not explicitly discussed in the included studies, it became a clear factor in how women experienced maternity care. Oppressive institutions of racism, sexism, ableism, classism, etc, are interconnected, impact on health inequalities,⁶² and cannot be separated when trying to understand why some women experience maternity care differently to others. One example of this is found in Bradbury-Jones' study³⁶ where the women felt that not only they were perceived as less able to make decisions because of their disability, but also this was compounded by health care professionals' judgments about the domestic abuse they had experienced.

Five of the eight CMO configurations related to system resources: access, interpreter services, education, practical support, and continuity of care. This closely reflects the findings of Hollowell et al's²³ review of black and minority ethnic women's experiences of maternity care. A frequent finding in both papers was the importance of community-based care, allowing women and midwives to integrate with the local community, and ease access to services for women who lack resources or are not able to travel far to hospital appointments.

The importance of relationships was so apparent in the program theories that it became a key middle-range theory. There is a wealth of literature on the benefits of continuity of care on women's outcomes.²³⁻²⁶ This synthesis found that for women whose trust has previously been broken, either through interactions with professionals, or previous trauma and abuse, the development of a trusting relationship with a health care professional results in increased confidence,

safety, and empowerment. It also reduced women's perceptions of discrimination, manipulation, and coercion by people in power. Although "relationships" was found to be an occurring theme in this synthesis, the concept of trust was tied in closely to this. Women described the impact of trust in health care professionals and trust in the system as a whole. Literature on the theoretical perspectives of trust describes these two aspects, suggesting that trust in a person can act as a moderator/mediator when there is distrust in a system.^{63,64} However, this protective factor is vulnerable to the trusted person not being there. A conflicting program theory identified that for some women, particularly those with social care involvement, it was more important that the whole service is perceived as safe, respectful, understanding, and kind, rather than one trusted professional in a wider toxic environment. The data from women who expressed this were linked to perceptions of surveillance, which may explain why the thought of one known health care professional might be perceived as intimidating, and building a relationship may be viewed as an invasion of privacy. It should be noted that the vast majority of included papers reflected standard maternity care and that those women who had experienced a form of continuity did not report negative perceptions of surveillance and valued the relationship they had with their health care practitioner/support person. Dismantling the belief that accessing health care services equates to relinquishing control may have long-lasting consequences on women's social interactions, help-seeking, and parenting. Conversely, if women with social risk factors, particularly those that contribute to disempowerment, experience paternalistic care through being denied choice and perceive health care professionals as lacking warmth, patronizing, arrogant, and stigmatizing, then they will remain disempowered and feel undervalued, and their low self-confidence will increase.

Candidacy, defined as "the ways in which people's eligibility for medical attention and intervention is jointly negotiated between individuals and health services,"⁶⁵ was the umbrella concept for two CMO configurations: "assumptions" and "surveillance." The concept suggests that a woman's "candidacy" for maternity services is materially, culturally, and organizationally constructed. For example, it is well known that more deprived women access preventative health care services less than more affluent women,^{5,66} and have higher use of emergency services.⁶⁷ Candidacy is thought to be at play here, with factors such as help-seeking in response to crisis symptoms rather than to prevent poor health, the normalization and acceptance of poor health, and fear of blame from health care professionals apparent across many of the included studies. Again, these factors were found in Hollowell et al's review,²³ with barriers to initial access, lack of interpreter services, discrimination/disrespectful care, and health care professionals' lack of cultural

knowledge affecting how women perceived their candidacy for services. The findings of this synthesis extend these findings further by proposing that if the value of accessing maternity services for the purpose of monitoring, prevention, and support is communicated across the communities in which women live, through community-based services and relationship building, then women would not view the purpose of the service as simply the treatment of ill health, and access care earlier in pregnancy.

4.1 | Strengths, limitations, and gaps in literature

Overall, the studies included in the synthesis were assessed to be of high-quality and they reported on studies conducted with women with a range of different social risk factors. However, the number of studies reporting women's socioeconomic status was limited. Only two of the studies reported specialist models of care, with the remaining studies reflecting the experiences of standard maternity care. This meant that the development of program theories for what works in improving women's experiences was often drawn from negative experiences and inverted to a positive program theory. To test those theories, a full evaluation of how women experience specialist models of care is required.

A further limitation of the synthesis is the cutoff date of 2010 in the inclusion criteria (see Table 2), potentially restricting the depth of the findings. This criterion aimed to reflect the NICE²⁰ guidance for women with social complex factors and to compare findings with previous systematic reviews of women's experiences of antenatal care.^{22,23} With these limitations in mind, the findings of this synthesis add depth and detail in what works, for whom, in what circumstances, and how, to existing recommendations from the international wider literature.^{5,8,9,13,18,22,23}

There were some themes that were expected to be reported but were not. These included the recognition of women's personal strengths and assets, and the impact of their community. This may be because the women interviewed felt these were not important, because the research approach did not explore these themes, or because they were not included in final published work. The assumption of deficit—that people are a burden on the state rather than a resource—with respect to low-income people, asylum seekers, refugees, and migrants was sometimes apparent in the reported experiences of women but was not made explicit in the discussion sections of the studies. In addition to this, despite the growing body of evidence into the "healthy migrant effect," the papers included in the synthesis did not explore inequities in health service use, experiences, and outcomes for second- or third-generation descendants. Tudor Hart's⁶⁸ "inverse care law"—the principle that those most in need of care are the least likely to receive it—was also evident in the findings of many included studies

but not discussed. For example, do health care professionals “do more” for more affluent women? Do women with lower socioeconomic status have lower expectations of maternity services? Further research, using qualitative realist evaluation methodologies with all stakeholders, will help to answer these questions and test the program theories put forward in this synthesis.

