



# **Adaptive performance of midwives as a resilience mechanism to improve safety in maternity services.**

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# Abstract

## Background

Despite efforts to improve safety in maternity services, progress so far has been unsatisfactory and remains a high-profile public concern (Health and Social Care Committee, 2021a; Ockenden, 2025). Traditionally improvement efforts have focused on standardisation, compliance with policies and procedures, and learning from incidents to prevent recurrence (Reason, 2000). However, this approach may be inadequate to improve outcomes in healthcare settings such as maternity services which are complex adaptive systems (Patriarca et al, 2017). Resilience Engineering may offer a more useful theoretical foundation, by considering how midwives adapt to adverse or unexpected conditions to enable the system to function, providing effective care to women and babies.

## Methodology

A multiple-case embedded design case study, utilising sequential observation and semi-structured interviews was conducted at two tertiary level maternity units in the English midlands. The aim was to explore adaptive performance by midwives as a resilience mechanism to contribute to safety in maternity services.

## Findings

Four themes were identified which pertain to specific tensions within the work system which midwives must navigate to succeed in everyday work. These were: Individualising Standardised Care Guidelines, Prioritising Competing Demands of Individuals within a Multiple-Patient Ward, Autonomous Midwifery Practice Within a Multidisciplinary Team, and Maintaining Safety Despite Finite Resources.

## Discussion

A new theoretical model has been produced, adapted from Anderson et al (2016), which demonstrates that midwives' adaptive performance is the pivot point, balancing the needs of the woman and the organisation. In this context, the ability to provide individualised care to women may be compromised by the requirement

for efficient patient flow and the safety of other women. Meanwhile, a perception that safe care, which is legally defensible, is achieved by adherence to policy or procedure, means that adaptive practice may not be organisationally supported.

## **Conclusion & Recommendations**

Stakeholder engagement is required to build consensus on the priorities in maternity care, and to innovate longer term strategies to support both patient safety, and efficiency and productivity. Such strategies must consider the impact upon women's experience such as delays in care, alongside the benefits for organisational resilience.

An ideological disparity may exist where organisational, structural adaptations are permissible, but individual, in-situ adaptations are not, despite often being unavoidable. However, in-situ adaptations to overcome work system deficiencies may mask issues with the potential to inadvertently decrease organisational resilience in the longer term. Thus, upward communication must be supported if midwives are to safeguard the continued functioning of the system during expected and unexpected conditions, in a way which is conducive to organisational monitoring and learning. To this end, a fundamental shift is required towards a Safety-II perspective which learns from everyday work and values adaptive performance of midwives which is vital to organisational resilience and the safety of women and babies.

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## Authors declaration

I declare that this thesis is the result of my own work and has not previously been submitted for any other degree at Staffordshire University or any other institution.

A handwritten signature in black ink, appearing to read 'R. Budd'.

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## List of Abbreviations

CTG	Cardiotocograph
DoH	Department of Health
DoHSC	Department of Health and Social Care
IOL	Induction of Labour
IUD	Intrauterine Fetal Death
MBRRACE	Mothers and Babies: Reducing Risk through Audits and Confidential Enquiries across the UK
NHS	National Health Service
NICE	National Institute for Health and Care Excellence
NMC	Nursing and Midwifery Council
OASI	Obstetric Anal Sphincter Injuries
RE	Resilience Engineering
RCM	Royal College of Midwives
RCOG	Royal College of Obstetricians and Gynaecologists
RHC	Resilient Health Care
UN	United Nations
VE	Vaginal Examination
WAD	Work-as-Done
WAI	Work-as-Imagined

## Glossary

<b>Accountability</b>	Being answerable for one’s actions and omissions. Midwives are accountable for acting in accordance with the NMC (2018) Code, and must abide by relevant legal, regulatory, and governance requirements, policies, and ethical frameworks including any mandatory reporting duties (NMC, 2019). They are also legally accountable to their employer for acting in accordance with their contract of employment.
<b>Adaptation/ adjustment</b>	“Any change to a process that is necessary for success, for example to work around a problem or difficulty. Adaptation may save time, preserve resources, allow others to function well, or deliver the best care available when difficult priority decisions are needed” (Anderson and Ross, 2020)
<b>Adverse events</b>	Events that may result in avoidable patient harm, for example medication errors, health care-associated infections, patient falls and unsafe blood transfusion (WHO, 2023).
<b>Autonomy</b>	Based on the ethical principle which asserts that people have the right to control over their body. Women have autonomy to make decisions about what is done to their body, including the ability to decline treatment (RCM, 2022). Midwives are autonomous professionals with the remit to <i>“lead midwifery care and support women and newborn infants throughout the whole continuum of care”</i> (NMC, 2019: 16)
<b>Birth outside of guidance</b>	Where a woman chooses to take up options which are outside of the recommendations routinely offered within the state funded maternity care system (Feeley, 2023)
<b>Blunt end</b>	Refers to people who manage the sharp end functions, e.g. managers, regulators, policy makers, and government (Rankin, 2014).
<b>Capacity</b>	The ability to provide the required services or completed the required activity, which includes having sufficient resources,

	for example, the correct number of staff, available equipment, and unoccupied beds.
<b>Cardiotocograph (CTG)</b>	A method used to electronically monitor the fetal heart rate which uses ultrasound waves and an abdominal pressure sensor to monitor uterine contractions of the mother. The aim is to detect signs of fetal compromise from the heart rate pattern over time.
<b>Complex Adaptive System (CAS)</b>	A system where multiple components act simultaneously and interact with each other reactively, which affects the behaviour of the system as a whole (The Health Foundation, 2010)
<b>Complex systems</b>	Systems that are never fully knowable; their processes cannot be definitively mapped or measured because of the number of variables and dynamic interactions which occur between system elements (Dekker, 2011).
<b>Complicated systems</b>	Systems that have many parts, but are largely predictable and manageable when the correct procedure is followed (Dekker, 2011).
<b>Demand</b>	The requirements placed on a person or organisation to deliver specific services or complete tasks. May include patient numbers, severity of illness (acuity) for example.
<b>Disruption</b>	An event which: <i>“Interrupts an activity in such a way that it derails the ongoing flow of that activity and requires the mobilisation of supplementary sociotechnical resources (e.g. expertise, attention, time, tools, data) to restore order and control, beyond those that would ordinarily be enrolled in that particular activity”</i> (Macrae, 2019: 20).
<b>Escalation</b>	The process of referring to a more senior healthcare professional such as the midwife in charge of the shift or an obstetrician when complications arise or the midwife is concerned about a deviation from the normal expected course of labour.

<b>Fresh eyes</b>	A practice where a second midwife reviews the fetal heart rate monitoring at regular intervals during labour as a safety-net to ensure that deterioration is not missed.
<b>Guidelines</b>	Written recommendations within an organisation or produced nationally for management of a specific condition or care pathway, based on the best evidence available. For example, NICE (2023) guidelines for care in labour. Guidelines are intended to assist decision making (RCM, 2025).
<b>Human Factors</b>	A scientific area of study that focuses on the interactions between humans and the work environment. The aim is to (re)design systems to enhance human well-being and system performance (HSSIB, 2025b).
<b>Individualised or personalised care</b>	care which is provided in partnership with women, providing choice and control, taking account of their individual values and preferences (RCM, 2025).
<b>Macro</b>	The level of the wider healthcare system (Fulop and Robert, 2015).
<b>Medical model of maternity care</b>	Pregnancy and birth viewed as inherently risky, requiring intervention to manage the risks.
<b>Meso</b>	The middle level of a system which is made up of multiple interconnected micro systems, this could be the whole organisation such as a specific NHS Trust, or the maternity service at a particular geographical location (Fulop and Robert, 2015).
<b>Micro</b>	The smallest structural level of a system, this could be a clinical team, a particular shift or an individual. Micro systems are dependent upon activity within other interconnected micro systems (Fulop and Robert, 2015)
<b>Neonatal death</b>	Death of a live born baby (after 20 weeks of pregnancy) within 28 days of birth (Draper et al., 2023).

<b>Obstetric Anal Sphincter Injuries (OASI):</b>	A perineal tear sustained during childbirth which extends into the anal sphincter (RCOG, 2018).
<b>obstetric intervention</b>	Actions instigated by an Obstetric doctor to medically manage pregnancy and birth. May include induction of labour, hormonal augmentation of labour, forceps or ventouse delivery or caesarean section.
<b>Patient safety</b>	<i>"The absence of preventable harm to a patient and reduction of risk of unnecessary harm associated with health care to an acceptable minimum."</i> (WHO, 2023: online)
<b>Perinatal mortality</b>	Umbrella term which includes stillbirth (fetal death in utero after 24 weeks gestation) and early neonatal death (within 28 days of birth) (Draper et al, 2023).
<b>Policy</b>	An organisationally directed way of doing something which employees are bound to comply with, for example uniform policy (RCM, 2025)
<b>Protocol</b>	Prescriptive instructions for carrying how to manage a specific situation, for example, heavy bleeding after birth (RCM, 2025).
<b>Resilience</b>	<i>"The intrinsic ability of a system to adjust its functioning prior to, during, or following changes and disturbances, so that it can sustain required operations under both expected and unexpected conditions"</i> (Hollnagel, 2011: e-book).
<b>Risk</b>	The likelihood of an event or outcome occurring. In maternity care, risk status is used to direct care pathways such as midwife led care or consultant led care depending on whether the woman is considered low or high risk respectively.  <b>N.B.</b> The concept of managing risk is controversial, associated with the medicalisation of childbirth, which some consider to restrict choice and individualised care (Ward, 2025).

<b>Root cause analysis</b>	A commonly used method to investigate incidents with the aim of identifying the causative factors so that they may be mitigated in the future (Hollnagel, 2021).
<b>Safety-I</b>	Retrospective approach which seeks to learn from incidents to try to prevent recurrence. Seeks to identify causes of incidents, assuming that things go wrong because of error or failure, usually by humans because they are the most variable part of the system (Hollnagel, Wears, and Braithwaite, 2015).
<b>Safety-II</b>	The ability of the system to succeed under varying conditions through adaptive performance which responds to the conditions. This approach considers why things go right most of the time, rather than what goes wrong occasionally (Hollnagel, Wears and Braithwaite, 2015).
<b>Sharp end</b>	Refers to people who operate at the front line of the process, in direct care roles (Rankin et al., 2014).
<b>Situated adaptation</b>	Actions taken by frontline workers in the immediate to short term (Macrae, 2019).
<b>Social model of maternity care:</b>	pregnancy and birth viewed as a normal, physiological process which usually progresses without complications and requires minimal intervention. Care is usually provided solely by a midwife or midwives.
<b>Sociotechnical</b>	Combining people and technology.
<b>Standard Operating Procedures (SOP)</b>	Written instructions which specify a standardised method to undertake a procedure (RCM, 2025).
<b>Stillbirth</b>	A baby born after 24 weeks of pregnancy, showing no signs of life (Draper et al., 2023).
<b>Structural adaptation</b>	Medium term adaptations at the operational level of an organisation (Macrae, 2019)

<b>Syntocinon</b>	Synthetic version of the hormone Oxytocin which is responsible for stimulating uterine contractions in labour. Syntocinon is used to artificially induce or augment (speed up) labour.
<b>Systemic adaptation</b>	Long term reconfiguration or redesign of systems (Macrae, 2019)
<b>Systems Thinking</b>	An approach which considers that adverse outcomes result from multiple contributory interactions within a complex network, rather than from one singular cause (Dekker, 2011). Safety is seen as an emergent property which results from the actions, relationships and interdependencies between system elements (Health Foundation, 2010).
<b>Trade-off:</b>	<i>“Adjusting how we do things to meet the demands and the current conditions, in order to meet the requirements of acceptable performance. That is, balancing demands and resources”</i> (Hollnagel, 2022:1).
<b>Workaround:</b>	<i>“An adaptation, improvisation or change, to an existing work rule designed to promote safety, in order to overcome, or lessen the impact of obstacles that are perceived as preventing that work system or its actors from achieving a desired goal”</i> (Clark et al., 2024:2).
<b>Work-as-Done (WAD)</b>	The way that a task is actually carried out which may differ from how it is “supposed to be done” according to written policy or procedures (Shorrock, 2016).
<b>Work-as-Imagined (WAI)</b>	how a task is envisaged to be done, as it is set out in written policy or procedures (Shorrock, 2016).

# Chapter 1 : Introduction to the Thesis

## 1.1 Background

In June 2025, the Health and Social Care Secretary announced that there is to be a national investigation into the safety of NHS maternity and neonatal services to drive urgently needed improvements in care (Department of Health and Social Care (DoHSC), 2025a). This follows the publication of several safety investigation reports, highlighting failures in care of women and babies at specific NHS Trusts (Kirkup, 2022; Ockenden, 2022; Ockenden, 2025). Ten years on from the Kirkup (2015) report which highlighted failings at Morecambe Bay NHS Trust maternity services, investigations at Shrewsbury and Telford, and East Kent have found similar failings and a further review is ongoing at Nottingham University Hospitals NHS Trust. The Care Quality Commission (CQC) (2024a) suggest that the issues raised at these Trusts are not isolated to specific service providers but are in fact widespread. Currently, 48% of maternity services in England are rated as inadequate or requiring improvement, with significant concerns over the safety of women using the services (CQC, 2024a). At the same time, women's experience of care has significantly declined, particularly in relation to communication and information sharing during labour and postnatal care (CQC, 2024b). The CQC (2024c: 5) say that this serves as a *“sobering reminder that efforts to improve have not yet done enough to address the underlying issues preventing safe, high-quality care being delivered every time”*. Although culture, teamworking, incident investigations and organisational learning have been repeatedly highlighted by the aforementioned investigations, these issues have been inadequately addressed (Health and Social Care Committee, 2021a).

However, this is not new; on the back of the Winterton Report (DoH, 1992), the infamous *Changing Childbirth* recommended reform to maternity services to humanise care, making it woman-centred; facilitating choice, control and continuity of care (Department of Health (DoH), 1993). Though the recommendations were widely welcomed by women and professionals, and promptly accepted as government policy, implementation was hindered by myriad factors, including fear of change, lack of funding and increasing medicalisation of pregnancy and childbirth (McIntosh and Hunter, 2014; Mander and Murphy-Lawless, 2013). And so, in the

intervening thirty-two years, several more government reports have been published (Chief Nursing Officers of England, Northern Ireland, Scotland and Wales, 2010; DoH, 2007; National Maternity Review, 2016), each calling for improvements to maternity services, but never wholly succeeding in bringing about change (McIntosh and Hunter, 2014). Evidence of this can be seen in the aims of the Maternity Transformation Programme (NHS England, 2016) which once again presents a vision for safer, more personalised, woman-centred maternity care, with increased choice and access to information to enable informed decision making by women about their own care. Meanwhile, interventions such as the Saving Babies Lives care bundle (RCOG, 2020), implemented to address maternal and neonatal mortality and morbidity have increased the medicalisation of childbirth but have been largely unsuccessful in achieving the desired aims (Health and Social Care Committee, 2021a). Consequently, safety remains a significant concern in maternity services despite the increased focus on it, which raises questions about why existing efforts are not working and what can be done to make care safer (UK Network of Professors in Midwifery and Maternal and Newborn Health, 2025). To answer this question, it is important to first understand the context of maternity services in the UK.

## 1.2 Context of maternity services

As registered professionals, midwives are the autonomous lead professional for women, their babies and families throughout the childbirth continuum (Nursing and Midwifery Council (NMC) 2019). This means that the majority of maternity care in the UK is provided by midwives because midwifery is unique and as a legally protected title, only those who have undergone a recognised training programme may call themselves a midwife, and only midwives can provide midwifery care (International Confederation of Midwives (ICM), 2024). The midwife's role is to promote positive outcomes by supporting the normal physiological processes of childbearing, and to anticipate and prevent complications, referring to and working with other health professionals such as obstetricians when necessary (NMC, 2019). This is reflected in the NMC (2019: 22, 27) standards where midwives provide *Universal care* for all women and coordinate *Additional care* provision for women and babies with complications. As Sandell (2012: 323) proffers:

*“Every woman needs a midwife, and some women need a doctor too”.*

The World Health Organisation (WHO) (2025) advocate for the vital contribution that midwives make globally to the quality of maternity care, providing evidence of improved outcomes and reduced maternal and newborn mortality when a midwife has provided care. Midwifery-led continuity of care is also associated with less intervention in labour, such as epidural analgesia, amniotomy, episiotomy and instrumental vaginal birth, as well as less fetal loss and neonatal death (Sandall et al., 2016). However, where complications or risk factors arise which are outside of the midwife's scope of practice, midwives must collaborate with other professionals within the multidisciplinary team to deliver the medical, obstetric, paediatric or social care that women and babies need (NMC, 2018). This necessary collaboration can infer tensions between obstetricians and midwives where different perceptions of "risk" impact upon professional boundaries and models of care (Spendlove, 2017: 2). Whilst midwives seek to optimise normal physiological processes in a social model of care, the biomedical model of childbirth views pregnancy as inherently risky, requiring medical supervision and intervention to protect mothers and babies from harm (Davison, 2021). In this medical model, safety is equated with the control and management of risk to minimise harm, where intervention is assumed to lead to better outcomes for mothers and babies (Scamell et al., 2019; Vincent and Amalberti, 2016). Consequently, Spendlove (2017) argues that the concept of risk has led to a dominance of the biomedical model of care in modern maternity services, contributing to the medicalisation of childbirth, which is defined as the "problematization of healthy life events" (Mander and Murphy-Lawless, 2013: 54). In this context, unnecessary intervention has begun to be recognised as an iatrogenic harm, that is harm as a result of medical or obstetric practices (Mander and Murphy-Lawless, 2013; Scamell et al., 2019). A recent Council of Deans policy briefing expresses concern over the rising rates of induction of labour and caesarean sections which have not been associated with improved safety or improvement in perinatal outcomes, thus suggesting that not all interventions are life-saving (UK Network of Professors in Midwifery and Maternal and Newborn Health, 2025). Considering the NHS England (2018:3) definition of safety in the healthcare context as: "The avoidance of unintended or unexpected harm to people during the provision of health care", the midwife holds an important role in seeking obstetric assistance when necessary but advocating against unnecessary intervention which could cause harm (NMC, 2018).

Underlying the issues of professional boundaries and models of maternity care is the issue of agency and power. Whilst *Changing Childbirth*, discussed at the start of this chapter, recommended choice and control for women (DoH, 1993), McIntosh and Hunter (2014: 281) cite Newburn as saying that:

*“Despite some moves towards women having more choice, more control and very occasionally a little bit of continuity (and it is very occasional and on the margins), it’s been against this rising tide of medicalization. So, yes, women have more choice but within an increasingly medicalised model, so it’s really lip service to choice”.*

Although this quotation is dated, it resonates with the researcher’s experience of contemporary maternity service provision, in which the choices available to women are ring-fenced by the complex and crowded maternity service organisation (Health Services Safety Investigations Body (HSSIB) 2025a), which is shaped by government policy (DoH, 2017), arm’s length bodies such as the HSSIB, previously known as the Healthcare Safety Investigation Branch (HSIB) (HSIB, 2020); and national guidelines such as National Institute for Health and Care Excellence (NICE) (2023). Women who seek to take up options which are outside of the routine offer of the state funded system, are said to *“birth outside of guidance”* (Feeley 2023: 7; Royal College of Midwives (RCM), 2025:1). The connotations of deviance here may place the midwife in a difficult predicament between their professional obligation to support woman’s choices (NMC, 2018) and their employee obligation to work within Trust policy and guidelines (Feeley, 2023).

Ergonomics or Human factors as it is also known, is *“the scientific discipline concerned with the understanding of interactions among humans and other elements of a system, and the profession that applies theory, principles, data, and methods to design in order to optimize human well-being and overall system performance”* (International Ergonomics and Human Factors Association (2026: online). Through this lens, this thesis will explore the reality of midwives’ everyday work, to understand how they navigate these tensions within the maternity care system, and overcome barriers in the work environment to provide safe maternity care. The aim being to identify potential was to improve system performance to promote the wellbeing of both midwives and the women that they care for.

## 1.3 Overview of the structure of the thesis

To understand the background to issues around maternity safety, this thesis begins with a critique of the current approach to patient safety. Chapter two considers how safety is defined and the limitations of the assumptions that underpin the existing mechanisms to achieve safety. In doing this, a case will be made for exploring the use of an alternative Human Factors/ Ergonomics approach, which moves away from the assumptions of traditional linear causality of patient safety incidents, to a more prospective, safety-protective perspective, which could be applied to the maternity context (Heggelund and Wiig, 2018).

The following chapter proposes a contemporary organizational ergonomics theory known as Resilience Engineering (RE) to fulfil this need by exploring supportive mechanisms which may prospectively facilitate safety improvement in everyday work (Hollnagel, Woods, and Leveson, 2006). The key feature of this being adaptive performance to sustain operations in all conditions (Hollnagel, 2011). Chapter three critiques the literature around RE as a theoretical foundation for this thesis; comparing existing conceptual models and considering contemporary applications of this theory in healthcare.

The narrative literature review presented in chapter four identifies that there is a scarcity of research on RE or Resilient Healthcare (RHC) in the midwifery context. Research to date has investigated midwives' resilience in terms of their own psychological adaptation to specific catalysts, such as the Covid-19 pandemic (Baumann et al., 2021; Halperin et al., 2022; Küçüktürkmen, Baskaya and Özdemir, 2022); the transition from student to newly qualified midwife status (Kool et al., 2023); or the return to work following maternity leave (Konlan et al., 2023). No studies have been identified that have explicitly sought to illuminate the adaptive practices of midwives. This chapter, therefore, identifies two clear gaps in the literature; firstly, it is not known what adaptations or workarounds are occurring in practice and why; and secondly, how does individual adaptive performance contribute to organisational resilience and conversely how do organisational resilience mechanisms support or disrupt adaptive capacity of front-line staff (Anderson et al., 2020c). These areas form the basis of the research objectives which guide the study which follows.

A decision was made to present the literature review which guided methodological decisions separately from the protocol in this thesis so that the detail of the chosen methods did not get lost amongst the theoretical debate. As such, chapter five presents the methodology for this study, addressing the researcher's philosophical beliefs, methodological debate and ethical issues which informed the design of the study. The practical application of these decisions is set out in chapter six, in the research protocol for a multiple-case, embedded design case study which aimed to explore adaptive performance by midwives as a resilience mechanism to contribute to safety in maternity services.

Triangulation of data in this study applied the Case Study Observational Research (CSOR) framework (Morgan et al., 2017), which allowed a sequential approach to integrate data from the different collection methods. However, this meant that the coding framework and interview guides could not be pre-specified in the protocol chapter as these were built upon the preliminary data collected. As such, a chapter was required to bridge the gap between the protocol as it was intended and the study findings, to explain how the observational data were analysed and incorporated into the interview phase of the study. Chapter seven therefore, describes the process of data analysis to transparently report how the protocol was applied in practice. Interestingly, this could in itself be seen as an example of adaptive performance, in that the protocol required adaptation to implement in response to early data analysis, which can be likened the concept of Work-as-Imagined versus Work-as-Done which is discussed in the background chapter (Shorrock, 2016).

Chapter eight presents the findings of this study, reporting on the cross-case analysis from the two study sites, incorporating data from forty hours of observation on the Labour wards and thirty individual semi-structured interviews with midwives and managers. The findings identify four themes which explain why adaptative practice is necessary and the consequences for supporting organisational resilience. These were: to individualise standardised guidelines, to work as an autonomous practitioner within a multidisciplinary team environment; to maintain safety when resources are finite; and to prioritise competing demands because care is not delivered to individuals in isolation. In essence, these themes relate to the

objectives of choice, escalation of concerns, equipment and resource issues and efficiency of patient flow.

The findings are situated within the existing body of knowledge in chapter nine, highlighting this study's novel contribution. A key finding of the study concerns differing priorities of people at different levels of the maternity care system, which necessitate adaptive performance by the midwife to balance the needs of the individual woman against the organisational needs of patient flow and measurable quality of care. A new theoretical model is proposed which adapts the Concepts for Applying Resilience Engineering (CARE) model (Anderson et al., 2016). The new model demonstrates that midwives adapt to balance competing priorities in the maternity care. In this context, whether the outcome of an adaptation is successful or unsuccessful depends upon whose needs are prioritised and therefore, which outcomes are considered. Outcomes may be simultaneously successful for the organisation and unsuccessful for the woman user or vice versa. With this in mind, organisational resilience may occur at the cost of individual wellbeing.

Chapter nine also considers the clinical implications of the findings, in terms of the impossible dilemma midwives may face when a prescribed course of action is unachievable because of working in sub-optimal work systems. Whatever action is taken may produce unsatisfactory outcomes for one or more stakeholders, whether that be frustration for the midwife, poorer patient experience, inefficiency in task completion, slower patient flow, or potential for unwanted clinical outcomes and the resultant risk of litigation. Finally, the strengths and limitations of this study are discussed to enable the reader to evaluate the credibility of the findings.

The final chapter concludes the thesis with a summary of the learning from this thesis and recommendations are made for practice and further research.

## 1.4 A note about terminology

As a midwife, the researcher is aware of several contentious issues that will be directly discussed or alluded to within this thesis which have the potential to cause

offense. Whilst it is certainly not the intention to cause offence, and the researcher aims to be as inclusive as possible, it could be disruptive to the flow of the work to address these issues during the narrative of the thesis. Therefore, terminology will be addressed once, here, and applied consistently throughout the thesis.

Firstly, in relation to gender identity, it is recognised that not all people who utilise maternity services will identify as “*women*”. However, the diversity of possible alternatives makes it difficult to find one universally acceptable term. Whilst “*women and birthing people*” may be appropriate, repetitive use risked becoming trite. Meanwhile, gender-neutral terms such as service user or client could be seen to dehumanise birth and has historically been unpopular with childbearing women (Batra and Lilford, 1996). The pragmatic decision has therefore been taken to use the word “*service users*” in public-facing recruitment documents and information sheets with the aim of inclusivity. However, in-keeping with the approach taken by the NMC (2025:3), the word “*women*” will be used throughout the thesis as the majority of people who use maternity services do identify as women, but this should be read as representing all people who give birth. Similarly, allowance should be made for direct quotations from participants who have used the word “*woman*”. This is not intended to exclude transgender, non-binary other gender-diverse people, and should be read as including all people who give birth.

Despite the controversy around the concept of normal birth (Beech, 2017), the International Confederation of Midwives (2024:1) still define the scope of practice for midwives to include “*the promotion of normal birth*”. It is recognised that normality may mean different things to different people, but in this context, it is used to mean pregnancy which follows its physiological course, resulting in a spontaneous vaginal birth without medical or obstetric intervention. The researcher does not intend for this to be read as endorsement of vaginal birth at any cost or refusing obstetric input when it is indicated. Timely intervention for those who need it is unquestionably lifesaving (Feeley, 2023). However, the landmark Lancet series highlighted that the risks associated with “*too much, too soon*”, whereby overuse, or routinely applied unnecessary interventions are considered to over-medicalise normal childbearing can also be harmful and costly (Miller et al., 2016: 2176). The concept of normality in this thesis should be understood as midwives working within their scope of

practice and in accordance with their Code of conduct (NMC, 2018) to provide midwifery care to women and birthing people who are suitable for midwife-led care.

Following on from the discussion of physiological processes, it is recognised that some people may object to the use of the word “*patient*” because users of maternity services are generally not ill (Mander and Murphy-Lawless, 2013). However, literature regarding safety in healthcare discusses this in terms of “*patient safety*” (WHO, 2023: *online*). Consequently, the word patient is used in this thesis in reference to the concept of safety but is not intended to infer medicalisation of women who are experiencing a normal physiological life event.

## 1.5 Conclusion

This chapter has set out the initial motivation for this thesis and set the scene for the research which follows. This thesis seeks to explore how safety can be improved in maternity services firstly by examining the limitations of the current approach to patient safety and then exploring the application of a novel theory known as resilience engineering, which may be a more fruitful theoretical foundation for improving safety in maternity services. This thesis goes on to report on the design, conduct and findings of a multiple-case, embedded design case study which aimed to explore adaptive performance by midwives as a resilience mechanism to contribute to safety in maternity services.

The next chapter will critique the literature regarding the current approach to safety in maternity services to identify potential opportunities for future improvement.

# Chapter 2 : The current approach to Safety in Maternity Services

## 2.1 Introduction

This thesis seeks to address questions about why existing efforts to improve maternity safety may not be working and what can be done to make care safer. To do this, this chapter will firstly define what patient safety is and examine the limitations of the “Safety-I” perspective which underpins the current efforts to improve safety in maternity services. Examples of pertinent issues that have been cited as concerns for safety in maternity and the measures instigated to address them will be discussed throughout this chapter to contextualise the theoretical discussion. In examining the limitations of the current approach, a case will be made for exploring the use of an alternative approach. The contemporary “Safety-II” perspective which focuses on learning from everyday work will then be discussed. This paves the way for the following chapter which explores a novel theory known as resilience engineering, which may be a more fruitful theoretical foundation for improving safety in maternity services.

## 2.2 Definitions of safety

### 2.2.1 Absence of harm

Safety is traditionally viewed as the absence of harm, whereby a work system is deemed to be safe when as few unwanted outcomes occur as possible (Hollnagel, Wears and Braithwaite, 2015). One difficulty with this view is that safety is equated with the absence of events rather than the presence of something (Hollnagel, 2021). Where instances of a particular outcome are low, it is difficult to know whether this is because the event has not happened, or that it has not been reported. The CQC (2024a) highlight a significant underreporting of patient safety incidents in their latest state of care report, because staff were too busy or because the incidents did not trigger local reporting. Outcomes may also not be reported if they are misdiagnosed. For example, Gurol-Urganci et al (2013) suggest that greater incidence of Obstetric Anal Sphincter Injury (OASI) rates may reflect improved accuracy of diagnosis rather than an actual increase in occurrence. With this in mind, the assessment of safety as the absence of harm may be inaccurate (Woodward, 2023).

HSSIB (2025a) argue that clinical outcomes are not a reliable measure of safety in regard to maternity service provision, as outcomes are influenced by multiple factors. Consequently, equating safety with the absence of harm is problematic because it is unknowable whether the absence of an outcome is because of specific measures instigated to improve safety or simply co-incidence. Reason (2000: 770) referred to this as a “*dynamic non-event*”, suggesting that safety is where adverse events are actively prevented, thus the traditional view of safety is challenging because it is not possible to measure something that has not happened. Applying this traditional view of safety to the midwifery context, the role of the midwife is to optimise the physiological processes of birth, to promote positive outcomes (ICM, 2024). Midwifery care is recognised to reduce maternal and neonatal mortality, including stillbirths, with the potential to save an estimated 4.3 million lives annually by 2035 if universal midwifery coverage were achieved internationally (Nove et al., 2021). Furthermore, midwife-led continuity models of care are associated with less intervention such as epidural analgesia, amniotomy, episiotomy and instrumental vaginal birth, as well as less fetal loss and neonatal death (Sandall et al 2016). This demonstrates that whilst the importance of midwives in improving outcomes is recognised globally, it may be challenging to quantify their contribution to safety given the absence of adverse events to measure if midwifery care has been effective. In effect, the protective safety work of midwives is essentially hidden where their care contributes to positive outcomes.

### 2.2.2 Absence of preventable harm

Considering the difficulties discussed above with defining safety as the absence of harm, NHS England (2018:3) define safety in the healthcare context as:

*“The avoidance of unintended or unexpected harm to people during the provision of health care”.*

This definition inherently accounts for some expected harm or unwanted outcomes as a result of pathophysiology but emphasises that safety is about preventing outcomes which are avoidable if effective care is delivered. The underlying assumption being that unwanted outcomes may occur because of mismanagement or inadequate care. This is often termed avoidable harm. Similarly, the World Health Organization (WHO) (2023: online) define patient safety as:

*“The absence of preventable harm to a patient and reduction of risk of unnecessary harm associated with health care to an acceptable minimum.”*

This definition raises two important issues; firstly, which harms are considered to be preventable, and secondly, what is an acceptable level of harm? The WHO (2012) assert that preventable harm is that which is agreed by the community to be avoidable in specific circumstances, which suggests that the criteria for preventable harm is socially constructed. Indeed, Vincent and Amalberti (2015) highlight that the threshold of what outcomes are considered to be avoidable is everchanging as healthcare standards improve. Considering this illustrates that safety is functionally an arbitrary threshold of the level of acceptable harm at a specific point in time (Hollnagel, Wears and Braithwaite, 2015). OASI is an example of this, where controversy exists as to whether this outcome is preventable (Kapaya et al., 2015). OASI is a birth complication whereby a perineal tear sustained during childbirth extends into the anal sphincter, which can cause incontinence, pain and dyspareunia (Fernando et al., 2015). Contributory factors include the size of the fetus, fetal position during labour, the mother’s ethnicity and being her first baby (Royal College of Obstetricians and Gynaecologists (RCOG) 2018). None of these factors are modifiable by the healthcare professional, and indeed, OASI may occur even in the absence of any risk factors (RCOG, 2018), therefore, not all harm can be predicted or prevented (Kapaya et al., 2015).

Whilst the RCOG (2018) have instigated considerable efforts to reduce the incidence of OASI, with a national care bundle and incidence monitoring at the local and national level, the evidence to support this intervention is questionable (Aasheim et al., 2017; Scamell et al., 2022; Thornton and Dahlen, 2020). Therefore, OASI may not be preventable even with targeted interventions. In this sense, some harm may occur irrespective of how safe the service is deemed to be by compliance with standardised interventions, due to pathophysiology of the woman.

A further issue with the definition of safety as the absence of avoidable harm is that determining whether harm was avoidable may only be possible retrospectively, through investigation of individual cases after an incident has occurred. For example, in maternity care, all cases of maternal death are investigated, and

national learning reports are published with the aim of improving future care. Knight et al (2022) reported that 38% of maternal deaths in the latest mortality report could have been avoided with better care. However, this verdict is based on assessment of care delivered against existing guidance, the implementation of which the authors state, needs strengthening (Knight et al., 2022). This suggests two underpinning assumptions: firstly, that harm results from non-compliance with policy, and secondly that if adhered to, the policy is sufficient to prevent harm.

In reality, the fact that guidelines are updated periodically as new evidence comes to light, suggests that guidelines are imperfect and represent the best, albeit incomplete understanding at the time. As a result, care might be delivered in accordance with current policy, but this might later be proven to be ineffective or potentially harmful. A historic example of this would be Thalidomide which was commonly administered for morning sickness in the late 1950's but was later found to be teratogenic to unborn babies, causing gross abnormalities (Rehman et al., 2011). With this in mind, equating safety with the absence of preventable harm is challenging when the concept of what is preventable is tied to imperfect and changeable guidelines or policies.

### 2.2.3 Safety as the control of risk

Vincent and Amalberti (2016:4) present an operational definition of safety as “*the control and management of risk over time to maximise benefit and to minimise harm*”, which suggests that safety is an action rather than a state of being, thus it is measured by process rather than outcome measures. This implicitly assumes that some unwanted outcomes will inevitably occur due to pathophysiology, but iatrogenic adverse outcomes can be avoided by risk management. This concept of was originally born out of the industrial revolution, whereby it was necessary to attempt to prevent or minimise the occurrence of industrial accidents, as a means to maximise productivity and efficiency (Dekker 2019). Though the seminal “*Axioms of Industrial Safety*” are now very dated, they continue to influence safety management processes today (Heinrich et al. 1980: 21). According to Heinrich et al.(1980: 22), the majority of accidents are attributable to unsafe actions by people; associated with character flaws such as “*recklessness and stubbornness*”. Thus, the proposed solution to manage such risks is often behavioural interventions aimed

at minimising error and violation of procedures (Khazode, Maiti and Ray 2012). The influential Domino model, (figure 2.1) theorises that accidents which result in injury to workers are preceded by a chain of events which contribute to the final outcome; like toppling dominos (Heinrich, Petersen, and Roos 1980). As can be seen in the figure below, the “dominos” in this model are largely person focused (Dekker 2019),

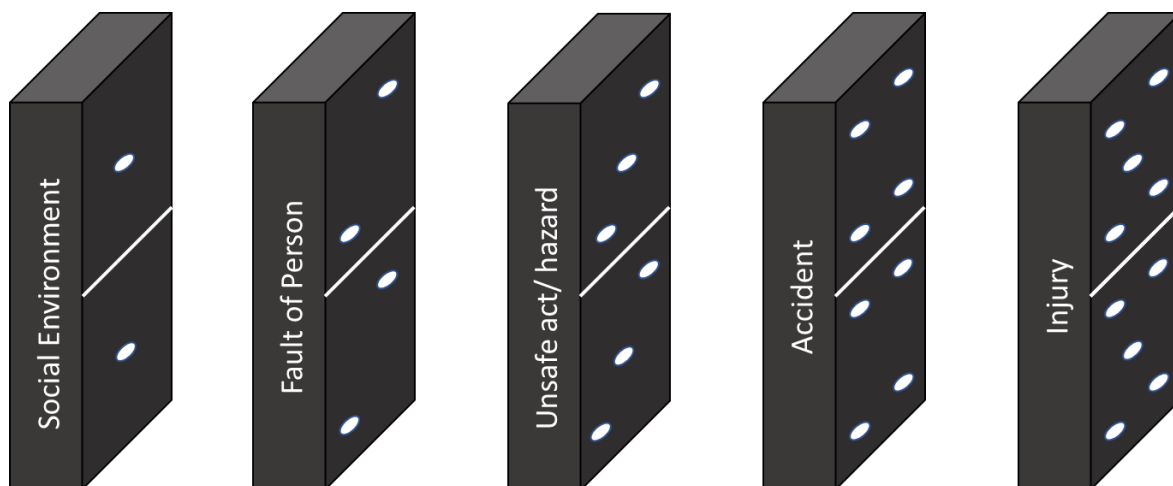


Figure 2.1: The Domino Model, adapted from Heinrich, Petersen and Roos (1980: 22)

In healthcare, person-focused risk management hinges on auditable compliance with evidence-based policies, whereby the individual clinician is responsible for practicing safely. The focus is on the actions and omissions of practitioners; under the belief that avoidable harm is due to error. This perspective is foundational to the current approach to managing safety in maternity services, which has been termed “*Safety-I*” (Hollnagel, 2021:22).

## 2.3 Safety-I

The Safety-I perspective is founded on the assumption of linear causality, where actions lead to outcomes and therefore, adverse events are associated with error or failure (Hollnagel, 2021:22). This perspective assumes that identification of errors can prevent recurrence of adverse outcomes in the future if measures are put in place and adhered to (Anderson and Watt, 2020). From this perspective, standardisation and compliance with policies is what will prevent avoidable harm (Reason, 2000). This is grounded in scientific management theory which has its roots in industrial processes whereby policies are designed to reduce variation in human performance and improve efficiency, akin to a production line (Wears and

Sutcliffe, 2021). In this way, processes can be standardised to produce consistent and reliable outputs.

### 2.3.1 The problem with standardisation

One difficulty with the notion of standardising practice is that policies and guidelines dictate what is considered to be best practice for specific conditions or situations in isolation, but do not always consider the interrelationship with co-morbidities and other existing policies (Woodward, 2023). Often, policies are nationally derived and generic, for example NICE guidelines, which are based on utilitarian principles of the greatest good for the greatest number (NICE, 2025). Though they are devised for specific patient groups, such as pregnant women, guidelines and policies do not speak to individual cases which may not fit the typical mould, or those who choose to go against medical advice. Similarly, national standards do not take account of local contexts, for example the demographics of the local population may infer higher rates of certain morbidities which place an additional burden on healthcare services. Therefore, there may be unintended consequences of implementation, for example the increase in workload for staff, resource requirements and training needs (Woodward, 2023). Thus, policies are not always workable in practice without local or individual adaptation (Woods, 2011). To compound this problem, HSSIB (2025a) identify that national efforts by different agencies to improve safety in maternity services have been uncoordinated, therefore local implementation is hindered by the multitude of competing national directives.

Drawing on the work of Shorrock (2016) around varieties of work, Woodward (2023) questions whether work can be fully prescribed in policies and guidelines at all. Work-as-Prescribed is based on a reductionist perspective, which assumes that work can be broken down into constituent parts or discrete tasks which can then be proceduralised. This approach may be appropriate in simpler systems with predictable, linear relationships; however, it is arguably incompatible with complex systems such as healthcare, which are dynamic and unpredictable (Hollnagel 2021). Whilst complicated systems have many parts, they are largely predictable and manageable when the correct procedure is followed (Dekker, 2011). Highly complex systems such as midwifery services, are never fully knowable; their processes cannot be definitively mapped or measured because of the number of variables and

dynamic interactions which occur between system elements (Dekker, 2011:214). Thus, policies and guidelines based on how work is imagined to happen are likely to be “*unworkable, incomplete, or fundamentally wrong*” (Woodward, 2023:8).

Given the inadequacy of guidelines outlined above, non-compliance with auditable standards does not necessarily infer unsafe care of individual women as policies may have to be tailored to individual circumstances. Indeed, an essential action identified by the Ockenden (2022) review for all NHS Trusts, concerned the importance of personalised care planning for women and families. This is defined as care which is provided in partnership with women, providing choice and control, taking account of their individual values and preferences (RCM, 2025). However, it would appear that the provision of individualised care is at odds with the notion of standardising care through guidelines and policies (Downe, 2010). If safety is equated with compliance with policy, then individualising care may introduce unwanted variation in care. This not only poses a potential problem in ensuring an equitable service for all women but also means that in the event of an adverse outcome, retrospective assessment of whether care was appropriate is likely to be subjective if care deviated from prescribed course (Feeley et al., 2019).

### 2.3.2 The fallacy of human error

In 1999, the American Institute of Medicine published its seminal report, *To Err is Human*, which cited alarming figures for avoidable patient deaths, which they referred to as an “*epidemic of medical errors*” (Institute of Medicine, 1999a:1). Their revolutionary conclusion was that “*medical errors*” are not due to sub-optimal practice by individual “*bad apples*” but result from system failures and conditions that cause people to fail. Despite the passage of more than two decades, the language of unintended harm persists in the DoHSC (2025b) definition of patient safety, which infers a degree of error; that something went wrong. Dekker (2003) asserts that in the traditional view of safety, systems are essentially safe, and it is human error that causes accidents. This now dated perspective, assumes that unwanted outcomes occur as a result of error or failure and that people, being a source of variability, are a threat to system safety (Hollnagel, Wears and Braithwaite, 2015). From this perspective, incident investigation enables learning to prevent recurrence of incidents. However, this notion is problematic for two reasons; firstly,

determining the cause of an incident is difficult, and secondly, there is a risk of hindsight bias which may lead to attribution of blame.