4.2 | Conclusions

The findings of this synthesis provide both an underlying theory and practical guidance on how to develop safe, person-centered maternity services for women with social risk factors that encourage early access and meaningful engagement and reduce the discrimination and fear this group of women often experience. The synthesis contributes to knowledge by identifying how women with different social risk factors experience care in different ways, resulting in specific program theories tailored to more individualized need. The CMO configurations developed will be tested in a realist-informed evaluation of two specialist models of care (one community based and one hospital based) within areas of significant health inequity in London, United Kingdom. The synthesis also highlights potentially significant gaps in the literature, such as the impact of discrimination on outcomes and experiences, potentially stigmatizing service provision, or the protective factors of community and family support. These knowledge gaps should be explored in future research and considered when planning services for this vulnerable population.

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of the article.

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Project 20: Midwives' insight into continuity of care models for women with social risk factors: what works, for whom, in what circumstances, and how



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ABSTRACT

Introduction: Continuity of care models are known to improve clinical outcomes for women and their babies, but it is not understood how. A realist synthesis of how women with social risk factors experience UK maternity care reported mechanisms thought to improve clinical outcomes and experiences. As part of a broader programme of work to test those theories and fill gaps in the literature base we conducted focus groups with midwives working within continuity of care models of care for women with social factors that put them at a higher chance of having poor birth outcomes. These risk factors can include poverty and social isolation, asylum or refugee status, domestic abuse, mental illness, learning difficulties, and substance abuse problems.

Objective: To explore the insights of midwives working in continuity models of care for women with social risk factors in order to understand the resources they provide, and how the model of care can improve women's outcomes.

Design: Realist methodology was used to gain a deeper understanding of how women react to specific resources that the models of care offer and how these resources are thought to lead to particular outcomes for women. Twelve midwives participated, six from a continuity of care model implemented in a community setting serving an area of deprivation in London, and six from a continuity of care model for women with social risk factors, based within a large teaching hospital in London.

Findings: Three main themes were identified: 'Perceptions of the model of care', 'Tailoring the service to meet women's needs', 'Going above and beyond'. Each theme is broken down into three subthemes to reveal specific resources or mechanisms which midwives felt might have an impact on women's outcomes, and how women with different social risk factors respond to these mechanisms.

Conclusions/implications for practice: Overall the midwives in both models of care felt the service was beneficial to women and had a positive impact on their outcomes. It was thought the trusting relationships they had built with women enabled midwives to guide women through a fragmented, unfamiliar system and respond to their individual physical, emotional, and social needs, whilst ensuring follow-up of appointments and test results. Midwives felt that for these women the impact of a trusting relationship affected how much information women disclosed, allowing for enhanced, needs led, holistic care. Interesting mechanisms were identified when discussing women who had social care involvement with midwives revealing techniques they used to advocate for women and help them to regain trust in the system and demonstrate their parenting abilities. Differences in how each team provided care and its impact on women's outcomes were considered with the midwives in the community-based model reporting

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how their location enabled them to help women integrate into their local community and make use of specialist services. The study demonstrates the complexity of these models of care, with midwives using innovative and compassionate ways of working to meet the multifaceted needs of this population.

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Introduction

Women with social risk factors such as those living in poverty and social isolation, seeking asylum or refugee status, experiencing domestic abuse, mental illness, learning difficulties, and substance abuse problems, have significantly higher rates of poor birth outcomes compared to their more advantaged counterparts (Draper et al., 2019; Biro, 2017; Lindquist et al., 2015; Blumenshine et al., 2010; Smith et al., 2009). In both the UK and the US women from black and minority ethnic backgrounds [BME] also experience unacceptably high rates of morbidity and mortality compared to their white counterparts, regardless of their socio-economic status (Knight et al., 2018). Recent reports and government policy in the UK have responded to these health inequalities by recommending models of maternity care which promote safety and personalised care (DOH, 2017, NHS England, 2016). The NHS ten-year plan (NHS England, 2019) set specific targets to ensure 75% of women from black and minority ethnic groups, and those living in social deprivation, receive continuity of care from a known midwife by 2024. This echoes international responses to health inequalities with the World Health Organisation (WHO, 2016) recommending midwife-led continuity of care for pregnant women in settings with a well-trained midwifery workforce. The recently updated Cochrane review of models of midwifery care (Sandall et al., 2016) found that women who received midwifery led continuity of care had reduced intervention, improved birth and neonatal outcomes, and increased satisfaction compared to those accessing standard maternity care. Non-randomised studies have also found benefits for women who have social risk factors, such as improved birth outcomes, neonatal outcomes, and more social and emotional support (Beake et al., 2013; Rayment-Jones et al., 2015; Homer et al., 2017). Improved access, engagement and screening, and birth outcomes have been identified for Aboriginal and Indigenous women accessing midwifery continuity models of care in Australia (Kildea et al., 2019; McLachlan et al., 2017). The mechanisms for these improved outcomes are not fully understood, and less is known about the impact of continuity of care on women with social risk factors. Furthermore, there is huge variation in how continuity of care is operationalised within services and the associated issues of assessing whether it has been achieved. Symon et al. (2016) emphasized the need for research in models of maternity care to report not only the *what* and *by whom*, but also attempt to explain the *why* and *how* improvements in outcomes are seen to inform the implementation of effective care.

Despite the evidence base and clear policy direction, current maternity care in the UK is often fragmented with women reporting limited continuity of care and concerns about midwives' awareness of their medical history (CQC, 2018). This is particularly concerning for women with social risk factors as they are known to struggle to access and engage with maternity services and often have complex medical histories (Ebert et al., 2011; Lindquist et al., 2015). A recent review of how women with social risk factors experience maternity care in the UK identified significant common barriers including difficulty accessing maternity care and interpreter services, inappropriate antenatal education, and a lack

of continuity and practical support (Rayment-Jones et al., 2019). Many women experienced paternalistic care and discrimination from healthcare professionals and those who had a history of social care involvement often perceived health care services as a system of surveillance rather than support. A trusting relationship with a healthcare professional was thought to mitigate this perception and helped women regain a sense of control during their pregnancy and birth. This supports the growing evidence base that shows continuity of care enables a quality of mother-midwife relationship and level of trust that leads to improved clinical outcomes and increased satisfaction (Biro et al., 2003). However, recent hypotheses (Rayment-Jones et al., 2019) identify many more potential mechanisms which may lead to improved outcomes for women with social risk factors and BME women. These include consideration of: the potential impact of the location of maternity care; how midwives working in continuity models advocate for women and provide culturally responsive, individualised care; the value of external support services; community integration; and how to utilise the multi-disciplinary team without impacting on the mother-midwife relationship (Rayment-Jones et al., 2019). The concept of 'candidacy', that is, women's ability to engage with maternity services based on how they are structurally, culturally, organizationally and professionally constructed (Dixon-Woods, 2006) is an important consideration when exploring the disparities seen in service use and outcomes for this population.

This paper adds to the knowledge base by exploring how midwives provide continuity of care to women with complex needs, and what they believe works, for whom, in what circumstances. The findings will enable the refinement of the hypotheses - or programme theories - developed in the aforementioned review (Rayment-Jones et al., 2019), and provide practical guidance for those developing maternity services aimed at reducing health inequalities. The study forms part of a wider realist evaluation of two continuity of care models for women with social risk factors: *Project20.uk*

Methods

Aim

To explore the insights of midwives working in continuity models of care for women with social risk factors in order to understand the resources they provide, and how the model of care can improve women's outcomes.

Realist approach

This study was informed by the realist paradigm that assumes one external reality which can be explained through contexts, mechanisms, and outcomes, but that this reality is subject to change and volition which should be pursued by the evaluator (Pawson, 2013). The findings of the realist synthesis (Rayment-Jones et al., 2019), and potential gaps in knowledge, formed the focus group interview guide (see Appendix A) that aimed to highlight this change and volition in how the model of care works. Thematic analysis was deemed the most appropriate method of analysis of the focus group data to reveal potential mechanisms which

Table 1
Description of each model of care.

Community based model of care [CBM]	A team of 6 midwives provide continuity of care to women located in an area of social deprivation. Not all women under their care will have social risk factors. Each woman is assigned a named midwife who coordinates all care, multi-disciplinary communication, and referrals. The named midwife aims to provide the vast majority of clinical care, with others in the team providing care when she is not on duty. The midwives are based in a local community health centre and offer antenatal, intrapartum, and postnatal care in the home, community, or hospital setting.
Hospital based model of care [HBM]	A team of 6 midwives provide continuity of care to women with social risk factors only. Women living within the hospitals geographical boundary with one or more significant social risk factor are referred to the team. Each woman is assigned a named midwife who coordinates all care, multi-disciplinary communication, and referrals. The named midwife aims to provide the vast majority of clinical care, with others in the team providing care when she is not on duty. The midwives are based on the hospital site and offer antenatal, intrapartum, and postnatal care in the home or hospital setting.

Table 2
Participants' time spent working within the model of care.

Participant	Number of years as a registered midwife	Time spent working in model of care
HBM1	8 years	<1 year
HBM2	6 years	2 years
HBM3	3 years	<1 year
HBM4	28 years	9 years
HBM5	5 years	<1 year
HBM6	25 years	4 years
CBM1	13 years	13 years
CBM2	<1 year	<1 year
CBM3	6 years	3 years
CBM4	4 years	<1 year
CBM5	6 years	<1 year

may not have been apparent in the synthesis, contributing to theory development.

Sampling, recruitment, setting and participants

Purposive sampling was used to recruit midwives who were working in the continuity of carer models being evaluated as part of the wider Project20 evaluation. The two continuity models of care were chosen on the basis they had been implemented in areas with significant health inequalities (Public Health England, 2015) to provide care to women with social disadvantage. Many of the women accessing the two models of care have social care involvement. Social care in England is defined as 'the provision of social work, personal care, protection or social support services to children or adults in need or at risk, or adults with needs arising from illness, disability, old age or poverty' (Act, 1990). See Table 1 for descriptions of the two models of maternity care.

The study inclusion criteria required the midwives to be working in the model at the time of the evaluation to enable all evaluation data to capture a similar time-point. Eleven out of a possible 12 midwives participated, five from a community-based continuity model of care [CBM] within an area of deprivation in London, and six from a specialist, hospital-based continuity model [HBM] for women with social risk factors in London. See Table 2 for data on

the number of years each participant had been a registered midwife, and how long they had been working in the model.

Data collection

Focus groups were considered the most appropriate method of data collection as not only do they seek opinions, values, and beliefs in a collective context, but they also provide insights into the mechanisms of complex behaviours and motivations (Jayasekara, 2012). Two focus groups were carried out, one per model of care. These were held in the clinical setting of each team and lasted up to two hours with six midwives in one [HBM], and five in the other [CMB]. They were conducted by lead researcher [HRJ] and facilitated by an academic colleague [ZK] who took notes on who was speaking, main topics or insights, and general time keeping. Using Manzano's (2016) guide to realist interviews, and the programme theories developed in the realist synthesis of women's experiences of UK maternity care (Rayment-Jones et al., 2019); a realist informed interview guide was prepared to elicit specific mechanisms of how each model of care was thought to work (see Appendix A). The term 'programme' has been changed to 'service' in the interview questions to reflect the language of the participants. Open questions were also used to clarify content or context, gain a deeper understanding of the midwives' perspectives, and to stimulate the flow of discussion.