Root cause analysis is a commonly used method to investigate incidents with the aim of identifying the causative factors so that they may be mitigated in the future (Hollnagel, 2021). However, this has been criticised as an oversimplification of events which often results in “*weak or ineffective*” solutions (Marshall, 2023:409). Indeed, contemporary patient safety is built upon the previously discussed industrial accident prevention work of Heinrich, Petersen and Roos (1980: 22), which suggests that “unsafe acts” are the key factor in the chain of accident causation. Considering again the domino model, Khanzode, Maiti and Ray (2012: 1360) assert that it may be easier to blame the “*unsafe acts*” domino which can be address by instructing workers to do better, than to address the more complex underlying conditions which are harder to resolve. However, Scamell et al (2019) clarify that where learning from unique or isolated incidents is used to manage future risks, this leads to tighter and tighter controls and organisational aversion to risk. In contrast, current thinking in safety science suggests that there is no one singular cause to accidents or incidents in complex systems, therefore, causal models represent an “*oversimplification*”. (Dekker, 2003: 215) of the reality of what happened. For example, NHS England (2019:35) cite “*failure to initiate CTG when indicated, failure to record a good-quality CTG, inadequate CTG interpretation and failure to communicate the findings to senior staff in a timely manner*”, as contributory causes of preventable fetal loss and neonatal death, as well as attributing human error as a factor in the misinterpretation of antenatal CTG’s. However, CTG interpretation and escalation is known to be a complex socio-technical process which is highly dependent upon interprofessional relationships and the interdependencies with other’s actions (Lamé et al., 2024). Therefore, an incident reported as a failure in care is unlikely to be due to the error of one individual.

Similarly, successive reports into the safety of maternity services have identified midwives’ failure to recognise and manage deterioration as a contributory factor in unwanted outcomes for mothers and babies (Kirkup, 2015; Ockenden, 2020). Given that knowledge of normal anatomy and physiology, and the ability to recognise deviations is a prerequisite of professional registration with the Nursing and Midwifery Council (NMC) (2019), it could be assumed that midwives should have

had the knowledge required to recognise deterioration in these cases. Thus, midwife error may be a logical conclusion to draw. However, recognition of deterioration is a complex process which is impacted by multiple other factors beyond clinicians' lack of knowledge (Bernstein et al., 2021). For example, it has been argued that normality-focused midwifery training may be inadequate preparation for caring for women with complications (Jeffrey et al., 2017). The midwifery philosophy of childbirth as a normal life event whereby women are not viewed as patients who are sick, but as healthy, young women undergoing a normal physiological process may impact upon the priority placed on routine observations, so opportunity to detect deterioration may be limited (Jeffrey et al., 2017). Subsequently, recognition of the significance of abnormal observations may also be inhibited by the focus on normality, as it may be difficult to distinguish physiological changes of pregnancy from the pathological signs of developing illness, because both may cause vital signs to be outside of the normal non-pregnant range (Mackintosh and Sandall, 2016). Alternatively, desensitisation may play a part in the failure to recognise deterioration, as abnormal observations are commonplace and thus become normalised (Mackintosh and Sandall, 2016). Skills and physiological perception have also been shown to decrease as women deteriorate (Cooper et al., 2012), which may be symptomatic of the suggested inadequacy of normality-focused midwifery training (Jeffrey et al., 2017).

This discussion serves to illustrate that to attribute failure to recognise and manage deterioration to midwife error may be an oversimplification of a complex process which may be fundamentally shaped by the midwife's philosophy of care and normality-focused training. Nevertheless, the view of pregnancy and birth as a physiological life event may contribute to the focus on error in maternity care, as there is widespread expectation that childbearing will follow a routine course, leading to a healthy mother and baby. Where this is not the case, people look for someone to blame because adverse outcomes are viewed as avoidable failure (Mackintosh and Sandall, 2016).

This leads to a second concern with equating harm with error, which is that retrospective assessment of error is subject to hindsight bias, which attributes a value judgment to the clinician's actions without fully understanding the context within which the actions were taken (Dekker, 2003; Marshall, 2023). That is to say

that blame may be apportioned to individuals for issues that have multifactorial, systemic origins. Indeed, the Health and Social Care Committee (2021a) identified a pervasive blame culture in English maternity services, which they suggest may be perpetuated by the litigation system whereby families must prove liability for harm to access compensation (Health and Social Care Committee, 2021a). It is acknowledged that the NHS Resolution Early Notification (EN) scheme has been introduced to provide families of babies affected by severe brain injuries with earlier recourse to financial support without having to prove negligence (NHS Resolution, 2022). The scheme is also intended to enable learning from incidents without apportioning blame. However, it is too soon to assess what impact this will have on the historical “*blame culture*” in English maternity services (Health and Social Care Committee, 2021a: 3).

With the benefit of hindsight, it is possible to assert that the actions taken were erroneous or misguided, but decisions ought to be judged against the knowledge the practitioner had at the time and in the context that the decision was made (Dekker, 2003). Applying the principle of local rationality, Woods and Hollnagel (2006) argue that it is important to recognise that people make decisions that make sense to them at the time. Therefore, an alternative approach is necessary which appreciates the complexity of healthcare, considering the subtle interdependencies which contribute to outcomes (Marshall, 2023).

### 2.3.3 The inadequacy of interventions to manage risks in maternity

The Institute of Medicine (1999b) recommended a move away from a punitive system of attributing blame, to redesigning work systems to support practitioners to do the right thing to minimise the potential for errors. Considering the example above of midwives’ failure to recognise deterioration, myriad tools have been implemented in maternity services to mitigate the risk of human error, as can be seen in the figure below. Despite these interventions, recognition and management of serious illness remains a concern in maternity services (Mackintosh and Sandall, 2016).

- Early warning scores or track and trigger tools to aid recognition of clinical deterioration and appropriate follow-up.
- Standardised escalation pathways or protocols.
- Communication tools such as Situation, Background, Assessment, Recommendation (SBAR).
- Individual and team training.
- Medical emergency teams or critical care outreach services.

Figure 2.2: Safety systems and tools to mitigate the risk of human error, adapted from Mackintosh and Sandell (2016)

Analysis of the literature around management of the deteriorating patient in maternity care demonstrates multiple flaws with some of the interventions above. For example, issues with the design of track and trigger tools that are intended to aid recognition of deterioration and appropriate escalation. Isaacs et al (2019) found that 30% of maternal observation charts contained at least one significant design error which could lead to delays in care or inappropriate management. Mackintosh et al (2014) report vague escalation protocols which omitted key information necessary for consistent referral and management of sick patients. Similarly, Cheshire et al (2021) identified significant variation between the normal parameters used in existing charts. This sheds new light on the person-focused approach which suggests that midwives fail to recognise deviations from normal (Kirkup, 2015; Ockenden, 2020), when in fact what is considered normal depends on local policy rather than objective truth. It is possible therefore, that rather than clinicians such as midwives being fallible and the source of errors, people are working in imperfect systems that sometimes set them up to fail. In the case of track and trigger tools, inconsistent parameters on observation charts can lead to variable implementation and outcomes of care (Isaacs et al., 2019), either because unnecessary referrals are made or, because help is not accessed when needed (Cheshire et al., 2021). Therefore, interventions to mitigate the risk of human error may be inadequate to manage risks in maternity services due to multiple system factors.

Similarly, a national care bundle known as *Saving Babies Lives (SBL)* has been implemented to reduce perinatal mortality (RCOG, 2020), in response to the Department of Health (DoH) (2017) ambition for Maternity Safety. Whilst the target was to halve the rates of stillbirths, neonatal and maternal deaths and neonatal brain injuries, and to reduce the national rate of pre-term births from 8% to 6% by 2025

(DoH, 2017), an evaluation has determined that the Government's progress towards these targets has thus far been unsatisfactory (Health and Social Care Committee, 2021a). Maternal deaths have statistically significantly increased in the last triennium, even excluding those related to Covid-19 (Felker and Knight, 2024). Whilst there has been a small reduction in stillbirth (3.74/1,000 to 3.35/1,000 births) between 2017 and 2022, the rates of neonatal deaths has remained broadly the same over this period (Gallimore et al., 2024), and the (Health and Social Care Committee (2021a :5) state that progress towards the target of reducing neonatal brain injuries "requires improvement". Additionally, there remains significant racial and socioeconomic inequalities in outcomes (Health and Social Care Committee, 2021a). This demonstrates the complexity of the links between interventions and outcomes and the difficulty of attempting to improve maternity care safety by applying the traditional cause and effect understanding (Hollnagel, 2021).

Shorrock (2016) highlights that there is a difference between Work-as-Imagined (WAI), where work procedures are written based on a presumed understanding of how work occurs, and the reality of how work is actually completed, bearing in mind the everyday challenges of the work environment. The latter being termed Work-as-Done (WAD). In the same way, interventions based upon assumptions about the root cause of unwanted outcomes may not successfully address the issue they are intended to if they do not adequately reflect WAD. A particular challenge in improving safety in maternity care is that interventions to address one issue may produce unanticipated consequences. For example, in line with the SBL care bundle, the National Institute for Health and Care Excellence (NICE) (2021) guidelines have increased the criteria for recommending Induction of Labour (IOL), including reducing the gestational age for induction of labour for post maturity, from 42 to 41 weeks. NICE (2021) admit that whilst this intervention is recommended to minimise the risks of continuing with the pregnancy, it does pose an increased risk of other interventions including the need for epidural analgesia, instrumental delivery and caesarean section. Meanwhile, the increased workload involved in IOL may be detrimental to the care of other women using the service (NHS England, 2023). This demonstrates the complexity of implementing interventions to improve patient safety, where attempts to reduce one outcome may affect another in unpredictable ways.

NHS England (2019:15) acknowledge that in relation to the SBL care bundle: “The introduction of any new pathway carries a risk of *‘intervention creep’*, where other obstetric interventions may become more commonplace. Indeed, White VanGompel and Main (2021) highlight the large variation in obstetric intervention rates between different maternity units, and question where the balance should lay between levels of intervention and maternal and neonatal outcomes. That is, whether the end result justifies the means by which it is achieved, considering that intervention rates are also monitored as a process measure of maternity safety (NHS England and NHS Improvement, 2019). Thus, determining whether an intervention has improved safety may depend upon which outcome is looked at. Ockenden (2022) reported that fixation with low Caesarean section rates meant that women did not receive the timely intervention that was necessary to prevent undesirable outcomes for mothers and babies at Shrewsbury and Telford Trust. Meanwhile, Reed (2021) states that pressure on maternity staff to achieve targets for measurable outcomes can override the provision of person-centred, individualised care.

It is worth noting here the philosophical difference between the midwifery and obstetric perspectives. Midwifery follows a social model of care, which views pregnancy and birth as a normal, physiological process which usually progresses without complications and requires minimal intervention (ICM, 2014). The obstetric perspective employs a medical model of care where pregnancy is deemed as inherently risky, and intervention is required to manage those risks (Davison, 2021). This difference leads to a tension between the desire to minimise unnecessary intervention because this is seen to medicalise a natural process, and the intention to actively manage risk to protect the mother and baby from morbidity and mortality (Davison, 2021).

The debate between models of maternity care and perceptions of risk has received significant attention in the literature (Feeley, 2023); however, it is beyond the scope of this thesis to analyse these concepts here. The inclusion of this point serves to provide necessary background to understand that the link between interventions and outcomes is complex in maternity care, and indeed unnecessary intervention could itself be viewed as a type of harm (Feeley, 2023; ICM, 2017a). As Reed (2021:45) suggests, birth trauma is a “*common side effect of increased intervention and a fragmented package of care*”. Considering this, provision of safe maternity

care should not only be concerned with clinical outcomes and rates of interventions, but also patient experience, including dignity, psychological safety, and person-centred care (White VanGompel and Main, 2021).

## 2.4 Systems Thinking

In contrast to the person focused approach to risk management which presents many challenges to the operationalisation of patient safety activity as discussed above, Reason (2000) proposed an alternative systems-focused approach. Rather than assumptions of linear causality where adverse outcomes can be prevented by individuals adhering to standardised procedures (Anderson and Watt, 2020), healthcare is deemed to be a complex system, in which safety emerges from the actions, relationships and interdependencies between system elements (Health Foundation, 2010). Thus, safety in maternity care is said to be an “*emergent property of complex systems*” (Liberati et al., 2019:71). That is to say that safety is not a static entity which exists in and of itself which can be eroded by certain behaviours, but safety is a property which arises from the interaction of human and technological elements within a complex and dynamic system. In this way, *Systems Thinking* considers that adverse outcomes result from multiple contributory interactions within a complex network, rather than from one singular cause (Dekker, 2011).

Given the complexity of healthcare, the systems-focused approach seeks to manage risk by designing the system to avoid unwanted outcomes (Bridger, 2018). As with the person focused approach, the systems approach still sees humans as fallible and prone to error (Reason, 2000). However, as Marshall (2023) suggests, Human Factors is about accounting for the abilities and limitations of the person and designing the system around this, rather than training the individual to work better in an ill designed environment. A systems approach considers all aspects of the sociotechnical work system which may impact upon patient safety, not just the actions and omissions of the clinician (Carayon, et al (2014).

In 2022, NHS England launched a new approach to patient safety, known as the Patient Safety Incident Response Framework (PSIRF), which has been heralded as

a significant change in the way incidents are responded to (Ashmore and Ruthven, 2023). Whilst this new framework demonstrates progress in seeking to implement a systems-based approach to understand the factors which may contribute to patient safety incidents (NHS England, 2024), the methodology remains predominantly retrospective; lessons are to be learned from incidents which have already happened, which is flawed (Scamell et al., 2019). Meanwhile, contemporary thinking suggests that safety in healthcare has not improved significantly because the wrong perspective of safety has traditionally been applied (Wears and Sutcliffe, 2020). Dekker (2003) argues that failure and success occur under the same conditions. Therefore, to view safety through the lens of failure is to look at only half of the picture.

## 2.5 Safety-II

An alternative perspective, coined Safety-II, refutes the assumptions of linear causality, retrospective incident investigation, standardisation and compliance which are synonymous with a Safety-I approach. The Safety-II perspective suggests that:

- Safety is an emergent property which cannot be directly measured.
- Wanted and unwanted outcomes result from the same behaviour.
- Harm results from complex interactions within the system, which are largely unpredictable and unknowable.
- Understanding safety requires consideration of how everyday work goes well, not just why it occasionally fails.
- Key to safety is adaptive performance of individuals.

This contemporary perspective seeks to understand how everyday work usually succeeds, rather than why it occasionally fails, by considering how people adapt to threats to safety (Dekker, 2003). Thus, safety can be supported prospectively, by valuing adaptive capacity of individuals within the organisation, which enables the system to maintain operations safety despite potential disruptions or adverse pressures (Hollnagel, 2011). This perspective paves the way for an alternative approach to safety known as Resilience Engineering, which builds on Reason's (2000:770) notion of a "*dynamic non-event*" where safety is maintained by timely

adjustments made by people which prevent adverse events. The theoretical foundation of this will be explored in the following chapter.

## 2.6 Chapter conclusion

This chapter has presented the background to this thesis which is that despite efforts to improve safety in maternity services, progress so far has been unsatisfactory and remains a high-profile public concern (Health and Social Care Committee, 2021a; Ockenden, 2025). Contemporary safety science literature suggests that the current approach to safety may be inadequate to improve outcomes in complex healthcare settings such as maternity services because they have innumerable human and technological elements which interact dynamically to produce unpredictable outcomes (Anderson and Watt, 2020; Dekker, 2011; Hollnagel, Wears and Braithwaite, 2015). The traditional cause-and-effect approach to safety assumes that adverse events are associated with error or failure (Hollnagel 2021). Therefore, improvement efforts focus on standardisation, compliance with policies and procedures, and learning from incidents to prevent recurrence (Reason, 2000). This chapter has discussed multiple limitations to this way of thinking. Notably, that people work in imperfect systems which may sometimes set them up to fail. Meanwhile, work procedures and guidelines based on how work is imagined to happen, particularly those that are nationally derived; are not always workable in practice without local or individual adaptation. Therefore, non-compliance with auditable standards does not necessarily infer unsafe care of individual women. Furthermore, ideological differences between midwifery and medical models of maternity care are reflected in different perspectives on what constitutes safety; promotion of normal physiological birth avoiding unnecessary intervention or actively managing risks to protect the mother and baby from potential morbidity and mortality.

The following chapter explores a novel theory known as Resilience Engineering which may present new opportunities to improve safety by thinking about it differently. In this alternative perspective, the adaptive capacity of people is an integral strength of the system rather than a source of unwanted variability, as people respond dynamically to pressures and potential disruptions. Therefore,

improvements to the service can be made by exploring how everyday work succeeds rather than why occasionally, incidents happen.

# Chapter 3 : Resilience Engineering as a Theoretical Foundation

## 3.1 Introduction

The previous chapter outlined the traditional approach to patient safety, often referred to as Safety I, which focuses on learning from safety incidents to prevent recurrence (Hollnagel, Wears, and Braithwaite, 2015). Contemporary thinking suggests that such reductionist approaches are inadequate to prevent avoidable patient harm because they fail to account for system complexity (Patriarca et al., 2017). An alternative approach is to consider how everyday work usually succeeds rather than why it occasionally fails (Dekker, 2003). Resilience Engineering (RE) presents an opportunity to explore supportive mechanisms which may prospectively facilitate safety improvement and avoid harm. The chapter will examine the theoretical foundations of RE as a paradigm, compare existing conceptual models, and critique contemporary applications of this theory in healthcare. The following chapter will then present a literature review of how Resilient Healthcare (RHC) has been applied in the midwifery context to date, to identify gaps in the literature which will be addressed in the study which follows.

## 3.2 Resilience Engineering

Human Factors is defined as a both a scientific area of study that focuses on the interactions between humans and the work environment; and an applied practice which aims to design or redesign systems to enhance human well-being and system performance (HSSIB, 2025b). Within this discipline, Organisational Ergonomics considers how sociotechnical systems are organised in terms of their policies, processes and structures, in order to optimise their performance (International Ergonomics and Human Factors Association 2026). Resilience Engineering, is a macro-ergonomic theory within the domain of Organisational Ergonomics, which has been proposed as a useful approach to safety management in complex socio-technical systems (Righi et al., 2015). This theory is concerned with how complexity can be managed in everyday work, through dynamic adaptive and performance to achieve success under varying conditions (Hollnagel, Woods, and Leveson, 2006). That is, how work can continue successfully, not only when conditions are ideal, but also in the presence of adversity or barriers to effective performance. Though people

are the most adaptive part of a socio-technical system, RE is concerned with the capacity of the system as a whole to respond to variable conditions to adapt to withstand future challenges (Woods 2018). Hollnagel (2011: e-book) defines resilience as:

*“The intrinsic ability of a system to adjust its functioning prior to, during, or following changes and disturbances, so that it can sustain required operations under both expected and unexpected conditions”.*

Inherent within this definition are several core concepts which ought to be defined, and which raise questions that require further exploration. Specifically, what is the system? How does the system adjust its functioning? What are the required operations? And how can unexpected conditions be anticipated or managed so that operations continue? These questions will be addressed in turn, firstly from a theoretical perspective and then applied to healthcare through Resilient Healthcare (RHC) specific literature.

### 3.2.1 The system

A system can be defined as a network of interconnected elements which interact to achieve a common purpose (Dul et al., 2012). Within this definition, the components may be physical (objects, equipment or environmental), human, or structural such as legislation or economic factors (Elliott-Mainwaring, Phillips and Bowie, 2023b). A system which combines humans and technology or machines, such as healthcare, is known as a socio-technical system (Walker et al., 2008). Sociotechnical systems are nearly always “*Systems of Systems*” which means that their boundaries are difficult to define, and they are intractably linked with other systems (Lundberg and Johansson, 2015:22). Clearly this hinders the operationalisation of RE, because it is difficult to know where a system ends. It is not possible to examine how a specific system performs in isolation to other interrelated or coupled systems that form the context within which the system functions. Therefore, it is necessary to artificially bound a system in order to operationalise the study of resilience. One way to do this is to consider the structural levels of a system. In considering the context for quality improvement activity, Fulop and Robert (2015) describe healthcare systems as comprised of micro, meso and macro structural levels, whereby an example of the micro level is the clinical team, the meso level is the organisation, and the macro level is the wider healthcare system. Using this structure, a maternity ward might

constitute a micro system. However, it does not function in isolation; it is dependent upon activity within other interconnected micro systems, such as the Labour ward and the outpatient community care services. Collectively, these micro systems would make up the meso system which could be defined as the whole maternity service at a particular geographical location, though this would be impractical to study. Alternatively, a micro system could be a specific shift, as the constituent human parts of the maternity ward may change on a shift-to-shift basis with changing staff, patient load and acuity. Regardless of where the lines are drawn, it is important to acknowledge that resilience is context specific (Woods, 2011), so the aim of defining the boundaries of a system is not to isolate it from the wider context, moreover, to make it manageable to study.

Sociotechnical systems are often considered to be complex systems, perhaps because of the presence of human elements, which are often unpredictable. Although conversely, complex systems are not always sociotechnical, for example non-technological ecological systems may also be considered complex (Elliott-Graves, 2023). Complexity refers to the nature of the relationship between the elements, which are frequently non-linear and unpredictable (Dekker et al., 2013). This is opposed to complicated systems such as a machine or an aeroplane which generally can be fully mapped or described and are therefore, largely controllable (Dekker, 2011). Similarly, maternity care is considered to be a complex system because it is not reducible to its component parts, consequences of interventions are not predictable, and the system itself is everchanging (Dekker, 2011; Pradhan et al., 2024).

The capacity to change means that maternity care can also be defined as a complex adaptive system (CAS), which is:

*“a dynamic network of agents acting in parallel, constantly reacting to what the other agents are doing, which in turn influences behaviour and the network as a whole” (The Health Foundation, 2010:6).*

Whilst complex adaptive systems have become distinguished as a type of system in their own right, Dekker (2011) argues that complex systems are inherently

changeable in reaction to their environment. Therefore, the two may actually be analogous. What is perhaps more useful here, is to consider complex adaptive systems as a perspective on how systems work; a way of thinking about the interactions within a system, taking account of the complexity, rather than seeing CAS's as an entity in themselves (The Health Foundation, 2010). Indeed, Pradhan et al (2024: 98) propose that maternity care may be a subset of CAS known as an *Ultra-adaptive System*, where inherent risks are predominantly managed by people in the system who adapt in situ at the point of care. This is in contrast to *Ultra-safe CAS's* which seek to exclude risk through standardisation and regulation (Pradhan et al., 2024: 99). The key distinction here is that standardisation through written policies, procedures and guidelines is of limited value in ultra-adaptive systems because of the high degree of change and variable conditions (Pradhan et al., 2024).

### 3.2.2 Adjustment/ adaptation

The definition presented above by Hollnagel (2011: e-book) considers resilience to be *“the intrinsic ability of a system to adjust its functioning prior to, during, or following changes...”*. As such, a fundamental assumption of RE is that change is ever-present, for example, peaks and troughs of demand, availability of resources, and technical difficulties (Hollnagel, Woods and Leveson, 2006). Given this variation, it is not always possible to comprehensively specify in advance how work should be done (Back et al., 2016). Shorrock (2016) explains this principle as the difference between Work-as-Imagined (WAI) and Work-as-Done (WAD), where organisational level expectation of how a certain activity or task is carried out varies to a greater or lesser extent from the reality of how it is actually performed by those at the frontline who have to operate under variable conditions. From a Safety-I perspective which extols the importance of adherence to policy, variation in human performance has traditionally been seen as a threat to safety, because it is equated with *“deviance”* or *“rule violation”* which is assumed to lead to *“intentional harm”* (Back et al., 2016:183). On the contrary, Braithwaite, Wears and Hollnagel (2015) proffer that trying to standardise practice only serves to increase the gap between WAI and WAD. In reality, people have to adapt their practice (professional performance) to account for variable conditions and thus close the gap between WAI in written procedures and the reality of delivering care in everyday practice (WAD) (Braithwaite, Wears and Hollnagel, 2015; Debono et al., 2018). This may be

through adaptations to work procedures, work arounds or trade-offs to meet the demands of the circumstances (Hollnagel, Woods and Leveson, 2006; Righi et al., 2015). These concepts are defined in figure 3.1 for clarity.

**Adaptation:**

“Any change to a process that is necessary for success, for example to work around a problem or difficulty. Adaptation may save time, preserve resources, allow others to function well, or deliver the best care available when difficult priority decisions are needed” (Anderson and Ross, 2020).

**Workaround:**

“An adaptation, improvisation or change, to an existing work rule designed to promote safety, in order to overcome, or lessen the impact of obstacles that are perceived as preventing that work system or its actors from achieving a desired goal”. (Clark et al., 2024:2).

**Trade-off:**

“Adjusting how we do things to meet the demands and the current conditions, in order to meet the requirements of acceptable performance. That is, balancing demands and resources” (Hollnagel, 2022:1).

Figure 3.1: Definitions of types of adaptation

Though the definitions are similar, adaptation could be considered an umbrella term which includes all types of adjustments to work for various reasons, whereas workarounds are intended to overcome a specific barrier to task completion. Trade-off's, meanwhile, infer action to balance demands and resources as stated in the definition above, or to prioritise goals such as efficiency or thoroughness, which Hollnagel (2022:1) describes as the *Efficiency-Thoroughness Trade-Off (ETTO) principle*. This principle suggests that it is not possible to be simultaneously wholly efficient and wholly thorough, therefore individuals adapt how they work to achieve one goal over the other, to an acceptable level of each, determined by organisational priorities, external drivers, cultural norms, routine local practice or habit (Hollnagel, 2022). Inherent within this principle is an important observation about the nature of complex systems which is that they are imperfect. Cook (2000) argues that complex

systems function in a degraded manner because of multiple flaws and continual change; however, people adapt to make the system work. For example, to overcome variable demand, insufficient resources, or technical difficulties (Hollnagel, Woods and Leveson, 2006). Hence, adaptation is required because work can never be performed in the way it is imagined to occur. As Cook (2000 online) explains:

*“Because system operations are never trouble free, human practitioner adaptations to changing conditions actually create safety from moment to moment. These adaptations often amount to just the selection of a well-rehearsed routine from a store of available responses; sometimes, however, the adaptations are novel combinations or de novo creations of new approaches”.*

With this in mind, adjustments are considered to be “*necessary violations*” (Reason, 1997:73), to ensure that the work can be completed successfully (Hollnagel, Woods and Leveson, 2006; Righi et al., 2015). In this situation, rather than being viewed as a liability, in sub-optimally designed complex care systems it is people who create safety through adaptive performance (Back et al., 2016; Cook, 2000; Hollnagel, 2012; Iflaifel et al., 2020; Macrae, 2019; Sujana et al., 2015). This notion is conceptually attractive to an industry such as healthcare where autonomous practitioners must navigate between adherence to work procedures and real-world challenges (Iflaifel et al., 2020; Verhagen et al., 2022). RE potentially offers a new perspective on how healthcare systems can be supported to succeed routinely (Safety-II) by supporting variability rather than focusing on prevention of harm (Safety-I) (Anderson et al., 2013). However, the application of RE concepts and practices in healthcare (Resilient Healthcare) is still in its infancy with much of the literature focusing on theoretical descriptions of the paradigm. Empirical evidence of its existence or practical application of the theory to improve quality and, or safety is limited, though this is to be expected of a nascent discipline (Wiig and Fahlbruch, 2019).

A review of the literature has identified several theoretical issues which may present barriers to the acceptance of resilience in healthcare. Firstly, it is not clear which adaptations or workarounds are beneficial for producing safety, and which actually

or potentially degrade system safety (Hollnagel and Braithwaite, 2018). Whilst Reason (1997) identifies some adaptations as “necessary” to overcome situational challenges, other violations are labelled “routine” or “optimising” which have more negative connotations with cutting corners and personal gain respectively. Although this work is now dated, and contemporary thinking around patient safety has perhaps moved on, it would be unwise to disregard the possibility that not all adaptations are carried out with philanthropic intent (Back et al., 2016). Nonetheless, according to resilience theory, the same behaviours lead to both desirable and undesirable outcomes (Dekker, 2003) so regardless of the motivation, people probably behave the same way all or most of the time. Therefore, it is likely the complex interaction of other elements within the system which determines whether an adaptation leads to a positive outcome or not, rather than the nature of adaptation itself (Sujan et al., 2015). That being said, there remains the possibility that some adaptations may degrade the system (Anderson et al., 2016; Wiig and Fahlbruch, 2019), as people are considered to be both creators of failure and defenders against it (Cook, 2000).

Resilient performance encompasses both response to disruption and adaptation to it so that the system can continue to function in the presence of continued adversity (Wiig and O’Hara, 2021). Consequently, Resilient Healthcare (RHC) is thought to contribute to both safety and quality improvement (Anderson et al., 2020), as short-term adaptation is required to safely manage unexpected conditions, as well as longer-term innovation of the work process or environment following learning from the incident (Lyng et al., 2021). Macrae and Draycott (2019:497) distinguish between these two types of adaptation, as “dynamic adjustments” and “adaptive reorganizations”. However, longer-term innovations can themselves necessitate in-situ adaptations by frontline workers as new practices or technologies can present unanticipated challenges, for example inadequate Wi-Fi access for mobile technologies (Debono et al., 2018; Lyng et al., 2021). This emphasises the difficulty in operationalising RE theory in healthcare, as supporting adjustment in how the system functions may have unintended consequences. As Woods (2011) states, local adaptations can have unintended systemic consequences, and conversely regional initiatives can infer additional challenges for clinicians doing the work (Woods, 2011). For example, a comparative case study by Wachs et al (2016:232) identifies organisational support for resilience skills, for example having contingency

plans for emergencies, support for collaboration, routine management of equipment and resources, and measures to deal with lack of beds for admitted patients, such as diverting less sick patients away from the Emergency Department (ED) to outpatient facilities and asking other hospital wards to take responsibility for ED patients that are waiting for transfer. Whilst these mechanisms would undoubtedly ease workload for ED staff during peaks in demand, they will inevitably increase the workload for those other settings. This study goes some way to address the link between resilience mechanisms at different levels of the system by discussing the organisation of work which thereby supports the adaptive capacity of individuals. However, one finding labelled the “*Standardization of managerial and care processes*” (Wachs et al., 2016:232) would appear to be antithetical to the concept of adaptive performance. As Anderson et al (2020:13) state:

*“Because resilient healthcare emphasises the capacity of a system to self-correct and cope with disturbances the focus moves beyond reliability and compliance towards improving the adaptive capacity of the system and supporting people in dealing with organisational complexity and demands. Safety and quality are strengthened by enabling workers to adapt safely to changing conditions....”*

Despite the focus of RHC on organisational resilience, most literature focuses on adaptations of frontline clinicians to account for system demands (Berg et al., 2018; Berg and Aase, 2019). For example, Furniss et al (2018) conducted an exploratory study, interviewing Anaesthetists using a Resilience Markers Framework. The study identifies seven resilience strategies employed by Anaesthetists in everyday work. It is possible that some of these mechanisms could benefit other practitioners and thus support resilience of the wider system, although this is not discussed. For example, colour-coding keys to emergency drug cupboards so that the right key is easily identifiable. However, it is not clear whether the strategies described by Furniss et al (2018) are widespread practices or individual variations, for example using different sized syringes to differentiate between drugs. Describing resilience mechanisms may be the first step in operationalising RHC theory, but clearly further work is required to assess how widespread local adaptations are and build consensus on which adaptations are beneficial thus should be supported, and which are potentially dangerous. It is also important to recognise here that mechanisms which work in one context may not be helpful in another. For example, Wachs et al

(2016) suggest that a computerised system supported resilience skills, by allowing access to online policies and electronic patient records. On the contrary, research by Debono et al (2018) highlighted difficulties with the design and usability of electronic systems which necessitated workarounds. This disparity serves to demonstrate that resilience mechanisms are context specific, dependent on local resources and constraints. Indeed, Dixon Woods (2014) discusses the importance of context in quality improvement, warning that interventions that work in one setting may not work in another because it may be other factors such as culture surrounding the implementation that support its success rather than necessarily properties of the intervention itself.

An ethnographic study by Debono et al (2018) found that nurses used workarounds for efficiency, safety, patient-centredness, to aid teamwork and to adjust for contextual challenges. A workaround is defined as a creative method used to circumvent problems or limitations in a system (Dekker, 2011). Whilst workarounds can be seen as a resilient behaviour, the authors highlight that they are necessitated by a tension between “bottom-up challenges of day-to-day work and top-down pressures, including policy directives” (Debono et al., 2018:54). Over time, this can impact upon nurses’ wellbeing, contributing to fatigue and burnout (Debono et al 2018). From a Human Factors perspective, as well as seeking to make care systems resilient, it is important to consider the wellbeing of those doing the adapting alongside the outcomes of safety and quality of care for patients. One way that individuals deal with complexity and competing demands, is to vary performance to ensure success, including creating necessary workarounds. Debono et al (2018) recommend that a possible opportunity to improve organisational resilience is to focus on identifying specific workarounds that individuals make, as these highlight system inadequacies, and then seek to integrate effective workarounds into everyday practice. In this way, the gap between WAI and WAD can be narrowed by redesigning WAI in line with current practice, rather than demanding adherence to procedures that may be unworkable in reality (Hollnagel and Braithwaite 2018). It is worth noting here though that as well as the psychological impact on clinicians of repeatedly having to work around contextual challenges, Debono et al (2018) highlight the negative perception of workarounds as a deviant behaviour. This suggests that there may be a disconnect between RHC theory which values adaptation as a source of resilience; and the experience of clinicians in practice who

perceive judgement for deviating from protocols. Similarly, whilst RHC theory proposes that acceptable and unacceptable outcomes result from the same system behaviours, in practice, individual clinicians may still assume liability for unwanted care outcomes, such as harm to patients (Verhagen et al., 2022). This raises an important question about how clinicians are supported to adapt their practice to account for misalignment between capacity and demand, and to overcome contextual challenges.

The literature around adaptive capacity presents a contradiction in that individual adaptations can be both a source of resilience and a threat to it. On the one hand, adaptation to complexity is what keeps the healthcare system safe and functioning (Anderson et al., 2020). On the other hand, research suggests that whilst short-term adaptation by individuals compensates for inadequacies in the system, this can actually make the organisation more vulnerable, because it can hide system deficiencies from those higher up in the organisation (Debono et al., 2018; Lyng et al., 2021; Patterson and Wears, 2015). For example, if individual clinicians repeatedly borrow a certain drug, such as Metronidazole from another ward because their own stock has run out, the person responsible for ordering from pharmacy may not know that more of that particular medication is needed, and it would be difficult to predict how much to order for future needs when current usage is not accounted for accurately. The result might be that both ward stocks of the medication become depleted, thus the system may become degraded. Following this example through though, in the circumstance where a patient needs the medication urgently because they are symptomatic of sepsis for example, but it is not available in the ward stock, borrowing from another ward becomes a “*necessary*” adaptation for the individual clinician. This problem may be symptomatic of work in sub-optimally designed complex care systems. Nonetheless, Woods (2015:7) warns that “*organizations can undermine, inadvertently, their own sources of resilience as they miss how people step into the breach to make up for adaptive shortfalls*”. With this in mind, it may be that the issue is not so much the specific adaptations of frontline workers that pose a threat to system resilience, moreover, a failure of communication between those at the frontline and those in managerial positions who may be unaware of operational challenges because people “*step into the breach*” or, that they do not recognise the value of adaptive capacity to support organisational resilience (Woods, 2015:7).

This leads onto a fundamental issue with the concept of adaptation, which is that the relationship between individual performance and organisational resilience is inadequately defined (Berg et al., 2018). It is argued that in complex systems, relationships are not simple and linear therefore the effects of individual performance cannot necessarily be aggregated to predict systemic performance as advocated by Le Coze (2019). Similarly, the impact of top-down regulation upon individual level resilience is poorly understood (Wiig and Fahlbruch 2019). Nameth et al (2008) argue that RE encompasses people at all levels of the organisation. This can be categorised into three “*moments of resilience*” (figure 3.2), labelled Situated (front-line workers), Structural (Operational level) and Systemic (System level) resilience (Macrae, 2019:17).

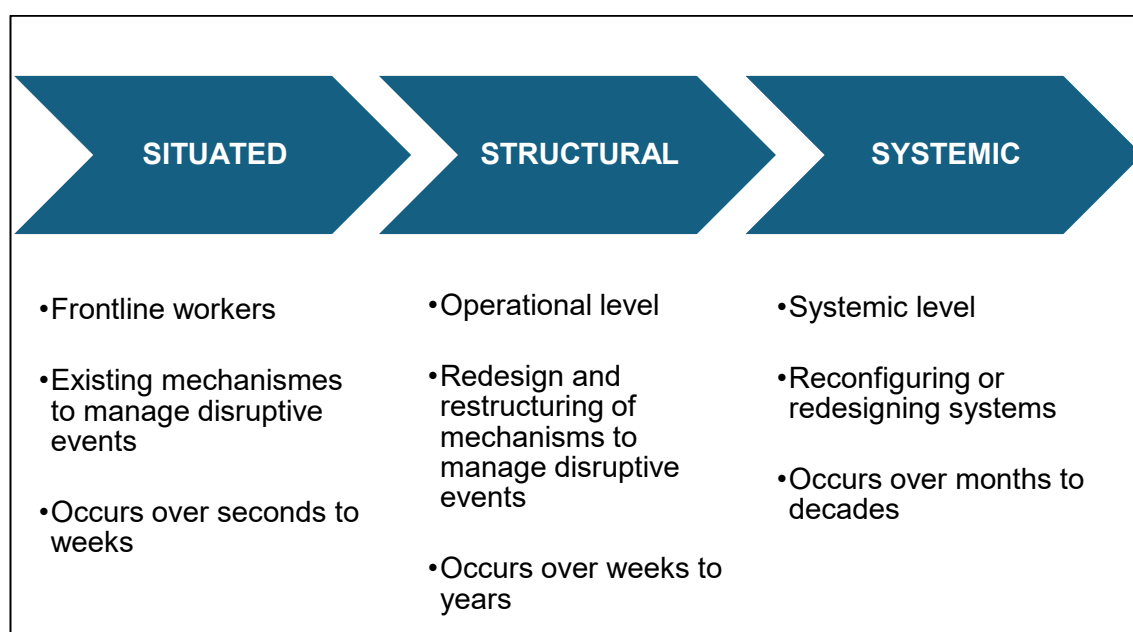


Figure 3.2: Moments of Resilience, adapted from Macrae (2019)

Where situated resilience might pertain to individual trade-offs and workarounds which occur in the immediate, structural resilience may involve medium-term attempts to reconcile WAI and WAD. Systemic resilience is a much longer-term endeavour which involves organisational reconfiguration of systems to detect and respond to potential threats to safety. However, Woods (2011) states that adaptations which are effective locally, can be maladaptive from a regional perspective. Similarly, adaptations may not be replicable in other settings because they may have unintended consequences when applied in a different context (Woods, 2011). Additionally, for a system to be resilient, some parts must remain

stable whilst others change (Lundberg and Johansson, 2015). Clearly the whole system cannot be in flux as this would lead to chaos and potentially unintended outcomes. Therefore, some adaptation is essential, but the system must simultaneously maintain some stability to ensure routine operations continue (Hunte and Wears, 2017). Consequently, although RE concerns system performance, it is important to consider resilient mechanisms which occur at each level of an organisation and the intended and unintended consequences of these elsewhere in the system (Berg et al., 2018). Multi-level research is needed to explore the relationship between different levels of the system and considers whether action taken at each level is supportive or disruptive to adaptive capacity at other levels of the system (Anderson et al., 2020b; Wiig and O'Hara, 2021). More specifically, how stakeholders at higher levels of healthcare organisations facilitate resilience and how they support frontline staff to perform adaptively (Anderson et al., 2020b). In keeping with the Human Factors lens, which is applied to this thesis, a key consideration must be the experience of clinicians to understand not only how they contribute to organisational resilience but also the impact of this on their wellbeing.

### 3.2.3 Required operations

In line with the engineering view of resilience which concerns the ability of a system to “*bounce back*” to a steady state (Wiig et al., 2020:332), seminal work by Hollnagel et al (2006) defined resilience as the ability to maintain or return to stability after a disruption. However, in an organisational context, the concept of stability has been criticised because it implies that the system has not learnt from or improved its processes as a result of the event, only returned to its previous state, which will not prevent recurrence of the same issue in the future (Coetzee et al., 2016). Similarly, Woods (2015) states that the concept of recovery to normal after a disruptive event is problematic because adaptation to the disruption irreversibly changes the system itself. Therefore, it will not go back to how it was before. A fundamental assumption of Resilience Engineering is that change is inevitable (Woods, 2015). Consequently, the concept of stability is contradictory to resilience theory. As Coetzee et al (2016) identify, resilience does not require a system to be stable, but adaptable. Hollnagel (2011) therefore refined the definition of resilience to account for expected and unexpected conditions. The core concept being that supporting variation in practice allows operations to continue despite adverse or unexpected conditions (Righi et al., 2015). Macrae (2019:15) proposes that the aim of resilience is to manage

*“disruptions, failures and surprises in ways that avoid total system collapse”*. This represents a subtle change in focus, from concentrating on stability of the process to maintenance of productivity.

A disruption is defined as something which:

*“Interrupts an activity in such a way that it derails the ongoing flow of that activity and requires the mobilisation of supplementary sociotechnical resources (e.g. expertise, attention, time, tools, data) to restore order and control, beyond those that would ordinarily be enrolled in that particular activity”* (Macrae, 2019: 20).

Considering this definition, the notion that a disruption may “derail” operations would appear to contradict Hollnagel’s (2011) definition of resilience whereby required operations are sustained, despite the conditions. However, the key issue here is that to be resilient against complete collapse, the system may need to reduce or adjust which functions it carries out during the period of adversity (Lundberg and Johansson, 2015). In this situation, it is recommended that organisations should focus upon their core goals (Lundberg and Johansson, 2015). Broadly, organisations may choose to prioritise safety, productivity, quality, or efficiency for example, although this represents a fragmented view where these goals are independent of each other (Hollnagel, 2021). Nevertheless, it is possible to infer how this principle applies in practice, for example in healthcare when demand outstrips capacity, clinicians might prioritise activities which aim to keep sick patients alive (safety) and relinquish productivity in terms of completing elective procedures for relatively well people who can wait. This can be seen in the NHS’s response to the Covid-19 pandemic, where elective procedures such as cataract removal, cholecystectomies and joint replacement surgeries were postponed to create bed capacity for acutely ill patients with Covid-19 infections (Propper et al., 2020).

### 3.2.4 Expected and unexpected conditions

Defining a disruption as that which *“requires the mobilisation of supplementary sociotechnical resources... ”*, Macrae (2019: 20) implies that expected conditions are those for which sociotechnical resources are routinely available. This implication can be seen in research by Cuvelier and Falzon (2011) regarding anaesthetists’ experiences of coping with challenging situations, which draws a distinction between

situations that are known risks, which can be anticipated and prepared for but are not expected to occur in a particular case (termed “*Potential Variability*”); and “*Unthought-of Variability*” which is completely unexpected. The authors conclude that resilience in ‘unthought-of events’ is dependent upon the anaesthetist’s ability to recognise that the situation is beyond what the system is prepared for and to call for help. However, it is recognised that the decision to call for help is confounded by multiple trade-offs in practice such as availability of staff to assist, the time taken and what help is likely to be required (Cuvelier and Falzon, 2011). Logically, this conclusion is credible. It makes sense that it is easier to cope with adverse situations that are anticipated and have protocols or resources in place to deal with them. However, Hollnagel’s (2017) definition of Resilience in Healthcare pertains to the ability of the system to adjust its functioning under both expected and unexpected conditions. Cuverlier and Falzon’s (2011) finding appears to imply that the healthcare system can be resilient to predictable adverse conditions, but successful management of unanticipated events is dependent upon the ability of individual practitioners. Given that the study sought to interview individual anaesthetists, it is not unexpected that the findings pertain to the capabilities of individuals, but the concern is that Cuverlier and Falzon’s (2011) conclusion could infer blame on individuals for system failures.