Analysis

Data from the two focus groups were analysed using thematic analysis (Braun and Clarke, 2006; 2013). This analytic approach to qualitative data involves inductive coding practices, which are both consultative and initially open (Braun et al., 2019). NVivo 12 was utilised for data management and analysis which followed Braun and Clarke's six-phase approach to thematic analysis (Braun and Clarke, 2006). In brief, these phases include familiarisation with the data, generation of initial codes, the searching for and review of themes, naming and offering explanations for each theme, and lastly producing a report. All data were coded by the lead author [HRJ], with a proportion coded by another author [SAS]. All codes and themes were subsequently ratified by all team members.

Themes were generated with a central organising concept to both explain and hold together each supporting quotation within each theme (Braun and Clarke, 2013). Regular discussions were held between all researchers to deliberate and, when required, revise aspects of the analysis, coding, or themes. This also helped ensure analytic rigour. When discrepancies occurred between researchers, these were debated until all were satisfied themes were fully explained and robust. We utilised existing models of sample size sufficiency (Morse, 2000), data adequacy (Vasileiou et al., 2018), and thematic concordance (Guest et al., 2006) to assess data quality and theme saturation – all of which were assessed to be excellent.

Results

Three main themes were identified: 'Perceptions of the model of care', 'Tailoring the service to meet women's needs', 'Going above and beyond'. Each theme is broken down into three sub-themes (Table 3) to reveal specific resources or mechanisms the midwives felt might have an impact on women's outcomes, and how women with different social risk factors respond to these mechanisms. Quotations from the midwives in each model of care have been given to add meaning and help identify differences and similarities between the two different models of care.

Table 3
Overview of main themes and subthemes .

Main Theme	Subthemes
1.0 Perceptions of the model of care	1.1 Variation in the perception of the aim of the model of care 1.2 Belief the model of care is working 1.3 Emotional investment
2.0 Tailoring the service to meet women's needs	2.1 Holistic care (multi-disciplinary working) 2.2 Flexible working (early access and chasing) 2.3 Community integration
3.0 Going above and beyond	3.1 Advocacy and disclosure 3.2 Counteracting mistrust and fear of the system 3.3 Trying to build relationships with those resistant to help

Perceptions of the model of care

Variation in the perception of the aim of the model of care

Midwives in both models of care gave varied answers when questioned about the aim of the model of care before discussing their uncertainty around a specific aim. Rather than give particular health outcomes they discussed social outcomes and the importance of being able to engage women in their maternity care and the impact on long term outcomes such as parenting. They acknowledged that this was something that they felt was important and not an official 'aim' or 'key performance indicator'.

'...better engagement with services. Trying to get you know, dictates off their, their, you know, life. Giving them the opportunities to see if they can parent, to be able to parent their children. Keep their children, if possible.' (HBM6)

'I don't know, 18 years ago [when the service was set up] I don't know what they would have been thinking. I think for us now I think a lot of it is engagement.' (CBM2)

Some midwives indicated uncertainty around the specific mechanisms thought to improve women's outcomes.

'So, my understanding is that its continuity of care for vulnerable women because vulnerable women have poor birth outcomes, we know continuity of care gives better outcomes so therefore stick those two together and hopefully we get better outcomes for vulnerable women. Less stillbirths.' (HBM2)

Belief the model of care is working

Despite the variation discussed around the aim of the model of care, the midwives in both models were confident that their care has a positive impact on women.

'I really do truly believe that we make a massive difference to people's social outcomes, I really, really do.' (CBM5)

'I have three women who lost babies [removed from parents to care of social services] in the past, I managed, you know, the care they received they were given an opportunity to keep their babies.' (HBM6)

Midwives in both models of care revealed specific mechanisms thought to improve outcomes by highlighting the differences in how women experienced the continuity model compared to standard or traditional maternity care. These mechanisms included early recognition of abnormalities, and more disclosures of women's concerns

'...getting them into the hospital sooner, and a plan made sooner, and, and a safety plan and maybe a delivery if that's what's needed. Whereas another lady [receiving standard care] like, who

wouldn't realise her symptoms, had no one she could contact, or felt she could contact, didn't really go, missed an appointment, got sent a letter for two weeks later, by that point pre-eclampsia [worsens]' (HBM3)

'Because we have slightly longer appointments than traditional teams, we are able to talk to women for longer so might be able to find things that they need referrals for that other teams might not have the time to dig into.' (CBM4)

Emotional investment

Midwives in the community-based model discussed the emotional investment they had in their women's wellbeing and how this motivates them to sustain their investment in the women they care for.

'I think we also have that like emotional insight as well... I feel like we, as a team, we are quite invested in our women, and we do a lot for them and I think, when you have that investment in someone that you want to push for them and you want their outcome to be good.' (CBM1)

'...I think the fact that we see a lot of the women, you know repetitively throughout pregnancy we know them really well. And it just gives you that element of, like I want this to work for you.' (CBM5)

Tailoring the service to meet women's needs

Holistic care (multi-disciplinary working)

Holism was referred to throughout each focus group. The midwives from both models of care were very clear about the importance of holistic, including culturally sensitive, care in comparison to the medical model of standard maternity care. The midwives described practical issues that women with social risk factors often face and how they spend time supporting and advising women on practical issues far wider than pregnancy or maternity care:

'And it was even simple things of, because she's been illiterate, you know she was given a bank card from the no recourse to public funds team from social services, but does she know how to use a bank card? Does she know how much things cost and things because she can't read? And so there's been quite a lot of other thinking outside the box that if someone were under a mainstream system of midwifery care ... But also, being more just aware of kind of her general needs and what we're thinking that she's going to be needing after we've gone, as well. She was medicated. So that was a challenge, trying to make sure she knew which medicine to take because she couldn't read the box.' (CBM1)

Both models of care reported having good relationships with their obstetric colleagues and named consultant. They felt that

this relationship led to a level of respect that promoted multi-disciplinary working.