It is suggested that while clinicians adjust their practices to account for the conditions they are working in, organisational resilience can be created by (re)designing the system considering the conditions that create the need for flexibility and adaptation, thus strengthening the ability of the system to manage complexity (Patriarca et al., 2017). Whilst adaptations or adjustments are central to resilience, Wiig et al (2020:335) argue that the key issue to address is the demands and capacity of the work environment. Hollnagel (2017) states that to improve the resilience of an organisation, it is necessary to first know the current situation. Therefore, a key question for investigating organisational resilience pertains to assessing the current capacity and demands upon the healthcare system.

## 3.3 Theoretical models

### 3.3.1 Four Resilience Potentials / Cornerstones of Resilience

In Hollnagel's (2011) definition of resilience, the ability to "sustain required operations" is enabled by adjustments in functioning prior to, during and after the disturbance. Inherent within this therefore, is both proactive anticipation of events which may challenge the system, monitoring for their occurrence and reactive response to the disturbance, and retrospective learning following resolution of the situation. Hollnagel (2017) presents these abilities in a conceptual framework as the Four Cornerstones of Resilience (Hollnagel, 2011), or Four Resilience Potentials (Figure 3.3). These key abilities include the potential to anticipate, monitor, respond, and learn.

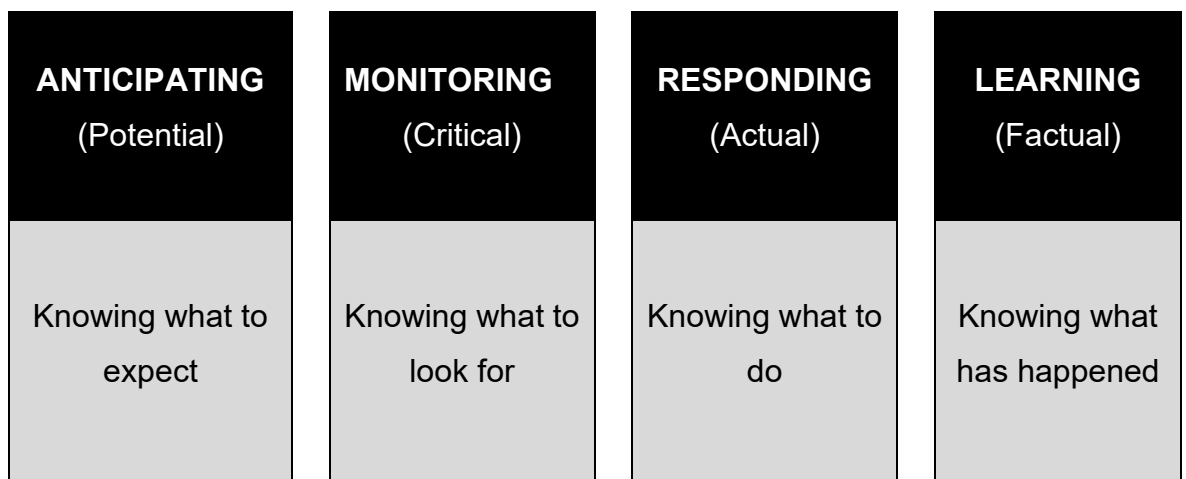


Figure 3.3: Four Resilience Potentials, adapted from Hollnagel (2017).

Woods (2015) argues that effective recovery from a disturbance depends upon preparedness before the event occurs. Thus, the ability to anticipate unexpected conditions is considered a cornerstone of resilience (Hollnagel, 2017). Anticipation requires two types of foresight; one based on learning from past experience, and one which comes from prospective monitoring for early signs of impending disaster (Westrum, 2006). Intentional learning after a disruption has been termed "active resilience" (Wiig et al., 2020). At first glance this concept would appear antithetical to the Safety-II foundations of resilience engineering, which focuses on learning from what goes well rather than preventing recurrence of adverse events. However, Woods (2015) argues that disruptive events inevitably and irreversibly change the system dynamics, therefore if an organisation does not learn from and adapt to

adversity, it will cease to function. Consequently, for an organisation to sustain required operations, it must learn from past experiences to support future anticipation of, and preparedness for unexpected conditions. Thus, resilience must incorporate both Safety-I and Safety-II thinking and approaches (Sujan, Huang and Braithwaite, 2016). Nevertheless, anticipation of possible disruptions may be hampered by the intractable nature of complex systems, which by definition are never fully knowable, nor can they be fully prescribed (Hollnagel, 2012). Consequently, resilience also requires the ability to contemporaneously respond to unexpected conditions.

Theoretically, resilience could be increased by employing more resources or resources for a greater range of possible occurrences. Woods (2015:6) calls this characteristic “*robustness*”. However, whilst it is logical to pursue defences against a greater number of possible disruptions, in reality, it is not practicable to maintain defences against every possible eventuality. Finite resources mean that increasing preparedness in one area, decreases capacity in another, making it more vulnerable, or “*brittle*” to failure in other ways (Woods, 2015:5). Indeed, Saurin and Hounsgaard (2016: 78) highlight the potential conflict between attempts to make systems “*lean*”, where use of resources is streamlined and inefficiencies are reduced, and the presence of “*slack*” in the system which provides the necessary scope to respond to unexpected events. Considering this, prioritisation must occur which balances the likelihood of specific events against the severity of the outcome if they do happen, in order to focus allocation of resources. This presents a challenge in operationalising resilience, as decisions regarding which disruptive events an organisation should be prepared for, are likely to be locally decided and context specific. How potential disruptions are identified and prioritised in practice is unclear (Wiig and O’Hara, 2021).

### 3.3.2 The CARE Model

Based upon Hollnagel’s (2011) generic definition, Anderson et al (2016:62) define Resilient Healthcare (RHC) as:

*“The ability of the health care system (a clinic, a ward, a hospital, a county) to adjust its functioning prior to, during, or following events (changes,*

*disturbances, and opportunities), and thereby sustain required operations under both expected and unexpected conditions.”*

Hollnagel (2017) subsequently defined resilience in healthcare specifically, with one notable difference, which is the replacement of “required operations” (Hollnagel, 2011) by “required performance” (Hollnagel, 2017). The inference here is that RHC is about how well the system can adapt and continue to function under pressure, rather than about the operations themselves, which as mentioned earlier, may need to change in response to the circumstances (Lundberg and Johansson, 2015). As Patriarca et al (2017) state, resilience is distinct from the outcomes of the process; resilience concerns the behaviour of the system. Building upon this definition, Anderson et al (2016) devised a model which collates the RE concepts to explain resilience in healthcare, known as the Concepts for Applying Resilience Engineering (CARE) model (figure 3.4).

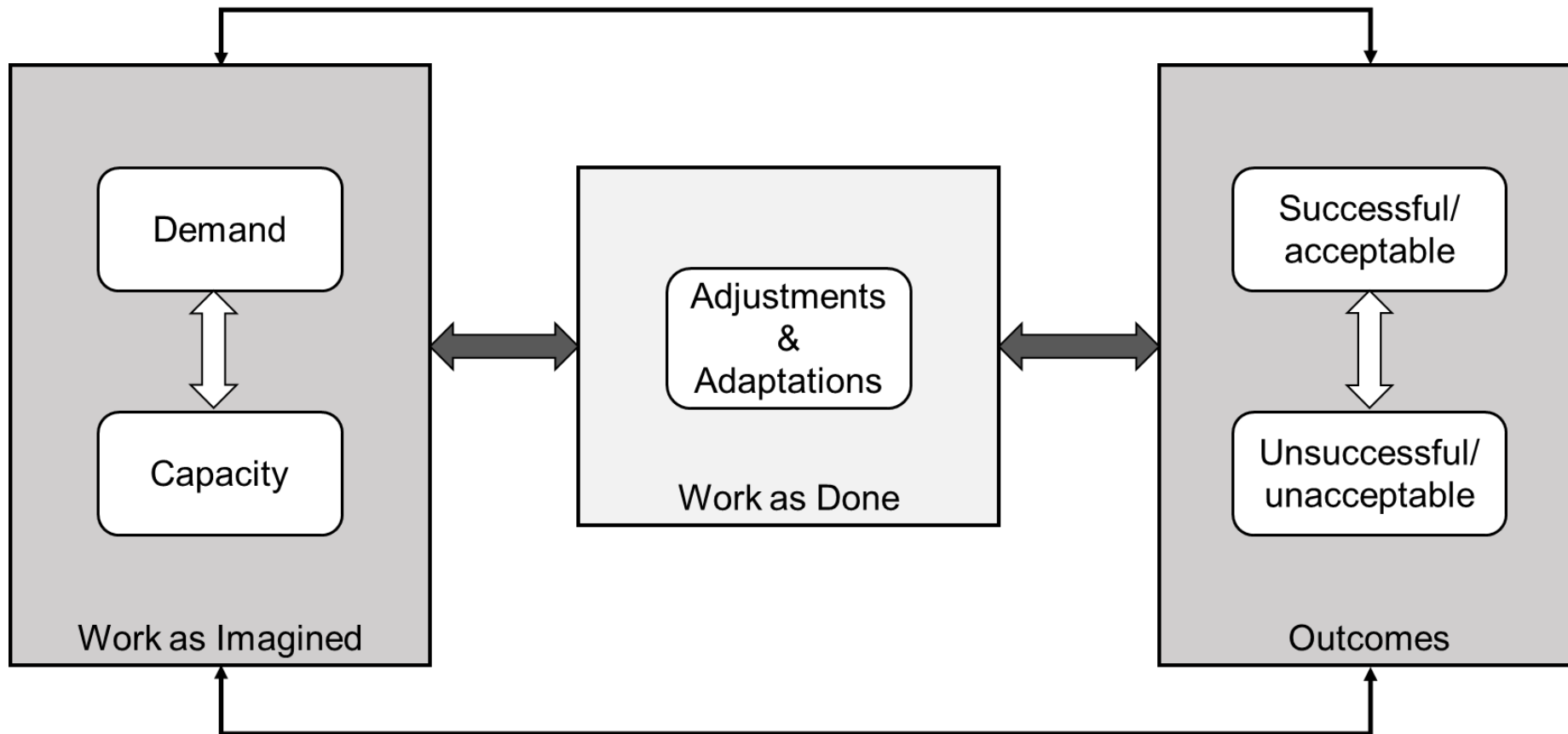


Figure 3.4: Concepts for Applying Resilience Engineering (CARE) model (Adapted from Anderson et al, 2016)

In this theoretical model, Work-as-Imagined (WAI) is determined by the interplay between capacity of the system and the variable demands upon it. Clinicians (and others) must adapt *in situ* to misalignments between demand and capacity. This is known as Work-as-Done (WAD). As with RE theory where success and failure stem from the same system behaviour, the CARE model identifies that acceptable and unacceptable outcomes stem from the adaptations which people make to enable the system to continue functioning when demand exceeds capacity (Anderson et al., 2016).

Anderson et al (2020) sought to apply the CARE model to quality improvement activity at an Emergency Department and an Older Person's Unit, using an ethnographic approach. The study identified a lack of mechanisms to monitor clinical work, which hindered workload management and delayed patient discharge. The authors recommend that rather than developing a protocol to standardise the care process, what is required is a dynamic system for monitoring task completion so that members of the clinical team can track patients' progress towards discharge (Anderson et al., 2020). Thus, an intervention could improve resilience by aiding anticipation and response to disruptions in the discharge planning process, although further research is needed to devise the content of the proposed intervention. Anderson et al (2020) conclude that it is possible to use RHC concepts to understand Work-as-Done, identify vulnerabilities in work processes and to underpin development of interventions which support adaptive capacity.

### 3.3.3 Amendments to the CARE Model

The advantage of the CARE model (Anderson et al, 2016) is that it clearly incorporates the key concepts of RE and therefore may be a good introduction for healthcare professionals who are new to the paradigm. However, upon deeper appraisal, it could be considered an over-simplification of reality. Indeed, Anderson et al (2020b) themselves state that the model is underdefined because adaptations occur for other reasons besides mismatched capacity and demand, for example, because of innovation or clinical freedom. Sanford, Lavelle and Markiewicz, et al. (2022) have subsequently sought to address this criticism, by categorising the types of capacity/ demand misalignments observed, to produce an updated model, known as CARE 2.0. The categories identified were: Equipment, Staffing, Communication,

Space and Process (Sanford, et al. 2022: 5). Similarly, Watt, Jun and Waterson (2019) updated the CARE model with their own version; the Enhanced CARE Model. In considering Work-as-Done, the Model identified factors which trigger adaptation, and the processes through which they occur. This model is based on research carried out in Blood Transfusion, with the data analysed using the Systems Engineering Initiative for Patient Safety (SEIPS) 2.0 model (Holden et al., 2013b). Hence the factors that triggered adaptations and the processes of adaptation relate to elements of SEIPS; such as people, tools (IT and non-IT), organisation, environment, task and process. Although these components may occur in other aspects of healthcare, the authors acknowledge that the scale of their impact may differ dependent upon context (Watt, Jun and Waterson 2019). As can be seen in figure 3.5 below, the size of the circles in this model is determined by the magnitude of that factor in the data. It is not known how whether these specific factors are relevant to maternity care, and if so, to what extent.

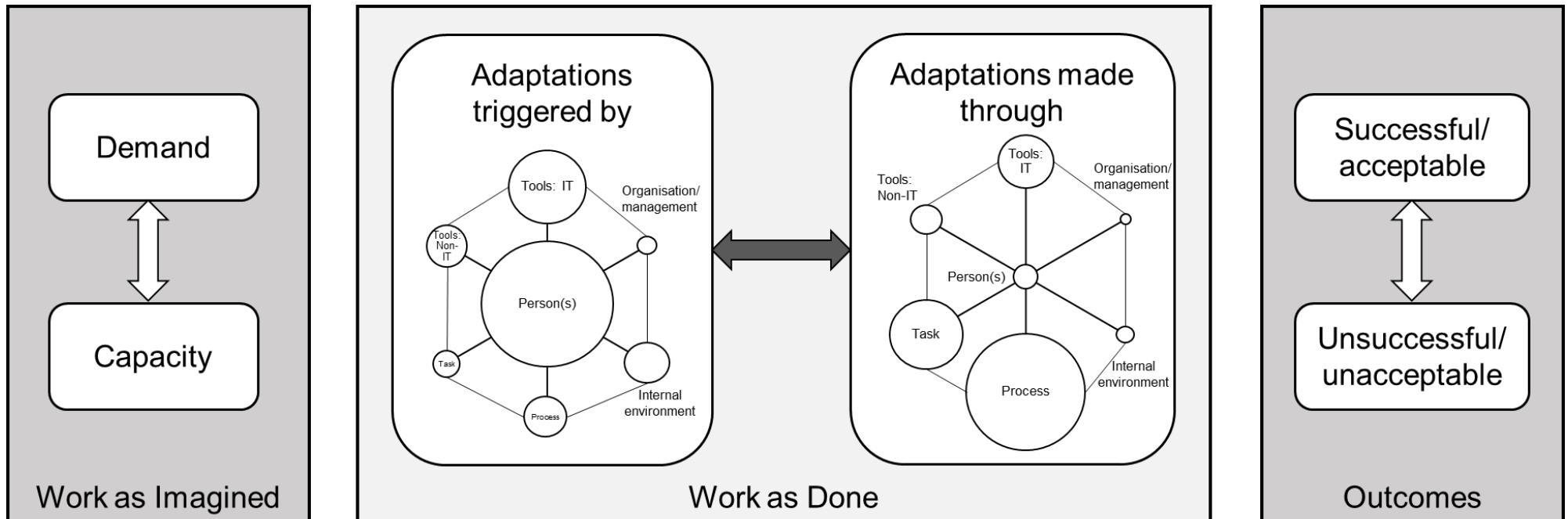


Figure 3.5: The Enhanced CARE Model (adapted from Watt, Jun and Waterson, 2019)

Interestingly, Watt, Jun and Waterson (2019) suggest that using the model demonstrated that adaptations implemented to manage misalignments between capacity and demand led to varying degrees of successful and unsuccessful outcomes. Building on Anderson et al's (2020b) own critique that CARE is underspecified, one could argue that successful and unsuccessful outcomes also occur for other reasons besides individual adaptations (Sujan et al., 2015). Notably, because healthcare deals with human physiology rather than inanimate objects such as might be found in an engineering context. In healthcare, morbidity and mortality may still occur despite effective care due to pathophysiology. It is important therefore to consider how success is measured (Hollnagel, et al., 2017b). As Anderson et al (2020a) warn, system performance cannot be measured by the absence of adverse outcomes. Within the patient safety domain, the focus is on preventing *avoidable* harm. From this perspective, a successful outcome is that the care process continues unaffected by disruptions in the system. However, this concept is complicated because the converse may also be true: good patient outcomes may occur despite disruptions to care because of the healing capacity of the human body, or even because a patients' relatives or other carers "*step into the breach*" to make up for inadequacies of the healthcare system (O'Hara et al., 2019; Woods, 2015:7). This presents a gap in the literature as it is not known how patient and public involvement contributes to organisational resilience and system safety (Berg et al., 2018; Wiig and O'Hara, 2021).

### 3.3.4 The Integrated Resilience Attributes Framework

Since the inception of the CARE model, various adaptations have been proposed (Sanford, Lavelle and Markiewicz et al. 2022; Watt, Jun and Waterson, 2019). Indeed, in acknowledgement of the limitations of the CARE model, Anderson et al (2020b) themselves have also built upon this original work to developed the Integrated Resilience Attributes Framework (Figure 3.6). This framework, combines the CARE model (Anderson et al., 2016) with Hollnagel's (2017) Four Resilience Potentials with Macrae's (2019) Moments of Resilience and (Anderson et al 2020b). The aim being to enable researchers to consider resilience mechanisms at different levels of the healthcare system so that opportunities for improvement can be identified. The framework is intended to redirect attention away from the individual level of clinicians providing direct patient care, to the activities of management and board level stakeholders (Anderson et al., 2020b).

Resilience potentials	Situated resilience	Structural resilience	Systemic resilience
<b>Anticipating</b> - disruptions	<ul style="list-style-type: none"> <li>• demand-capacity misalignments in ongoing practical work</li> <li>• opportunities to apply and draw on resources and skills</li> </ul> <p>Capacity to anticipate</p>	<ul style="list-style-type: none"> <li>• demand-capacity misalignments between resources and requirements</li> <li>• opportunities to restructure resources and practices</li> </ul> <p>Capacity to anticipate</p>	<ul style="list-style-type: none"> <li>• demand-capacity misalignments in the processes that produce and circulate resources and practices</li> <li>• opportunities to reconfigure methods and systems</li> </ul> <p>Capacity to anticipate</p>
<b>Monitoring</b> – the work system or environment	<ul style="list-style-type: none"> <li>• task demand-capacity misalignments</li> <li>• team performance</li> <li>• task environment</li> <li>• task tools and equipment</li> <li>• performance outcomes</li> <li>• opportunities</li> </ul> <p>Capacity to monitor</p>	<ul style="list-style-type: none"> <li>• service demand and capacity misalignments</li> <li>• service environment</li> <li>• service tools and equipment</li> <li>• performance outcomes</li> <li>• opportunities</li> </ul> <p>Capacity to monitor</p>	<ul style="list-style-type: none"> <li>• system demand and capacity misalignments</li> <li>• environment</li> <li>• tools and equipment</li> <li>• performance outcomes</li> <li>• opportunities</li> </ul> <p>Capacity to monitor</p>

<b>Responding</b> – to demands	<ul style="list-style-type: none"> <li>• task demands</li> <li>• opportunities via flexible adaptation</li> </ul> Capacity to respond	<ul style="list-style-type: none"> <li>• service demands</li> <li>• opportunities at a service level</li> </ul> Capacity to respond	<ul style="list-style-type: none"> <li>• system demands</li> <li>• opportunities at a system level</li> </ul> Capacity to respond
<b>Learning</b> – from experience	<ul style="list-style-type: none"> <li>• Case based learning</li> <li>• Experience based learning</li> <li>• Performance feedback</li> </ul> Capacity to learn and implement changes	<ul style="list-style-type: none"> <li>• Organisational performance feedback</li> </ul> Capacity to learn and implement changes	<ul style="list-style-type: none"> <li>• System learning and feedback</li> </ul> Capacity to learn and implement changes

Figure 3.6: Overview of the Integrated Resilience Attributes Framework, adapted from Anderson et al (2020b: 103116)

Whilst the framework identifies some aspects of resilient performance which may act as guidance in conducting research in practice, some of the attributes are vague, such as “*Capacity to anticipate*” (Anderson et al., 2020b: 103116). It is not clear where this capacity comes from or how people anticipate or even what events they are anticipating. There is a degree of repetition of attributes under each heading: situated, structural and systemic level resilience, implying that people at each of the levels perform the same or similar functions. However, it is possible that people at different levels of the system require resilience to different threats. For example, clinicians on the frontline may anticipate and monitor for clinical deterioration of an individual or small number of patients, whilst board level monitoring is of key performance indicators with board members anticipating the risk of not achieving required benchmarks. Anderson et al (2020b) advise that the framework is not intended to be prescriptive, and clearly, local adaptation would be required to enable implementation of the framework in empirical research. What is not clear from the framework, is how the resilience activities at each level impact upon each other. The link between the levels of the system warrants further exploration (Anderson et al., 2020b).

### 3.3.5 The Strategies Framework

Anderson et al (2016) note that the criteria for acceptable and unacceptable outcomes in the original CARE model are subjective and moveable, dependent upon the priorities of different stakeholders. With this in mind, if resilience concepts are to be used in quality improvement, it would be prudent to consider the outcomes of adaptations for different stakeholders. The Strategies Framework by Rankin et al (2014) (figure 3.7) may be a more usable tool for investigating resilience in the maternity care setting, because it considers both sharp end and blunt end interactions. That is, what occurs at the front line in patient facing roles, and what happens at the organisational or systemic levels of the bounded system. Rankin et al (2014) suggest that the framework may be used as a tool investigate everyday adaptations in complex, high-risk systems. Maternity care may be considered a high-risk industry because it is a complex system which deals with vulnerable people and adapts to ever-changing conditions (NHS Confederation, 2022). Indeed, the Strategies Framework has been applied to a case study of an unexpectedly high workload on a maternity ward in which birth partners were asked to leave, to create

extra bed capacity for maternity patients (Rankin et al., 2016). This demonstrates the tool's suitability to implementation in the maternity context specifically.

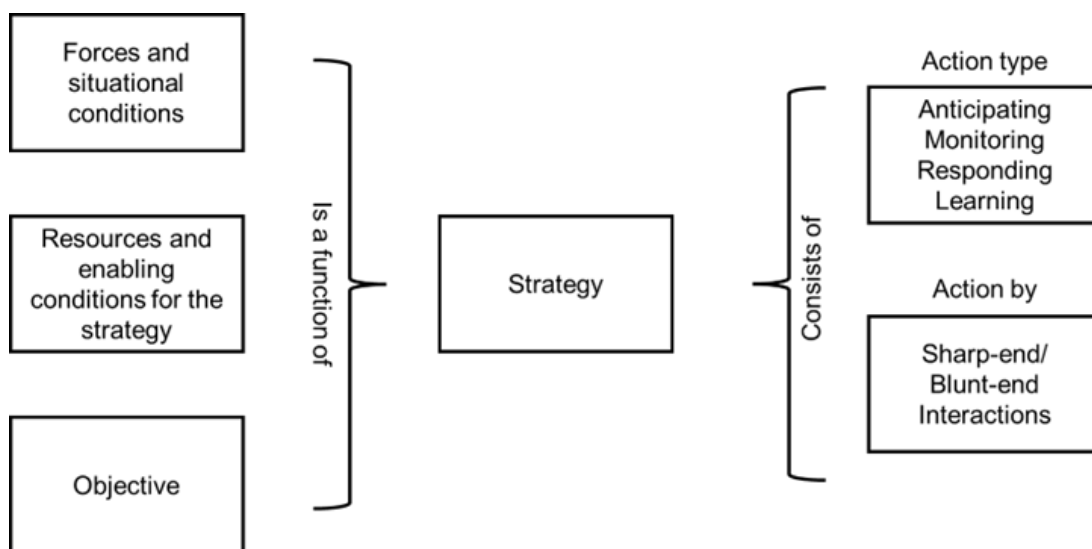


Figure 3.7: Strategies Framework (adapted from Rankin et al (2014)).

The Strategies Framework aims to understand the complexities of work, identifying how clinicians manage risk and changeable conditions that are not accounted for in written procedures and guidelines (Rankin et al., 2014:78-79). This ties in with the recommendation of Anderson et al (2020b) to examine WAD to enable quality improvement activity to support adaptive capacity; however, the framework represents a more structured approach by identifying the factors that ought to be observed alongside the “strategy”, such as “the adaptations used by individuals to detect, interpret or respond to variation” (Rankin et al., 2016 e-book). These additional factors are the situational context in which the adaptation occurs which may be closely linked with the objective of the specific adaptation; the enabling factors which support the action; and the impact of the adaptation on the wider system (Rankin et al., 2014: 83). These elements broadly align with the longstanding Structure, Process Outcome model of healthcare quality by Donabedian (1988), whereby the situational conditions and enabling factors align with the structure, the objective and the strategy (adaptation) constitute the process and the sharp and blunt end interactions are components of the outcome. Thus, the Strategies Framework may be useful for exploring the effect of adaptations on the whole work system, for example, how front-line adaptations affect efficiency, effectiveness, and patient safety (Rankin et al., 2016). These impacts are important to explore

considering the ETTO principle discussed previously, which proposes efficiency and thoroughness are competing goals (Hollnagel, 2022). Meanwhile, if exploring WAD is to contribute to quality improvement (Anderson et al., 2020b), both quality and safety should be considered as goals of the system because management of these are codependent (Verhagen et al., 2022). Therefore, the six domains of quality in healthcare could be considered as features of the sharp and blunt end interactions, of which efficiency, effectiveness and patient safety are three, alongside patient-centredness, timeliness and equitability (Institute of Medicine (US) Committee on Quality of Health Care in America, 2001:6).

### 3.4 Chapter conclusion

This chapter has reviewed the literature which provides the theoretical foundation for the research which follows. Resilient Healthcare (RHC) offers a novel perspective on safety in healthcare by considering how people contribute to system safety by adapting their practice to meet the variable demands of the circumstances, ensuring that the system continues to function and care provision is unaffected by disruptive events or ongoing challenges (Hollnagel, Woods and Leveson, 2006; Righi et al., 2015; Wiig et al., 2020). Rather than being viewed as a liability, it is the adaptability of individuals that ensures safety of the system as a whole (Hollnagel 2012; Macrae 2019). However, this chapter has identified theoretical issues which present challenges in operationalising RHC concepts in clinical settings (Anderson et al., 2016).

Firstly, to improve the resilience of an organisation, it is necessary to first know the current capacity and demands upon the healthcare system (Hollnagel, 2017). One way to approach this is to identify what adaptations or workarounds are occurring in practice, which may highlight system inadequacies (Debono et al., 2018). Anderson et al (2020b) suggest that this could underpin development of interventions which support adaptive capacity. For example, effective workarounds could be integrated into everyday practice, to narrow the gap between WAI and WAD by redesigning WAI in line with current practice, rather than demanding adherence to procedures that may be unworkable in reality (Hollnagel and Braithwaite, 2018). However, it is not clear from the literature which adaptations or workarounds are beneficial for

producing safety, and which actually or potentially degrade system safety (Hollnagel and Braithwaite, 2018).

Secondly, a possible disconnect has been identified in the literature between RHC theory which values adaptation as a source of resilience; and the experience of clinicians in healthcare settings who may perceive judgement for deviating from protocols. This raises an important question about how clinicians are supported to adapt their practice to account for misalignment between capacity and demand, and to overcome contextual challenges. In this way, the relationship between individual performance and organisational resilience is inadequately defined (Berg et al., 2018). Similarly, the impact of top-down regulation upon individual level adaptive performance is poorly understood (Wiig and Fahlbruch, 2019). Multi-level research is needed to explore the relationship between different levels of the system and considers whether action taken at each level is supportive or disruptive to adaptive capacity at other levels of the system (Anderson et al., 2020b; Wiig and O'Hara, 2021). More specifically, how stakeholders at higher levels of healthcare organisations facilitate resilience and how they support frontline staff to perform adaptively (Anderson et al., 2020b).

In conclusion, Resilient Healthcare is conceptually attractive to an industry such as maternity care where autonomous practitioners must navigate between adherence to work procedures and real-world challenges (Iflaifel et al., 2020; Verhagen et al., 2022). Whilst this theory has been investigated in some healthcare contexts, such as nursing, anaesthetics and emergency departments; its usefulness in UK maternity services is as yet unknown. Nevertheless, given the challenges in maternity services discussed in the previous chapter, a different approach to improving quality and safety in this context is sought. The theoretical foundation presented here offers an opportunity to explore supportive mechanisms which may prospectively facilitate safety, as opposed to traditional reductionist approaches which attempt to “*find and fix*” specific incidents that have happened and are unlikely to occur in the same way again (Anderson et al., 2020a: 206). Resilient Healthcare (RHC) may also be applicable to quality improvement, enabling investigation of Work-as-Done, to identify vulnerabilities in work processes and thus underpin development of interventions that support adaptive capacity (Anderson et al., 2020b). The following chapter will examine the literature concerning how resilient

healthcare theory has been implemented in the maternity care context to date, to identify gaps in the literature which will inform the aims and objectives of the study that follows.

# Chapter 4 : Resilience in Maternity

## Services Literature Review

### 4.1 Introduction

Several literature searches were carried out between July 2022 and April 2025, using electronic databases such as CINAHL, Medline, Nursing and Allied Health Database and the University's own search engine. Doctoral theses were searched through the British Library's EThOS service, and grey literature was searched using relevant websites such as the Royal College of Midwives, the Nursing and Midwifery Council, NHS England and the Resilient Healthcare Network. Search terms included Resilience Engineering; Resilient Health Care; workaround or adaptation or adaptive performance or practice; midwifery, maternity, midwives or midwife, intrapartum, labour or labor. Although prolific literature was found regarding resilience in midwifery, the vast majority of this concerned person-level psychological resilience in terms of understanding or reducing burnout (Caiazza et al., 2019; Eaves and Payne, 2019; Hunter and Warren, 2014; McDonald et al., 2015; Sabzevari and Rad, 2019). Only two papers were identified which pertain to Resilience Engineering in the midwifery context (Heggelund and Wiig, 2018; Macrae and Draycott, 2019).

A range of evidence synthesis approaches exist which could have been used to review the literature, for example scoping reviews and evidence mapping (Campbell, Tricco and Munn, et al. 2023). Whilst scoping reviews may be used to scope the nature and extent of research on a particular topic (Arksey and O'Malley, 2003), these are often conducted as a precursor to a further systematic review of a particular aspect of the topic (Campbell, Tricco and Munn, et al. 2023). Considering the dearth of relevant literature retrieved from the searches, a systematic review was not appropriate. However, Bourhis (2017) states that narrative reviews may be used to outline research findings in relation to a particular theory. This would seem appropriate in the current context, which seeks to explore findings of midwifery research in relation to resilient healthcare theory. Furthermore, narrative reviews offer greater potential for the researcher to offer critical insight and supposition which is important in social science (Bourhis, 2017). Therefore, a narrative review is presented to critique the current theoretical understanding of the topic.

## 4.2 Resilience activities

Heggelund and Wiig (2018) conducted a multi-level case study, comparing resilience mechanisms in two hospitals in Norway. Through the use of observation, qualitative interviews, focus groups and analysis of two strategic documents, the authors deductively identified factors which were deemed to relate to Hollnagel's (2011) four cornerstones of resilience. The findings describe activities which are relevant to anticipation, monitoring, responding, and learning, for example, flexible allocation of staff and having a pool of reserve staff available for peaks in demand (Heggelund and Wiig, 2018). Similarly, the study found that the coordinating midwife and the duty officer had an overarching view of activity on the unit and were instrumental in monitoring allocation of workload and task completion. This finding is in keeping with a study by Mackintosh et al (2009), which found that the coordinating midwife having a helicopter view of activity on the Delivery Suite was a key mechanism for managing workload.

Whilst Heggelund and Wiig (2018) identified factors which they say relate to anticipation, monitoring, responding, and learning (Hollnagel, 2011), it is not clear how some of the mechanisms cited relate to the defining feature of resilience: the ability of the system to adjust its functioning (Hollnagel, 2011). For example, the study discusses fetal monitoring in labour, highlighting a difference between the two hospitals in where the monitoring is displayed. At one site the monitoring is only visible in the delivery room, whereas at the other, it can be seen in the duty room and doctors' offices as well (also known as central monitoring). The authors state that staff used this room to discuss "patient-related challenges" (Heggelund and Wiig, 2018:90) but it is not clear how the visibility of the fetal monitoring facilitated adjustments in performance.

One possible inference here which has not been explicated is that availability of the monitoring from outside of the delivery room may override the need for midwives to actively escalate to a doctor. When deviations from the normal have been detected, the doctor can see the monitoring for themselves even if the midwife does not notify them. An ethnographic study by Small et al (2022) reported that obstetricians felt obliged to intervene when abnormalities were visible on a central monitoring system, whether or not the midwife had asked for their input. Rather than improve safety,

this uninvited attendance was considered to interrupt the midwife's patient-centred care and undermined interprofessional relationships because it inferred distrust in the midwife's abilities. With this in mind, it is questionable as to why central monitoring is considered to be a resilience mechanism in Heggelund and Wiig's (2018) study. A possible reason is that the central monitoring facility adjusts for underlying issues with teamwork and interprofessional boundaries by providing the Obstetric team with an oversight of everything that is happening in the unit whether or not they are actively involved in each case. An alternative to this paternalistic approach would be to build collective trust and overcome professional boundaries which could be achieved through in-situ simulation (Macrae and Draycott, 2019).

Another possible inference which may explain the benefit of having the fetal monitoring displayed outside of the delivery room in Heggelund and Wiig's (2018) study is that it may enable discussions and decisions to be made away from the bedside. Research by Small et al (2022) agrees with this suggestion, emphasising the dangers of making decisions without the full clinical picture. Fetal monitoring can display artifacts which could be construed as abnormalities when viewed in isolation, but when seen in context, are due to more benign causes such as maternal movement, vomiting or even birth of the baby for example. These causes would not be evident from outside of the delivery room.

The notion of making decisions outside of the delivery room is also concerning from an ethical perspective, as the Royal College of Midwives (2022) emphasise the importance of supporting women's autonomy by involving them in decision making about their care. Consequently, it is important to question why it would be necessary to make decisions away from the bedside and how this contributes to resilience. It is possible that this behaviour is an adjustment for an unmanageable workload whereby the doctor cannot physically attend two patients at once, or it may be a facet of workplace culture. On the contrary, it could be done to minimise disruptions to the physiological process of labour by reducing the number of people entering and exiting the room unnecessarily because stress is known to inhibit uterine contractility, thus slows down progress in labour (McDonald and Johnson, 2017).

This speculation serves to make the point that simply describing mechanisms for resilience without exploring the context of how and why they work, is of limited value. Hollnagel and Braithwaite (2018:215) argue that:

*“...before thinking about how to make a change, it is wise to invest time to find out how the system actually functions and how everyday situations and uncertainties are successfully managed”.*

Indeed, Heggelund and Wiig (2018) themselves recommend that future research should consider the impact of context on resilience, as to why some systems succeed. It is possible that the contextual analysis was impacted by the fact that the data in this study were collected for a much larger national project, with a subset of the data extracted and analysed separately for this arm of the study. The report states that all of the interviews were conducted by the national project team (Heggelund and Wiig, 2018), though it is not clear whether the researchers who analysed the data in this arm were involved in either of the data collection methods, or whether this was a secondary analysis of existing data. The latter may threaten the rigour of the study, because data may be misinterpreted or not fully understood if the researchers were not involved in the data collection (Ruggiano and Perry, 2019). In contrast, an ethnographic approach could enable insight into the context of how resilience mechanisms support everyday work to succeed (Anderson et al., 2013).

Macrae and Draycott (2019) argue that the purpose of Resilience Engineering is to understand how adaptations, adjustments and variations in practice can support safety. However, Heggelund and Wiig (2018) suggest that protocols and procedural checklists were beneficial to resilience by standardising parts of the work. The authors acknowledge that this is contrary to resilience engineering theory whereby attempts to constrain variability undermine safety (Anderson et al., 2020b); however, Heggelund and Wiig (2018:94) state that *“by creating procedures for uncomplicated events, one can control and reduce unwanted variability in these situations”*. Conversely, Macrae and Draycott (2019) analysed how the use of *in-situ* simulation of obstetric emergencies can support both stability and adaptability to underpin organisational resilience. They propose that “standardised cognitive aids” such as protocols, checklists, and emergency procedures contribute to high reliability in

emergencies and that *in-situ* simulation provides an opportunity for staff to become familiar with using these tools. Aside from the issue of whether reliability and resilience are separate concepts, there appears to be some disparity in the literature regarding the role of standardised procedures in supporting resilience. Whilst Heggelund and Wiig (2018) advocate for standardising routine care, Macrae and Draycott appear to endorse standardisation of emergency procedures. It stands to reason that there must be some regulation to work processes, or else chaos may ensue. However, Macrae and Dracott (2019) go on to discuss that *in-situ* simulation contributes to short term stability but facilitates adaptation in the longer term, through collective learning and reflection. This fits with Hollnagel's theory where learning is a cornerstone of resilience, and Macrae's (2019) moments of resilience, whereby testing and adaptation of sociotechnical systems contributes to structural resilience which occurs over weeks to years. Nevertheless, there is a need for empirical evidence which translates resilience theory into midwifery practice, as Anderson et al (2020) have argued, the theoretical foundations of resilient healthcare are well described but untested. They recommend that research must now move on from describing resilient performance to development of quality improvement initiatives. However, understanding of how to do this is still underdeveloped (Hollnagel and Braithwaite, 2018). Furthermore, this literature review has highlighted that understanding of resilience in midwifery is still sparse. While Heggelund and Wiig (2018) have begun to identify some resilience mechanisms, further research is needed to understand how these mechanisms support adaptation and adjustment in the midwifery context, to support organisational resilience.

### 4.3 Adaptive performance in midwifery

Literature regarding adaptive performance of midwives is also scant and tends to focus on the psychological adaptation of individuals as a coping mechanism rather than from a resilient healthcare perspective where adaptations to practice contribute to organisational resilience. The literature searches identified that existing studies investigate midwives' psychological adaptation in relation to a specific catalyst. As might be expected given recent history, a few studies have investigated midwives coping strategies during the Covid-19 pandemic (Baumann et al., 2021; Halperin et al., 2022; Küçüktürkmen, Baskaya and Özdemir, 2022). Other catalytic events were the transition from student to newly qualified midwife status (Kool et al., 2023), the

return to work following maternity leave (Konlan et al., 2023), and sleep deprivation (Arbour et al., 2020). Whilst these studies provide valuable insight into how individuals adapt to circumstances to cope psychologically, they are not relevant to the present thesis, where the focus is adaptive performance as an organisational resilience mechanism to contribute to patient safety. That is, how midwives adapt what they do to keep the system safe and functioning, rather than how they as individuals recover from stressful situations. It is also worth noting that none of these studies were conducted in the UK, and one of them (Baumann et al., 2021) pertained to independent midwives which is not relevant to organisational resilience as these midwives work out with the hospital system.

No studies have been identified that explicitly sought to illuminate adaptive practices that midwives make; however, workarounds have been reported as a finding in two studies. For example, James et al (2019) considered the factors that influence decisions regarding the appropriate location for obstetric high dependency care, whether that be on Labour ward or in a designated critical care unit. The study found that midwives asked other members of the multidisciplinary team to undertake tasks that they were not skilled to undertake themselves, which James et al (2019:342) consider to be a workaround for midwives' "*skills fade or skills deficit*". The authors highlight that overcoming these skill deficiencies could allow the continuation of high dependency care on Labour ward rather than requiring transfer to a higher-level medical unit which has other repercussions such as the separation of mother and baby because babies are not permitted in critical care units (James et al 2019). In this way, it could be surmised that the workaround contributes to organisational resilience because it minimises interruptions to care for the woman and enables the service to continue functioning despite the barrier of skill insufficiency. However, an alternative perspective is that rather than being a workaround, midwives asking another professional to undertake tasks that they are not trained or proficient to undertake is considered accountable practice. The Nursing and Midwifery Council (NMC) (2018:15) Code states that midwives must "*Recognise and work within the limits of [their] competence*", specifying that they should "*ask for help from a suitably qualified and experienced professional to carry out any action or procedure that is beyond the limits of [their] competence*". It could be argued that this apparent workaround, is not a reflection on the practice of the individual midwife, but moreover a symptom of an issue with the organisation of care, whereby midwives

are being asked to provide care beyond their level of training. Indeed, this is acknowledged by James et al (2019) who highlight the cost of providing midwives with the necessary high dependence care training or, implementing critical care outreach services, but argue that such measures are necessary to avoid workarounds becoming longstanding solutions to organisational problems.

A second study which identified a workaround as an incidental finding, is by Kearney et al (2023) who conducted an audit and observations of midwives' use of an integrated electronic medical records system within maternity services in Australia. The study observed midwives to document events on paper initially and then transcribe these to the electronic system retrospectively, where the intention would be that the documentation is made electronically at the time. The authors highlight both the complexity of the electronic records system and also the urgency of emergency situations which necessitate retrospective documentation because other tasks take priority. Whilst the NMC Code (2018) does make provision for retrospective record keeping where necessary, Kearney et al (2023) argue that the practice presents a risk to the accuracy and comprehensiveness of documentation when transcribing paper records after the event. In terms of organisational resilience, delaying documentation to provide direct patient care may enable prompt response to an emergency situation thus preventing it from escalating further which may disrupt service provision. On the other hand, incomplete documentation may hinder continuity of care where other professionals are unclear on what care has been previously provided. This may be symptomatic of the Safety-II principle that the same action may lead to both intended and unintended outcomes (Hollnagel, Wears and Braithwaite, 2015). In the majority of cases, delaying electronic documentation may lead to good outcomes, but occasionally, it may not. However, the adaptation may only become apparent following investigation after an adverse outcome when documentation is missing or written retrospectively, therefore successful outcomes following this adaptation may go unnoticed.

A further issue raised by Kearney et al (2023) which may contribute to this workaround of delaying documentation, is the midwives' desire to balance documentation requirements against being "with woman", where electronic records systems were seen to interrupt interaction with women (Kearney et al., 2023:7). This resonates with work by Kirkham (2011) who discussed the dilemma midwives face

between being “*with woman*” or “*with institution*”. It is possible to infer from this that midwives in the study by Kearney et al (2023) perceived documentation requirements to be in competition with midwifery care, as “*with woman*” is the literal translation of the word “Midwife” (Wickham 2018: online). In this case, a workaround was required in order to meet the needs of the women whilst also meeting organisational requirements (Kearney et al., 2023). This is conferred by Wickham (2018: online) who states that:

*“It can be extraordinarily difficult to be with the woman, because midwives are busy balancing the need to be with the fetal heart monitor, the notes, the multidisciplinary team, the local guidelines, the evidence and the professional rules”.*

In this way, Hunter and Warren (2014) suggest that midwives must balance the needs of the women and the organisation in order to provide care. Given that the provision of safe maternity care should not only be concerned with clinical outcomes and rates of interventions, but also patient experience (White VanGompel and Main, 2021), the notion that adaptation is required in order to meet women’s relational needs questions whose perspective of safety is prioritised. This may be illustrative of the previously discussed ideological tension between the social model of midwifery which advocates for personalised care to promote physiological processes with minimal intervention (ICM, 2014) and the medical model of obstetrics where childbirth is viewed as inherently risky and therefore adherence to organisational processes such as documentation is perceived to managing those risks (Davison, 2021). This raises a question as to the impact of organisational risk management processes on midwives’ ability to deliver personalised care.

#### 4.4 Conclusion and gaps in the literature

The previous chapter set out the theoretical foundation of RHC which underpins this thesis as an alternative to the traditional “*find and fix*” approach to improving care systems based on retrospective incident investigation and standardisation of processes to minimise the potential for error (Anderson et al., 2020a: 206). Despite conceptual appeal, literature on RHC has thus far tended to be theoretical, with limited empirical research to confirm credibility of the theory in practice, which is understandable given it is in its infancy in healthcare terms. This literature review

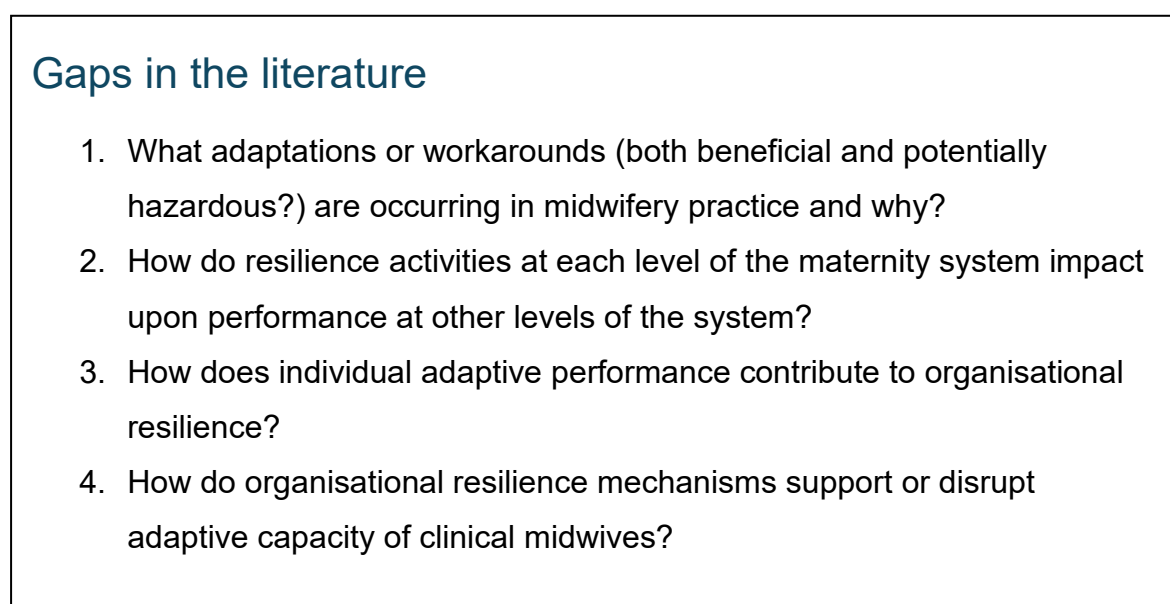
has identified that there is scant literature on the application of RHC theory in midwifery practice. Instead, research to date has investigated midwives' psychological adaptation in relation to a specific catalyst, such as the Covid-19 pandemic (Baumann et al., 2021; Halperin et al., 2022; Küçüktürkmen, Baskaya and Özdemir, 2022); the transition from student to newly qualified midwife status (Kool et al., 2023); or the return to work following maternity leave (Konlan et al., 2023). No studies have been identified that have explicitly sought to illuminate the adaptive practices of midwives. However, workarounds have been reported as a finding in two studies (James et al., 2019; Kearney et al., 2023), demonstrating that adaptive practice does occur in midwifery practice. This suggests that resilient healthcare theory may be applicable in this context.

A fundamental assumption of RHC is that adaptation is what keeps the healthcare system safe and working (Anderson et al., 2020b). However, it is not clear within the literature what adaptations are occurring in practice and why. James et al (2019) allude to the potential for workarounds to occur as a solution to longstanding organisational problems. Identifying the nature and purpose of adaptations that are currently occurring in midwifery could illuminate the contextual challenges that midwives face in everyday work. The aim would be to minimise these challenges in order to prospectively support staff to work effectively therefore promoting the safety and wellbeing of patients and midwives. On the other hand, it is possible that some adaptations or workarounds may be beneficial for producing safety, while others may actually or potentially degrade the system (Hollnagel and Braithwaite, 2018). With this in mind, it is not clear which aspects of practice ought to be standardised with policies and procedures, and which practices have scope for adjustment or adaptation to retain as a formalised resilience mechanism. Again, identifying examples of current adaptations could enable stakeholder engagement to build consensus on whether any of these existing adaptations could be supported through structural or organisational change to narrow the gap between WAD and WAI so that work may be accomplished more effectively (Debono et al., 2018).

It is clear within the literature that Resilient Healthcare concerns organisational resilience. However, much of the empirical research in other areas of healthcare investigates the adaptive capacity of individuals on the frontline. Therefore, the relationship between frontline adaptation and how organisational resilience is

achieved warrants further exploration (Anderson et al., 2020b). While Heggelund and Wiig (2018) have begun to identify some resilience mechanisms in maternity services, it is not clear how these mechanisms support adaptation and adjustment which is the defining feature of organisational resilience (Hollnagel, 2011). Thus, there is a need for empirical evidence which operationalises resilience theory in the maternity care context. Multi-level research is needed to explore how the resilience activities at each level of the system impact upon each other (Wiig and O'Hara, 2021). That is, how does individual adaptive performance contribute to organisational resilience, and how do organisational resilience mechanisms support or disrupt adaptive capacity of front-line staff (Anderson et al., 2020). Given the Human Factors perspective which guides this research, a key consideration here is the impact of adaptive performance on people within the system, alongside the performance of the system (Chartered Institute of Ergonomics and Human Factors (CIEHF), 2025). In particular, in light of the discussion above regarding a potential conflict between organisational risk management processes and personalised care, the impact of adaptive performance on midwives, and on women's experience of care requires consideration.

The gaps in the literature that have been identified by this literature review can be seen in figure 4.1. The following chapter provides a methodological discussion which underpins the development of a study to address these gaps.



*Figure 4.1: Gaps in the literature derived from the literature review*

# Chapter 5 : Methodology

## 5.1 Chapter Introduction

The preceding theoretical foundation and literature review chapters identified that Resilience Engineering (RE) offers a novel perspective on safety in maternity care by considering how people contribute to system performance by adapting their professional practice to meet the variable demands of the circumstances, so that care can continue without disruption (Hollnagel, Woods and Leveson, 2006; Righi et al., 2015; Wiig et al., 2020). However, understanding of resilience in midwifery is still limited. Two clear gaps in the literature were identified. Firstly, what adaptations or workarounds are occurring in practice and why? Secondly, how individual adaptive performance contributes to organisational resilience and conversely how organisational resilience mechanisms support or disrupt adaptive capacity of front-line staff (Anderson et al 2020c). This chapter defines the philosophy which shapes the methodological approach taken in the research which follows. In doing so, this chapter presents the methodological justification for the decisions that have been made. The practical application of these decisions is set out in the subsequent protocol chapter.

## 5.2 Midwifery, Philosophy and Resilience Engineering

Midwifery is thought to be both a science and an art (Silverton, 1993; Paine, 2001; Keeling, 2002; Power, 2015). That is to say that the practice of midwifery requires the application of scientific knowledge, as well as interpersonal skills, and the wisdom which comes from experience, to be “*with woman*” (Power, 2015:654). No two births are the same, and the midwife must tailor their care to the individual needs of each childbearing person and surrounding family. A holistic approach is necessary which considers the physical, psychological, social and spiritual domains of human life to support the physiology of labour and childbirth. For example, adrenaline is an antagonist to oxytocin which is the hormone responsible for stimulating uterine contractions, therefore the midwife must ensure physical comfort and psychological safety for the woman so that the physiological processes of labour continue (Jackson et al., 2014). This highlights that human experience is multifaceted and cannot be reduced to causal relationships as expected in a positivist philosophy (Biesta, 2015). Clearly, knowledge comes from a variety of

sources. Some aspects such as anatomy may be considered an objective truth, which can be tested deductively. However, social, spiritual and psychological aspects of birth are unique to the individual and can only be understood through interaction with the other person. The importance of gaining knowledge through experience, by interacting with others aligns neatly with Dewey's (1938) philosophy of pragmatism.

The researcher's view is that while some elements of reality may be objective truths, experience of it is socially constructed and there may be multiple versions of truth, depending upon whose perspective is taken. For example, a birth may have been uncomplicated from a professional perspective but experienced as traumatic by the birthing person. Biesta (2015:17) asserts that from a pragmatist perspective, *"everyone's experience is equally real. The fact that people have different experiences doesn't make any one of them untrue or less real. It is just that they are approaching the thing from a different standpoint, from a different background, from a different history, and with different purposes and intentions"*. Consequently, in order to understand a situation or event, a range of perspectives should be sought.

A feminist philosophy could have been used to understand the different perspective of midwives, given that this study pertains to maternity care which predominantly serves women (Harvey and Land, 2017). However, the researcher did not want to approach the study with pre-existing assumptions of systemic oppression based on gender (Silverwint, 2017). In contrast, a pragmatic approach may be more useful, given that the focus is on the *"consequences"* of action rather than looking for a *"root cause"* in a deterministic belief (Biesta, 2015: 11). Building on the researcher's beliefs about the nature of individual experience, this thesis concerns the interaction between people which contributes to organisational resilience within the maternity care system. Within this complex sociotechnical system, the relationships between elements (people and technology) are often non-linear and unpredictable (Dekker et al., 2013; Walker et al., 2008). Thus, pragmatism fits coherently with the theory of Resilience Engineering which considers how people adapt to cope with complexity in order to achieve desired outcomes (Woods and Hollnagel, 2006).

### 5.2.1 Ontology and epistemology

Pragmatism is thought to dispense with questions of ontology and epistemology because knowledge is the result of experimentation, not a pre-existing entity to be discovered (Dewey, 1938). Inquiry results from doubt, and in practical terms, ethereal questions of the nature of knowledge have little bearing on functional doubts, therefore are not useful to attempt to investigate (Biesta, 2015). The pragmatic ontology is that something is true if it is useful to believe it (Ormston et al., 2014). Undoubtedly, it is possible to think of examples of things which would be helpful to believe but are not true, such as that medicine can cure all ills, or that one's employment and financial future are guaranteed. However, the underlying principle of pragmatism is convincing, that the purpose of inquiry should be to bring about change, rather than perpetuating philosophical debate. Indeed, this practical utility is influential in the selection of pragmatism over other philosophies such as critical realism, which also sits in the middle-ground between positivism and interpretivism. Critical realist ontology suggests that reality exists independent of people's experience of it and can never be fully known (Bhaskar, 2008). However, this would seem incongruent with its proposed epistemology that:

*“Knowledge is obtained by observing and interpreting meaning to explain the elements of reality that must exist prior to the events and experiences that occurred” (Lawani, 2021: 322).*

It is hard to see how observation and interpretation can lead to knowledge when reality is subjectively perceived and never fully knowable. It would appear to require a theoretical leap from that which is observed by the researcher to precede an event to then infer causal relationships.

On the contrary, pragmatism has been criticised as simplistic because it is often regarded as a philosophy of whatever works (Ormston et al., 2014), although deeper exploration shows that it is more nuanced than this. Pragmatism is less about whatever works, and more that philosophy must have a purpose. It emphasises the importance of *“knowledge as the relationship between actions and consequences”* (Biesta, 2015:18), which helps to guide research in a way that is mindful of the influence of the research itself on that which is being studied. Therefore, this study seeks to produce useable findings, whilst being reflexive of the researcher's

influence on not only the data, but also the participants and the wider maternity service. The purpose of the research is to explore the experience of midwives in the real world, with the pragmatic aim of exploring adaptive performance by midwives in order to inform improvement of their working conditions so that safety of the maternity care system as a whole may be enhanced.

### 5.3 Methodology

In line with the pragmatic philosophy which underpins this research, the methodology has been selected based upon the research questions which arose out of the literature review (Lewis and McNaughton Nicholls, 2014). That is to say that doubt has directed the means of inquiry (Dewey, 1938). The research objectives are exploratory in nature, which requires a non-experimental approach. The objectives seek to explore experience of the current reality, not to introduce an intervention or test a hypothesis. Furthermore, the objectives concern midwives' perceptions and experiences as opposed to enumeration of frequencies, therefore a qualitative approach is dictated (Ormston et al., 2014). Finally, the diversity of the objectives means that multiple methods are necessary to provide the answers because no one single method is sufficient to address all of the objectives. Therefore, a methodology is required that is qualitative and non-experimental, with scope to incorporate multiple methods.

A variety of qualitative methodologies exist which could be used to explore the current research aim, for example phenomenology or an unspecified qualitative design (Bowling, 2011). However, research on resilience in healthcare to date has tended to use ethnography (Debono et al., 2018; Anderson et al., 2020b), or case study methodologies (Wears et al., 2006; Furnis et al., 2011; Laugaland et al., 2014; Patterson and Wears, 2015; Wachs et al., 2016; Heggelund and Wiig, 2018; Fagerdal et al., 2022). This suggests that these methodologies may be more appropriate to the topic, and furthermore, are tried and tested approaches which validates their use. Both ethnography and case study methodologies would allow a multi-method, non-experimental, qualitative approach and would be plausible to address the research aim and objectives. Indeed, Cleland et al (2021) argue that there is significant overlap between the two methodologies. Therefore, the merits of each must be weighed up to determine which methodology is most appropriate.

Following on from the anthropological tradition, ethnography focuses on people and culture (Ormston et al., 2014), which is particularly relevant given that recent maternity safety reports have highlighted issues around the culture in maternity services that have reportedly contributed to adverse maternal and neonatal outcomes (Ockenden, 2022; Kirkup, 2022). However, Kalakou et al (2022) state that whilst culture is inevitably influential upon adaptive performance, it is just one aspect of the context which influences the resilience of healthcare professionals. Case studies on the other hand, allow exploration of a complex phenomenon in situ (Crowe et al., 2011; Yin, 2009). That is to say that the case is examined within the boundaries of culture, time and setting (Cleland et al., 2021), meaning in this case, that the multiple contextual factors that surround adaptive performance by midwives may be explored. Similarly, case study methodologies can enable comparison of the micro and meso perspectives by combining multiple methods such as observation at the micro level and interviews at the meso level (Schwandt and Gates, 2018). Therefore, a case study methodology may be preferable because it provides scope to apply a systems approach to this study in keeping with the theoretical foundation of this thesis (Paxton and Frost, 2018).

A further consideration in deciding between methodologies is compatibility with the underpinning research philosophy. Cleland et al (2021) assert that an advantage of the case study method is that it is not tied to a particular philosophical position; it is flexible and can be adapted in line with the researcher's own ontological and epistemological beliefs. Thus, case study methodology can be coherent with the underpinning pragmatic philosophy of the researcher. Principally, case studies are appropriate to answer “*what*”, “*how*” and “*why*” questions (Yin, 2009:9), such as those in figure 4.1. This goes beyond simply describing the participants' experience as might be the case in an ethnographic account, to producing tangible findings with practical utility. Indeed, Schwandt and Gates (2018:354) state that:

*“Collectively viewed, all case study research exists to address the dialectic that lies at the heart of understanding – an ongoing investigation of the empirical to refine the theoretical and the theoretical to better understand and explain the empirical”.*

This cyclical nature can be juxtaposed with Dewey's (1938) pragmatic focus on human experience whereby:

*“Beliefs must be interpreted to generate action, and actions must be interpreted to generate beliefs”* (Morgan, 2014: 1046).

The common ground here would appear to be that the observable and the metaphysical are inseparable; understanding comes from considering how one leads to the other and vice versa. Consequently, the ability of case study to be both inductive and deductive; building on existing theoretical foundations and also seeking knowledge which arises from the empirical data, would seem in keeping with the cyclical nature of pragmatism. Similarly, case study is an ideal methodology to apply to a fledgling theory such as resilience engineering because the cyclical nature of case study can be used to build upon existing theoretical foundations to develop new insights. This can be seen in figure 5.1, whereby the study is predicated on a pre-existing theoretical foundation of Resilience Engineering literature, and through data analysis, theory is developed and refined to produce new theory by theoretical generalisation (Stake, 1995; Yin, 2009). Therefore, case study is the chosen methodology for this study because of its compatibility with the researcher's pragmatic philosophy and its ability to develop new theory based on both existing theory and empirical research as can be seen in figure 5.1.



Figure 5.1: Theory development model

### 5.3.1 Study design

Case study research can be defined as the exploration of a phenomenon within a “bounded system” (Simons, 2010: 22). Therefore, the first step in designing a case study is to define the boundary of the cases and the embedded units of analysis (Yin, 2009; Silverman, 2022). This is complicated within a complex adaptive system

because the boundaries between systems are blurred, and systems may be coupled or “*nested*” within other systems (The Health Foundation, 2010:9). Whilst this thesis applies a Human Factors lens which requires a Systems Thinking view of the maternity care system as a whole, pragmatically, the system needs to be broken down into manageable cases to investigate (McNab et al., 2020). Schwandt and Gates (2018:341) assert that a case can represent either an “*empirical unit*” or a “*theoretical construct*”. That is, something which already exists or an abstract concept that is yet to be discovered. With this in mind, one way to set tangible boundaries for use in research is to use pre-existing physical limits. For example, a hospital ward has clear physical limits which form the boundary for the case (McNab et al., 2020).

In this study, the case is defined as the Labour ward. This particular setting has been chosen over other clinical areas for instrumental reasons (Simons, 2010); because intrapartum care is continuous, requires input from a variety of different professionals and is unpredictable thus necessitates adaptive performance by staff to adjust for unexpected conditions. Unlike out-patient settings which are generally routine and provided by individual midwives, mostly working alone, Labour ward represents a complex socio-technical system which is ideal for exploring the adaptive performance of midwives. Furthermore, a recent exploratory review by the Health Services Safety Investigations Body (HSSIB) (2025a) identified that the majority of safety concerns related to events that occurred intrapartum, making labour ward an ideal setting to understand issues around safety of maternity care.

### 5.3.2 Single or multiple case

Having defined the case, the next step is to decide upon the study design. Yin (2009) describes four basic designs for case study research, depending on whether the study uses a single, or multiple cases and how many units of analysis are used within each case. That is, single case with holistic or embedded units of analysis, or multiple case with holistic or embedded units of analysis (Yin, 2009). Table 5.1 presents five circumstances under which a single case design is appropriate (Yin, 2009).

Table 5.1: Indications for a single case design (adapted from Yin (2009))

Type of case	Rationale
Critical case	To test a well formulated theory
Extreme case	Where only one case exists, therefore insight is valuable
Representative or typical case	Where findings can be assumed to be representative of other cases
Revelatory case	Where a case has previously been unreachable
Longitudinal case	To see how a situation changes over time

The present study does not appear to fit any of these criteria for a single case design. As a novel theory, resilience engineering is insufficiently developed to be investigated as a critical case. Furthermore, given the range of maternity care settings and quality ratings in existence in England (CQC, 2022), it is difficult to say that any of them are extreme cases or conversely, typical of the national maternity care system, because of their heterogeneity. Meanwhile, maternity units are not considered to be a hard-to-reach group, and the focus of the research is the status quo, not a longitudinal study. Additionally, although the aim of qualitative research is not to produce generalisable findings, the use of a single case design does present ethical and philosophical challenges in terms of ensuring the credibility and therefore utility of the findings (Silverman, 2022). Consequently, a multiple-case study is deemed to be more appropriate to take account of any potential differences between cases. Using a multiple-case design, alternatively known as a collective case study, can enable a wider understanding of the phenomena by comparing cases across two different sites (Stake, 1995; Yin, 2009).

### 5.3.3 Holistic or embedded designs

Having decided to study multiple cases, a choice ensues between holistic and embedded designs (Yin, 2009). The difference being whether the case is comprised of a single, or multiple embedded units of analysis. The data for each case could be analysed collectively as a single unit of analysis if the component parts of each case were similar. However, resilience engineering literature calls for multi-level research that examines activity at the micro, meso and macro levels (Anderson et al., 2020c;

Wiig and O'Hara, 2021). Thus, it would appear that the micro, meso and macro levels ought to be considered as different units of analysis, thus justifying an embedded design. This design seeks to analyse different units of analysis within each case prior to comparing the separate cases with each other, as can be seen in figure 5.2 (Yin, 2009).

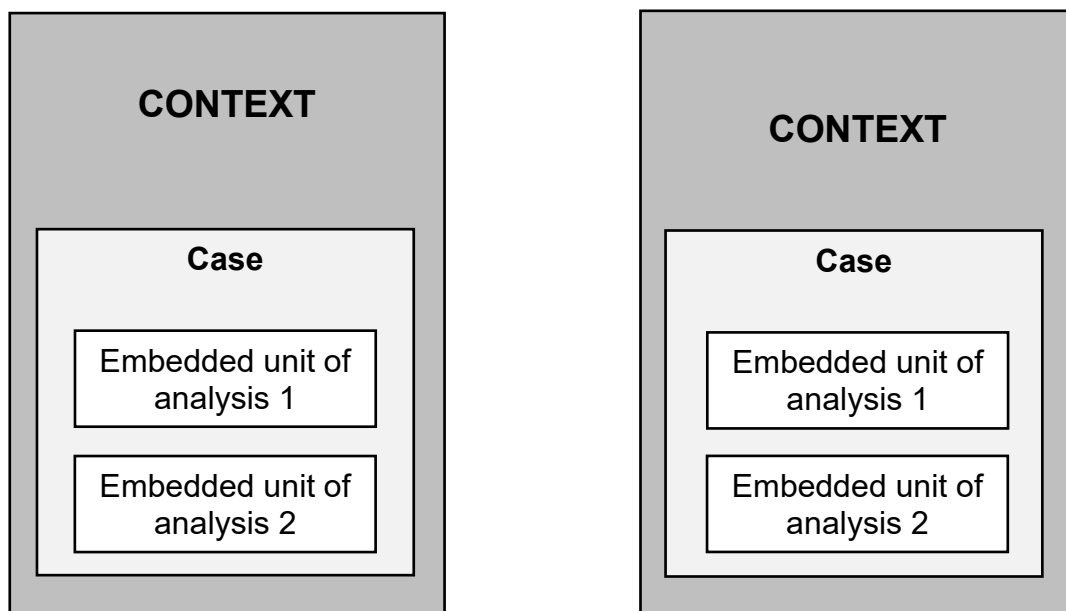


Figure 5.2: Multiple-Case embedded design, adapted from Yin (2009:46)

### 5.3.4 Defining the embedded units of analysis

#### Micro level

The Health Foundation define the micro level as the frontline clinical team (Fulop and Robert, 2015). However, this definition is somewhat vague in that the front-line team is made up of individual clinicians. Thus, it is not clear whether by focusing on the team, any investigation would aggregate data from individual clinicians or only consider the aspects of care which occur collectively as teamwork. Heggelund and Wiig (2018) also suggest that micro refers to the ward level rather than the individual clinician. However, when considering adaptive performance, the key issue is that individuals adapt their performance according to the conditions. Whilst it is acknowledged that Anderson et al (2020c) have cautioned against research at the individual level, the researcher considers that resilience is akin to the ripple effect where the action of the individual clinician initiates a series of wider ramifications. Saurin and Sanches (2014 :69) uses the phrase “*variability propagation*” to describe

this phenomenon, where the effects of variability are compounded through the system. Consequently, to define the micro level as the clinical team or ward level rather than the individual clinician would appear to miss out foundational insight into the relationship between individual level adaptive performance and organisational level resilience. Therefore, in this study, micro level refers to midwives working clinically providing direct patient care.

Of course, it could be questioned as to why choose the clinician as the micro level and not the women. Berg et al (2018) highlight the value of service user perspectives in quality improvement and safety research. However, the problem with applying reductionist approach such as this, is that there is no natural stop-point. One could always look further back for preceding factors which led up to the performance of the midwife. Pragmatically though, the researcher must start from somewhere. As the presence of individual women on the Labour ward is transient, they are not considered to be substantive within the defined boundary of the case. In contrast, the study focuses on the adaptive performance of midwives, therefore this would seem a natural place to start.

### Meso level

Sources confer that the meso level refers to the organisational level of the system (Fulop and Robert, 2015; Heggelund and Wiig, 2018). This could be taken to mean those at the top of the organisation, such as NHS Trust executive board members. However, the Royal College of Midwives (RCM 2019) state that very few midwives sit at board level in the UK; often the most senior midwife in an organisation reports to a director of nursing and will not have direct input into strategic leadership. It is recognised that midwifery is a distinct profession, and without representation at Board level, executive members may have limited understanding of the challenges facing maternity wards on a day-to-day basis (RCM, 2019). Indeed, the Ockenden report (2022:12) found that the Board at Shrewsbury and Telford NHS Trust “*did not have oversight, or a full understanding of issues and concerns within the maternity service*”. With this in mind, it is thought that board level individuals may have insufficient experience of the operational management of maternity services to provide useful data to the study (RCM, 2019). Therefore, in this study, the meso level is defined as midwives at the management level of the hospital because this

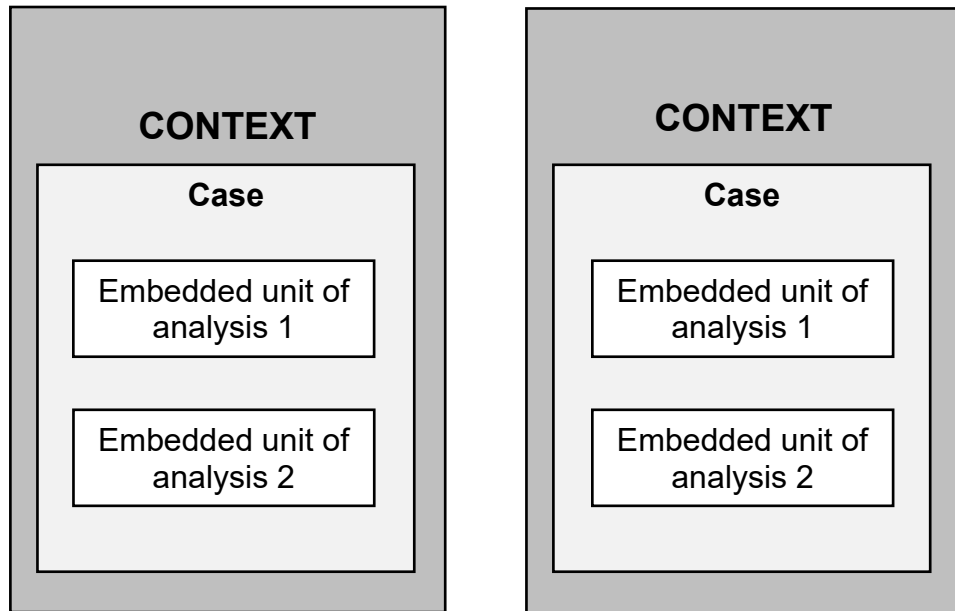
captures those individuals in leadership roles relevant to the operational management of Labour ward. This population should have sufficient insight into hospital governance, without specifying that they must sit at a board which could limit the number of potential participants who are eligible to participate in the study.

### 5.3.5 Macro level as context

Fulop and Robert (2015:2) define the macro level as “*the system level*”. It can be difficult to specify what constitutes the system because the boundaries are blurred and there are systems within systems (The Health Foundation, 2010). Wards do not work in isolation and activity is dependent on myriad factors elsewhere in the hospital and beyond. For example, the activity on Labour ward is influenced by bed occupancy on the antenatal and postnatal wards because this affects patient flow. However, Labour ward may also receive in-utero transfers from other maternity units who are full or cannot accommodate extreme prematurity in their own Neonatal Units. Therefore, even the boundary between separate hospitals can be blurry.

Heggelund and Wiig (2018) equated the macro level with the national maternity context. Whilst this study has chosen to follow suit, it is important to distinguish that the national level perspective represents the context within which both cases sit, not an embedded unit of analysis. Therefore, the difficulty of blurred boundaries and nested systems has been addressed within the present study by adapting Yin’s (2009) multiple case study design as can be seen in figure 5.3.

Yin's Multiples-case embedded design



Adapted Multiple-Case embedded design

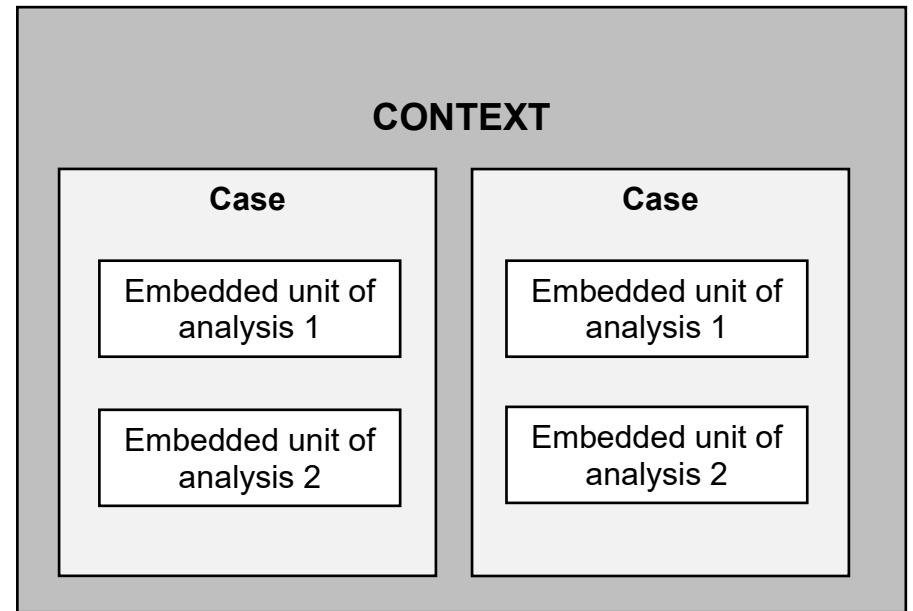


Figure 5.3: Application of multiple case study design (adapted from Yin, 2009:46)

In this adapted design, the two separate cases are encompassed within the same national context, rather than envisaging each case within its own distinct context. This is deemed appropriate because Schwandt and Gates (2018) argue that multi-site case studies seek to understand particular phenomena at each site within a wider geographical context. Consequently, placing both sites within the same context brings together the systems thinking approach and the case study methodology by considering the separate cases as being nested within a wider, national maternity care system. Nevertheless, similar to Heggelund and Wiig (2018) each case will be analysed separately first, and then cross-case afterwards to compare differences and similarities, at this point taking into consideration the wider national context.

### 5.3.6 Case selection

In England, there are a variety of maternity care settings and quality ratings ranging from outstanding to inadequate (CQC, 2022). Consequently, it may not be possible to define any of them as “typical” of the national maternity care system. However, the notion of typicality has been criticised because no two cases are the same (Simons, 2010). Furthermore, the underlying desire for typicality is that this will lead to generalisable results (Simons, 2010). It is argued that the purpose of case study research is not generalisability to other cases, but theoretical generalisability (Yin, 2009). The key is to understand a particular case, rather than to be able to generalise to others (Stake, 1995). The comparative case study seeks multiple occurrences of the same phenomenon to enable exploration and theory development through replication of the same methods at the different sites (Schwandt and Gates, 2018). The intention is not to choose particular cases which might illuminate an unusual phenomenon (Crowe et al., 2011). Instead, the aim is to select sites which have similar characteristics to enable comparison (Crowe et al., 2011; Yin, 2009). Thus, the study uses a “*most similar system design*” case comparison approach whereby the cases are strategically selected to minimise the effect of confounding variables, aside from the key determinant under investigation (Ruffa, 2019:3).

Similar to the comparative multi-level case study conducted by Heggelund and Wiig (2018), the criteria for selecting the sites is that they were similar in terms of the

level of care provided at the hospital but representing different CQC performance ratings to enable comparison; one rated as a high performing maternity service and one requiring improvement. Several possible study sites could be chosen. At the time of planning this study there are 140 maternity services rated good or outstanding, and 104 rated inadequate or requires improvement (CQC, 2022). The selected sites are therefore chosen for practicality because of established connections with each of the hospitals, which facilitates access. Whilst it is acknowledged that convenience sampling could pose a risk of selection bias (Ruffa, 2019), Stake (1995) argues that practicality is a legitimate driver in selecting the cases, because the priority must be those that are most likely to lead to learning. Difficulty in accessing sites may be prohibitive to learning.

## 5.4 Methods

Lewis and McNaughton Nicholls (2014) advise that the choice of research methods should be directed by the question. In the present study, four research objectives were identified from the literature review. The broadness of these objectives is necessary to provide a comprehensive systems view of the phenomenon; however, they are heterogenous in nature and so cannot be addressed by one single data collection method. Mills et al (2010) suggest that a particular advantage of case studies is the ability to triangulate a variety of data collection methods. Therefore, a multi-method approach is chosen.

### 5.4.1 Multi-method triangulation

Using both “*direct*” and “*indirect*” data collection methods may highlight differences between Work-as-Disclosed and Work-as-Done (Hollnagel et al., 2018:19; Shorrock, 2016). This is not to infer that midwives are intentionally dishonest, but in the case of adaptations, their behaviour may be engrained so that it has become unconscious. Alternatively, where adaptations are viewed as deviant behaviour, the fear of retribution could affect what participants are willing to disclose (Debono et al., 2018). Coffey (2018) suggests that the important thing is to explore how individuals rationalise what they do, that is, to bring together action and meaning. Consequently, this study will use a qualitative, multi-method approach to explore not only what happens, but why.

Triangulation of methods is advocated within the RE literature to substantiate findings (Nemeth et al., 2011; Berg et al., 2018), which may increase credibility (Yin, 2009), a challenge however, is in how to compare the data obtained through different methods, which are aligned to different research objectives. To some extent, comparison can occur within the data analysis by identifying unifying themes which cut across the different methods (Sibbald et al., 2021). For example, Heggelund and Wiig (2018) implemented two separate data collection methods but with similar topics set out in the respective data collection guides. The benefit of this approach is that the two data collection methods are independent of each other, therefore the findings may be confirmatory (Arias Valencia 2022). Using this approach, the sequence of conducting the different methods does not matter. This may be helpful with regards to time efficiency and recruitment as the data could be collected in parallel. However, a key concern of the present study is to identify differences between WAI and WAD and then to explore participants perceptions of why this occurs. To this end, the data collection methods are required to collect slightly different but complimentary data. Therefore, the data collection methods must be connected. Arias Valencia (2022) suggests that sequential triangulation should be used where data from one collection method is required to inform another. This enables an inductive approach to be taken within the initial exploratory phase, and then complimentary data to be produced within the subsequent deductive phase, contributing to theoretical development (Arias Valencia 2022).

#### 5.4.2 Sequential data collection

Rigour may be improved by using a sequential design whereby findings from the initial data collection method are embedded into subsequent data collection and analysis (Lewis and McNaughton Nicholl, 2014; Simons, 2010). For example, observation can provide a rich description of situations which can form the basis of further analysis and can be used to triangulate data from other methods such as interviews or focus groups (Simons, 2010). The Case Study Observational Research (CSOR) framework, adapted from Yin (2009) allows different data collection methods to be used sequentially (Morgan et al 2017). This more structured approach allows firstly for development of the coding frame for subsequent data analysis, and secondly, for further exploration of themes within the later data collection methods. The application of the CSOR framework (Morgan et al., 2017) is described in the protocol chapter. What follows here is a critical

appraisal of the data collection methods and consideration of issues around their implementation which justifies the decisions made in the protocol.

### 5.4.3 Direct methods

Applying the CSOR framework, a “*direct*” data collection method should be conducted first, to identify what adaptations occur in practice (Hollnagel et al., 2018: 19; Morgan et al., 2017). Observation can illuminate subconscious or habitualised behaviour and identify where reported behaviour may differ from actual behaviour due to the social expectation of conformity (McNaughton Nicholls et al., 2014). Consequently, observation may be used to identify the difference between Work-as-Imagined and Work-as-Done (Shorrock, 2016). Of course, other direct methods could be used to identify adaptive practice, such as Video Analysis (Mackenzie and Xiao, 2011). The benefit of this technique is that the video recording may be shown to the midwife afterwards to enable discussion of their action (Mackenzie and Xiao, 2011). However, there are several drawbacks in the maternity care setting. Firstly, birth is an intimate and private event, therefore women may perceive video recording as intrusive which could adversely affect recruitment. Similarly, given the previous discussion around blame culture in maternity and the possibility of adaptations being perceived as deviance, midwives may also be reluctant to have video evidence of them working outside of local guidelines or procedures. Additionally, the unpredictable nature of labour and birth could make it difficult to capture adaptive practice which occurs outside of the birthing room, such as in the corridor or in the medication store room. Video analysis could be used to observe a specific activity, such as drug administration or intravenous cannulation or an element of communication for example, however, the objectives of this study are exploratory in nature. Therefore, pre-specifying a particular activity to observe would limit the scope of the data to preconceived notions of what is important from the perspective of the researcher, rather than being open to participants’ leading. This is important in view of the underpinning pragmatic philosophy in that the findings of the study ought to be able to contribute to meaningful change. Nemeth and Herrera (2015) argue that naturalistic observation is a key feature of resilience engineering research because it can be used to identify and evidence the existence of resilience in practice. Therefore, this is the method that will be used in this study.

## Observation

In deciding between the type of observation to be conducted, it is important to consider two fundamental issues: firstly, the epistemological beliefs of the researcher regarding how knowledge is generated; and consequently, the role of the researcher in producing this knowledge (Anderson et al., 2018). A positivist stance would assume that what is observed is an objective representation of “*the truth*” which already exists to be collected, whereas a social constructionist or interpretivist philosophy accepts that data are generated through active choices and a degree of interpretation by the researcher, a process which is inherently subjective (McNaughton Nicholls et al., 2014:245). As a pragmatist, the researcher considers that knowledge results from interaction with the world, thus complete objectivity is not possible (Beista, 2015). It is argued that observation is not a neutral process of collecting data which is “*out there*” but involves active choices and interpretation by the researcher (Beista, 2015:23). McKenzie (2017) asserts that there is not a right answer to the debate between overt/covert and participant/non-participant observation, the defining features of contemporary observational research are reflexivity and rigour. However, as these features are not restricted to the observational data collection but run through the whole of this case study, reflexivity and rigour will be addressed at the end of this chapter after discussion of the specific methods. What follows here is an outline of the methodological debate which informs the decisions between overt and covert observation, and between participant or non-participant observer roles.

## Overt or covert

A key consideration in observational research is the influence of the researcher on the researched. That is, the extent to which the presence of the researcher affects the behaviour of those being observed (Jamie and Rathbone, 2022). The Hawthorne effect suggests that people change their behaviour because they know that they are being observed (Sedgwick and Greenwood, 2015). However, Newnham et al (2021) argue that it is not possible to know the effect the researcher has on the behaviour of participants because the researcher does not know how they behave ordinarily in the researcher’s absence. The ideological approach would be if participants did not know they were being observed, to provide assurance that observed behaviour is representative of usual behaviour. However, covert observation is clearly unethical because consent has not been sought (Hammersley and Atkinson, 1995).

The alternative is to use an overt approach so that true informed consent can be gained, but as stated above, this could affect the trustworthiness of the findings if participants change their behaviour because they know that they are being watched. It is important to recognise though, that the choice between covert and overt observation is a scale, not a dichotomy (McNaughton Nicholls, et al 2014). It is possible, although somewhat dishonest and potentially unethical, to be overt with participants about the fact that they are being observed, whilst withholding some of the information about the purpose of the observation or the specific aspect of care which is being observed (Jamie and Rathbone, 2022).

A specific issue in the present study is around disclosure of the purpose of the research, in that the word *resilience* may have negative connotations for midwives where it is seen as a person-level psychological capacity equated with the ability to cope with adverse working conditions (Tant, 2020). Similarly, it is recognised that safety in maternity services is a high-profile concern currently and thus may also be emotive to staff and patients. The concern is that this could inhibit recruitment and participation in the study. In considering the HRA (2022) Policy Framework for Health and Social Care Research, the researcher deemed that the principles of safety and ethical conduct override the potential Hawthorne effect or implications on recruitment. Therefore, an overt observation approach is chosen, whereby the researcher will be clear to participants that they are present in a research capacity and will be honest about the purpose of the study.

#### Participant or non-participant

Whilst observation inherently involves active choices and interpretation by the researcher (Beista, 2015), the degree of participation by the researcher can vary, as set out in figure 5.4.

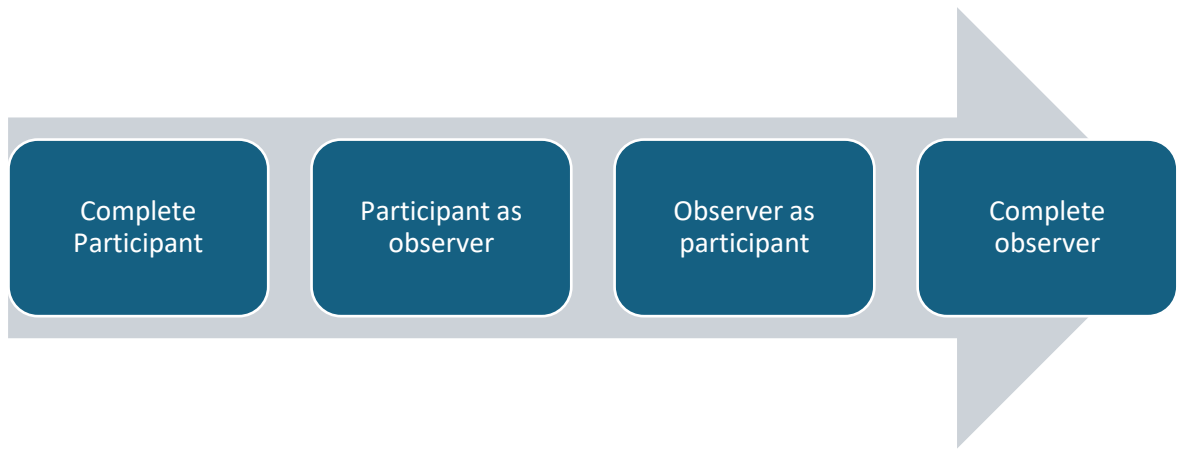


Figure 5.4: Degree of participation of Observers (adapted from Gold (1958))

At either end of the scale, the complete participant role and the complete observer roles both require a covert approach (Gold, 1958). The complete participant role hides the researcher in plain sight, whereby the researcher fully integrates into the social setting so that they are part of the community and participants do not know that they are being observed (Gold, 1958). With a complete observer role, the researcher may be physically hidden, for example observing participants through a two-way mirror so that participants are unaware of being observed (McNaughton Nicholls et al., 2014). As discussed above, covert observation was ruled out because it may be considered unethical (Rees, 2011). Furthermore, within the complete observer role, the researcher does not interact with participants (Gold, 1958). In a maternity care setting, where privacy and confidentiality are paramount (NMC, 2018), those present must have justifiable reason for being there. It may appear suspicious if an individual were to loiter, without any interaction or apparent job to do whilst covertly collecting data. Therefore, neither the complete participant nor the complete observer roles are appropriate in the current context.