'...And I think it's really great that if we have just a general query about something, um, that comes up within an appointment...we can just email and, um, the named consultant will respond with whatever advice she would advise.' (CBM4)

The midwives in the hospital-based model also spoke about their presence at women's obstetric appointments, and how this presence impacts on the obstetrician being able to provide more holistic care and encourage understanding of why women might make certain decisions:

'I think that by knowing them [the team's named obstetrician] then they help work with us...to give the women the best care and the best, and maybe the, you know, the decisions they make are looking at the woman as a whole rather than just the obstetric concerns, they're understanding the social impact of why she chooses.... I dunno, they can understand the whole picture, because we helped deliver that' (HBM2)

Flexible working (early access and chasing)

Flexibility was discussed by the community-based midwives as an essential means of engaging women who struggle to attend appointments due to social factors such as caring responsibilities, financial and geographical barriers, unfamiliarity with the service, and mistrust.

'And it works for the women. Like if you've got a woman that can only ever see you at 5 or 6pm then I can do that one day and then come in late the next day or whatever, like you have that flexibility' (CBM1)

'And I also think a lot of our women now, our particularly vulnerable women, really wouldn't travel to the hospital for their appointments.' (CBM3)

'We didn't really stick to much of a pattern in terms of meeting her we could meet her when we could so there was a bit of a patch when we didn't see her for a few weeks. Um, not necessarily like through want of not trying but like just door-knock her and she was moving between properties, so it was just a lot more difficult...but that could have ended very differently' (CBM3) *'...she could have entirely fallen off the radar.'* (CBM1)

The hospital-based midwives discussed flexibility in terms of early access to pregnancy care and how this can impact on social care outcomes. They also felt that women with social care involvement are given a chance to demonstrate their ability to parent through referrals to parenting and rehabilitation programmes, whereas if they were going through the standard maternity care pathway, they may not have been referred to these programmes in time.

'We see them quite early on [in pregnancy], we can recognise their needs and then send them to the relevant departments. So, when it gets to the time that we do go to core group meetings or strategy meetings, we've already referred them to relevant departments, we can already encourage our women to attend, or to be compliant with these programmes, erm, and once they've reached, the social services' sort of decision about the care of their unborn, we can already demonstrate that these women have been involved in some sort of rehabilitation programmes for their care, where they probably wouldn't have had that before' (HBM3)

Midwives in the community-based model of care discussed the time they spent chasing women and encouraging them to come to their appointments. They felt that this had an impact on the

women's engagement, outcomes and overall safety. Neither model of care had administrative support for this aspect of care.

'...we spend hours and hours and hours chasing people, and I think actually other services don't perhaps know that we need to know things...it's like other people's awareness of what midwifery actually is and like safeguarding other children, because we seem to do a lot' (CBM5)

'So I think instead of them feeling like they might just be in a system of hundreds of women...they're going to have to tell their stories again and again, um, whether it's that aspect that they don't, that they feel like they can engage with better. Or just kind of us having the capacity to almost ... push people to come to their appointments and go to their scans' (CBM2)

Community integration

When the midwives were asked about how engaged they felt to the local community there was a clear difference between the two models of care. Where the community-based model discussed a 'learning curve' they still felt they were well integrated into the community and knew about local services. They described a comprehensive but complex system of community support services that they have knowledge of through referrals and communication.

'...she was a late booker, very little support, or no support really for her. Um, living in very precarious situation when we met her. Um, and I think we were just able to, kind of build a bit of a team around her.' (CBM2)

'...although it's been a massive learning curve with all these women coming through, and I know we've all learnt a lot about what's available locally and what happens locally.' (CBM3)

The hospital-based team midwives did not share this feeling—this did not seem to be solely based on their location and the size of their geographical area, but also cutbacks in services. They spoke about the enormity of the community, different cultures across the multi-ethnic geographical patch, and how this created difficulty in integrating women into local community support services.

'There's just too many communities. and it's a very big catchment area, with very many different communities, multi-diverse, that actually sometimes it's very hard to... get to know them all' (HBM2)

'...when I was a community midwife where I lived, I was known as the [name anonymised] clinic midwife, and when I'd go to the local high street they'd say hello to me and acknowledge me because they all, most of them had seen me in the clinic. But here, with the diversity and complexity of all the different ethnic communities that are going on, you just couldn't integrate into them, it's just impossible to do that because you can't be everything to everyone, so you just have to be quite single in your care' (HBM1)

'I think it's a shame that, you know the erm, children's centres, that's shrunk, a lot. And I think that's a real shame because when I very first started I felt we were more integrated into the children's centres, and that's gradually got less and less and less' (HBM4)

'They (health visitors) are very short (staffed) and it's very difficult to get one very quickly' (HBM6)

Midwives in the community-based model of care discussed how immersing themselves in the community setting enables them to integrate women into local services. This in turn helps women to feel supported and cared for by their local community.

'I'm working with a young girl with learning difficulties at the moment and all of these incredible services have just come to light that I didn't even know existed... Um, like we're working with a

is, then we might make that maybe not, you know not the regular midwife they see.' (CBM3) 'Good cop bad cop. (CBM1). 'Yeah, sometimes that works to keep them engaged.' (CBM3)

The hospital-based midwives described advocating social care to the women through explaining how they can provide practical support and give women an opportunity to demonstrate their parenting abilities. They felt that this has led to a reduction in the number of babies removed by social care.