Of the two middle-ground roles, both allow interaction with participants, to varying degrees. The participant as observer role requires participation in the ongoing activity whilst observing the care, whereas the observer-as-participant role permits a degree of interaction with participants whilst observing them but seeks to minimise interruption to the activity under investigation (McNaughton Nicholls et al., 2014). A crucial consideration in deciding between these two approaches, is the risk of over-involvement through participating in the ongoing activity, which could compromise objectivity and skew the researcher's priorities away from data collection, towards

patient care (Newnham et al., 2021). Within this is an ethical conflict between the researcher's obligation to do good research and the moral obligation to protect participants (Anspach and Mizrachi, 2006; Jamie and Rathbone, 2022). Similarly, there is concern over the degree to which the researcher affects the activity under investigation, where participation could change the natural course of events (Anspach and Mizrachi, 2006). However, a degree of social engagement with participants is seen as facilitative of trust and therefore may encourage honest disclosure by participants (Hammersly and Atkinson, 1995). Therefore, a careful balance is required between distance and closeness to the activity under investigation.

The researcher's background as a Registered Midwife provides an emic perspective of the midwifery profession, which may provide insight into the ongoing clinical care, and knowledge of national drivers which shape the context of care (Cleland et al., 2021). To some degree, this may negate the risk that the researcher may misinterpret situations because of the superficial engagement. However, the researcher may also be considered an outsider to the study sites by virtue of not being employed substantively there. Thus, it may be necessary to interact with participants to clarify their rationale for actions, for example. Gold (1958) asserts that the observer as participant role is commonly used in studies involving short-term observations which require less integration into the setting. Thus, the observer-as-participant role is deemed appropriate in this study to harness the advantages of permitted interaction with participants whilst minimising the threat to trustworthiness of the findings through over-involvement (McNaughton Nicholls et al., 2014; Newnham et al., 2021).

Whilst observation is a recognised data collection method for resilience research (Nemeth and Herrera, 2015), methodological literature provides little practical guidance on the appropriate duration of observations in case study research. Coates and Catling (2021) found that duration of observation was inadequately reported in the majority of studies included in their systematic review of observational studies in maternity care. Indeed Debono's (2018) ethnographic study of workarounds in nursing conducted 44 hours of interviews but the duration of observation is not reported. However, Leslie et al (2014) argue that scale is not the important factor in research for quality improvement, small but high-quality research

that asks insightful questions can be more productive. Consequently, this research aims to achieve depth of analysis on a smaller scale, over larger scale but less nuanced description. Considering previously published case studies, Heggelund and Wigg (2018) conducted 35 hours of observation across two maternity wards. By comparison, Fagerdal et al (2022) report a greater duration of observations (115 hours); however, this was spread across 13 teams therefore would have averaged less than nine hours of observation per embedded unit of analysis. Similarly, Laugaland et al (2014) conducted 90 hours of observation over 7 wards which would have equated to less than 13 hours per ward. This demonstrates that a long duration of observation is not required for case study research. Consequently, this study aimed to conduct up to 40 hours of observation between the two maternity units, in line with Heggelund and Wigg's (2018) methods. Observations covered early, late and night shifts and different days of the week to account for differences in workload (McNaughton Nicholls et al., 2014).

An observation schedule was devised to guide the observational data collection, using an adapted Strategies Framework (Rankin et al., 2014) (Figure 3.7), because this framework has the potential to identify not only the adaptations which are being made, but also the rationale for the action, the contextual factors which necessitate the adaptation and the barriers and facilitators to the actions. The observation schedule could have been based on the Concepts for Applying Resilience Engineering (CARE) model by Anderson et al (2016) or the Four Resilience Potentials from Hollnagel (2011) which are part of the theoretical foundation for this thesis. However, the Strategies Framework incorporates the four resilience potentials (Hollnagel, 2011) and provides more scope to examine the context within which the adaptations happen as opposed to the CARE model which focuses on the balance between demand and capacity which could restrict the breadth of observational data that is sought (Rankin et al., 2014). Consequently, the Framework by Rankin et al (2014) may be more comprehensive, facilitating a systems perspective on adaptive performance. This approach also overcomes the "what-you-look-for-is-what-you-get" issue (Berg et al., 2018: 309), because the observation guide does not look for features of the CARE model or the resilience potentials but will compare the findings to these models afterwards.

Although the observation schedule will be used to guide the data collection, data analysis will use a “*discovery*” approach which seeks to not limit the findings to pre-defined categories but be open to uncovering new insights which can be critiqued against existing theory (Wilson and Chaddha, 2009:2). This will contribute to achievement of the fourth research objective, by comparing inductive insights from the data to existing models such as Anderson et al (2016) and Hollnagel (2011) to develop a new theoretical model to explain the relationship between individual level adaptive performance and organisational resilience.

#### 5.4.4 Indirect methods

Interviews are a commonly used method in resilient healthcare research (Berg et al., (2018; Iflaifel et al., 2020) and indeed in case study methodologies, because they provide opportunity to ask respondents how and why a process happens as well as their opinion of it (Yin, 2009). A focus group interview could also be used to achieve this purpose and could potentially be more time efficient as the views of several participants could be captured simultaneously. However, given the potential for adaptive practices to be viewed as deviance, focus group interviews may be subject to social desirability bias, where participants may be unwilling to share objectionable views (Debono et al., 2018). Therefore, the presence of other participants may limit their candour. Additionally, there is a concern that more assertive personalities may dominate discussions, risking disparity in the credence given to individual participants’ voices, or exclusion of potentially important insights from less vocal participants. Therefore, this study shall implement individual interviews to ensure freedom of speech and maximise the opportunity for a range of views to be shared.

#### Semi-structured interviews

The choice of interview approach is driven by the epistemological perspective of the researcher and the purpose of the study. Where knowledge is seen as a pre-existing entity, to be collected, a structured approach may be appropriate because the data collected within the interview can be considered an objective reflection of reality, representative of the respondent’s life experience outside of the interview itself (Yeo et al., 2018). This perspective is aligned with a positivist ontology where the aim is to collect standardised, potentially quantifiable data, such as in surveys and

questionnaires (Brinkmann, 2018). On the other hand, a constructivist perspective would infer that knowledge is constructed through the interaction which occurs within the interview process (Brinkmann and Kvale, 2019). This latter perspective lends itself to a semi-structured or unstructured approach whereby the nature of the data generated is not standardised, but unique to each individual interview, dependent upon the interaction between the researcher and the interviewee (Yeo et al., 2018). It has been suggested that the pragmatist view seeks to bridge the gap between these two opposing stances, arguing that knowledge is constructed through interaction within the interview, but that the knowledge generated is to some degree representative of the participants' life beyond the interview (Yeo et al., 2018). Although the researcher would identify as a pragmatist, the perspective put forth above would appear to be a logical fallacy; that knowledge can be both constructed and objective. Nonetheless, Biesta (2015:21) asserts that Dewey's constructivism is a "*transactional constructivism*", whereby knowledge is both constructed and real. This contradiction could be addressed by considering the nature of knowledge itself. If there are multiple truths, then one could consider that the knowledge that is generated within the interview may represent reality for that individual (Biesta, 2015). However, it is argued that there are often inconsistencies within the account of the same individual, suggesting that knowledge is subjective and situated (Watson, 2006). Indeed, Ilaifel et al (2020:341) suggest that:

*"Although interviews and focus groups are widely used in qualitative research, the assumption that participants' words are indicators of their inner experiences may be questionable".*

Despite questions of whether interview data is representative of life beyond the interview itself, the researcher subscribes to the pragmatic belief that knowledge is constructed through interaction with participants, which requires a flexible approach where the interviewer may respond to the interviewee's leading to develop understanding, rather than being confined to a standardised list of questions which limits the breadth of experience which may be obtained. Consequently, a semi-structured interview approach is chosen, which allows the researcher to ask the same substantive questions of all participants but gives scope to deviate from the interview guide to follow the participant's leading. In this way, the data which are generated through interviews may be similar enough to enable comparison, whilst

simultaneously specific to the individual participant, thus valuing the full range of human experience.

In line with the sequential nature of the CSOR framework, individual semi-structured interviews with midwives will take place following observations to enable exploration with participants of what has been seen in practice (Morgan et al., 2017). Conversation within the interviews will be directed by an interview guide, which, like the observation guide, is based on the Strategies Framework (Rankin et al., 2014) in figure 3.7.

#### 5.4.5 Sampling

The aim of complexity-informed research is to describe the multiplicity of experiences within the context under investigation, rather than to achieve a consensus opinion, or to extrapolate assumptions about other cases. (Greenhalgh and Papoutsi, 2018; Yin, 2009). Therefore, the researcher's role is to produce findings that are an accurate portrayal of the range of participants' experiences of the selected case. Consequently, sampling in case study research is not subject to the same quantitative issues of probability sampling (Silverman, 2022). It is argued that it is inappropriate to apply fundamentally quantitative methods to qualitative sampling because the aim of qualitative methodologies is rich and thick description, not enumeration of frequencies (Braun and Clarke, 2019; Lincoln and Guba, 1985). Nevertheless, practically, study protocols require an estimate of sample size to gain ethical approval.

Although theoretical sampling is used in other qualitative research designs to determine adequate sample size (Morse, 2015; Saunders et al., 2018), the core concept of saturation which drives theoretical sampling, is controversial. Theoretical sampling means that recruitment decisions are directed by ongoing data analysis, and further recruitment, data collection and analysis continue until saturation occurs (Streubert and Carpenter 2011). However, there is a lack of consensus within the literature as to the sample size required to achieve saturation, or how to estimate it (Saunders et al 2018; Vasileiou et al 2018). Braun and Clarke (2019) argue that the concept of data saturation is ill-defined; the literature does not dictate whether

saturation refers to no new information, or no new codes or no new themes. Similarly, it is not clear how many instances of a thing are required to state that the code or theme has been saturated (Braun and Clarke 2019). Furthermore, the amount of data provided by each participant may vary, therefore the data saturation point is not directly related to the number of participants (Morse 2015). Consequently, it is difficult to anticipate the sample size required to achieve saturation when the benchmark is ill-defined.

Whilst Greenhalgh and Papoutsi (2018:97) advise against theoretical sampling in complex systems research because “*data will never be complete or perfect*”, there is limited guidance within methodological literature as to a suitable alternative way to estimate a sufficient sample size in qualitative research. Consequently, the sample size decision for the present study was guided by existing resilient healthcare research. Anderson et al (2020a) state in their resilient health care study protocol that they aimed to select a sample of four to five participants from each of four teams at each study site. This would equate to 16 to 20 participants at each of the two sites. Meanwhile, Heggelund and Wiig (2018) report data from 38 qualitative interviews across two sites, and Debono et al (2018) recruited 44 participants for individual interviews. It must be acknowledged though that each of these studies had multiple researchers collecting data. The scope of the present study is confined by the presence of a single researcher. Vasileiou et al (2018) suggested that resource considerations and practicality are commonly used justifications for sample sizes in qualitative research. With this in mind, a pragmatic approach is taken; the present study aims to recruit up to 15 participants at each site with the intention of retaining at least 12 in the data analysis. Therefore, this equates to a sample size of up to 30 registered midwives in total which is similar to the sample sizes used in previous resilient healthcare studies (Anderson et al., 2020a; Heggelund and Wiig, 2018). Similar to Debono et al (2018), this study will implement purposive sampling to select participants who are most able to provide useful insights about the case, according to the pre-defined inclusion and exclusion criteria (Stake, 1995).

#### 5.4.6 Use of documents

Documents are commonly used in case study research and are a key data source because they can be used to verify findings from interviews and observation (Bowen, 2009; Wood et al., 2020; Yin, 2009). Local document analysis can provide valuable insight into the context and culture of the case that is being investigated (Simons, 2010). For example, by looking at policies and procedures, workload, resources, management plans, feedback mechanisms and methods of learning from events (Berg et al., 2018). Analysis of national documents can also support understanding of the macro level context which affects the cases (Simons, 2010). For example, national reports, strategy, policy or regulatory documents may be used to gain insight into the political, regulatory, and cultural drivers of safety in maternity services which may support or inhibit organisational resilience (Berg et al., 2018: 310; Heggelund and Wiig, 2018). However, there is limited methodological guidance for novice researchers on how to incorporate document analysis into case study research.

Methods of analysing documentary data tend to be poorly reported in the literature (Berg et al., 2018). For example, it is not clear how Heggelund and Wiig (2018) analysed the strategic documents in their study, nor how the findings were incorporated into the overall case study analysis. The authors simply report that they “*form part of the contextual conditions of the maternity wards*” (Heggelund and Wiig, 2018: p87). Similarly, Morgan et al (2017) state that they included documents as field notes which were imported into the computer assisted data analysis software, although it is not clear then how these documents were analysed. On the other hand, Wachs et al (2016) report that they implemented the same analysis methods for all forms of data. This approach would seem reasonable in that it may ensure consistency in how data are dealt with and may also give more equal weighting to different sources of data, although the validity and practicality of this approach is unclear.

A further epistemological issue with the use of documents within a multi-method study is the question of the purpose and therefore the timing of document analysis in relation to the other methods of data collection (Wood et al., 2020). On the one hand, document analysis can precede observations and interviews to direct

avenues for further exploration (Simons, 2010). A concern with this is that the researcher would have to be selective in which documents to analyse given the likely volume of local documents in existence. Choosing which documents to review prior to observing practice may result in selection bias, based upon the researchers preconceived ideas of what issues are important rather than being guided by prevailing concerns of clinicians at the study sites. However, analysing all documents would be unfeasible for a sole researcher in this study. On the other hand, document analysis can occur later in the case study to substantiate findings from the previous methods (Yin, 2009). This is complicated by the assertion by Yin (2009:105) that documents may not reflect “*unmitigated truth*”. It is necessary to consider who has authored the document and for what purpose (Yin, 2009). In maternity care, some auditable standards have financial incentives such as the Maternity Incentive Scheme (NHS Resolution, 2023) which provides insurance to Trusts against negligence claims. Other policies may be linked to care quality ratings for the Trust such as the CQC (2015) who have the power to impose conditions upon which services a Trust is allowed to provide, or fine a Trust that does not meet the specified standards (CQC, 2022). Consequently, this may affect the way that policies are written and reported, so cannot be assumed to be objective or value-free. This is problematic in terms of being able to use them to substantiate findings from other data sources if the documents themselves may potentially contain biases or hidden agendas, which could affect the trustworthiness of the findings.

Whilst documents can provide insight into organisational values and culture, (Simons, 2010), this is beyond the scope of the present study, given that analysis would have to consider tone and semantics as well as their content. Future research could explore how maternity culture is portrayed in organisational and national documents. Meanwhile, the objectives of this study are observable in practice and relate to the perceptions of individuals, which could be discovered through observation and interview methods. Therefore, following the CSOR framework, observational data will be analysed first to direct the topics to be explored within the subsequent interviews (Morgan et al., 2017). Guidelines or protocol documents may be accessed to identify where practice has deviated from that which is prescribed, but this will be included as part of the observational data rather than being a structured data collection method in itself.

### 5.4.7 Data analysis

Smith and Firth (2011): suggest that there are three main categories of qualitative data analysis methods:

1. Methods that focus on language such as discourse analysis;
2. Those that aim to develop theory, such as grounded theory; and
3. Those that focus on interpreting participants perspectives such as thematic analysis or content analysis.

The pragmatic epistemology that guides this study is not concerned with the nuances of language; moreover the “*relationship between actions and consequences*” (Biesta, 2015:18) Therefore methods such as discourse analysis that focus on language are disregarded. Given that resilience theory already exists, albeit underspecified and little used in midwifery, inductive theory development could be seen as unnecessary duplication, thus grounded theory-type approaches are not appropriate either. Consequently, a data analysis method is sought which aims to interpret participants perspectives on a situation or phenomenon. This is appropriate to the methodology as Mills et al (2010) suggest the aim of case study research is to intrinsically understand the case from what is important to the participants. A variety of methods exist which focus on interpreting participants perspectives, for example, thematic-, or content analysis (Smith and Firth, 2011). However, Braun and Clarke (2021) suggest that there is not a single right method; the key issue is that the chosen method should align with the overall research design and theoretical underpinnings.

Thematic analysis (TA) is a commonly used approach to qualitative data analysis which aims to detect connections within the data in relation to the research objectives (Braun and Clarke, 2014). Though this approach could be used in the present study, it has not previously been used in Resilient Healthcare studies that have implemented case study methodologies (Berg et al., 2018). This may suggest that the method is inappropriate in this context. Additionally, the lack of analytic description in the resilient healthcare field hinders the replication of methods (Berg et al., 2018). This is compounded by the variety of types of thematic analysis methods which exist, which range in the degree of structure and subjectivity (Braun and Clarke, 2021), as Finlay (2021:104) says, from the “‘*Scientifically descriptive*’ to

'*Artfully interpretive*'. Consequently, accessibility of the method to less experienced researchers may be restricted.

Heggelund and Wiig (2018) implemented a content analysis method in their case study research, using the four cornerstones of resilience as a pre-defined coding framework. Whilst the authors suggest that the findings have expanded current understanding of resilience factors in everyday work (Heggelund and Wiig, 2018), Graneheim et al (2017) argue that using a deductive approach such as used by Heggelund and Wiig (2018), may exclude data that do not fit with existing theory. The concern here is that the "*left-over*" data which does not fit into the predefined coding framework may challenge existing theory (Graneheim et al., 2017: 30). Indeed, Heggelund and Wigg (2018: 85) do report that "*many themes and categories emerged along the way and hence a need arose for further concretisation*". This suggests that analyses did arise from the data which did not neatly fit with the coding framework. However, it is not clear what is meant by "*concretisation*" (p85), or how the emergent themes and categories were dealt with. One would posit that three options exist for seemingly extraneous data: 1. Disregard it as an anomaly or outlier; 2. Make it fit into the existing framework; or 3. Amend the coding framework to include inductive themes. Disregarding anomalies may risk confirmation bias in that you will find what you look for (Hollnagel, 2014; Jamie and Rathbone, 2022). Making the data fit into the prescribed framework could endanger the credibility of the findings (Timmermans and Tavory, 2012). Therefore, it appears that the only credible option is to allow the creation of data driven themes and categories alongside the theory driven a priori framework.

Template analysis could provide a useful solution to the criticism of Heggelund and Wiig (2018) above, in that this method allows a flexible approach to analysing qualitative data, whereby an initial template of a priori codes is identified by the researcher as potentially relevant or important, but these codes may be modified, added to, or disposed of if they do not fit with the data being interrogated (King 2026). The flexibility of this method could be considered in-keeping with the adaptive nature of organisational resilience (King, 2012; Brooks et al. 2015), although this has not been proven. Framework analysis, however, has been successfully implemented by McCourt et al. (2018) and James et al. (2019) to analyse their qualitative data. Both studies applied a deductive approach to devise an a priori

coding framework from previous research findings and then inductive open coding of initial study data to refine their frameworks. Consequently, Framework Analysis allows the creation of data driven themes and categories alongside the theory driven a priori framework, in order to combine inductive and deductive data analysis approaches (Gale et al., 2013). This is different from what is termed “*abducted analysis*”, which does account for existing theory but only as “*sensitizing notions*” that must be borne in mind but do not contribute to development of the coding framework (Jamie and Rathbone, 2022:15).

Both Template and Framework analysis methods would enable a systematic and transparent approach to managing the data (Cassell, 2008; Gale et al., 2013). Whilst hierarchical coding employed in Template analysis allows for broad themes to be broken down into progressively more specific ones (King 2026), the advantage of Framework analysis is that the matrix produced enables comparison of findings both within and across cases. This connection with the original unit of analysis is important in the present case study for examining the difference between midwives’ and managers’ perceptions of adaptive practice in dynamic clinical and organisational conditions. This systematic charting process supports analytic transparency and auditability (Ritchie et al. 2014), which is especially important in view of the doctoral nature of this thesis. This may also enhance the trustworthiness of the findings (Smith and Firth, 2011), providing a valuable counter to the criticism of previous Resilient Healthcare studies which have tended to lack methodological description (Berg et al., 2018).

The present study will therefore implement the same approach as McCourt et al (2018) and James et al (2019) to build upon existing theory without the analysis being limited by it (Crowe et al., 2011). That is to say that the study will explore the application of Resilient Healthcare theory in midwifery practice, whilst being open to new insights which may arise from the data. Consequently, this approach may contribute to the research objectives by enabling development of a model to explain the relationship between individual level adaptive performance and organisational resilience.

## 5.5 Assessment of rigour

Whilst Yin (2009: 41-45) uses the terms “*construct-*”, “*internal-*” and “*external validity*” and “*reliability*” to describe the assessment of quality within case study methodology, Lincoln and Guba (1985) warn against applying quantitative criteria to qualitative studies because the underpinning ontological and epistemological perspectives are incompatible. If truth is multiple and relative, and knowledge is constructed, then the notions of validity and reliability are irrelevant. As Cutcliffe (2000: p1479) suggests:

*“To strive to attain more credibility according to an alternative philosophical standpoint appears to be at best inappropriate and at worst, a distraction from the potential that creativity can bring”*

Instead, case study is seen to have its own measures of rigour (Flyvbjerg, 2010). The most commonly used are those produced by Lincoln and Guba (1985): credibility, dependability, confirmability and transferability (Houghton et al., 2013). The following section will critique each of these criteria in turn and discuss how they will be applied in the present study to ensure quality.

### 5.5.1 Credibility

Similar to internal validity, credibility concerns how relatable the findings are to the participants and members of the social setting under investigation (Lincoln and Guba, 1985). This may be challenging if one considers there to be multiple realities; however, Lincoln and Guba (1985) suggest that the key is to represent the range of realities adequately, rather than to infer a singular truth exists. It is perhaps for this reason that Yin (2009) encourages case study researchers to look for deviant cases, which challenge emerging theory, so that breadth of understanding may be gained. In order to procure this level of understanding, Houghton et al (2013) suggest that prolonged engagement in the setting and persistent observation are necessary. The purpose of these respectively are, for the researcher to become acquainted with the environment and contextual factors which may impact upon the situation being studied; and, to enable identification of the key issues to focus on going forward (Lincoln and Guba, 1985). Whilst prolonged engagement and persistent observation are theoretically justified, it would be pragmatic to question how long is required to achieve the goal of credibility? Houghton et al (2013) report that they conducted observations over a period of 12 hours at each of their five study sites. The authors

conclude that this length of time was adequate to acquire a full understanding of the situation under investigation and suggest that saturation was achieved in this time. Similarly, the discussion earlier in this chapter regarding duration of observation within other resilient healthcare studies demonstrated that a long duration of observation is not required for case study research. Consequently, the duration of observation in the present study will be in line with other resilient health care studies, to enable comparable credibility. The researcher's professional experience as a midwife may be seen as facilitative in this case, as it provides some contextual understanding which may negate the need for a long period of immersion in the setting (Cleland et al., 2021). Although, on the contrary, the researcher must be mindful of not imposing preconceived ideas or biases onto the findings (Ormston et al 2014).

A common criticism of case study methodology is that it is subjective, and its findings may lean towards verification of the researcher's preconceived understanding of the situation under investigation (Flyvbjerg, 2010; Glette, and Wiig, 2022). Indeed, Jamie and Rathbone (2022:16) assert that qualitative research is never completely objective and apolitical: the researcher inherently brings their "*theoretical baggage*" to the process. On the other hand, the subjectivity of the researcher is essential in understanding and interpreting the case (Simons, 2010). As Flyvbjerg (2010:223) explains, case study methodology requires a closeness to the real-life situation which enables a "*nuanced view of reality*". The challenge then, is to conduct the study in a rigorous way which guards against confirmation bias, and to transparently report the methods used, so that the reader can make their own assessment of the credibility of the findings (Lincoln and Guba, 1985; Houghton et al., 2013; Berg et al., 2018). That is to say, the aim should be to demonstrate methodological credibility, and trustworthiness of the research findings (McBrien, 2008).

Glette and Wiig (2022) propose that peer debriefing may reduce the risk of confirmation bias. This is where early findings are presented to colleagues for critique. It is thought that this method may enable discussions around possible preconceptions as a result of the researcher's positionality (Glette and Wiig, 2022). Furthermore, agreement between peers and the researcher on analysis of the data may infer greater credibility of the findings (Lincoln and Guba 1985). However, Houghton et al (2013) suggest that this method may be of limited value, in that

qualitative data analysis is highly personal; different researchers will interpret the data differently. With this in mind, the value of peer debriefing is not in confirming findings, but instead in scrutinising the methodological processes used to reach those conclusions (Graneheim and Lundman, 2004). The present study benefits from being a PhD project, in that regular supervision is mandated as part of the programme. Therefore, this forum presents an ideal opportunity for academics who have expertise in the topic area and research methods used to critique the data analysis to aid credibility.

Similar to peer debriefing, some authors advocate member-checking of data to increase credibility of the findings (Houghton et al., 2013). This involves asking research participants to confirm the accuracy of the data. However, the interpretation of data is individual to the researcher (Sibbald et al., 2021). As Brinkmann and Kvale (2019) suggest, a different interviewer would create a different interaction with participants and different interpretation of their meaning, therefore would likely produce different findings. Therefore, it is recommended that the role of the participant is solely to confirm the accuracy of the interview transcription, not to comment on the interpretation (Houghton et al., 2013).

Another issue with member checking is that participants' perceptions could vary over time. Therefore, whilst their meaning may have been true at the time of the interview, it may change by the time the researcher goes back to them to check the transcript. This can be seen in the report by Houghton et al (2013) where a few participants raised concerns about the language they had used during their interviews. This presents both pragmatic and ethical issues for the researcher, in that a significant amount of work is involved in taking transcripts back to participants to check, which may be inefficient if the outcome, as in the case of Houghton et al (2013), is that the transcriptions remain unchanged anyway after discussion with the participants. Alternatively, amending the transcript after member checking, could cause instability or inconsistency in the data analysis which poses a risk to the dependability of the findings (Graneheim and Lundman, 2004). With these potential pitfalls in mind, the decision for the present study is that the case study represents a snapshot in time. Participants' views are considered to be true to themselves at the point where the data are collected. Audio recording of interviews should enable

accurate verbatim transcription; therefore, member checking is not considered necessary to confirm the accuracy of the transcription.

Perhaps of more value than member checking to the credibility of this study's findings, is triangulation of data collection methods. Cross-referencing between multiple sources of information should be a key feature of all case study methodologies because it allows different aspects of the case to be explored (Sibbald et al., 2021; Yin, 2009). Resilient Healthcare literature also advocates for the use of triangulation to augment credibility and reduce the risk of misinterpretation of data (Nemeth et al., 2011; Berg et al., 2018). Houghton et al (2013:13) suggests that triangulation serves two purposes, firstly, to "*confirm*" data and secondly, to ensure "*completeness*". Confirmation is concerned with accuracy of the data collected (Houghton et al., 2013). Thus, the use of triangulation may compensate for not conducting member checking of interview transcripts if observational data confirms interview data and vice versa. However, the issue with this is if differences are found between the data sources, this could suggest inaccurate data (Houghton et al., 2013), or, a noteworthy finding in itself, such as a difference between Work-as-Imagined (WAI) and Work-as-Done (WAD) (Shorrocks, 2016). As Brinkmann and Kvale (2019) suggest, interview participants may report what they think the interviewer wants to hear rather than what they actually do or think. On the other hand, triangulation can ensure completeness of the data, which is about collecting a range of perspectives to gain a more comprehensive picture of the phenomenon. As Sibbald et al (2021: 294) state, by "*seeking patterns within and across data sources, a thick description of the case can be generated to support a greater understanding and interpretation of the whole phenomenon*". So then, it would appear that the key to determining whether contradictory findings suggest inaccuracies in the data or a difference between WAI and WAD, would be to analyse the data separately, "*within and across data sources*" (Sibbald et al., 2021: 294). This is facilitated within the present study by the sequential design based on the CSOR framework (Morgan et al., 2017) and the use of the Framework analysis method which clearly demonstrates where each source of information has come from to enable comparison between and across embedded units of analysis. It is important within this, to be transparent how each source of evidence has contributed to the analysis.

### 5.5.2 Dependability

Where Yin (2009) discusses the criteria of reliability, Lincoln and Guba (1985) advocate for the similar concept of dependability. The difference being that reliability is based on the positivist principle of replicability where repetition of the same methods should produce consistent outcomes. This is not possible in qualitative studies, which are context specific and subjective to the individual researcher (Lincoln and Guba, 1985). Therefore, dependability concerns stability of the phenomenon under investigation and consistency of the study methods used (Lincoln and Guba, 1985; Graneheim and Lundman, 2004). Despite the epistemological and semantic differences, both Yin (2009) and Lincoln and Guba (1985) promote the use of audit trails as a means to reduce bias in qualitative studies. This occurs by transparently reporting the philosophical and methodological perspectives that guide the study (Sibbald et al., 2021), the aim being to clearly evidence how the researcher has reached their conclusions, so that the reader can evaluate the dependability (Koch, 2006; Spencer et al., 2009; Houghton et al., 2013).

Similar to Glette and Wiig (2022), the audit trail will be produced within the current study, by the use of a journal to record the research process. This will be complimented by the Framework analysis method which breaks the interpretation down into incremental steps to show the progression of the analysis rather than making great theoretical leaps that are unexplained (Spencer et al., 2009). Thus, the methodological and interpretational decisions may be made transparent.

### 5.5.3 Confirmability

Whilst dependability requires consistency of methodological approach, confirmability concerns the accuracy of the data and their interpretation (Lincoln and Guba, 1985; Houghton et al., 2013). A key principle of pragmatism is that knowledge occurs through experience; however, interaction with the phenomenon inevitably changes the natural course of events. It is important therefore, to be cognisant of the researcher's influence on the conduct and findings of the research. This is known as reflexivity, which is defined as *"the researcher's critical self-awareness: the process by which they examine understandings of self/other and analyse the ways in which these preconceptions influence and impact the research"* (Finlay,

2021:107). It would appear that there are two aspects to this, firstly, concerning honest disclosure of the researcher's positionality, and secondly, ongoing reflexivity of the researcher's influence on the conduct of the research (Ormston et al., 2014). Houghton et al (2013) suggest that rather than seeking to remove oneself from the research process, confirmability requires self-awareness of the researcher's influence upon all aspects of the study and transparent reporting. Therefore, the aim should be reflexivity around one's positionality and implicit biases, and honest reporting (Jamie and Rathbone, 2022; Ormston et al., 2014).

In terms of the researcher's positionality, there is significant debate within the literature regarding emic versus etic perspectives, particularly in ethnographic studies (Burns et al., 2012; Bergman and Lindgren, 2018; Yeo and Dopson, 2018; Gelir, 2021). Although this is outside the scope of this chapter to discuss, Cleland et al (2021) provide a succinct summary that the insider position may increase access, willingness to participate, and contextual familiarity, which aids accurate interpretation. Whereas the outsider may be more perceptive of accepted customs and practices, and aware of inherent biases. Given that the researcher does not come to the field completely "*objective*" and "*apolitical*" by virtue of their professional background (Jamie and Rathbone, 2022: 16), the important thing here is to be transparent about one's positionality so that others may assess the degree to which this has influenced the findings (Simons, 2010). In view of this, the researcher has been transparent throughout this thesis about her status as a registered midwife. This enables the reader to assess the confirmability of the findings through transparent reporting (Cleland et al., 2021).

Being both a midwife and a researcher simultaneously requires reflection during the process of observation to minimise the risk of analytical bias (Nillson et al., 2019:3). Jamie and Rathbone (2022) suggest keeping a reflexive journal to effectively map theory development during the course of the research, to take account of the researcher's influence on the conduct of the research. They argue that the purpose is not to merely document the procedures taken but to consider the researcher's thinking and rationale for methodological decisions (Jamie and Rathbone, 2022). Again, this may assist in minimising the influence of potential biases on the research as it enables the researcher to explore their own preconceptions and potential biases concurrently with the data analysis but also enables full disclosure in

reporting the findings (Cleland et al., 2021). Consequently, the researcher will keep a reflexive journal during the course of the research to support confirmability.

#### 5.5.4 Transferability

Transferability concerns the ability to extrapolate findings from the study site to either the wider population from which the sample was drawn, to other settings, or to social theory (Lewis and Richie, 2009). Transferability to other cases is not the purpose of case study research (Yin, 2009), nevertheless, sources agree that case study research should provide enough detailed, or “*thick*” description of the context in order for the reader to assess transferability (Houghton et al., 2013:16; Cleland et al., 2021; Sibbald et al., 2021; Glette and Wiig, 2022). As Cleland et al (2021: 1139) state, the advantage of case study research is its ability to “*capture context rather than control for it*”. Furthermore, Glette and Wiig (2022) suggest that the theoretical foundations of the case study should also be reported to support the evaluation of new theory from the findings. With this in mind, the theoretical foundations of resilient healthcare, human factors and patient safety have been explored within the literature review chapters of this thesis, and the rationale for case selection has been provided within this chapter. Thick description of the context of each of the cases will be presented within the study findings, to enable the reader to assess whether they are applicable to other settings and indeed their contribution to wider social theory.

#### 5.6 Ethical considerations

The UK Policy Framework for Health and Social Care Research (HRA, 2022) is clear that research can and should improve care. However, principles of ethical practice must be applied in the design and conduct of studies to protect service users and the public from harm (HRA, 2022). This includes measures to maintain public trust so that opportunity for future research activity is not jeopardised (Bowling, 2011).

First and foremost, the ethical principle of autonomy asserts that people have the right to control over their body. This means that the researcher must provide honest disclosure of the purpose and requirements of the study, including any potential risks involved and then respect people’s choices as to whether or not to participate.

Considering this, informed consent, the right to refuse, and the right to withdraw from participation are considered within the protocol chapter which follows.

Whilst the declaration of Helsinki (World Medical Association (WMA), 2024) crystallised that people should not be forced to participate in research against their will, it may conversely be unethical to not give people the choice to participate in research, as excluding them may adversely affect the findings, thus restrict future access of excluded groups to effective care or treatment options. For example, the latest MBRRACE report highlights that excluding women who are pregnant or breastfeeding from clinical trials has resulted in limited evidence to inform cancer treatment for this patient group (Felker et al., 2024). The World Medical Association (2024:3) state that:

*“When such individuals, groups, and communities have distinctive health needs, their exclusion from medical research can potentially perpetuate or exacerbate their disparities. Therefore, the harms of exclusion must be considered and weighed against the harms of inclusion”.*

Although this statement primarily relates to clinical trials, the principle should be considered within the present study, where lack of funding for translation services precludes the participation of women who do not speak English. Given the known disparity in morbidity and mortality outcomes for mothers and babies of colour (Felker et al., 2024), research looking at variability in practice could provide valuable insight into such inequalities. Therefore, this exclusion is accepted as a limitation of the study. However, the study focuses on the actions of the midwife rather than the woman, thus it is the midwife who is considered to be the participant rather than the woman. Midwives from global majority ethnicities are welcome to participate in the study as a sufficient level of English fluency is required of their professional registration and employment in England (NMC, 2023).

Given that this study is observational, rather than experimental in nature, participation in the research does not in itself pose any additional physical risks to those involved beyond the risks incurred through receipt of ordinary maternity care. However, childbirth is understood to be a private and sensitive time for women and

their families, therefore the psychological impact of participation in an observational study ought to be considered under the ethical principle of non-maleficence. Though a precedent has been set in support of observational research on Labour ward or other birth settings by other studies that have successfully used this method (Dahlen et al., 2021; Goldkuhl et al., 2022; Jenkins and Cluett, 2018; Newnham et al., 2017; Nilsson et al., 2019; Walsh, 2006), it is possible that women may feel uncomfortable or upset by having a researcher watching their care. However, given the discussion above regarding the ethics of excluding people such as pregnant women from participation in research (WMA, 2024), the key issue here would appear to be to facilitate individual informed choice by potential participants, rather than to paternalistically decide whether observation is an acceptable method to women. Nevertheless, a PPIE activity was undertaken to seek the views of service users on the research project, to gauge whether the study would be feasible to undertake.

### 5.6.1 Patient and Public Involvement and Research Ethics Committee feedback

Midwives of various grades and professional positions were consulted on and endorsed the proposed research objectives and methodology. Similarly, service users contributed to the development of the protocol by reviewing the study synopsis and supporting documents such as the Service User Information Sheet, with favourable feedback received. Service users unanimously confirmed that observation is an acceptable research method when used for the greater good of potentially improving patient safety. The researcher's professional background as a registered midwife was seen as a positive motivator towards participating in the study, because this justified the researcher's presence in the setting. Having all given birth in NHS hospitals previously, the service users expected to have several different members of staff and students involved in their care, so stated that they would be happy to consent to the presence of a researcher whilst in labour. Indeed, as both study sites are teaching hospitals, there are often student midwives or medical students watching care on Labour ward so taking part in this study is not considered to pose any extra risk than might normally be expected in routine care.

One service user speculated that first-time parents may be less willing to participate in the study; however, they thought it was clear in the PIS that they may decline to

participate if they wanted to. Initially, it was intended to implement an opt-out approach to consent for women and midwives in the observational phase of this study because it would not be feasible to obtain written consent from every person who may be present in the Labour ward due to the large number of different professionals that may come and go during the observation period. However, this was amended to verbal consent upon request of the research ethics committee, because of concerns regarding collection and storage of personal identifiable data of people who opt out of the study and therefore are not participants. Implementing a verbal consent process meant that no identifiable staff or service user information need be collected. Instead, it was agreed that the midwife would document in the woman's health record that they had received the information sheet and after opportunity to discuss any questions, they had agreed to the researcher being present to observe the midwife's practice.

### 5.6.2 Implications of the researchers' professional status

A further ethical issue which warrants consideration is the implications of the researchers' professional status as an NMC registrant in terms of duty of care to patients and the duty to report malpractice. On the one hand, Newnham et al (2021) warn that rigour may be compromised where the researcher becomes too involved in care. Therefore, it is important to avoid intervening in the ongoing activity in the setting, as participation could change the natural course of events (Anspach and Mizrachi, 2006). On the other hand, as a registered midwife, refusal to participate when asked to do so, such as in an emergency, could be deemed a "*sin of omission*" or "*non-beneficence*" (Anspach and Mizrachi, 2006:721). In this way, the researcher as an insider may encounter conflicts of interest which affect the research process and interpretation (Cleland et al., 2021). This potential conflict of interest is addressed in the protocol and participant information sheets (PIS) by being clear that the researcher will not participate in direct patient care unless in the case of life-saving emergency actions when the researcher's professional duty as a registered midwife would override the purposes of the research (NMC, 2018). Coates and Catling (2021) state that intervention may be appropriate in this scenario, when it is required to prevent harm. Similarly, as a registrant, the researcher would have a duty to report malpractice which presents a risk to patient safety, safeguarding issues or criminal activity. Therefore, in the event of one of these situations arising, confidentiality would have to be breached in order to escalate the risk to the

participant's line manager or directly to the Nursing and Midwifery Council in the case of staff members, or the police if warranted. This again represents a conflict of interest according to Cleland et al (2021), between doing good research and doing the right thing professionally, in that the duty to report unsafe practice may impact upon the fidelity of the situations observed. Furthermore, this obligation presents a potential threat to participants' professional reputation and registration where there is a possibility of disciplinary action as a result of reporting their practice to the employer or the regulatory body. Participants will be made aware of this through the PIS; however, knowledge of this possible risk has the potential to affect recruitment of midwives to the study. Nevertheless, the HRA (2022) state that public safety supersedes the research benefit, therefore the researcher's professional duty to protect patients and the public must take precedence over the purposes of the research (NMC, 2018).

### 5.6.3 Participant confidentiality

The HRA (2022) state that researchers have a duty to appropriately protect the confidentiality of individual research participants. Whilst information governance procedures will be implemented to ensure that personal information is protected during the conduct of the research, maintaining anonymity in research outputs is more complex. Saunders, Kitzinger, and Kitzinger (2015) argue that removing participants' names from publications is insufficient on its own to anonymise individuals within small qualitative samples. This may particularly be the case with regards to "*distinctive*" or "*prominent*" individuals within small communities (Hammersley and Traianou 2012:127), such as midwife managers in close-knit organisations as in the present study. Two issues underpin this concern; firstly, the managers could be identifiable if the reader knows where the study has been conducted, because this information is often publicly available on NHS Trusts' websites. Secondly, despite anonymising participants' names, individuals may be identifiable to themselves or to other staff members through deduction from unique characteristics, such as demographic details or even through characteristic expressions (van den Hoonaard, 2003; Kaiser 2012).

To address the first issue, Hammersley and Traianou (2012) suggest that background information about the study sites could be changed or omitted to

minimise the risk of the locations being identified. However, not all detail can be erased, as this may threaten the integrity of the data (Saunders, Kitzinger, and Kitzinger 2015). Within a comparative case study methodology, context is particularly important for theory development (Schwandt and Gates, 2018). Consequently, a balance must be achieved between providing sufficient detail for the reader to assess the credibility of the findings, whilst not providing enough contextual detail that the location may be identified. The pragmatic solution here is to broaden the reported geographic area that the study sites are in, to encompass more maternity units, so as to disguise which specific sites were selected. In this case, the study sites will be reported as being in “*the midlands*” which eleven counties (Britannica editors, 2025).

Again, the HRA (2022) perspective is applicable with regard to the possibility of identifying individuals by deduction; in that public safety supersedes the research benefit. It is recognised that identification could cause harm to individuals or the wider NHS Trust (UK Statistics Authority, 2022), for example, reputational damage should the study uncover behaviours that contravene accepted standards of practice. Therefore, the priority is to ensure that as far as possible, participants are not identifiable by the combination of individual details provided in the findings (UK Statistics Authority, 2022). Hammersley and Traianou (2012) suggest that this may be achieved by either using pseudonyms or by referring to people by their job roles. In deciding between these two options, it is important to consider whether individuals could be identified from their characteristic expressions or linguistic inflections if several quotes were attributed to them. Given the recommended *Birthrate Plus*® staffing ratios of midwives to births, an averaged size maternity unit in England may have around 200 midwives in total (Ball, Washbrook and RCM, 2025). With this relatively small number of staff, it is not inconceivable that the fraction of midwives and midwife managers who work on labour ward, may know each other well enough to be able to identify individual colleagues. On balance, the researcher considers that risk of this exceeds the epistemological benefit of traceably reporting which participant contributed specific quotations. Therefore, participants will be identified in the findings by their job role and study site, rather than by a pseudonym or participant code. This is acceptable, as the embedded units of analysis discussed in section 5.3.4, are the midwives and the managers collectively, therefore, it is not necessary to be able to identify individuals in the findings.

## 5.7 Chapter conclusions

This chapter has discussed the philosophical and methodological debate which has informed the design of a multiple-case, embedded design, qualitative case study to explore adaptive performance of midwives as a resilience mechanism to improve safety in maternity services. The following chapter sets out the practical application of these decisions in the study protocol.

# Chapter 6 : Protocol

## 6.1 Chapter introduction

The previous chapter set out the methodological debate which underpinned the development of a multiple-case, embedded design case study which aims to explore adaptive performance by midwives as a resilience mechanism to contribute to safety in maternity services. This chapter presents the protocol for the study which follows. This study was reviewed by the University's Independent Peer Review process (Appendix 1) and awarded a favourable ethical opinion by a local Research Ethics Committee (Appendix 2) and received Health Research Authority approval (Appendix 3). Subsequently, local NHS Trust approvals were granted from each participating organisation; however, in order to maintain confidentiality, these are not included.

## 6.2 Research aim

To explore adaptive performance by midwives as a resilience mechanism to contribute to safety in maternity services.

## 6.3 Research objectives

Four research objectives were derived from the preceding literature review, which guide the implementation of the study:

1. To explore what adaptations or workarounds (both beneficial and potentially hazardous) are occurring in midwifery practice and why.
2. To analyse how midwives perceive individual adaptive performance to contribute to organisational resilience.
3. To explore how organisational resilience mechanisms support or disrupt adaptive capacity of clinical midwives.
4. To develop a model to explain the relationship between individual level adaptive performance and organisational resilience.

## 6.4 Study design

The research will use a multiple-case embedded design case study, and be conducted at two hospital Labour wards, representing the two cases. Within each case, the embedded units of analysis are divided into two separate work packages, focusing on the different levels of the maternity care system. As can be seen in figure 6.1 below, work package one will analyse data from individual midwives working in direct patient care roles. Work package two will analyse data from midwife managers to provide an organisational perspective on resilience. The data will be considered in the light of national drivers for patient safety, as raised by participants as impacting upon their practice. This represents the national context within which both midwives and managers work.

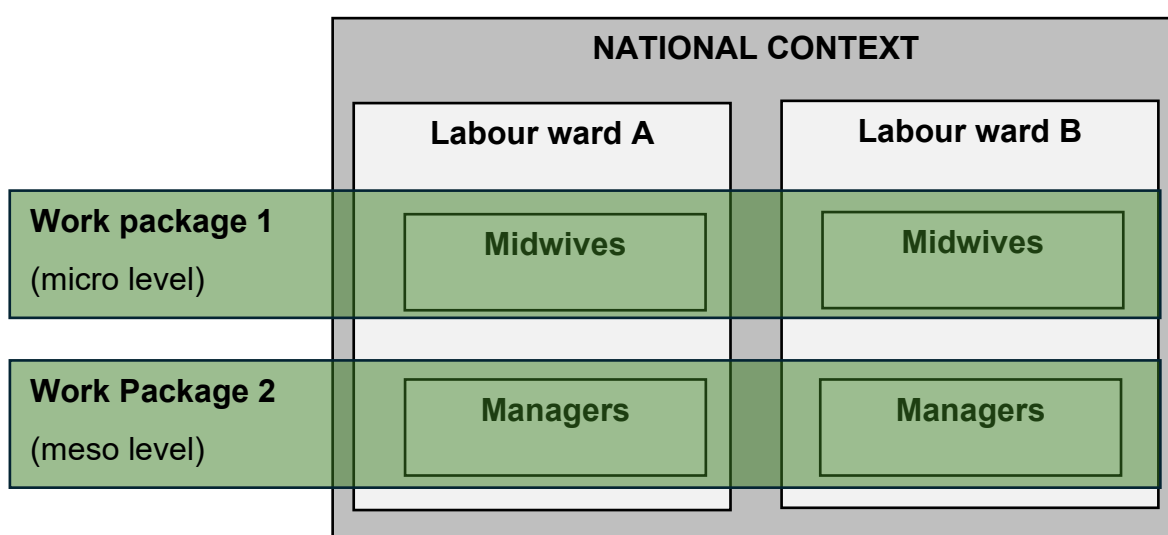


Figure 6.1: Multiple case study design divided into work packages

In line with Morgan et al's (2017) Case Study Observational Research (CSOR) framework, work package one is further divided into two phases to sequentially implement multiple data collection methods (figure 6.2). The purpose of this is to direct the data collection in phase two and to inform development of the coding framework that will be used to analyse all of the data. This can be seen in the figure below as the first two steps in the Framework Analysis method (Richie and Spencer, 1994).

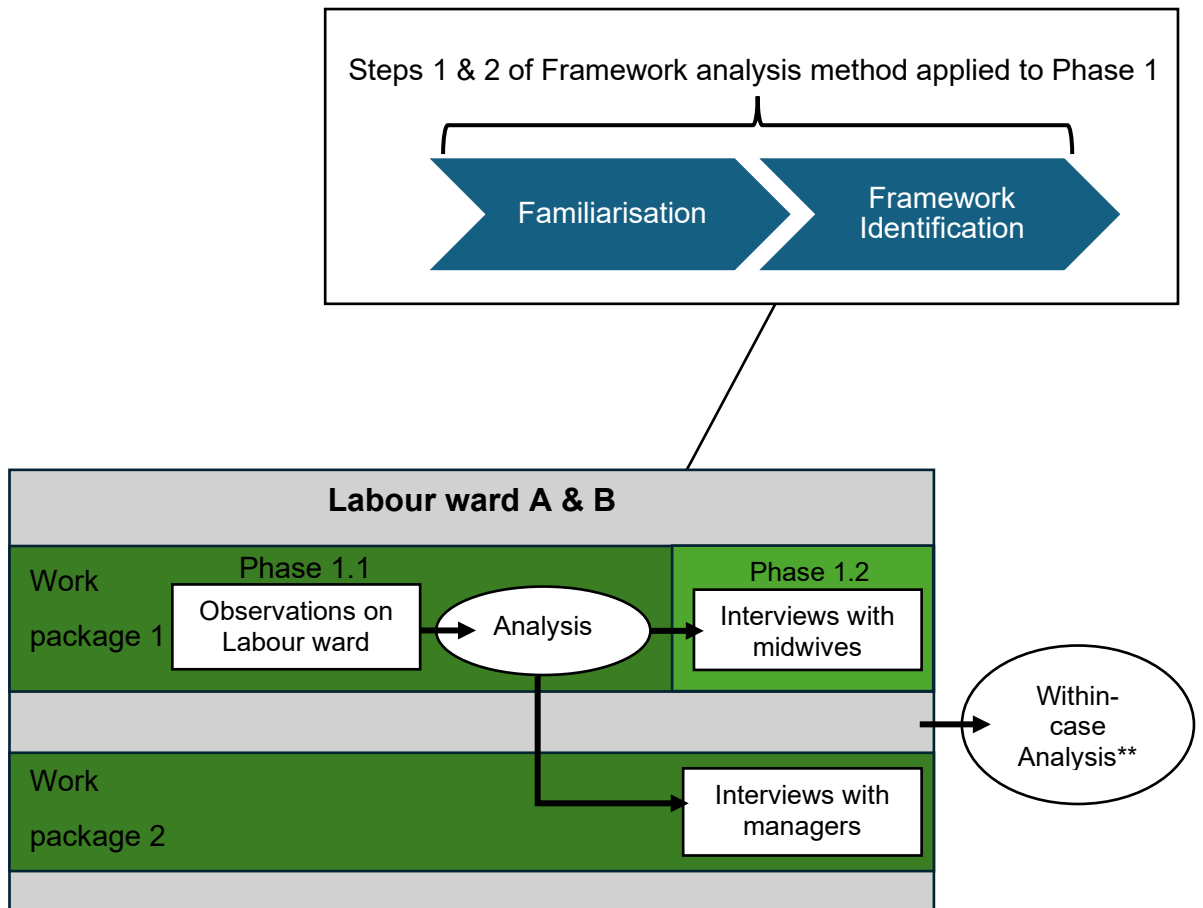
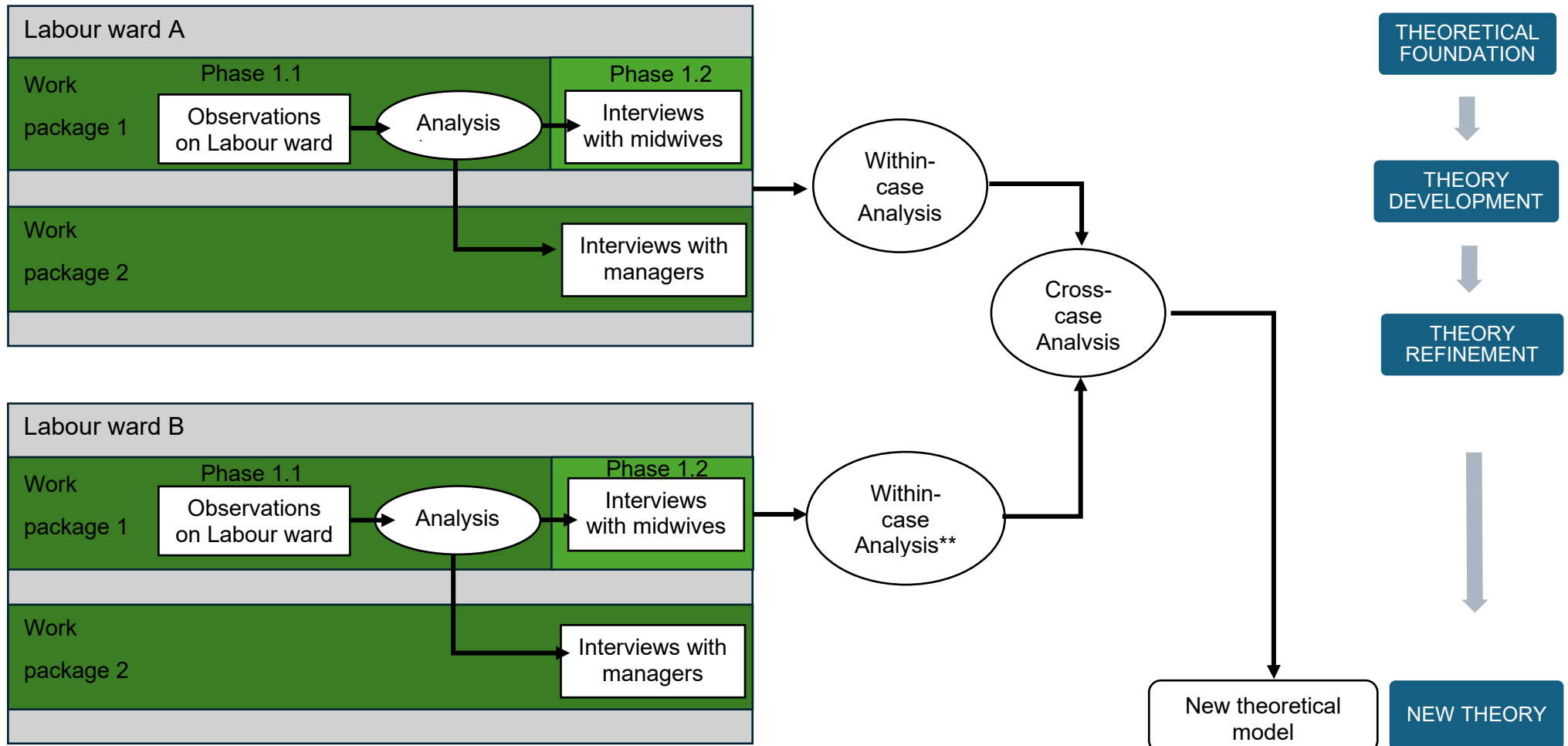


Figure 6.2: Data collection phases within work package 1 and 2 for both labour ward A and B

Applying a pragmatic approach, data will be collected for the two cases (Labour ward A and B) in parallel, although analysed separately. This allows a longer period of time for data collection across the two sites, rather than conducting the case studies sequentially where any delays could adversely affect one site more than the other, leading to disparity in the conduct of the study. The study design map in figure 6.3 shows how the data from each case will be analysed first within-case and then compared cross-case to refine a new theoretical model. All five steps of the Framework Analysis method will be used for within-case and cross-case analysis.



\* First two steps of Framework Analysis model

\*\* Complete Framework Analysis

Figure 6.3: Study Design Map

## 6.5 Work package one: micro level

Work package one will use observation and interviews to answer research objectives one and two:

- To explore what adaptations or workarounds (both beneficial and potentially hazardous) are occurring in midwifery practice and why; and
- To analyse how midwives perceive individual adaptive performance to contribute to organisational resilience.

In line with the CSOR framework (Morgan et al., 2017), the first work package is divided into two sequential phases as can be seen in figure 6.4. Firstly, an observational phase, the data from which will inform the interview phase. These two phases are reported separately here for clarity.

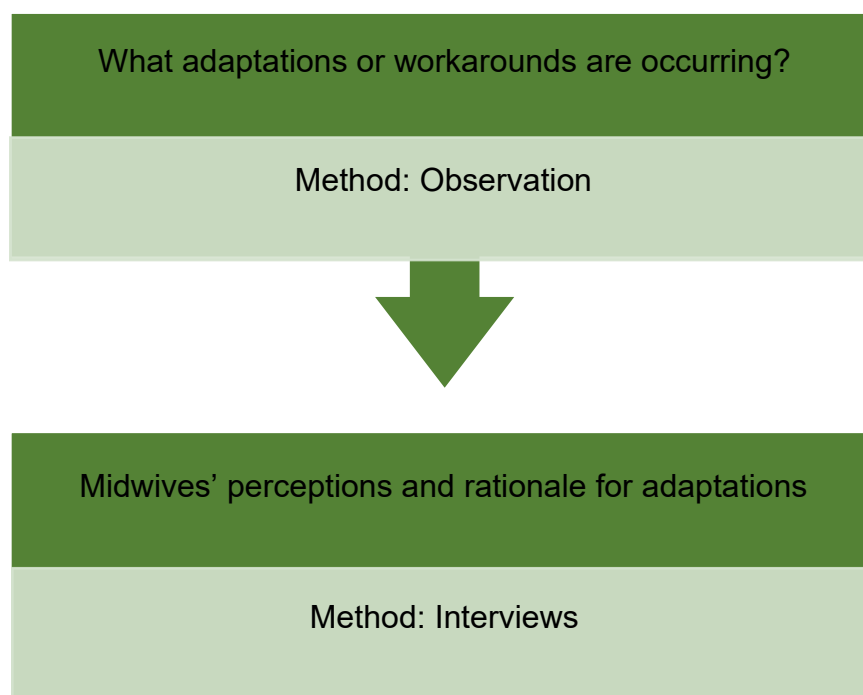


Figure 6.4: Research objectives and associated data collection methods conducted at each of the two sites (WP1)

## 6.6 Phase 1.1: observations

### 6.6.1 Recruitment

Recruitment focuses on informing midwives and women that the study will be taking place, to provide opportunity for them to ask questions and decide whether they would be happy to participate. Prior to commencing the study, separate posters will be displayed in staff and public areas of the maternity unit to advertise the study and give notice of the dates that the researcher will be present on Labour ward (Appendix 4 and 5). The posters summarise the key study information and provide a QR code to an electronic Participant Information Sheet (PIS) for midwives (Appendix 6) and a Service User Information Sheet (SuIS) for women (Appendix 7). Both contain the necessary information for them to make an informed decision whether to allow the researcher to be present to observe the midwife providing care. The PIS advises that participation is voluntary, and withdrawal is permissible at any time prior to data collection. Whilst participants are free to withdraw beyond that point, it is not possible to remove observational data from the analysis as any amount of observation may have already influenced preliminary analysis by nature of the same researcher conducting all observations. An all-user email will also be sent by the local collaborator to all maternity staff to advertise the study. This is as a courtesy to midwives who rotate between clinical areas and non-midwifery staff who may work on Labour ward, or those who may pass through it when transferring a patient for example.

### 6.6.2 Sampling

It is not possible to preordain specific midwives to observe prior to arrival on the maternity unit as actual staffing often differs from what is rostered due to sickness and redeployment for shortages elsewhere. Therefore, sampling of participants for observation applies a convenience approach of selecting midwives who are on shift when the researcher is permitted access to the sites. Selection of participants will be facilitated by the shift coordinator who will be aware of women whose care it would be inappropriate to observe, such as bereaved families, those with special communication needs or who do not adequately understand explanations in English as the study does not have funding to accommodate translation services. The specific requirement of participants to speak English applies only to women because staff are assumed to speak English as a requirement of their job role.

### 6.6.3 Consent

On the day of the observation the researcher will introduce themselves to the shift coordinator who is a gatekeeper to the ward, and to the midwives on shift. Having provided advance notice of study conduct and a PIS, midwives will be asked for verbal consent to participate. This approach is taken to avoid an administrative burden of gaining written consent from numerous health professionals who could be present in clinical settings and may change over during the observation period. No identifiable staff information will be collected and observation notes will be anonymised at source to protect participant confidentiality.

The focus of this observational study is the adaptations made by midwives; however, in the course of their work midwives provide direct patient care to women. Women are not considered to be participants in this study, merely be present whilst the research is taking place, consequently, they are only required to provide verbal consent for the researcher to be present to observe their midwife working.

Midwives on shift will be asked to verbally advise women that the study is being conducted and that the researcher is present to observe staff, not them. Paper copies of the SuIS will be provided if women have not previously accessed this electronically. As women are not participants in the study, the level of consent required from them does not require midwives to act as part of the study team or to have undertaken any specific training. The minimum requirement is that women provide permission for the researcher to be present in their delivery room to observe the midwife. This will be obtained and recorded in the medical records by the midwife providing care.

The researcher will only enter delivery rooms with a midwife who is being observed and will offer to leave the room if asked to do so, to respect women's right to privacy and autonomy. No identifiable information will be collected from women and observation notes will be anonymised at source to protect confidentiality.

#### 6.6.4 Data collection

Observations will be conducted by the researcher in the Labour ward at the two study sites, within general ward areas and within delivery rooms, where permitted to do so by the midwife providing care and the woman. An observation schedule based on the Strategies Framework (Rankin et al., 2014) will guide data collection (Appendix 8). Observational data will be recorded on the observation schedule with additional field notes recorded in a notebook contemporaneously or as soon as practicable where writing notes is deemed intrusive or disruptive to clinical care.

The researcher will assume the role of “*Observer as participant*”, whereby observation could include interaction with participants to seek clarification of what they are doing; however, the researcher will seek to minimise intrusion on the activity underway (McNaughton Nicholls et al., 2014: 247). The researcher will not participate in direct patient care, though it is stated within the approved documents that in the case of a potentially dangerous situation the researcher’s professional duty as a registered midwife would override the purposes of the research (NMC, 2018). Observation will be overt, in that the researcher will be clear that they are present in a research capacity and open about the purpose of the study.

Where it is necessary to access local policy documents or protocols to understand how the work is prescribed, these documents will be reviewed and condensed into field notes to enable analysis of observational data (Morgan et al., 2017). This also ensures that the NHS Trusts are not identifiable in the final report. The information contained within these documents is not patient data therefore patient consent is not necessary. However, access to documents will be negotiated with a gatekeeper at the study site.

#### 6.6.5 Duration of observation

In line with previous research (Heggelund and Wigg, 2018), approval was gained to undertake up to 40 hours of observation between the two maternity units. The observation periods will cover early, late and night shifts and include weekends to account for differences in workload, staffing and environmental conditions (Anderson and Ross, 2020).

### 6.6.6 Data analysis

In line with the CSOR framework, analysis will occur in two stages; the observational data will be analysed first, prior to commencement of the interview phase of this work package (Morgan et al., 2017). Observational findings will thus inform development of the interview guides for the individual semi-structured interviews at each site and will also be used to develop the coding frameworks for each site which will be used to analyse the interview data in phase two. Preliminary data analysis will occur during the observational period by nature of the same researcher conducting all of the observations. (Gale et al., 2013). All research data will be analysed by the researcher and may be corroborated by the academic supervisory team.

## 6.7 Phase 1.2: semi-structured interviews

### 6.7.1 Recruitment

The study will be advertised on posters and by a global email sent by the organisations to all midwives at the study sites, inviting them to contact the researcher if they are interested in participating in the study (Appendix 9 and 10). This will ensure that the invitation to participate reaches all midwives who may work across different clinical areas, though it is explicit in the study documents that the study pertains to activity on Labour ward. Potential interview participants who express an interest in the study will be assessed for eligibility according to the criteria in table 6.1. If eligible, they will be provided with a PIS (Appendix 11) and given a minimum of 24 hours to consider whether to participate prior to formally being consented if they wished to continue.

Table 6.1: Inclusion and exclusion criteria for interviews

<b>Eligibility criteria</b>	
Registered Midwives who work at the study sites, deployed on the Labour ward at the time of data collection are eligible to participate in the interviews.	
<b>Inclusion criteria</b>	<b>Exclusion criteria</b>
Registered midwife, band 5 upwards	Non-midwives, e.g. student midwives, maternity support workers, doctors, operating department practitioners
Employed by the study site for a minimum of one month prior to participation in the study	Locum staff who do not work regularly at the study site
Working clinically in a direct patient care role	Not working in direct patient care role
Based on Labour ward at the time of data collection	Does not work on Labour ward
English speaking	Non-English speakers

### 6.7.2 Sampling

Purposive sampling will be implemented to select participants who are most able to provide useful insights about the case, according to the inclusion and exclusion criteria above (Stake, 1995). The study aims to recruit up to 15 participants at each site with the intention of retaining at least 12 in the data analysis.

### 6.7.3 Consent

Written consent will be obtained for interview participation, via an electronic consent form (Appendix 12). All participants are deemed to have capacity to consent by virtue of their professional standing as registered midwives. Participation is voluntary, and withdrawal is permissible within 2 weeks of having provided the data, after which time the data may have been incorporated into the analysis.

### 6.7.4 Data collection

Interviews with clinical midwives will be conducted at each site, either at the hospital, or virtually according to participant preference. Each interview will last up to an hour, at which point the discussion will be drawn to a close in line with the participant information sheet. Conversation will be guided by the interview schedule (Appendix 13); however, this is not prescriptive. Discussion will be permitted to deviate from the schedule to follow the participant's leading. All interviews will be audio or video recorded depending on whether they were conducted in person or virtually and transcribed verbatim for accuracy.

### 6.7.5 Data analysis

Data analysis will use the Framework method in two ways. Firstly, the first two steps will be implemented with the observational data to identify the coding framework with which to analyse the interview data in phase two, thereby triangulating the data obtained from the two methods (Morgan et al., 2017) and enabling exploration of the difference between Work-as-Done and Work-as-Disclosed (Shorrock, 2016). Subsequently, all five steps will be applied to the interview data to capture any new codes which may not have been present in the observational data (see figure 6.5).

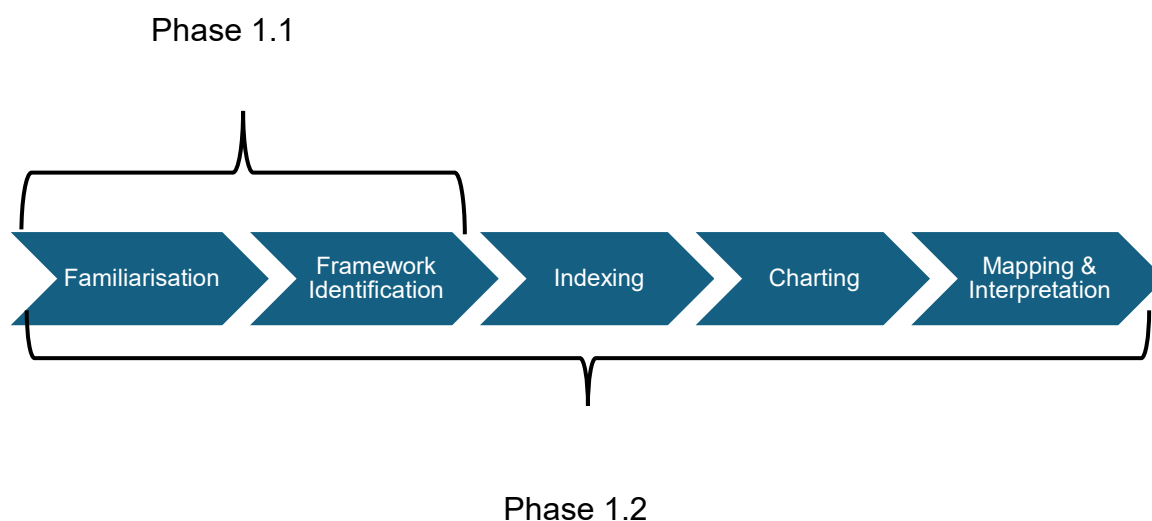


Figure 6.5: Application of framework analysis method to data collection phases

Computer assisted data analysis software will be used to support indexing and charting of the data (Crowe et al., 2011), to enable a systematic and transparent approach to managing the data (Gale et al., 2013).

## 6.8 Work package two: meso level

Work package two uses interviews to answer research objectives three and four:

3. To discover how organisational resilience mechanisms support or disrupt adaptive capacity of clinical midwives.
4. To develop a model to explain the relationship between individual level adaptive performance and organisational resilience.

Figure 6.6 shows that this work package consists of individual semi-structured interviews with midwife managers, to address the objectives above. However, the observations conducted in work package one will feed into the data collection, in that examples of adaptations carried out by midwives will be added to the interview schedules for work package two.

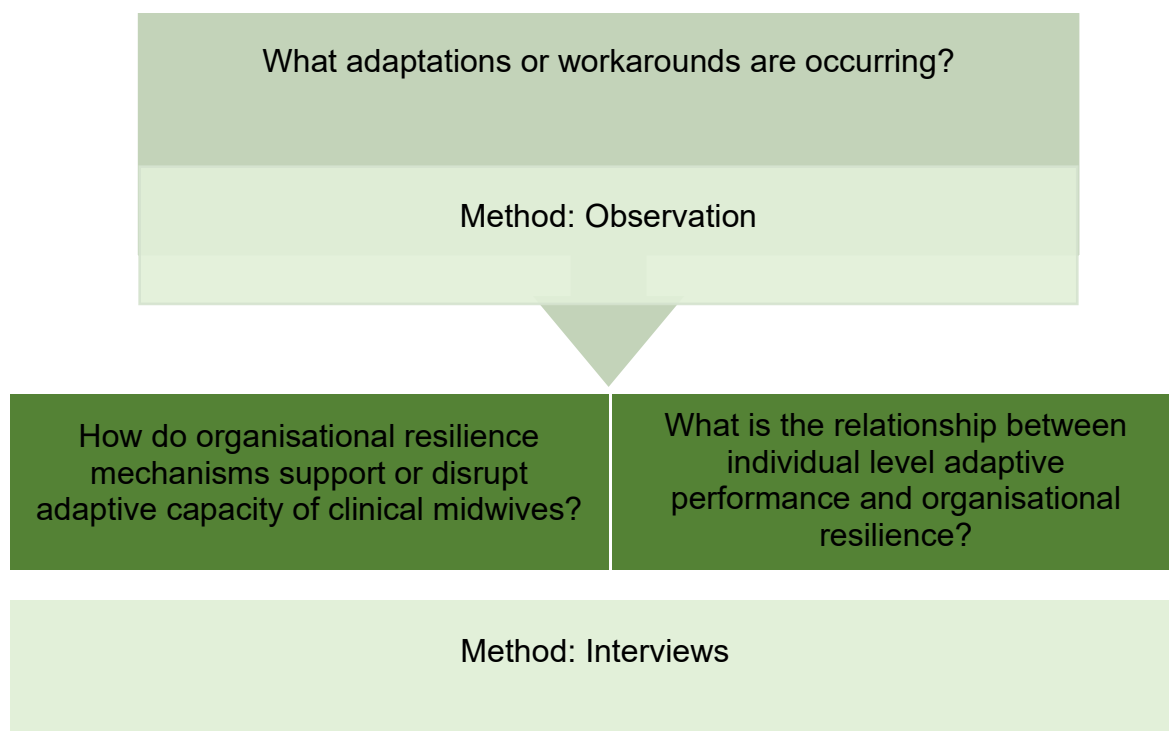


Figure 6.6: Research objectives and data collection methods (WP2)

## 6.9 Phase 2.1: Organisational level interviews

### 6.9.1 Recruitment

Midwife-managers who meet the eligibility criteria in table 6.2 will be identified and invited to participate in a semi-structured interview by the local collaborator at the study sites. Potential participants will be provided with a PIS (Appendix 14) and given a minimum of 24 hours to consider whether to participate prior to formally being consented if they wished to continue.

Table 6.2: Inclusion and exclusion criteria for management level interviews

<b>Eligibility Criteria</b>	
Midwives in management positions at the study sites are eligible to participate, according to the inclusion and exclusion criteria below.	
<b>Inclusion criteria</b>	<b>Exclusion criteria</b>
Registered midwife, band 7 or above	Midwives on band 6 or lower
Employed in a management role at the study site (ward management or patient safety related)	Non-midwives, e.g. student midwives, maternity support workers, doctors, operating department practitioners.
Role pertains to activity on Labour ward.	Locum staff who do not work regularly at the study site.
English speaking	Non-English speakers

### 6.9.2 Sampling technique

As with work package one, work package two also uses purposive sampling to select participants who are most able to provide useful insights about the case (Stake, 1995). However, fewer eligible participants exist in this population, therefore all midwife-managers whose role pertains to activity on the Labour ward will be invited to participate. This is anticipated to be up to five midwife managers. The small number of participants is not a limitation in this situation because the study aims to recruit the whole population, rather than a sample.

### 6.9.3 Consent

Written consent will be obtained for interview participation, via an electronic consent form (Appendix 12). All participants are deemed to have capacity to consent by virtue of their professional standing as UK registered midwives. Participation is voluntary, and withdrawal is permissible within 2 weeks of having provided the data, after which time the data may have been incorporated into the analysis.

### 6.9.4 Data collection

Individual semi-structured interviews with midwife-managers will be held in person at the study site, or virtually if the participant requests this. Each interview will last up to 60 minutes. An interview guide (Appendix 15) will be used to direct the discussions, though this is not intended to be prescriptive. Discussion is permitted to deviate from this to follow the participant's leading. Specific examples of adaptations observed at the study sites will be added to the interview guide following completion of the observational phase. All interviews will be audio or video recorded with consent and transcribed verbatim.

### 6.9.5 Data analysis

Framework analysis will be used for this work package as in work package one to allow within-case comparison between the embedded units of analysis. The aim is to utilise the coding framework previously devised in work package one; however, initial familiarisation with the data in stage one of the framework analysis method (as seen in figure 6.5) will determine whether the data are sufficiently homogeneous to allow this. If the data are highly heterogeneous, a new framework will have to be devised using existing resilient healthcare theory and de novo codes arising from the interview data (Crowe et al., 2011; Gale et al., 2013; Morgan et al., 2017). Again, computer assisted data analysis software will be used to support indexing and charting of the data (Crowe et al., 2011). This is to enable a systematic and transparent approach to managing the data (Gale et al., 2013), which is thought to enhance rigour by recording analytical decisions (Houghton et al., 2013).

## 6.10 Ethical and regulatory considerations

The research will be conducted in accordance with the UK Policy Framework for Health and Social Care Research (HRA, 2022). Ethical principles will be addressed as detailed in the table below.

Table 6.3: Ethical principles applied to this study

Ethical Principle	Application to research methods
<b>Right to approach</b>	<p>Women will only be approached by members of the direct care team. Potential staff participants will be approached by the employing organisation on behalf of the researcher, typically by the local collaborator. The researcher will not have access to any personal information. This will protect the right of employees to privacy and data protection.</p>
<b>Confidentiality and anonymity</b>	<p>The right to confidentiality and anonymity will be made clear in the participant information sheet. No personally identifiable information will be collected. Participation in the research will be confidential and personal details will not be shared outside of the immediate research team except in the case of criminal activity or safeguarding concerns which require action. Participants will be made aware of these requirements in the PIS/ SuIS.</p> <p>Observation data will be anonymised at source. Interview data will be ascribed a code to disassociate it with the participant. Documents that include personal identifiable data such as consent forms will be stored separately to the coded interview data and only the research team will be able to make the link between the two.</p> <p>Participants will not be identified in any publication of research findings. Pseudonyms will be used when reporting</p>

	direct quotations from participants. Place names will also be anonymised.
<b>Data Protection and Storage</b>	The research team will abide with the Data Protection Act, 2018 and the UK General Data Protection Regulation (GDPR) (Council regulation 2016/679 [2016]). The Research team will only collect the minimum required information for the purposes of the study. This is, the participant's name, and preferred contact method which may include a work or personal email address, a telephone number or other messaging platform. Interview recordings will be destroyed following transcription to ensure participant anonymity as only the anonymised transcript will be retained. All data will be stored securely on University of Staffordshire's secure server for 10 years in line with the University's Code of Practice for Research (2018).
<b>Informed consent</b>	Potential participants will be provided with a participant information sheet and given time to consider their willingness to participate. Interview participants will be given a minimum of 24 hours and then asked to provide written consent. Observation participants will be given a participant information sheet and then asked for verbal consent to participate. Verbal consent will be obtained from women by the midwives providing care, for the researcher to enter the room to observe the midwife providing care.
<b>Right to withdraw</b>	Staff and women will be informed via the PIS/ SulS that they are free to withdraw from the study at any time up to two weeks after having provided data and are not required to give a reason for withdrawal. A decision to withdraw at any time, or a decision not to take part, will not affect their legal rights.

<p><b>Safeguarding</b></p>	<p>The data collected will remain confidential as indicated; however, confidentiality would be breached in the event of a safeguarding issue, or malpractice which presents a risk to patient safety, or criminal activity. Concerns of this nature may be discussed with the academic supervisory team for guidance and escalated to the participant's line manager, the police or directly to the Nursing and Midwifery Council if warranted. Participants will be made aware of this through the PIS/ SuIS.</p> <p>The observations in work package 1.1 are not considered to pose any additional risk of psychological distress to that which would be expected in routine care, because midwifery care in labour and birth may be observed by student midwives or medical students anyway. However, if a woman or midwife becomes uncomfortable with the presence of a researcher, they may withdraw from participation in the study at any time without affecting their legal rights or ongoing care. If women were to become distressed by participating in the research, there are two avenues for support. Firstly, for immediate support at the time, participants could speak to the researcher (whilst they are still present on the Labour ward to observe), their midwife, or the professional midwifery advocate (PMA) at the Trust. As no personal information will be collected; it is not possible to follow women up after the observation has been concluded. Consequently, participants will be directed to access existing listening/ debriefing services at the Trust, if they want to discuss their experience afterwards. Given that this is a non-experimental, observational study, it is unlikely that the researcher's presence alone will cause distress. It is more likely that the clinical circumstances and aspects of their care may cause distress. Therefore, existing debriefing service would seem appropriate in this context.</p>
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	<p>Similarly, the interviews in work packages 1.2 and 2.1 are not intended to cause any psychological distress to midwives or managers; however, if this were to occur, they may stop the interview and/ or withdraw from the study at any time. If unresolved distress arises from the conduct of the interviews, participant wellbeing will be safeguarded through signposting to the Professional Midwifery Advocate (PMA) at the study site. The PMA's role is to support midwives' wellbeing and safety of the public. As the researcher is a registrant, they also have access to a PMA. If the researcher were to witness a distressing situation as part of the observational data collection or hear a distressing disclosure at interview, they will seek confidential support from the PMA, without disclosure of any identifiable personal data.</p>
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### 6.10.1 Peer review

This protocol has been reviewed by the University's Independent Peer Review process prior to applying for NHS and Research Ethics Committee and approval to undertake the study has been granted (Appendix 1).

### 6.10.2 Research Ethics Committee (REC) and other regulatory review & reports

HRA approval (Appendix 2) including favourable opinion from a REC (Appendix 3) has been granted prior to conducting the research. Capacity and Capability has also been obtained from the study sites prior to commencement of the project.

### 6.10.3 Protocol compliance

Protocol compliance will be monitored by the academic supervisory team at Staffordshire University, which acts as the study Sponsor.

#### 6.10.4 Indemnity

This study does not introduce a new intervention to practice but rather explores current practice. Therefore, is not deemed to pose a risk to patients or staff. There are no special compensation arrangements, but study participants may have recourse through the NHS complaints procedures. As the research Sponsor, the University indemnifies its staff, research participants and research protocols with public liability insurance.

#### 6.10.5 Access to the final study dataset

The study records and all source documents shall be made available upon request for review by the Academic Supervisory team, and relevant regulatory authorities if required.

### 6.11 Dissemination

The end of the study will be the date of the last participant interview. The Research Ethics Committee (REC) that gave a favourable opinion will be notified within 90 days of the study ending.

Research participants may receive a copy of the findings by consenting to this and providing an email address on the consent form. Participants may also be invited to participate in a feedback focus group following completion of the study, to discuss the findings. Again, consent to be contacted for this purpose will be requested via the consent forms. Consent forms will be stored, electronically on the university's secure server, separate from interview data to ensure confidentiality.

Data collection for the study is planned to run until the end of December 2023, with the final thesis due to be submitted to the University by September 2024. Following completion of the study, the research findings will be written up and submitted to academic journals for publication.

## 6.12 Protocol amendment

An amendment to the protocol was submitted to the HRA in December 2023, and approved in February 2024 (Appendix 16), to bolster the recruitment strategy with staff-facing social media advertising including Facebook and Twitter (now X) (Appendix 17), recruitment through word of mouth from midwives who have participated, and provision for alternative methods of communication with those who express an interest in participating such as a work or personal email address, a telephone number or other direct messaging method, for the purpose of sharing information about the study and arranging the interview. Participation was also incentivised with the opportunity to be entered into a prize draw to win a gift voucher as a mark of gratitude for volunteering their time.

## 6.13 Chapter conclusion

This chapter has presented the protocol for a multiple-case, embedded design case study, divided into the two work packages to address the aim and objectives identified by the preceding literature review. The following chapter will discuss the process of data analysis as it was implemented and will present the findings and implications of this study.

# Chapter 7 : Process of Data Analysis

## 7.1 Chapter introduction

The previous chapter set out the protocol for a multiple-case, embedded design case study which aims to explore adaptive performance by midwives as a resilience mechanism to contribute to safety in maternity services. Just as Debono et al (2018) identify that the difference between Work-as-Imagined and Work-as-Done also applies to the research process, this chapter discusses the implementation of the Framework Analysis method, and adaptations that were made to the underpinning theoretical framework in response to the analysis. This chapter therefore bridges the gap between the protocol as it was intended, and the study findings which are presented in the next chapter.

## 7.2 Analysis of observational data

To develop the preliminary coding frameworks, the observation record sheets for each site were compiled into respective summary charts, which utilised Rankin's (2014) Strategies Framework as an a priori framework to ensure that the data analysis remained consistent with the underpinning theoretical framework of adaptive performance that had shaped the observation guide. This process enabled initial familiarisation with the observational data. An incremental approach was then used to distil codes from the observational data, by first condensing the data from narrative text into key concepts. Then, these concepts were grouped together into similar categories. For example, at Site A, under the heading of Situational Conditions, "Workload" incorporated individual workload, perceived obstetric workload and unit busy. Similarly, "Equipment and Resources" incorporated faulty equipment, lack of equipment, new equipment, faulty IT equipment, IT failure, poor quality resources, and supply of resources. Finally, the category titles were extracted as codes and compiled in the initial coding framework. In this way, the observational data inductively informed the preliminary codes which pertain to the objective of the adaptation, the contextual factors which both necessitate it and facilitate it, and the sharp and blunt end consequences. Table 7.1 shows the initial coding framework for site A to demonstrate the method used. The same process was applied to site B, with largely similar codes identified, see Appendix 18.

Table 7.1: Initial Coding Framework from Site A observational data

<b>Adaptation</b>	<b>Situational conditions</b>	<b>Resources and Enabling conditions</b>	<b>Objectives</b>	<b>Sharp end interactions (effect on women)</b>	<b>Blunt end interactions (effect on organisational resilience)</b>	<b>Resilience Potentials</b>
Situational or Exceptional	Clinical condition	Stable clinical condition	Patient safety	Promotion of safety (for women)	Preserved safety (of the unit)	Anticipation
Erroneous or Unintentional	Patient complexity	Availability of staff	Care provision	Effective patient care	Effect on care	Monitoring
Optimising	Unavailability of staff	Access to electronic patient records	Labour progress	Minimisation of disruption (to individual care)	Workload	Responding
Routine Individual adaptation	Workload	Access to paper notes/ patient stickers.	Timely intervention	Patient Experience	Minimisation of disruption (to the service)	Learning
Routine Local Custom and Practice	Competing priorities	Good staffing	Prevention of unnecessary intervention.	Timing of intervention	Prioritisation	
	Distractions	Unit not busy	Good clinical outcomes	Prevention of unnecessary intervention	Patient flow	
	Staffing	Sufficient time	Prevention of adverse events	Clinical outcomes	Time efficiency	
	Not enough time.	Supportive culture	Compliance with guidelines/ policy	Documentation requirements	Use of resources	

	Equipment & Resources	Coordinator	Maternal monitoring	Protection against litigation.	Detection of deterioration
	Room layout & stocking	Teamwork	Fetal monitoring & wellbeing	Efficiency	Sepsis and infection rates
	Guidelines	Continuous CTG monitoring	Accurate documentation	Delays	Student learning opportunities
	Local expectation	One-to-one care	Timely completion of task	Infection control	Treatment or intervention
	Lack of training	Delegation	Preparedness	Risk to mother or baby	Standardisation
	Midwife Inexperience	Midwife clinical skill and experience.	Effective pain relief	Effectiveness of monitoring	Compliance with guidelines
	Fetal monitoring	Midwife's adaptability.	Routine practice.	Recognition of abnormality	Defence against litigation
	Patient experience	Midwife's autonomy		Response to situations	Trust awareness
	Midwife role to promote normality	Seniority/ authority		Ability to escalate/ refer	Potential for situation to escalate
		Availability of equipment.		Equipment available when needed	
		IT system		Variability	
		Patient consent.		Potential for error	

## 7.3 Development of the interview guides

The protocol set out that the observational data would be analysed for two purposes. Firstly, to inform development of the interview guides for the interviews at each site, and secondly to develop the coding frameworks that will be used to analyse the interview data in phase two. In the first instance, examples of observed adaptations were extracted from the observation records and added to the respective interview guides, as can be seen in figures 7.1 and 7.2. The same process was conducted for both sites, with largely similar adaptations observed and added to the interview guides.