'So we also advocate social services to, to them, as well as for them to social services. Because as soon as someone says 'social care', 'social services' they immediately have this picture 'they're going to remove my baby', but it, when we talk to them and say 'we'll be there, we'll be there with you, we'll make sure they're, you know, they're there to help and support you' and they then actually start to engage a lot better...so, as in HBM6's case women are managing to keep their babies, where before they didn't engage, they fought against them [social services], and they lost their babies but by working with them they've kept their babies.' (HBM1)

Midwives in the hospital-based model also described a level of apprehension of the model of care for some women and reflected on one particular woman who felt like she was being stigmatised after being referred to the team. Again, they described ways of trying to overcome this through communicating the positive aspects of the model of care with women, but that for some women this doesn't work:

'I think they can be quite apprehensive about it (the specialist model of care), but, I think if they realise they have to have a midwife anyway, having a midwife they know who will come to their house, who will be flexible with timings, who will work with their needs, and who will be there to support them, then I think it turns...it becomes a better experience. Because there's a lot of women who don't want full stop, any professionals involved, they kind of don't even want to go into hospital, they're going to do their own thing whatever' (HBM2)

'I did have one woman who declined our services because she felt that we were singling her out for special treatment and stigmatising her, so she didn't want that' (HBM1)

This concept was not discussed in the community-based model.

Trying to build relationships with those resistant to help

When exploring the issue of women who are more difficult to engage, the midwives from both models of care gave specific examples of social circumstances that led to a resistance to be helped:

'Some of these cases though, you just aren't ever going to win and that's, well it feels like that. So some people are totally just going to disengage and no matter what we try, um, so they're, I think it's knowing that some we probably aren't always going to help.' (CBM1)

'Because like some women just see us as pests and that we're interfering and ... [Some agreement], I don't know, they don't want us so it, it would be impossible to ... that's the women rather than our service' (CBM4)

'Some women have their own agenda, and no matter what you do or how you try, they will not ... waiver from that. They have their own agenda, this is what they want and some of them will... will play you for what you want, for what they want, and to get what they want...' (HBM1)

One midwife described how some women access the model of care thinking that they 'play the system' to continue using drugs or alcohol:

'and sometimes is actually the reason why they've come to us, so they may be dependant on, on drugs, or alcohol, and don't want to get off of it, but will play the system, so they can remain using, or drinking, and still have their baby.' (HBM3)

Discussion

Midwives working in both models of care were asked about how they provide care to women with social risk factors, and what aspects of their care they felt contributed to improved outcomes. There were many overlapping themes and similarities between the teams, but also some significant differences in how the teams worked and how midwives perceived the model to be working for different groups of women. It is important to bear in mind that although there was confusion around the aim of the models, all midwives believed the model of care they worked in was beneficial to most women and improved both clinical and social outcomes.

As expected, the quality of the midwife-mother relationship and importance of trust was often discussed theoretically and demonstrated through real life examples. As Hunter et al. (2008) highlight, the way in which maternity care is organised has a profound impact on midwives' ability to form meaningful relationships with women. Continuity models of care have long been associated with increased trust between a woman and midwife, whereas fragmented, industrialised models of maternity care are far from conducive for the development of trust. Perhaps more interestingly though, this topic did not dominate the discussion and the midwives put forward a catalogue of other resources they employ to engage and support women with social risk factors. These resources often involved advocacy and guiding women through a fragmented and often unfamiliar system and using the flexible nature of the model of care to coordinate other professionals and agencies. This demonstrates that although the midwife-mother relationship is clearly integral to the model, a more complex system of mechanisms takes place 'behind the scenes', with midwives often planning care and orchestrating support for women when they are not physically with them. Insights such as this, raised throughout the discussions, have been formulated into programme theories to test in the wider evaluation of this model of care (Project20) - see Table 4.

Advocacy was discussed specifically and in more nuanced ways, but overall reflected the literature around its importance for this vulnerable population of women, particularly those with safeguarding concerns (Everitt et al., 2017; Woods, 2008). Midwives in both models spoke about advocating for social care services as well as for the women, in order to ease women's reluctance to engage with a service they may perceive as a form of unhelpful surveillance. This contributes to the hypotheses put forward by Rayment-Jones et al. (2019) that continuity of care mitigates this perception and helps women regain a sense of control. Whereas it was assumed that trust was the mechanism to improve women's engagement with social care, engagement may also be enhanced by how a trusted midwife conveys information and advocates the service to them. Lewis' (2019) longitudinal qualitative work with pregnant women also identified the intricacies of the midwife-mother relationship, with trust being interwoven with women's agency and the importance of 'two-way trust' that includes the midwives trust in the woman. This reveals a level of trust and belief in the woman and a desire to extend this trust to other professionals. Trust as a generative mechanism may impact on far more than a woman's experience of

Table 4
Additional programme theories for testing in realist evaluation of specialist models of care for women with social risk factors).

Programme Theories

If midwives are able to work flexibly, then they are able to meet women's individual needs and increase safety through spending time care planning and coordinating support that may not be available on demand (for example during an allocated appointment time in the standard maternity care model).

If midwives advocate social care to women through explaining their role and how they can provide practical support, then women's perception of surveillance may lessen leading to engagement, and child protection outcomes and maternal infant-bonding improve.

If the midwife-mother relationship is 'two way', that is the midwife also has trust in the woman then the many known benefits of the trusting relationship will be enhanced.

If models of care are based in the hospital setting or have large catchment areas, then midwives are less likely to have the knowledge and familiarity of niche support services that may benefit the women they care for.

If midwives are placed in the community setting, then they will be better able to place the individual needs of women before institutional norms because they feel a sense of obligation and responsibility towards the woman rather than the system.

If women do not have the time to form a trusting relationship with a midwife, then they are unlikely to disclose sensitive information and seek support for issues that may have long-term detrimental consequences for themselves and their families.