**Site A Interview Guide**

Examples of adaptations identified in the observational phase to be discussed here

- Retrospective documentation (+/- writing on paper and then completing electronic forms later).
- Overriding computerised CTG classifications
- Work arounds for IT problems/ equipment issues (e.g. repeating observations because machines didn't read properly first time).
- Replacing or locating missing equipment
- Response to hearing a fetal heart deceleration.
- Assessing an epidural block and response to findings.
- Individual techniques for managing workload (e.g. little pots with equipment in/ own checklist of tasks to be done)

*Figure 7.1: Excerpt from interview guide for Site A*

### Site B Interview Guide

Examples of adaptations identified in the observational phase to be discussed here

- Retrospective documentation (+/- writing on paper and then completing electronic forms later).
- Delaying Induction of Labour or commencement of syntocinon because of other activity on Labour Ward.
- Back-timing fresh-eyes reviews when it has been done late
- Holding CTG transducer in place because no FSE's available
- Workarounds for faulty or missing equipment (moving rooms, finding replacement equipment, typing in password if fingerprint recognition doesn't work).
- McRobert's position in anticipation of a shoulder dystocia
- Individual techniques for managing workload (e.g. making a checklist of

Figure 7.2: Excerpt from interview guide for Site B

## 7.4 Analysis of interview data

Analysis of the interview data for each site followed the full five steps of the Framework method, as shown in figure 6.5. The implementation of these steps will be presented using these headings.

### 7.4.1 Familiarisation

Manual transcription of audio and video recorded interviews facilitated familiarisation with the interview data, as did reading through the transcripts in their entirety several times to gain a grasp of the participants main concerns. Additionally, a journal was kept throughout the data collection and analysis process, in which analytic notes were made to retain concurrent interpretations.

## 7.4.2 Framework identification

Although the initial coding framework had been devised from the observational data, analysis of the interview data applied all five steps of the Framework method, to capture any new codes which may not have been present in the observational data.

## 7.4.3 Indexing

The analysis then proceeded through the remaining stages of the analysis method. Coding, or indexing as it is called in the Framework method, was performed manually within Nvivo Computer Assisted Data Analysis Software. The benefit of this approach was that where uncertainty existed in how to code a particular aspect of the data, the whole case of previously coded transcripts could be searched for occurrences of that aspect to ensure consistency.

Indexing applied both a deductive and an inductive approach, whereby the coding framework was used to deductively identify instances within the interview transcripts which illuminate codes previously identified in the observational data. Thus, enabling comparison of Work-as-Imagined versus Work-as-Done. However, where data did not fit with the existing coding framework, an inductive approach was used to create a new code, as can be seen in table 7.2, below. A log was kept to trace the source and rationale for all new codes. Using the Nvivo software meant that all previously coded transcripts could be easily searched for occurrences of these concepts in case they had been missed, using key word and synonym searches. As can be seen in table 7.2, literature came to light during the course of the research which suggested a fifth resilience potential exists, which is “*Coordinating*” (Anderson and Ross, 2020). Consequently, this was added to the coding framework, as it was apparent within the data also. The code “*Professional differences*” was also amended to include “*boundaries*”, on account of data in transcript A006. The same process was followed with the data from Site B, with the additional codes provided in appendix 19.

Table 7.2: Additional codes from Site A Interview data

Additional codes from Interview data						
Source	Situational condition	Resources and Enabling condition	Objective	Sharp end interaction	Blunt end interaction	Resilience Potentials
Midwife	Person factors	Skill mix	Patient Choice	Effect on staff		Coordinating
	Unpredictability or Sudden Change	Handover				Tools (as part of monitoring)
	Professional differences					Responding (to emergency situations)
Midwife		Knowledge			Retention	
Midwife	Midwife Motivation or Morale					
Midwife		Management and Leadership			Communication of changes	
Midwife	Professional differences and boundaries					
	Capacity					
Midwife					Change	
Midwife		Ward round				
Manager		Communication				
Manager	Financial Constraints					

### 7.4.4 Charting

A framework matrix was created within NVivo, using the participants as the rows and the codes as the columns. It was then possible to automatically pull the coded sections of text into the relevant cells of the matrix to chart the data. However, significant work was required to format the matrix into a manageable layout, whereby the codes were sorted into themes and sub-themes, structured around the elements of the Strategies Framework which had underpinned the data collection (Rankin et al., 2014). To do this, the NVivo matrix was exported to Excel, where the themes could be separated out into separate sheets within the same spreadsheet. Table 7.3 shows the framework matrix for the ‘Objectives’ theme at Site A, as an example of how this was done. The equivalent framework for Site B data is provided in appendix 20.

Table 7.3: Framework matrix for Objectives Theme for Site A

Participant	Objectives						
	Patient Choice	Compliance with Guidelines	Doing the Right Thing	Outcomes and intervention	Patient Safety	Timely Completion of Tasks	Balancing clinical Priorities
1							
2							
3							

Further formatting was required to summarise the text in each cell, firstly to condense longer pieces of narrative, but also to provide context which was often lost when text had been lifted verbatim from the transcript. This was a time-consuming process which required reference back to the original transcript to understand what the participant had meant, to ensure accuracy. Although this process was onerous, it did contribute to the analysis by augmenting familiarity and involvement with the data. Furthermore, organising the data in this way enabled a systematic and transparent approach to managing the data, which facilitated the mapping and interpretation by comparing the data by case and by code (Gale et al., 2013).

#### 7.4.5 Interpretation: identification of themes

Initially, data were charted against the Strategies Framework (Rankin et al., 2014) which had shaped the data collection, as stipulated in the protocol. However, in doing this it became apparent that some codes appeared as both situational conditions, namely actors which necessitate adaptations; and enabling conditions which supported them. As a result, charting the data would either result in repetition across themes, or a judgement as to which theme the data should sit within. This was difficult because sometimes participants reported opposing views on the same factor, for example some midwives found managers supportive, whilst others did not. Whilst it is recognised that the researcher is an integral part of qualitative data analysis, deciding whether data were situational or enabling required a significant value judgement by the researcher which risked the objectivity of the findings. Furthermore, given the non-linearity of healthcare as a complex system, it would appear to be an arbitrary distinction to categorise systemic conditions as essentially positive or negative. With this in mind, a pragmatic solution was taken, to adapt the Strategies Framework to consider the work system as a whole, rather than artificially dividing factors into situational or enabling conditions. This resulted in a more neutral presentation of the data and allowed for the nuances between and within participants' reports. The same principle was applied to consider the effects of the adaptations collectively as outcomes, rather than as sharp and blunt end interactions, because relationships between elements in a complex adaptive system are not linear or discrete. The same adaptation could affect both the woman or midwife, and organisational resilience. For example, utilising on-call community midwives when Labour ward is busy and short staffed may be beneficial to organisational resilience in terms of preserving safety of the unit and maintaining patient flow; however, it has consequences for the community midwife in terms of abiding by working time directives for required breaks between shifts. Consequently, this may impact upon women who are scheduled for community appointments the following day. Therefore, considering all outcomes within the same theme was more in keeping with the human factors systems approach which underpins this research.

In a similar manner, a priori codes were initially drawn from existing resilient healthcare theory to categorise the types of adaptation as Situational or Exceptional, Erroneous or Unintentional, Optimising or Routine Individual adaptations (Woodward, 2023:17). The intention of this was to build on the existing theory rather

than disregard it. However, upon coding the interview data it became apparent that this categorisation required a value judgement by the researcher, and as such was highly subjective. For example, most adaptations appeared to be situational or exceptional, meaning that they occurred in response to individual circumstances at the time, rather than being routine or pre-planned activities. In other words, they occurred within the situated moment of resilience according to Macrae's (2019) classification. However, some of these adaptations could be considered to be erroneous, such as a practice reported as an error by a manager at Site A, whereby some midwives count the maternal respiration rate for 15 seconds, and then multiply it by four to save time, instead of counting it for a full minute, or that they record intermittent auscultation of the fetal heart using a CTG transducer, instead of a handheld doppler. This example provides a dilemma when juxtaposed with a scenario presented by another manager at the same site, in which a midwife was reprimanded for failing to listen in to a fetal heart for a period of time whilst transferring the woman between clinical areas. On the one hand, a midwife is reprimanded for not auscultating the fetal heart, on the other hand, midwives are criticised for auscultating using the wrong equipment. Therefore, in the situation where the correct equipment is not available when required, both possible adaptations may be admonished, though unavoidable at the time. Thus, deciding whether an adaptation is situational or erroneous may be a matter of personal opinion. Furthermore, given the short time period over which the observations occurred, it is not possible to know without making unfounded assumptions whether certain adaptations are routine practice for individual midwives, or local custom and practice. For example, three midwives reported at interview that some midwives observe their patients from the office where their CTG trace is displayed on the central monitoring system, rather than being present in the room. This practice was not witnessed during the observational phase; therefore, it is unknown whether this is a common practice or just one or two individuals. Indeed, it could be the same individual that has been reported by all three midwives. With this in mind, it was decided to compile all identified adaptations into a single table and then inductively analyse them, rather than using a deductive approach to categorise them. Implementing the amendments discussed above, the adapted Strategies Framework which was used to structure the framework matrices can be seen in figure 7.3, alongside the original model for comparison.

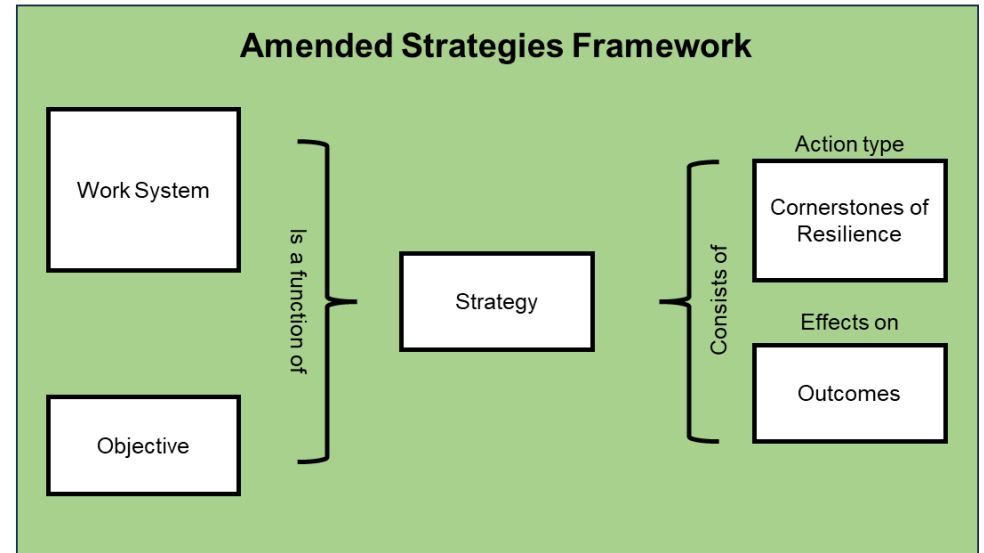
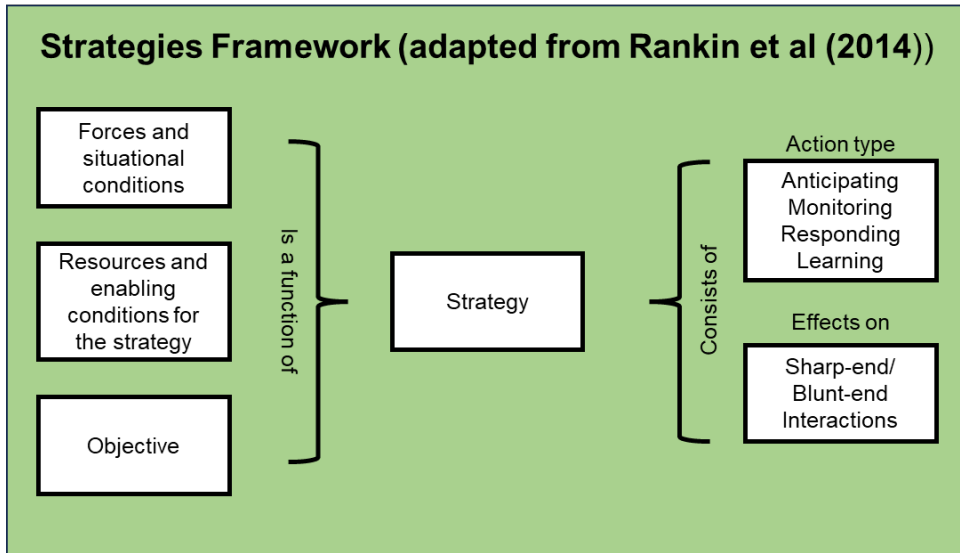
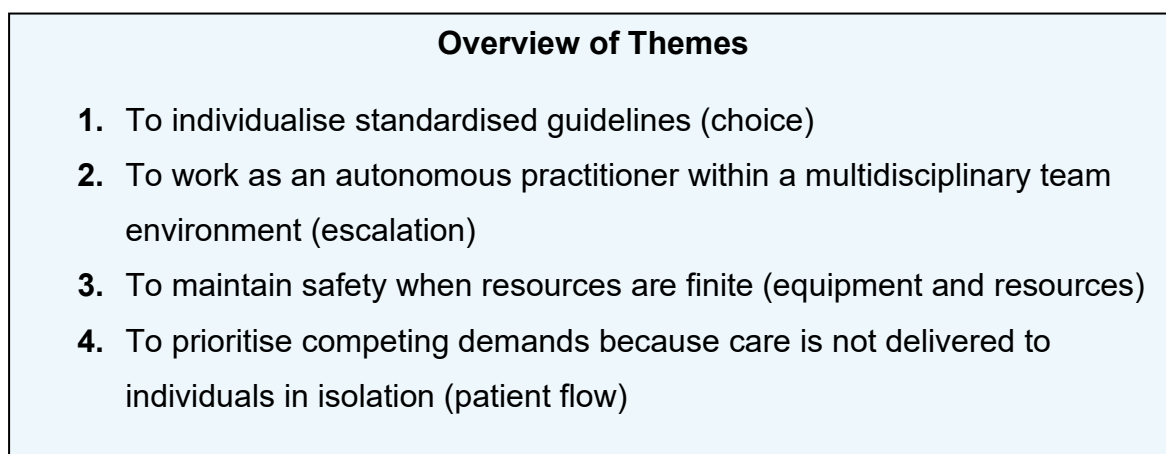


Figure 7.3: Original Strategies framework model (adapted from Rankin 2014), and amended model used for data analysis

The amended framework proved useful for indexing and mapping of the data, with a framework matrix similar to that shown in table 7.3 for each element. However, this became restrictive of higher-level analysis because it appeared to artificially separate out intractable interactions with the complex maternity care sociotechnical system into discrete elements. Thus, reporting them in this format became list-like, making it difficult to see the connections between specific work system conditions and the outcomes of related adaptations. It became apparent that a strategies framework would be required to analyse each individual adaptation. A more natural way to analyse the data was to start with the objectives for adaptations to identify if there were common themes in why adaptations occur and then consider the work system conditions and specific outcomes that related to each of these themes. Using this approach, four broad themes were identified which explain the impetus for adaptive practice, as can be seen in figure 7.4, below. The coded data were subsequently allocated to the relevant theme, enabling the implementation of one strategies framework for each theme, rather than requiring a framework for each individual adaptation.



*Figure 7.4: Overview of themes*

## 7.5 Chapter conclusion

This chapter has discussed the methodological decisions that were made as part of the data analysis process, because research-as-implemented did not completely align with research-as-imagined in the preceding protocol. Thus, adaptive practice was required to accommodate the unforeseen threats to objectivity and higher-level analysis. Four themes were identified through this method, which will be used to frame the findings presented in the following chapter.

# Chapter 8 : Findings

## 8.1 Chapter introduction

The previous chapter presented the protocol for this multiple case, embedded design qualitative case study which explores adaptive performance of midwives as a resilience mechanism to contribute towards safety in maternity services. This chapter reports on the cross-case analysis which compares findings from the respective cases to identify the nature and purpose of adaptations or workarounds occurring in midwifery practice and how individual adaptive performance is perceived to contribute to organisational resilience. Furthermore, the chapter will explore how organisational resilience mechanisms support or disrupt the adaptive capacity of clinical midwives, and in doing so, define the relationship between individual level adaptive performance and broader organisational resilience. The following chapter will discuss the contribution of these findings to the existing body of literature and set out the implications for future research and practice.

## 8.2 Description of the cases

The case study was undertaken at two study sites in the English Midlands. As can be seen in table 8.1 below, both were large, tertiary maternity units with similar annual birth rates. In accordance with the research protocol, the key difference between the sites were the CQC (2022) ratings at the time of planning and data collection; Site A was rated “*Good*” and Site B was rated as “*Requires improvement*”.

Table 8.1: Comparison of Cases

	Site A	Site B
<b>Level of care provided</b>	Tertiary	Tertiary
<b>Services provided</b>	Consultant-led unit, Midwife-Led Along-side Birth Centre, level 3 Neonatal Intensive Care Unit (NICU).	Consultant-led unit, Midwife-Led Along-side Birth Centre, level 3 Neonatal Intensive Care Unit (NICU).
<b>Location</b>	Inner city	Inner City
<b>Annual birth rate</b>	Approx. 5800 p.a.	Approx. 6500 p.a.
<b>Number of midwives employed at the Unit</b>	Funded establishment: 229 FTE  Midwives in post: 202 (Jan 2024)	Funded establishment: 271.9 FTE  Vacancies out to advert: 10 (Mar 2025)
<b>Induction of Labour Rate</b>	34.1% (2024-25)	47.5% (2024-25)
<b>Caesarean Section Rate</b>	40.8% (2024-25)	41.8% (2024-25)
<b>CQC rating</b>	Good	Requires Improvement

### 8.3 Overview of the data

Twenty hours of observation were undertaken on the Labour ward at each site, over the course of two weeks in June and October 2023. Observation periods covered early, late, and night shifts and included weekends, to account for differences in workload, staffing levels and environmental conditions. This resulted in 24 individual observation record sheets for Site A, and 18 for Site B. Each reported on a specific adaptation that was observed in practice. The records were compiled for each Site and analysed separately to ensure within-case analysis for each case. Examples of observed performance adaptations were extracted from the observational data to inform development of the respective interview guides for the subsequent semi-structured interviews.

Twelve individual semi-structured interviews were conducted with clinical midwives at each site, with a 44% (n=12/ 27 approached), and 55% (n=12/ 22 approached)

recruitment rate respectively. This number met the lower threshold of the intended sample size, therefore was deemed to be sufficient given that all 12 of those who were interviewed were retained in the analysis, with no drop out. Following on from this, four midwife managers were recruited for semi-structured interviews out of five who were approached at site A. At site B, only two managers responded to the invitation to participate. However, all six managers were successfully interviewed and retained in the analysis with no drop out. Midwife and manager interviews were analysed as separate units of analysis, within their own cases. The findings presented here represent the cross-case analysis which compares the embedded units of analysis between the two sites.

Four themes were identified which explain why adaptative practice is necessary and the consequences for supporting organisational resilience. These were:

1. To individualise standardised guidelines (choice)
2. To work as an autonomous practitioner within a multidisciplinary team environment (escalation)
3. To maintain safety when resources are finite (equipment and resources)
4. To prioritise competing demands because care is not delivered to individuals in isolation (patient flow)

The thematic map in figure 8.1 shows these themes in orange and demonstrates the aspects of the work system which necessitate adaptation in relation to each theme, shown in blue, and the potential outcomes of associated adaptations, shown in green. The arrows signify that although aspects of the work system are discussed in relation to particular themes, they do in fact impact upon other themes. Likewise, the outcomes may in turn impact upon other aspects of the work system. Thus, representing these concepts within circles denotes that they are an interconnected part of the whole maternity care system. The findings of this study will be presented under the four themes.

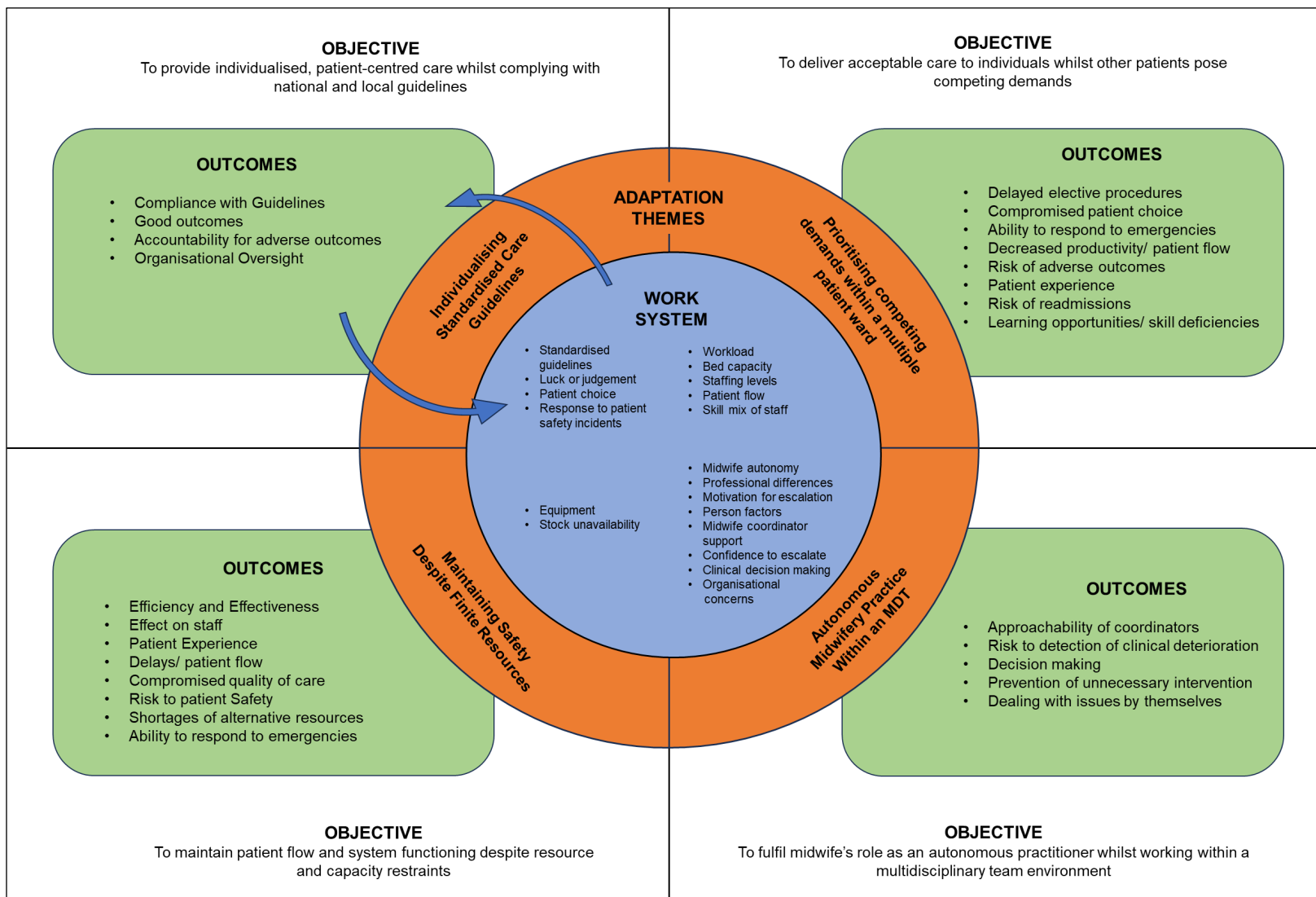


Figure 8.1: Thematic map of themes and sub-themes

## 8.4 Theme 1: Individualising standardised care guidelines

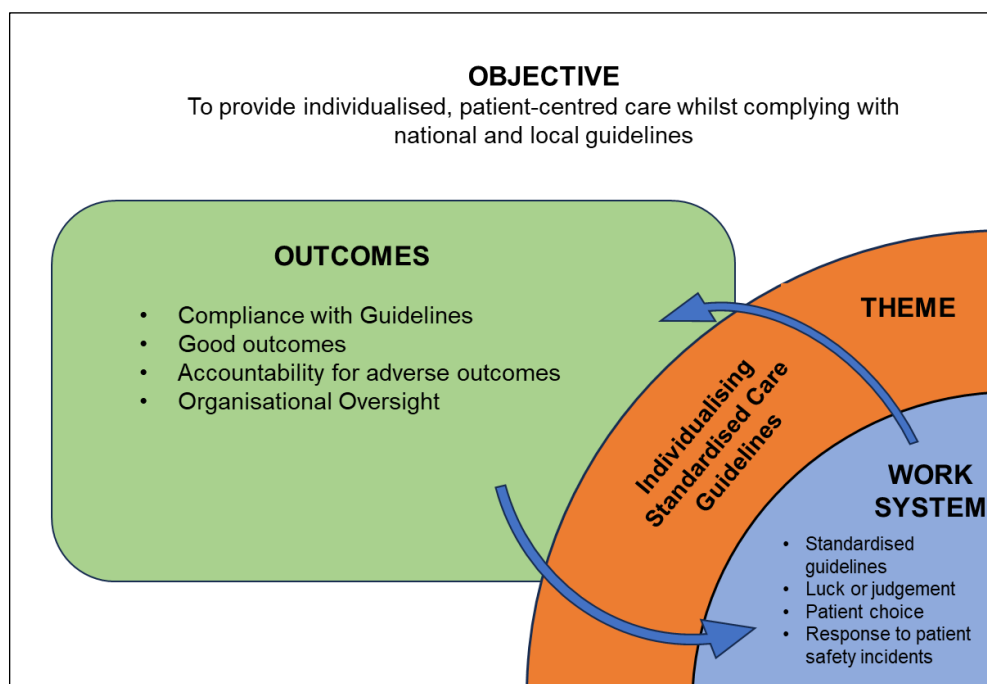


Figure 8.2: Conceptual map for theme 1

Individualising standardised care guidelines (figure 8.2) refers to the adaptations that are required to deliver care designed for a population of people with a particular condition, to individuals with their own specific needs. This theme arose out of a tension within the data between reports that midwives maintain patient safety through adherence to National and Trust guidelines, and statements about the inadequacy of those guidelines to address every situation, given the unique complexity of individual patients. This theme is composed of four sub-themes which are: the role of standardised guidelines, perceptions of luck or judgment in determining outcomes, adaptation to patient choice and the organisational response to patient safety incidents. These will be addressed below.

### 8.4.1 Standardised guidelines

The term '*guidelines*' is used loosely in this sub-theme to mean any standardised instructions for work practices or care delivery. This includes NICE and other national guidelines, local NHS Trust clinical guidelines, and standard operating procedures. Policies could be also included here, although participants were clear that adherence to organisational policies is non-negotiable whereas guidelines are

for guidance rather than being absolute. However, divergence was noted in how guidelines should be used. For example, one midwife suggested that:

*“The way I see it, I create safe practice, by just not really deviating from what I know and making sure that it's along with trust policy and things like that”.*

(Midwife, Site A)

Whereas a Manager implored that:

*“We have to for the benefit of the women and also the families, make sure that whatever care we provide is adjusted to their needs. So, guidelines don't fit for everyone. One size does not fit all and to have so many variations would be impossible to keep a track of”.* (Manager, Site A)

Thus, adaptation is required to provide individualised, patient-centred care when guidelines do not fit the circumstance. This is particularly apparent, in view of the oft-quoted increasing complexity of women which may necessitate adaptation of routine practice, because there may not be a bespoke guideline for a woman's particular condition.

Alternatively, people may present with comorbidities for which multiple guidelines apply, though they may not necessarily align:

*“Guidelines are there to help, but they're not there to be exactly followed. Cause not everyone fits into that specific guideline, so it will be adapting that way. Sometime if a lady has two complications, one will definitely outweigh the other, usually. So, you have to follow that guideline and see if you can align the other one”.* (Midwife, Site A)

The use of the word “*outweigh*” in this quotation infers the potential for competing demands between guidelines that may require concurrent use. With this in mind, where more than one guideline is applicable to the individual's care, the midwife must try to either integrate the two or prioritise which elements are most important to adhere to.

Whilst there was widespread agreement that care should be individualised, there were also multiple references to “*ticking boxes*”. For example, one midwife spoke of

fetal monitoring and documentation requirements superseding practices to support active birth:

*“My hands are tied because clinically I've got things I need to do. And it's almost like the legal tick boxes supersede the woman's wellbeing and experience”.* (Midwife, Site B)

Another Midwife elaborated that these tick boxes included incident reporting, audit, the Maternity Incentive Scheme (MIS) and national safety standards, and Key Performance Indicators (KPIs). There were also multiple references in the interviews to the RCOG Saving Babies Lives care bundle, and the Ockenden report which have all instigated practices changes. For example, a manager spoke of the practice of Fresh eyes which is audited to ensure compliance with guidelines:

*“We audit it and any areas that we are, staff are found not compliant with then that is fed back individually to say this hadn't happened. Can you explain the rationale behind it? And we do that approach to try and appreciate how we can support them to complete it.”* (Manager, Site A)

Whilst manager this manager explained that it is not just about achieving targets and ticking boxes, another manager implored midwives to: *“stick to the rules!”*. Similarly, a different manager discussed her role as a manger to *“enforce the rules”*. This raises a question as to what adaptations are permissible in order to individualise care, and which aspects of guidelines should be adhered to ensure auditable safe standards of care.

The data suggest conflicting priorities for midwives, between documentation requirements and patient experience, as exemplified by the quotations below:

*“Basically, your guidelines, like your fetal heart monitoring. Documentation of actions, reviews, like anything that is done within guidance or outside of guidance, is a big must, isn't it? Like your documentation, a lot really. Just because that's what will be used against you”.* (Midwife, Site B)

In contrast:

*“Your documentation, obviously in a court of law, that’s the only thing you’ve got, isn’t it? Erm, so it is to show that you’ve given that patient the best care. But on the flip side, you can have beautiful documentation, but your patient feels like you’ve just completely abandoned her cause you’ve sat in front of that [computer system] like [typing gesture]... I think, for me, although I know documentation is paramount and we should, midwife means with woman, not with pen or with [computer system] screen. So, I will always choose my woman over my documentation. And it’s just trying to find that even keel, you know, where you’re protecting yourself as well with your documentation and you’ve got a good record of what’s gone on during that Labour or whatever, but also your woman feeling that you’ve been there for her and you’ve supported and that she’s had that emotional care”.*

(Midwife, Site B)

The common ground between these two quotations is the perceived importance of documentation to defend their practice, suggesting that all care, whether within or outside of guidance may require justification or defence against litigation. However, the difference between the quotations speak of an implicit tension between individual needs and organisational processes. This is supported by a midwife who spoke of the negotiation required to balance the two:

*“I think sometimes you’ve got to remind yourself that not everybody is in a tick box. That they’re an individual, and they’re not a condition. They’re not just that induction. That they’re a person and think... make sure that you think of the person first. You know, I know I’ve said about the oxytocin, but obviously that’s our process, that’s our regime, you have to go along a bit what they want, but then also, it has to be a little bit of a discussion... You need to be working with the situation, with discussion, and with informed consent to whatever you’re doing”.*

(Midwife, Site B)

The tension between individual needs and organisational processes may reflect differing perspectives of what safety is in maternity care and how it is secured, as the manager suggests:

*“There are good things safety wise. We are very hot on doing things, but if those women don’t feel listened to... regardless of whether we’re doing the things that we perceive make them safer, if the women don’t feel like they’re being listened to, they won’t feel safe. It’s a balance, isn’t it?”*

*(Manager, Site A)*

The inference here is that to women, safety includes a psychological component that links in with their right to bodily autonomy and choice. Whereas to professionals, safety is achieved by actively doing things. Interestingly, the context of this quotation is the profound opposite of the current theme; rather than midwives adapting their practice to individualise standardised guidelines, the manager was suggesting that midwives may follow protocols religiously *“because that’s what the box says we should do, without kind of looking at the woman...”* (Manager, Site A) and tailoring the pathway to her situation. This suggests a perception that adherence to policy or procedure equates with safe care.

#### 8.4.2 Luck or judgment

An alternative perspective on the concept of safety comes from an outlier in the data which ran across all four themes. This was an apparent contradiction between the perception of safety being procured by action, and good outcomes occurring by luck. Interestingly, although midwives considered patient safety to be a key objective for adaptive performance in principle, relatively few examples of adaptations were specifically identified by midwives that pertained to this, as can be seen in the table 8.2, below.

*Table 8.2: Adaptations specified by midwives as being for patient safety*

Source	Adaptations
Midwife, Site A	Implementing perinatal mental health support to keep you and obviously them and other patients and safe.
Midwife, Site A	Taking on higher workloads to make sure that more women are safe.
Midwife, Site A	Taking a patient when you're supposed to be supernumerary because it's safer for the coordinator to go in and deliver the baby,

	than wait for the on- call to come in in an hour and just leave the woman on her own.
<b>Midwife, Site A</b>	Negotiating a different order of inductions of labour/ theatre cases, or delaying something on account of staffing later on, to try to keep it safe and keep it moving.
<b>Manager, Site A</b>	Pulling non-clinical staff to provided one-to-one care in labour, to ensure that the woman and baby are safe, even if this means having two or three different midwives caring for her.
<b>Midwife, Site B</b>	Thinking outside of the box to keep safety and keep the service running, e.g., pulling beds from people when they get up and give them a delivery bed, so they have a bed.
<b>Midwife, Site B</b>	Transferring a patient with necrotising fasciitis to the care of general surgeons, for safety.
<b>Manager, Site B</b>	formal process for prioritising which women will come first if there is a delay in inductions, and how to safety net them.

On the other hand, the analysis process identified several adaptations that could be attributed to the objective of patient safety but were not ascribed as such by the midwives. Such as, administration of emergency drugs before the doctor arrives to prescribe them, because this would enable more timely treatment and avoid delays. Similarly, moving staff to facilitate safer staffing and staff staying on to do extra hours, or working through breaks would ensure that there are sufficient staff to patient ratios to enable safe care provision. Coordinators scrubbing in theatre in an emergency if a full theatre team is not available or delivering a baby themselves if there is not another midwife to care for a spontaneous labourer in established labour. Even using alternative equipment such as opening the delivery pack early or using loose swabs and water to catheterise if there are no vaginal examination packs available (Observation 1.6e), could be seen as being for the objective of patient safety, because an aseptic catheterisation technique is required for infection control. However, these adaptations were not explicitly identified by the midwives as being for that objective.

In contrast, a key concept stood out when analysing the interview transcripts, which was that in extreme situations, midwives perceived good outcomes to have occurred

by luck. It is possible however, that the midwives have not recognised their own contribution to safety in these cases, as preceding actions were identified in the transcripts of each of these cases, the majority of which were in fact adaptive, as can be seen in table 8.3 below. Indeed, one midwife even speculates:

*“I don't know if that's luck or good judgement really that we do get to that point that everybody's delivered everybody's safe and everybody's in a bed... but it always seems to peak at that level that you're just about coping. I've never had it go over that I can't possibly care for a woman that's in labour. We always seem to manage”.* (Midwife, Site B)

Table 8.3: Midwife actions preceding outcomes reported as occurring by luck

Source	Outcome reported by midwife as occurring by luck	Preceding action by midwife that may have contributed to outcome
Midwife, Site A	“Luckily, the baby was absolutely fine...”	Midwife negotiated a plan to perform a full set of observations at the start of labour and then to offer auscultation hourly to make sure that baby was ok. Mother could then accept or decline the auscultation at the time.
Midwife, Site A	“Anything could have happened... That baby could have dropped in toilet. It could be dropped on the floor.... Luckily, the baby was fine. And luckily that was the case.”	Midwife responded to audible screams in the corridor and intervened.
Midwife, Site A	“But hey ho. We live! And luckily all my patients were fine. They were safe...”	Midwife listened in to all of the babies to ensure they were ok, then prioritised the urgency with which patients needed to be seen and reorganised the workload.

Midwife, Site A	“Luckily, two of them [senior student midwives] were known to me quite well.... Luckily, I think the two ladies did deliver, but at different times, thankfully.”	Midwife took on a higher workload by providing long-armed supervision to two senior students caring for women in labour, whilst she took care of a premature labourer.
Midwife, Site A	“I’ve done a couple of things and luckily, it saved a woman’s life recently, and years ago it saves a baby. And I kept them safe.”	Midwife recognised behavioural and skin colour changes as a sign of deterioration and summoned medical assistance.
Midwife, Site A	“Luckily, we have got some urometers.”	Midwife adapted to lack of catheter collection bags by using alternative equipment.
Midwife, Site A	“I couldn’t find an ear thermometer to double check to make sure she hasn’t got a high temperature.... She didn’t. She’s fine, luckily.”	Midwife had already measured the temperature with an oral probe thermometer, then borrowed a tympanic thermometer from another room to recheck it.
Manager, Site B	“Luckily somebody came to do fresh eyes and noticed it.”	Fresh eyes is performed routinely, every hour.

These examples suggests that midwives may unconsciously contribute to organisational resilience through adaptive performance, but they perceive positive outcomes to have occurred by luck.

### 8.4.3 Patient choice

Patient choice concerns the right of women to make choices about their own care. In this study, patient choice generally referred to women declining routinely offered monitoring or interventions, with the phrase *“birth outside of guidance”* used synonymously. The inference being that patient choice often goes against what is advised by professionals. Interestingly, patient choice was the most commonly

reported reason for adaptive practice at interview; however, no instances of this were observed. This may suggest a difference between what midwives are willing to disclose at interview and what they actually do in practice. Indeed, midwives were more likely to report their own adaptations as being to support patient choice, meanwhile they were more likely to report the adaptations of others as individual practices, alluding to them being erroneous. For example, a midwife reported waiting for two hours following artificial rupture of membranes before starting syntocinon intravenous infusion, to allow the woman to mobilise in the hope that she will start to labour spontaneously, without the need for medicinal intervention. On the other hand, another midwife spoke of colleagues who:

*“Look busier than they actually are”, whereby they “will tell you that they’re not starting it [syntocinon] because they’re contracting regularly, so I’m just giving her a little bit more time. And then you go back and they’re not really doing anything. So this is where you know your staff, and you keep an eye on to make sure...”*

(Midwife, Site B).

The insinuation here is that not following the timescales in the induction of labour guidelines may be deviance rather than patient choice.

On the contrary, adaptations that were reported as supporting patient choice were viewed more positively, for example, adapting Labour ward rooms to resemble the birth centre environment when this facility is not available, or adapting monitoring or routine care practices when the woman has declined something such as continuous electronic fetal monitoring or active management of the third stage of labour. Indeed, several midwives referred to *“birth outside of guidance”* as an acceptable justification for adaptive practice, because this was the woman’s choice.

Crucially, a manager stated that guidance is:

*“Not set in stone and there’s parts of it you don’t have to follow if you feel that’s in the best interest of the woman. And as I said, there’s no way in any guidance you can cover every possible scenario... But if you have got a challenging situation... then it’s about giving that individualised care, and I think if what you’re doing is reasonable, then that’s OK.”*

(Manager, Site A)

Accordingly, adaptation to a guideline can be justified if it is “*in the best interest of the woman*” and “*reasonable*”. Because women have the autonomy to choose what is in their best interests, adaptations on account of patient choice are clearly justifiable. On the contrary, what is considered “*reasonable*” is subjective and open to scrutiny. The midwives were very aware that cases would be “*picked apart*” (Midwife, Site A) when an adverse outcome occurs, to see what could have been done better. As Site A manager explained, the first step in the process for patient safety response review following a patient safety incident is to look for any acts of omission in care which could have prevented the outcome. Indeed, manager another manager highlighted that adaptive performance is likely to be criticised by HSIB, should an adverse outcome occur which leads to an investigation. Whilst the manager argued against this criticism where care is adapted to the woman’s choices, it emphasises that the onus is on the midwife to defend their adaptations. As such, adaptations on account of patient choice may be more easily defensible for the midwife.

#### 8.4.4 Response to patient safety incidents

This sub-theme pertains to the way in which incidents were perceived to be investigated by the organisation and potentially external bodies, and the implications of this for midwives’ practice. There was a clear sense that incident investigation was undertaken from an organisational learning perspective and not to apportion blame, as can be seen in the quotation below:

*“Any near miss or adverse event is always investigated. Anyone involved in them will participate, will be interviewed. They certainly are not pushed under the carpet here, definitely not. It’s very open here, you know, duty of candour and all that... And if you have something to answer for, you have to answer to it.... It would all be investigated, and we have HSIB and you know, its very open and honest here. And I don’t ever feel like it’s a blame-game here. I think it used to...”*

(Midwife, Site A)

However, there remains the possibility of midwives being called to account for their actions or omissions. Whilst the manager at this site was keen to assert that the organisation’s response to patient safety incidents is not punitive, the importance of midwives learning from incidents is clear:

*“I don't feel that we're led by bad outcomes. Where people get into defensive practice, in my opinion, is where perhaps sometimes you know, corners have been cut and then a conversation will have been had, and rightly so, because we have to. We have a professional and a moral obligation to ensure that we have learnt if there has been an incident, complaint or poor outcome. You know, and that feedback must go back to the individuals, but not necessarily in a negative way, but from a supportive point of view, but not everybody will receive that message in the way it's intended because it does rely on personalities to be able to do that, and insight, and I would say not all midwives have got insight, sadly.”*

*(Manager, Site A)*

Other managers were more cautious in their use of language, suggesting that feedback may be positive as well as negative, and emphasising the importance of liaising with the staff sensitively to understand their thought processes at the time of whatever incident had happened. Nevertheless, midwives were clearly aware that their care could be scrutinised for “acts of omission” (Manager, Site A) and talked about practicing in a way that protected themselves legally. For example, one midwife discussed how she repeatedly offered an aspect of care that the woman had declined, and documented this to protect herself against any “backlash”:

*“It was just constantly offering and yes, she got annoyed with me for keep offering... But at least then I protected myself. Umm. Protected myself against anything if it did go wrong, any backlash towards me because I did offer and you declined and it's clearly documented”*

*(Midwife, Site A)*

Similarly, a midwife talked about the need to be able to stand up in court and justify one's rationale for their actions. Likewise, another midwife discussed the importance of doing the right thing because if you do not, “ultimately, it's going to come back on you”. The findings therefore suggest that midwives may feel vulnerable to scrutiny and potentially litigation if they deviate from guidelines in case anything untoward were to happen. The risk here, as one midwife explained, is that midwives may feel that it is easier to follow guidelines precisely than to individualise care:

*“You're gonna have other people who are just gonna do what they're told. Because it's an easier life. What we're doing is breaking down their resilience. When people start doing what they're told, because that's the easier option,*

*that's not resilience. It's not autonomy and it's not safe, and they know that, but they can't fight it. Umm, because they're worn down, they're worn down, they're worn out".* (Midwife, Site A)

This quotation suggests that unquestioning rule-following may threaten patient safety because midwives are not fulfilling their autonomous professional role. However, compliance with guidelines may be prioritised by clinical midwives over adaptive practice out of duty, rather than necessarily knowing why they were being asked to do something. This finding aligns with standardised guidelines subtheme in that midwives may follow guidelines or protocols religiously without individualising them to the circumstances, under the belief that adherence to policy or procedure equates with safe care. Whilst this could be interpreted as midwives demonstrating faith in the adequacy of the guidelines to protect women, and their babies from harm; the lack of understanding of the rationale for changes suggests it may in fact be due to midwives' demotivation or lack of control over changes, as the two quotations below illustrate:

*"I just do what I need to do. If I'm told from an audit "you need to do this", then I'll do it. Maybe I should learn more about why... But I don't though, I just do it. I do what I'm told. "It's a new guideline": Ok"*

(Midwife, Site B).