If women who remain resistant to help throughout their pregnancy despite continuity of care are known/handed over to primary care and early years services, then they will have a support network in place and will be more likely to be able to regain trust in the system over time.

maternity care. Dahlen and Aune (2013) described how women who perceived a trusting relationship with their midwife felt that this led to personal growth and development. Long term outcomes such as these are particularly significant for women who may lack trust in both the system and their own abilities as a mother. Although this 'two-way trust' was not explicit in this study it was alluded to when discussing how women with social care involvement can be encouraged to demonstrate their ability to parent by engaging with the system. This has the potential for improved maternal-infant bonding and a longer-term impact on social outcomes. This concept was also discussed by Ebert et al. (2014), who found that socially disadvantaged pregnant women did not feel safe to engage in discussions with midwives regarding choice or to seek control of their care. This resulted in midwives perceiving a lack of responsibility from the women and increased surveillance.

Midwives from the community-based model discussed multi-disciplinary working in terms of both hospital-based and community-based services. They described community services as comprehensive and complex, and constantly having to learn what was available, but felt that it was within their remit to communicate with services if they felt it would be beneficial for women. The hospital-based midwives on the other hand spoke about multi-disciplinary working in terms of their hospital-based, obstetric services. They reported a lack of community resources and short-staffed health visitor services. It was hypothesised that they may perceive a lack of community services due to the enormity of their catchment area. If the community-based midwives reported challenges in getting to know what is available locally, it would make sense that knowing and communicating with niche, local services is an impossible task for the hospital-based midwives with a much larger catchment area. In addition to this point, both the hospital-based, and the community-based midwives reported strong, effective working relationships with their named obstetric consultants, which involved frequent communication. Being based away from the hospital did not seem to impact

on this. These are important points to consider when planning services to meet the needs of women with social risk factors who are often socially isolated. Midwives in the CBM felt that their community location impacted on how well looked after women felt, and demonstrates to women how their community cares for them. This 'candidacy' concept was discussed in Rayment-Jones et al. (2019) findings of how women experience maternity care. 'Candidacy' theory suggests that how a person interacts with health services is structurally, culturally, organizationally and professionally constructed (Dixon-Woods, 2006), and can give us insight into why women with social risk factors make less use of maternity services than their more affluent peers. This concept is described in Ebert et al. (2014) qualitative work with socially disadvantaged women in Australia, which found that without appropriate information and choice women believed they were outsiders to the maternity care culture. This resulted in women handing over their autonomy to those who they believe do belong in the culture: midwives.

Hyde and Roche-Reid (2004) reported conflicting communication ideologies between women and midwives, with midwives believing their role was empowering women, but in fact their communication reflected their employing institution's values. This study explored how this allegiance can shift in a continuity of care model, with midwives demonstrating how they aim to place the needs of the woman before the system's norms. This shifting of allegiance and different ideologies has been explored in the continuity of care literature over the past decade, with continuity of care being associated with a sense of obligation and responsibility towards the woman rather than the system (McCourt et al., 2006; McCourt et al., 2009; Hunter, 2004). In the current study, this seemed more apparent in the community-based model of care when midwives discussed holistic care, calling to question how the location of midwifery services might impact on midwives ideologies and communication methods. McCourt and Pearce's (2000) work with minority ethnic women found that those receiving standard maternity care in the hospital setting had poorer experiences and felt that their care was not focused on them as a person. This begs the question that if midwives are immersed in the hospital environment are they more loyal to the needs and norms of the system than if they were on the 'outside' looking in alongside the woman?

The midwives in the community-based model gave insight into how the trust they had built with women had impacted on women's disclosure of sensitive information. Women they were caring for who may have been referred to the team for one particular social risk factor, often disclosed more complex and serious risks as they began to trust the midwives and understand their role. This in turn leads to referrals to support services and more individualised care plans. This insight begs the following questions:

- 3- How much are midwives working in standard maternity care models missing?
- 3- To what extent do women hold important information back through fear of disclosure to a system they do not trust?
- 3- What are the long-term consequences of this on the woman, the child and future children?

Perhaps the most insightful aspect of this study was the sub-theme 'Trying to build relationships with those resistant to help' as it unpicked some of the complexity of looking after women who often live difficult lives with long-standing social, physical, psychological issues and mistrust in the system. The midwives in both models of care identified domestic violence, substance abuse, and social care involvement as particularly challenging factors in engaging women and building trust. Fear of the system was seen to be the main barrier and although midwives practised different techniques to try to remedy this, there was a general feeling that

some women were too resistant to help for the model of care to have any effect. This demonstrates that continuity models of care are not a panacea for all poor health and social outcomes, and that the problems these women face are deep rooted and require more long-term multi-sector intervention. That said, continuity of care provides an opportunity to begin to focus on this resistance and work with primary care and early years services to ensure a support network is in place.

Strengths and limitations

When discussing the limitations of this study it should be taken into account that this method of theory building and refining, will be tested in the wider realist evaluation of the models of care using in depth qualitative and quantitative data from women with social risk factors. The 'fragments of information' gained during realist-informed qualitative methods (Emmel, 2013) will be re-tested to contribute to the interpretation and explanation of how the model might affect women's physical, emotional, and social outcomes.

The focus groups were undertaken by a realist-interview trained academic using Manzano's (2016) approach to generate data demonstrating the effectiveness of the model of care. This method helps to refine programme theory and improve rigour through the 'teacher-learner' relationship. In this case the interviewer presented theories extracted from a realist synthesis (Rayment-Jones et al., 2019) and asked the midwives to confirm, falsify, explain, and refine the theories. The midwives' insights are not considered to be constructions, but 'evidence for real phenomena and processes' (Maxwell, 2013) that contribute to the overall evaluation of the programme's effectiveness. The realist-informed interview guide allowed for both the testing of pre-constructed theories, and new programme theories to be identified (Table 4).

Potential limitations of the study include the fact the participants knew this study is part of an evaluation of their service. These factors might have created a sense of being tested/assessed and therefore impacted on how the participants responded to demonstrate the success of the model of care. In the analysis however, less effective aspects of the models of care were apparent. Again, these insights will be tested in the wider evaluation of the model to increase rigour. A further limitation of this study is that it is urban based only, rural and remote models of care should be evaluated as the context is significantly different.

Conclusion/implications for practice

Overall the midwives in both models of care felt that the service was beneficial to women and had a positive impact on their outcomes. It was thought that the trusting relationships they had built with women enabled them to guide them through a fragmented, unfamiliar system and respond to their individual physical, emotional and social needs, and ensure follow up of appointments and test results. They felt that for women the development of a trusting relationship impacted on how much information they disclosed, allowing for enhanced, needs-led, holistic care. Interesting mechanisms were identified when discussing women who had social care involvement with midwives revealing techniques they used to advocate for women and help them to regain trust in the system and demonstrate their parenting abilities. This has the potential to reduce the number of babies removed from their mothers and greatly improve long term outcomes for children at social risk.

Differences in how each model provided care and its impact on women's outcomes were considered with the community-

based midwives reporting how their location enabled them to help women integrate into their local community and make use of specialist services. The midwives in the hospital-based model described their extensive catchment area and location as a barrier to this. This has important implications for women with social risk factors who are often socially isolated and lack support.

Midwives in both models of care discussed how some women are more difficult to engage, with specific social risk factors intensifying their mistrust in the system. This should be taken into account when developing inclusion criteria for continuity models of care, and midwives' workload.

The study demonstrates the complexity of these models of care, with midwives using innovative and compassionate ways of working to meet the multifaceted needs of this vulnerable population.

Declarations ethics approval and consent to participate

London Brent Research Ethics Committee (HRA) REC Reference 18-LO-0701.

Availability of data and material

Attached as additional file or contact the lead author HRJ.

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Authors' contributions

Authors HRJ, JH, AH, JS contributed to the conceptualisation of the research question, and methodology. Author HRJ designed the interview guide and conducted the focus groups. Authors HRJ and SAS interpreted and analysed the focus group data. All authors read and approved the final manuscript.

Declaration of Competing Interest

None declared.

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Supplementary materials

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Appendix A. Realist informed interview guide for focus groups with midwives in continuity modes of care for women with social risk factors

Question	Rationale
Can you tell me what your involvement in this specialist model of care is?	Realist evaluation assumes that people know different things according to their role. These answers will be used to tailor future questions according to the specific insight of the stakeholder.
What is the purpose of the service? /what do you think are the desired outcomes for women? Do you think the service makes a difference to these outcomes? Can you give examples?	Assuming that programmes have different outcomes for different groups, stakeholders, women and family members will be asked this question until the range of outcomes has been identified. Interviewer will prompt for evidence of the nature and extent of the outcome. If expected outcomes are not identified (improved access and engagement), interviewer will prompt for those outcomes. If unexpected outcomes are identified, interviewer will prompt for greater description. These outcomes will be verified using the quantitative data analysis. Initial question leading into exploration of mechanisms. When participants identify programme activities (for example flexible appointments, 24hr access to a known mw, safeguarding training) interviewer will probe further – e.g. – So, what is it about being able to contact a known midwife 24/7? How did that help cause (the later outcome)?
We are interested in how specialist models of care have an effect on women's outcomes. How do you think the service has caused, or helped to cause [outcomes identified earlier in interview]?	This question is seeking more specific information about "for whom" the programme has and has not been effective (in what respects, to what extent). Interviewer will specifically probe in relation to sub- groups that are identified in the realist synthesis' programme theories.
Are the outcomes previously mentioning the same for all women? For example, women with different social risk factors? [using the specific sub-groups identified in the programme theories – specific disadvantaged groups/social risk factors and different cultures]. In what ways have they been different? Do you think women with social risk factors want/are open to this model of care prior to accessing it? How might this differ for different groups of women (specific risk factors?) Do you think this specialist model of care changes the way women feel about maternity services? In what ways? Can you provide examples? There are lots of ideas about how specialist models of care actually work, and we think they probably work differently in different places or for different people. One of those ideas is (an example: that if women trust their midwife then they will engage with the services and be more open to disclosing concerns.) Does it work at all like that here? Can you give an example? Does this apply to all women? What about: (brief description of other mechanisms not previously identified) - Engagement with the multi-disciplinary team - Engagement with local community - What other resources the service offers (practical support, interpretation services, access) We've seen that specialist models of care work differently in different places. What is it about this service that makes it work so well/less well? Do you think culture, the local community or other resources has an effect on women's outcomes? Can you give examples? If you could change something about this service to make it work more effectively here, what would you change and why? What else do you think we need to know, to really understand how the service works here?	This theory-based question sets out to explore candidacy theory. Examples might be given of how women with particular social risk factors have reported their experience of maternity care (for example those who are unfamiliar with the UK system, or those who have social care involvement), to explore if and how the programme addresses these issues and what the outcomes of this might be. The subject of a realist interview is the programme theory. The aim is to get the respondent to refine the programme theory for the particular context about which they know. This question revisits the mechanisms (particularly those not identified before) but in a more specific way to test the programme theories and whether the programme works differently for different people. This (in conjunction with the women and family members responses) will help confirm or refute the initial programme theories.
	Realist evaluation assumes context does affect outcomes (by affecting which mechanisms fire). Interviewer will probe for aspects of culture, local resources/lack of them, local and family relationships/support, relationship between organisation and participants and so on.
	This question aims to elicit understanding of why the programme has not worked as effectively as it might (i.e. mechanisms not firing, aspects of context) as well as strategies for improvement. This open probe that enables participants to comment on anything not covered by the interview. The structure of the question keeps the focus on 'how the programme works' and 'in this context'.

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