In contrast:

*"They just bring stupid things in and never tell you why. I mean, I suppose that's a safety issue that they just don't explain it to you. They just give you something else to do and it just adds up, and adds up, and adds up, everything that you've got to do. But you've no reason why... You're not gonna refuse to do it, are you?... It's out of your control that isn't it? Like I say, you're not gonna refuse to do something".* (Midwife, Site B)

Interestingly, the quotation speaks of a deeper issue which is the implementation of changes to practice following patient safety incidents. A Midwife from Site A explained that the formal process for making changes to guidelines was lengthy and arduous with requirements to produce a business case and acquire approval from

various committees. However, when an incident occurs, changes can be implemented at pace:

*“You’ll be amazed how quickly we can implement stuff, which is quite funny, because whenever you try and implement something normally it takes forever to get it through all the, you know, all the loopholes. I remember a woman having magnesium toxicity one evening on Labour ward. By the following morning, [Anaesthetic Consultant] had pulled the entire guideline down that night and rewrote it, and it was up and live and ready to go the next morning. You just think that’s, you know, amazing.”* (Midwife, Site A)

Whilst this midwife spoke proudly of this agility, others interpreted the organisational response to incidents as “*knee jerk reactions*”. Although the intention of changing the guidelines was to prevent the same thing happening again, the perception was that this created a greater workload burden to the midwives without necessarily addressing the right issue:

*“I do think that we get quite a bit of knee-jerk reaction from things that go through Risk... I do find a lot of knee-jerk reactions from it. I don’t say they’re all wrong. I think some of them, definitely yes, they do need a reaction. That’s what it’s there for isn’t it? To make sure we’re not missing things and to make sure we’re learning from things that don’t go right. Erm, but on the flip side of that, I do think we perhaps then introduce more rules and guidance and things that is giving those women even less chance of being a normal pregnant woman. A normal healthy pregnant woman, who would follow a normal pathway”.* (Midwife, Site B)

The implication of this is that the response to adverse events may lead to greater intervention, without necessarily reducing poor outcomes:

*“I think the number of things that are being investigated are bigger than they ever have been. I think the funds that are ploughed into all of that is a shame. Can’t fund it where it’s actually needed rather than investigating what’s gone wrong and then knee-jerk reaction putting all of these guidelines and interventions in the way. Which I see why, but sometimes you think well, you were always the odd adverse case. For all these interventions, we actually*

*haven't improved outcomes. And there's an awful lot of money just going into a big black hole somewhere, that is not necessarily a particularly efficient use of money and time and people's skills".* (Midwife, Site B)

In terms of organisational resilience, this reactive risk management response could potentially inhibit midwives' adaptive capacity as more "*rules*" (Midwife, Site B) and "*interventions [are put] in the way*" (Midwife, Site B). It also poses an interesting paradox, that individual midwives may be dissuaded from adapting their practice in case an incident occurs, but when an incident does occur the organisation implements practice changes.

## 8.5 Theme 2: Prioritising competing demands of individuals within a multiple-patient ward

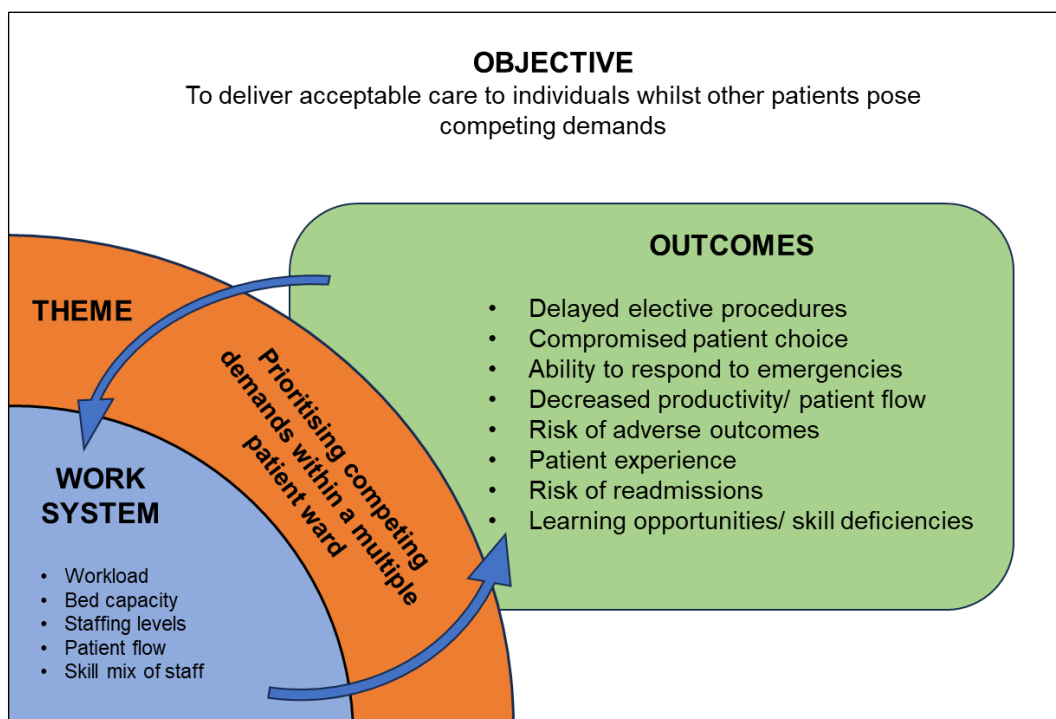


Figure 8.3: Conceptual map for theme 2

The previous theme identified that adaptation is required to balance tensions between individual needs and organisational processes. This second theme (figure 8.3) concerns the adaptations that are required to balance the competing demands of individuals within a maternity unit which delivers care to multiple women at once. Whilst a midwife's care on Labour ward is patient focused, that is considering the recommended care for the (one) woman's specific needs, other members of the MDT such as the coordinator and obstetricians oversee the care of multiple women at once. This includes all inpatients on the maternity unit as well as planned admissions for elective procedures, and those who present to the triage unit with concerns. Thus, the limitations of the work system such as bed capacity and staffing levels mean that it may not always be possible to meet the individual needs of all patients simultaneously. As one Midwife reported, this can cause tension for the midwife between what they would like to do and what they can do, as this extended quotation illustrates:

*“The IUD [intrauterine fetal death] lady is ARM’able, so we can break her waters and get her on with the induction and have a baby. There isn’t a*

*midwife. She needs one-to-one. So, she's been delayed. And obviously, this has got a knock-on effect on her care. On her mental health as well because she's staying in hospital more than she's supposed to be. I can think of delaying inductions or delaying a woman that needs to be transferred to theatre for delivery. She's been pushing for three hours. Theatres are busy. She can't go. There was a woman with ten hours delay. She's been like seven hours fully dilated. Theatres were busy, so there's nothing you can do. And it is frustrating because this poor woman had been waiting for almost 24 hours before breaking the waters, and she was very lovely and very understanding, but... you feel for them because there's nothing you can do. So, this is when we have to adapt to situations and sometimes these kind of things, you bring them home with you. Because you care about the patients, so you want to give them the best care, but you realise that this is not always possible, and it's out of your control, basically. So, yeah. Frustration is the first thing I can think when we have to adapt to situations. We do adapt to situations a lot of the time. At the end of the day, we do it, but it's not ideal"*

(Midwife, Site A)

As this quotation illustrates, in situations where demand outstrips the system's ability to deliver the right care, adaptation is required to prioritise competing demands to deliver an acceptable level of care to individuals whilst maintaining patient flow through the unit so that the service may continue to function. However, this may be complicated by the unpredictability of the workload, the restrictions of bed capacity, short staffing, poor skill mix and the need for patient flow. These five sub-themes will be explored below.

### 8.5.1 Workload

Workload concerns the number of women and babies who require inpatient care on Labour ward, as well as their acuity which refers to the level of input individuals need depending upon their clinical condition. This subtheme addresses the need to match the workload to the available staffing and bed capacity in order to manage the through-flow whilst maintaining safety.

Whilst the number of women booked to give birth at the Trust each month is monitored, a midwife described how this does not necessarily correlate with actual admissions to Labour ward, as some may give birth prematurely, and others will present in labour, unbooked (not registered to give birth at that maternity unit). Therefore, it is difficult to predict the workload on account of spontaneous births. Indeed, several midwives at Site A referenced the unpredictability or the potential for sudden change in situations as a requirement for adaptive practice. For example:

*“I think the majority of us are adaptable to change, because Labour ward is so unpredictable; you don’t know what’s coming through the door at any point, but you’re prepared for it all. Well, most things anyway! [laughter]. Nothing can shock me in midwifery anymore.”* (Midwife, Site A)

Midwives at both sites reported concerns with insufficient bed capacity and referred to occasions when their units had been full to capacity, questioning the safety of this for women. There was a strong sense that the midwives felt the safest thing to do in this situation would have been to close the unit to new admissions, but this did not occur. For example:

*“The only time that I feel its unsafe here is when it’s so full to capacity. We never close, as a unit, in the hospital it’s an open-door policy. But there’s been times over the years, not many times, but a few times over the years where you think oh my God, we just need to shut these doors. But you always seem to find a way through and you always seem to just get there, by the skin of your teeth sometimes. But that’s not even a staffing issue, that’s a capacity issue.”* (Midwife, Site A)

The reason for the reluctance to close the units was not clear; with speculation about politics, financial penalties for the Trust for closing, and concern for where else the women would go if they could not attend their local unit, particularly if they could not afford to travel. Nevertheless, as closing the units was not considered to be an option, other adaptations were required to accommodate peaks in demand. These included moving women to the fetal wellbeing unit overnight, using the birth centre as a holding bay for postnatal women until the ward can accommodate them and adapting Labour ward rooms to resemble the birth centre environment when the birth centre could not accommodate women in low-risk labour.

Similar adaptations were implemented by midwives at Site B to manage the number of women who required care during busy periods. In addition, a manager elaborated that the workload can be managed through planning of elective procedures such as induction of labour and elective caesarean sections:

*“It's really trying to regulate your activity. But obviously, maternity, we do know the problem is you have elective and you have spont [spontaneous], and you cannot control the spont at all. So as much as possible, we've worked hard to make sure we're not creating an unnecessary pressure with what we can control, so don't book 15 inductions for a Friday. You know it's going to go wrong, isn't it? Mightily wrong. And that's what was happening previously. So, you know, we're all the time, we're monitoring and trying to control the elective work so that you're not putting unnecessary pressure.”*

(Manager, Site B)

Whilst this manager inferred that managing elective schedules can relieve pressure on Labour ward being able to accommodate spontaneous labourers which cannot be planned; a midwife suggested that the proportion of inductions has far exceeded the number of spontaneous labours. The perception was that the majority of admissions were now pre-planned:

*“The obstacles for me are induction reasons and I think we've gone so far from letting just women get on with things and being normal, that I don't even know what's normal myself sometimes anymore. We do induce people for the most ridiculous things and that's a big, not for me giving the care at the time, but that's a massive thing for me because you know, we have lost a lot of low-risk beds. And yes, because there's not the population, but because we're inducing everybody”.*

(Midwife, Site B)

This suggests that adaptations to manage the workload may achieve the purpose of managing the through-flow of women; however, it may impact upon the care delivered to individuals.

## 8.5.2 Bed capacity

This subtheme concerns the limitations of the number of beds that are available for inpatient maternity care, not only on Labour ward, but also in the antenatal and postnatal settings. Given that this aspect of the work environment is fixed, adaptations are required to maintain a manageable flow of patients through the unit, and to accommodate peaks in demand.

Continuing with the example presented above, increasing the number of inductions may have helped to manage the unpredictable workload; however, it was reported to have created another issue, which was that the available bed capacity in which to commence the induction of labour procedure before the women are admitted to Labour ward, had not changed. Several midwives reported that this resulted in a backlog of women waiting for admission for induction of labour. For example:

*“There was a point in the year when we had like 30-plus inductions outstanding. And I was like we need to close!”* (Midwife, Site B)

As alluded to in the quotation above, an organisational adaptation was implemented to address this, which was to take four beds from the low-risk, midwife led birth unit, to create four more induction of labour beds. Despite their prior hesitation, the midwives largely credited this as a success in terms of reducing the delays for women being admitted. However, it was not without consequence. Firstly, the cost of creating this extra capacity was reduced availability of low-risk birthing rooms. Thus, choice may be limited for other women who presented in spontaneous labour, wishing to give birth in the birth centre:

*“One of the big impacts is that the birth centre is now virtually no longer a birth centre, it’s an induction area... So, the elective work is much, much greater than it ever used to be, which means that your capacity for your spontaneous is very poor now, and the choice for women is really limited, because the birth centre is so, well, non-existent. So, women’s choice has been compromised significantly. So, it’s a shame.”*

(Midwife, Site B)

This suggests that prioritising competing demands of multiple patients within a setting means whilst those with the perceived greatest need may benefit from adaptative practices, others will inevitably be disadvantaged. Secondly, although an increased number of inductions were able to be commenced in the induction bay, this did not guarantee that there were rooms or midwives available on Labour ward to care for the women when they were ready to continue with the procedure by breaking their waters. As one midwife stated:

*“On the induction suite we can get them to the point where they're ARM'able and can be transferred to delivery suite. But some women have waited 52 hours to be transferred and have just been on [the induction suite] waiting to come up to delivery suite.”* (Midwife, Site B)

Thus, there may still be delays, due to bed capacity constraints, but with women waiting in the induction bay rather than at home.

### 8.5.3 Staffing levels

This sub-theme addresses the adaptations that were required to maintain a safe service in spite of staffing shortages, which were frequently reported as barriers to the functioning of the unit. As discussed previously, one such adaptation is to manage the workload coming in to Labour ward where possible, thus short staffing particularly affected the ability to commence and progress with inductions of labour. As one midwife stated:

*“We could move with the inductions a lot quicker if we had the 14 midwives that we were supposed to have. But yeah, I think if we did have the 14 midwives that we were supposed to have all the time, we would have a very safe service because we're doing that service on 7 or 8 midwives and we're just getting away with it.”* (Midwife, Site B)

This was indeed witnessed during the observational phase of this study, where the coordinator was unable to bring in booked inductions of labour from home due to short staffing on the current shift and also the next, which meant that there would not be enough staff to care for the women overnight.

A Midwife explained the importance of anticipating future demand, ensuring staff are kept in reserve to be able to respond to an emergency should one arise, rather than matching elective admissions to staff numbers:

*“Just because you've got the staff to cover it, doesn't mean you should be. We should be aiming for comfortable so that we're prepared for an emergency.”*  
(Midwife, Site A)

Nevertheless, this calculation is complicated as a Midwife explained that you cannot predict when the induction will take effect. The women may sleep through the night, or they may all go into labour at the same time and require transfer to Labour ward. In terms of organisational resilience, this highlights a tension between maintaining the ability to respond to disruptive events, and the ability of the system to continue its routine functions, as the midwife went on to describe the cost of being prepared for an emergency is that midwives may be without a woman to look after, meanwhile women may be waiting on the ward to be admitted to Labour ward for artificial rupture of membranes (ARM).

While the coordinator was concerned for the safety of women already on Labour ward, managers were reportedly concerned about the risk of IUD amongst those who were waiting and therefore pushed for them to be admitted sooner. This demonstrates a potential conflict in priorities between those at different levels of the system. In addition, one midwife at Site B expressed concerns about the risks associated with delays, including prolonged labour, maternal fatigue, risk of infection, risk of DVT and the effect on patient experience. With these consequences in mind, the findings suggest that the degree of success of an adaptation is dependent upon which outcomes are considered, and for whom. Whilst managing the planned workload can compensate for staffing shortages and maintain the ability to respond to emergencies, it may result in decreased productivity in terms of patient flow, which carries risks for individual patients where their care is delayed. Thus, this adaptation may actually increase the emergency workload if women develop complications whilst waiting.

### 8.5.4 Patient flow

Patient flow refers to the expected course of patients being admitted to the maternity unit via triage or the antenatal ward, through the Labour ward to give birth, and then to the postnatal ward, usually with their baby, prior to postnatal discharge home. Efficiency in this process requires a balance between the workload, that is the patients who require care in a particular clinical area against available bed capacity, and the midwifery staff to care for them. Given the previous discussion around the Trusts' reluctance to close the maternity units to new admissions, being able to admit women to the Labour ward is dependent upon the timely transfer of other women out from Labour ward to the postnatal ward after birth, and timely discharge home from the ward; to create available capacity. Midwives consistently reported feeling pressure to transfer women to the postnatal ward swiftly following birth. For example:

*“There's always that external pressure. If your patient's well and the baby's fine, we need to get the next person in. So even though I would like to, I would like to give the allowance and just relax and slow down, I think sometimes we don't give them as much [time].”*

(Midwife, Site B)

The quotation above highlights the tension which characterises this theme, which is that individual patient needs have to be weighed against the organisational need of patient flow and the safety of other women. As such, timescales for transfer may be affected by other workload requirements, not solely the fitness of the woman. As a result, midwives had to prioritise which elements of care were essential to deliver within the time available to them. One Midwife explained that needs were assessed on a daily basis and prioritised according to risk. On Labour ward, the priorities were reported to be the physical needs of the women and babies, and completing the documentation requirements; however, this was at the expense of spending time with the women providing breastfeeding support and parent education:

*“I just don't feel like you have that time because as soon as they're delivered, they want them upstairs because they've got another person to get into that bed. And then once they're upstairs, there's a midwife that's running around like a headless chicken because you've got eight patients, 8 babies, NEWTTS, BM's, NIPE's... I think that then the patients go home, not really feeling the most confident in themselves... I just don't feel they go home with*

*the support that they need... spending time with the midwife that's looking after them just going over their concerns and things, I think that would make a world of difference and then the safety of the patients, they'll go home feeling confident and their safety at home is... you may not get readmissions, babies may not have to come back to ED because they have lost 15% of their body weight. ED's levels will go down."* (Midwife, Site A)

As the quotation above suggests, whilst prioritising postnatal care elements may support patient flow and therefore safety of other women who require inpatient care, the consequence of this for the individual may be morbidity post-discharge, which would require emergency readmission. Similarly, a midwife spoke of her concern that discharges are prioritised on the postnatal ward by managers to ensure patient flow, but this was sometimes at the expense of providing adequate care to remaining in-patient women who are inherently less well. This suggests that adaptation is required to navigate the tension between efficient patient flow and the quality of patient care provided to individuals. However, the impact on organisational resilience may be increased workload elsewhere in the system.

#### 8.5.5 Skill mix of staff

Skill mix concerns the range of experience levels of the midwives on shift. Whilst delays in care may be due to inadequate staff numbers, several midwives across both sites articulated concerns over the skill mix of the staff on shift as a contributory factor affecting the safety and flow of the unit. For example:

*"I think they [managers] don't always, they don't always see the bigger picture of what you've had to do on that shift, or the midwives that you've had, sometimes even the quality of the midwives you've had. Cause some shifts you come on and it's you, one band six and six band fives. And you're like [alarmed facial expression]."* (Midwife, Site A)

The implication here is that the workforce is predominantly junior, which reflects in their level of experience and confidence. The result of this was additional workload for the midwife coordinator in supporting the junior staff:

*“Our job becomes harder, keeping everybody safe because you are very aware that you have midwives around that don't have a lot of experience. So, you have to adapt to how you allocate your work load and what you would do if we're short staffed.”*

(Midwife, Site A)

One Midwife spoke of how she might move staff around between wards to ensure that the skill mix across the unit was safer, by ensuring that wards were not solely staffed by junior midwives. However, this was sometimes complicated by midwives who refused to move wards, or some who refused to care for certain types of cases, such as twin pregnancies, or pool births, or people with a raised BMI, or epidurals. This demonstrates an overlap with theme three: *Autonomous Midwifery Practice within a Multidisciplinary Team*, whereby the midwife's perceived right to autonomy over their practice may compromise skill mix. Whilst the manager spoke of the need to identify learning needs for such people and support them to develop the required skills, in the immediate instance the coordinator will have to adapt by reallocating the workload to account for skill differences amongst the staff.

Interestingly, one Manager suggested that importance of having experienced midwives may not be because of a lack of clinical skill amongst junior midwives, moreover, that more experienced midwives have the adaptive capacity to detect small issues and deal with them before they become more problematic:

*“It's early intervention, before we diagnose an actual problem that we actually need to treat. It's those early interventions, I think are those things that get missed, skill mix-wise sometimes.”*

(Manager, Site A)

This raises an important implication for organisational resilience around how junior midwives are supported on shift and their practice safety-netted to ensure that the early signs of deterioration can be detected and acted upon in a timely manner. Some of the midwives spoke of the benefit of regular ward rounds, for oversight of in-patients and recognition of risks which may help to address this. Likewise, the practice of fresh eyes may be beneficial as a second midwife routinely attends the birth room and may highlight issues that might have been missed or support the junior midwife in decision making. Although, this study found that it is not always

possible to secure this review on time due to short staffing or high workload, which detracts from the protective benefit of fresh-eyes being a safety-net for junior midwives.

A further implication of adaptations on account of skill mix is that moving junior midwives between clinical areas may compensate for deficiencies in the immediate instance; but this may impact upon the learning opportunities afforded to junior midwives to acquire those requisite skills going forward. As one midwife stated, learning skills requires exposure. However, the deficit of experienced midwives which several midwives spoke of, means that the few who are on shift are often either in charge, or allocated the most complex women. As a result, experienced staff do not always have time to supervise junior midwives to learn new skills whilst also doing their own work:

*“You try and get your more senior staff to look after your ladies on your HDU and stuff, but there’s that few of us left, and you’ve either got one extreme or the other. You’re either old, like me, or your brand spanking new and there’s never enough midwives for them to come with you and see how you look after these patients.... You try and help people, as much as you can, but more often than not you’ve got your own patient to look after... They’ve got to learn, and you know, get their own experience. And you want to help them. But sometimes you just can’t. Cause you’ve got... and the only person free is the band seven, and they’re trying to coordinate an entire Labour ward. So that’s probably why a lot of them don’t speak up coz they know everybody’s too busy.”*

(Midwife, Site B)

Consequently, workload adaptations may perpetuate the problem of skill deficiencies, because when the unit is busy, the priority is productivity rather than supporting learning, which is time consuming:

*“You find the first thing that goes the minute it gets busy is learning opportunities. You know, you’ll have a band 5 doing their preceptorship, their woman will deliver, they’ll have a tear, and they’ll go: there’s nobody there to watch them. There’s nobody there to do that, and then somebody just goes in and sutures it. And it just means a few more weeks down the line, when another woman delivers, and that midwife would have been signed off and*

*could do that suturing themselves, actually, you're then relying on other people.”*  
(Midwife, Site A)

Though it is recognised that other sources of clinical support were available alongside the coordinators, midwives reported that the availability of preceptorship support midwives on shift was variable. In this situation, supporting learning opportunities required other adaptations in workload allocation, for example one midwife described flexibility in using members of the multidisciplinary team such as obstetricians to supervise junior midwives performing clinical skills such as suturing, though this is dependent upon their workload and the urgency of competing demands of other women on the ward. This brings the theme full circle, to suggest that prioritising competing demands of individuals within a multiple patient ward refers to staff needs as well as women. This finding leads onto the next theme which concerns the fact that midwives by definition are autonomous practitioners, but they do not do work in isolation. Thus, adaptation is required to facilitate multidisciplinary teamwork.

## 8.6 Theme 3: Autonomous midwifery practice within a multidisciplinary team

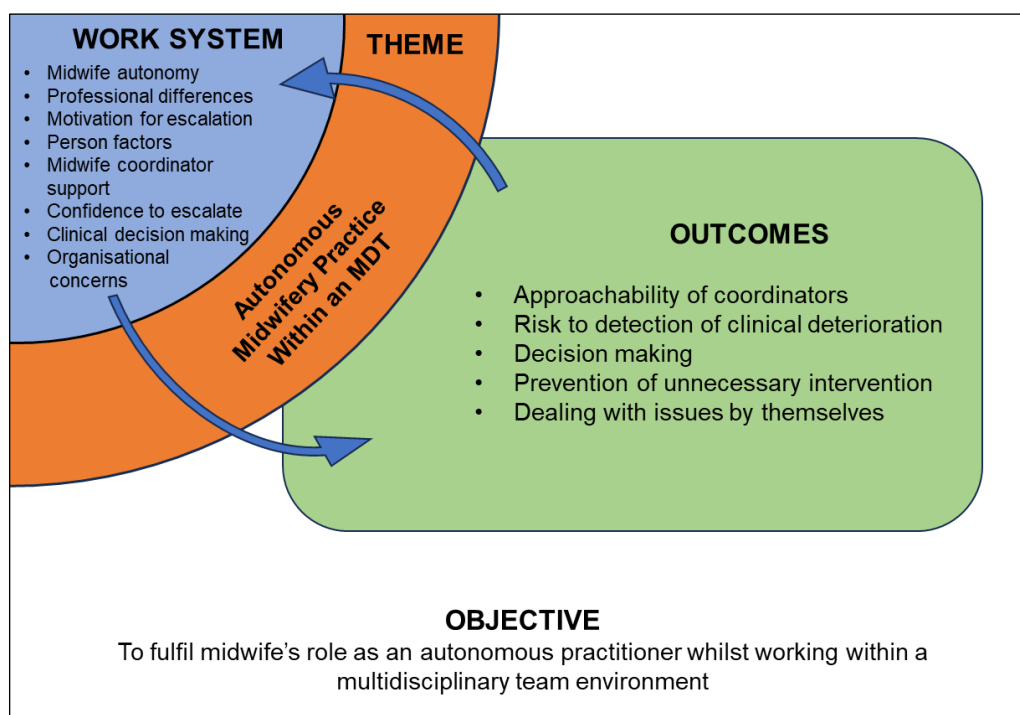


Figure 8.4: Conceptual map for theme 3

This theme concerns the adaptation required to enable effective teamwork on Labour ward (figure 8.4), not least because of the different personalities that exist within the team; but also because of the fundamentally different perspectives which professionals may hold around the normality of pregnancy and childbirth, which affect decision making and care delivery. Whilst the importance of teamwork was unanimously reported in the interview data, the findings suggest that the goals of different professionals may not align. Therefore, midwives demonstrate adaptive practices within their role as autonomous practitioners to achieve their desired outcome. With this in mind, this section will discuss how the work system elements in this theme necessitate adaptations which affect the care and outcomes of women and also staff wellbeing.

### 8.6.1 Midwife autonomy

A range of perspectives were seen within the data regarding the degree of autonomy that midwives felt they had in their workplace. At one end of the spectrum, midwives were clear that they were autonomous practitioners, who lead care, and are able to administer medications under midwife exemptions without a medical prescription. Indeed, one midwife proclaimed that:

*“It's a big feather in the cap for midwives that we have more respect for ourselves as practitioners and we've come through over the last 20 odd years and we're now saying, well, actually, no, I do disagree with what you're saying because I'm the person delivering this care. I'm know things just like you do. Just because you said it's this, doesn't necessarily mean that's the way it is, and you know, I'm very proud of the midwife that we've got now because they do feel a bit more capable of doing that”.* (Midwife, Site A)

At the other extreme, a midwife reflected that:

*“People haven't got the confidence to be autonomous in any way. It's gone completely the other way; in that they virtually have to be told to do everything”.* (Midwife, Site B)

The outworking of this variation in perspectives is that midwives may practice differently with regards to how much they involve other professionals in decision making and their use of guidelines or policy. Whilst one midwife spoke of practicing how she saw fit, as long as she could justify it within her remit of practice, another reported practicing safely by not deviating from what she knew and ensuring she abided by trust policy. Consequently, doctors and senior midwives on shift may have to adapt to the different midwives' ways of working.

### 8.6.2 Professional differences

This sub-theme addresses the differences of opinion held by doctors and midwives which affected intrapartum care decisions and the ability of the different professionals to work together. Interestingly, there appeared to be incongruence between- and sometimes within-interviews, between the predominant statements

about the high standard of teamwork at the sites, and other instances where midwives reported “*challenging decisions*” (Midwife, Site A), “*frustration*” (Midwife, Site B), “*abrasion*” (Midwife, Site B) and “*intimidation*” (Midwife, Site A), between professionals. Rather than these opposing views discrediting each other, it is possible that the difference here reflects the variable experiences that midwives have on different days. As this midwife explicated:

*“You've got some [Doctors] that are really approachable, where you can go to them and say, you know, I don't like this CTG or my woman, you know, my woman is not well and they'll be like, right, OK, we'll come and review it, and then there's others that are like, you know, not... condescending is the wrong word, but questioning practice that they'll either like, make you feel stupid or they'll just be like, we'll just see how she's in half an hour and not take your concerns seriously.”*

(Midwife, Site A)

Whilst theme two spoke of the unpredictable workload on Labour ward, this theme identifies that the doctors on duty are also unpredictable in nature. This required in-situ adaptive practice by the midwives to overcome professional differences. For example, this Midwife explained that:

*“You can get to work on a delivery suite and... you can look at which doctors are on and think, I don't know if they're gonna... not do what I need them to do but work with us. I don't know whether they'll throw in ideas of what they want to do today. And then you can come on and there'll be certain doctors on that you think, Oh, wow! I'm really glad they're on today because they seem to be on the same page as everybody else... So, I think we're just adapting on the spot sometimes to whatever is there, whoever we're working with and whoever we're looking after”.*

(Midwife, Site B)

The uncertainty of whether the doctors would “*work with them*” or “*throw in their own ideas*”, infers that midwives and doctors may have different ideas; thus, it cannot be assumed that all members of the MDT have a shared goal. Hence, adaptation may be required to enable effective teamwork where professional differences exist.

The majority of midwives interviewed reported ward rounds and handovers as features of safety, although the exact mechanism of beneficence was not clear. The consensus appeared to be that these activities ensured that all clinicians had the same information about each patient on the ward, although this does not necessarily negate the possibility of different perspectives on that information; as one midwife suggested that as the person delivering care, the midwife may not agree with what other professionals say when they have not been in the room with the woman. Indeed, several midwives spoke of the importance of being present with the woman, in order to detect subtle changes in her demeanour or behaviour which may be indicative of deterioration.

### 8.6.3 Motivation for escalation

Professional differences were particularly noted with regards to escalation practices, which is where midwives must inform a doctor or the coordinator of any deviations from normal in the woman they are caring for, such as deranged vital signs or elevated Maternity Early Warning Score (MEWS). A tension was noted between the midwife's obligation to refer because this is what guidelines require of them, and the midwife's clinical judgement as to whether there was genuine cause for concern that required intervention. One Midwife exemplified this by describing a situation where she escalated a MEWS score to a doctor because this was "*the right thing to do*", even though her clinical judgement was that the observations were not problematic:

*"It was very busy and I felt like, yeah, I know they are going to be fine with this, but I still had to escalate and just when I opened my mouth and said it, I knew it was fine. That's so, yeah, I had to document that I actually escalated even though I wasn't worried. Yeah, I wasn't worried, but that's the new thing to do and the right thing to do so I had to just talk about it to someone."*

(Midwife, Site A)

The midwife's motivation for escalating the raised MEWS score in this instance was obligation because an observation has crossed a certain threshold, rather than because she wanted the doctor to do something about it. In contrast, another Midwife reported having escalated concerns regarding a prolonged second stage of labour, but the response being intervention beyond what she had intended:

*“I felt frustrated because I thought, I'm sure, all she needs is just a little bit of synto [syntocinon intravenous infusion]. So even though I felt confident enough to ask that, the Doctor said, well, she should be delivered by two hours, so that's what we're going to do... I found that quite annoying the other day, if I'm honest. Because then I thought, she's had a forceps, in my opinion for no reason, but it wouldn't be in the doctor's opinion for no reason. You know, no harm was done. Everybody was happy. But for me, I just thought, oh, I think I'm sure she could have used, just had a little bit stronger contractions and she would have been able to do it herself. So, I think sometimes, you can clash with the doctors, not necessarily in a bad way, but what they think you should do, and what you think you should do. Yeah, can sometimes be a little bit of a barrier”.* (Midwife, Site B)

The quotations above suggest that escalation practices may be affected by environmental conditions such as how busy the ward is and staffing levels, as well as the anticipated response from the senior professional, and the perceived necessity of the intervention which the midwife predicts will ensue. On the one hand, the midwife may be deterred from escalating if the ward is busy and the midwife knows that the doctor will not act upon it anyway. Although, as discussed in theme one; this omission could be open to scrutiny if an adverse outcome were to occur. On the other hand, the midwife may be deterred from escalating if the anticipated response does not align with their own perception of what intervention is required. With this in mind, two opposing types of adaptation were identified in this theme: those intended to secure input from other professionals when the midwife wanted it, despite individual person factors and local culture; and those intended to prevent intervention that the midwife perceived as unnecessary within their autonomous scope of practice.

#### 8.6.4 Person factors

Person factors refer to aspects of individual personalities and interpersonal communication skills which were commonly reported to affect midwives' practices in relation to raising concerns. This was evident both in terms of individual midwives escalating clinical concerns about a woman's condition, and how organisational concerns are escalated to management. At the individual level, it would appear that

midwives adapted to interpersonal issues by changing who they escalated clinical concerns to. For example, a midwife spoke of “*knowing who to go to*”, depending on how approachable she thought the doctor was and whether she anticipated her judgement would be questioned or dismissed. The midwife reported adapting to this in the past by approaching the coordinator instead as an intermediary between herself and the consultant. On the other hand, if the coordinator was deemed unapproachable, then midwives may seek advice or a second opinion from someone else. As another midwife states:

*“It’s a bit hard to just go and ask that questions that you feel like might be a bit of a silly one or something you should know. But usually, there’s someone there that you can go and ask, even if it’s a band six, that’s not the coordinator. But most of the coordinators are quite approachable.”*

*(Midwife, Site A)*

Interestingly, this midwife went on to say that the decision of who to escalate to also depends upon the situation. In an emergency, she would talk to the coordinator, but if it was something she thought was a “*silly question*”, then she would either refer to the guideline or ask a band six midwife or a band seven who was not in charge. This may suggest that the urgency of a situation overrides any perceived personal issues.

### 8.6.5 Midwife coordinator support

The midwife coordinator was frequently cited as a facilitator of safety on Labour ward; by having a “*helicopter view*” of the unit which facilitated safety, and as someone that the midwives could go to with questions and concerns. However, whilst it may be part of their job role, it was recognised that supporting staff as well as coordinating the activity on Labour ward can add significantly to the coordinator’s workload:

*“We deliver a lot of support I think, as shift lead but it can be exhausting. You know, you can’t support everybody all the time and then do the rest of your job.”*

*(Midwife, Site A)*

Whilst manager a manager at Site A praised the coordinators for the vital difference that they make on shift by supporting the staff, this was acknowledged to be at their personal detriment. The concern here is how different coordinators withstand stress and the effect this may have on their approachability. One Midwife discussed that some coordinators maintain their composure despite stressful situations, while others:

*“Do get a bit snappy, and a bit shouty, and a bit stroppy. But yeah. I think it is down to how people coordinate.”* (Midwife, Site A)

The midwife went on to emphasise how coordinators have to be approachable, to support escalation, otherwise very junior staff may not have the confidence to ask questions, which may result in errors. This has the potential to form a catch-22 situation whereby coordinators could become less approachable to staff as their workload increases, which could cause further problems if the midwife does not raise their concerns. Consequently, as highlighted in theme two, poor skills mix may be detrimental to organisational resilience in that the additional workload it creates for coordinators may inhibit their ability to safeguard the early detection of clinical deterioration.

### 8.6.6 Confidence to escalate

This sub-theme refers to the confidence required to escalate concerns to a senior professional. A Midwife alluded to fear being a barrier to escalation when she spoke of *“not be[ing] afraid to highlight something or even to say, “I’m a bit concerned about this...”*. Indeed, another midwife spoke of escalation being *“scary”* and an associated *“stigma”*, particularly if concerns had to be taken higher for a second opinion:

*“I feel like there's still a bit of a stigma there, especially if you go in from like, if you weren't happy with a Reg [Registrar] two or a consultant and then you jump escalate. I feel that would be quite scary. However,... You've got to do it if you want to keep your woman safe.... We don't want that to become a culture between those midwives that haven't got as much confidence as say you know the senior 6 or whatever... we need to kind of, you know,*

*encourage escalation and make sure that actually like everybody is receptive of it and they're not judging that midwife."* (Midwife, Site B)

The words culture and judgement used here suggest that the process of escalation is not value neutral. Confidence is required, particularly if the midwife does not agree with the first point of escalation, as midwife this Midwife suggests:

*"Nobody should feel bad for escalating, but I know that people do feel bad to escalate. I felt it before, you know. And ultimately it depends on the confidence then of that person to... overrule the coordinator or whoever and go to the next person and go to the next person until at least I get a review, you know or something. But some people won't continue that free fall of escalation, will they?"* (Midwife, Site A)

The two quotations above speak subtly of two different reasons for the fear that midwives may face regarding escalation. The first is the fear of possible judgment by other staff. As the first midwife stated above, some doctors may question the midwife's practice and make them feel stupid. The other reason is anticipation of whether the senior professional will take the midwife's concerns seriously and provide the assistance that they are asking for. If not, then they will have to "overrule" them. The findings appear to suggest that confidence to do this develops with experience and seniority. However, it may be that the doctors have greater confidence in the ability of senior midwives and greater trust in their clinical judgement, as the quote below states:

*"Being a core member of staff, the doctors know who you are. You've been here for an amount of time, they know that they can trust you. They know that you're fast and you can get on with it and you haven't got to ask necessarily any questions. Whereas the more junior staff might need a little bit more support... they'll need someone looking over them, to make sure that they are capable and aware of what they're doing".* (Midwife, Site B)

### 8.6.7 Clinical decision making

An alternative proposition is that it is not so much confidence to escalate that is required, but confidence to make autonomous decisions, as this midwife discussed how she would investigate the cause of concerning features prior to escalating:

*“If I was concerned about a trace, I was getting a deceleration, I’d got a woman who was wanting to push, I would have done a VE [vaginal examination], check if she was fully dilated. If she is, encourage her to push, have a baby. If she’s not, get a second opinion. But I would have that information before I pressed the buzzer... So, I just think people haven’t got the confidence to be autonomous in any way. It’s gone completely the other way; in that they virtually have to be told to do everything”.*

(Midwife, Site B)

Clinical decisions appeared to be largely motivated by a moral obligation to the women that the midwives cared for to “*do the right thing*”, and self-reflection of the midwife’s ability to manage the situation by themselves. For example, a midwife informed a woman who had declined certain aspects that she would be seeking obstetric input in case something happened which she was unable to deal with:

*“To protect you and baby, I said I will be calling them [doctors] in and I was a bit stern with her on that point because it was, that was the most dangerous part for her. Erm, because anything could happen and I didn’t wanna deal with that”.*

(Midwife, Site A)

In contrast, another midwife spoke of not calling a doctor because she felt that intervention was not required:

*“I think some of that is just experience and knowing when to call a doctor and when not to. Cause sometimes... they want to intervene, when actually, we could just let them [the woman] carry on. So, I might not call for intervention as much as a junior member of staff... And end up with a better outcome. Less intervention for the woman. Being an advocate for the patient. But its having the confidence to do that”.*

(Midwife, Site B)

Similarly, a midwife spoke of advocating against the use of hormonal augmentation for a woman who she deemed to have made good progress in labour, with the aim of avoiding a “*nasty caesarean section*” which she considered unnecessary.

### 8.6.8 Organisational concerns

Organisational concerns refers to issues such as short staffing, workload, and being full to capacity, which local and regional policies required clinical staff to escalate to management. Interestingly, a Midwife suggested that whilst clinical midwives are supported to escalate to the coordinators, the coordinators may not be so well supported to raise organisational concerns to management. This may be due to person factors, as the Midwife below doubted the ability of some managers:

*“You can look at the rota and, I will be honest, you can look at it sometimes and think there's absolutely no bloody point calling her because she's useless! She'll be about as much use as chocolate teapot. You just think I'm paying lip service here. I'm ringing to tell you what's going on, but I know ultimately, you're not really going to help me, but thankfully those people are few.”*

(Midwife, Site A)

Most midwives reported feeling able and supported to escalate concerns; however, confidence in resolutions being forthcoming was variable, as can be seen in the quotation below:

*“We are supported to escalate, yes. Whether it's always met with the answer you want, I would say probably not. And I'm a realist really. I know a lot of the time they can't provide the help that you need or you want because they haven't got it or they don't know where to get it from, but you're not discouraged to use the escalation policy. Absolutely not.”*

(Midwife, Site A)

One Midwife wryly explained the escalation procedure whereby concerns can be escalated through the ranks from the coordinator to the manager or matron and then on to the Head of Midwifery or the Deputy Director:

*“...and then it ever goes on and then maybe the issue gets brushed under the carpet if they can’t do anything about it [laughter]. Possibly, I don’t know. That’s usually the case, if it’s not that important”.* (Midwife, Site A)

The midwife’s laughter during this statement would suggest that this was not a serious accusation of neglect. However, it does speak of her expectations of issues being dealt with or at least of receiving feedback on the outcome. Similarly, this midwife did not expect help to be delivered, and as a result, suggested that midwives don’t ask. Instead, they just try to get on with it:

*“Because we so used to working under pressure, we don’t ask much for help. Because, well, we know that actually even if you ask for help, nothing is gonna happen, basically. So, the only thing you can do is either escalate during the shift which you should do really, this is what I do at least; make them aware. And then they either come and try... [to] reorganise the workload according to what that is, compared to the midwives that are available, or sometimes you try and get on with it.”* (Midwife, Site A)

What the midwife is alluding to here is that she would like more staff, but she knows that this is not a viable possibility, therefore whether or not the issue is reported to the manager, the only option is to reorganise the workload to make best use of the midwives that are on shift. The statement that you *“make them aware. And then they either come..., or sometimes you try and get on with it”*, suggests that they do not always come, in which case the coordinator would need to deal with the issue themselves.

In contrast, another midwife felt that she knew what action should be taken in the situation, therefore did not want to disturb the manager during the night when she could manage the situation by herself. Instead, she would call in the on-call midwife and inform the manager in the morning, rather than asking for permission. This may be illustrative of what one of the managers at Site A referred to as the *“ethos of midwives dealing with things by themselves”*, where midwives feel that they don’t need a manager to fix things, they can do it themselves. Whether the reason for midwives’ reluctance to report issues is perceived self-sufficiency or the assumption

that that they may not get what they ask for anyway, the danger here is that dealing with things by themselves and not reporting issues could mask the problem and therefore prevent organisational resilience. However, there was a sense that escalating, even if it is perceived as paying lip service, was the right thing to do. Though the reasons may vary, the effect is consistent; person factors impacted upon midwives' escalation practices. Whilst individual clinical midwives reported that they would seek support from someone other than the coordinator where necessary to ensure that their concerns were addressed, organisational concerns may be reported to the manager because the coordinator felt obliged but ultimately dealt with by themselves.

## 8.1 Theme 4: Maintaining safety despite finite resources

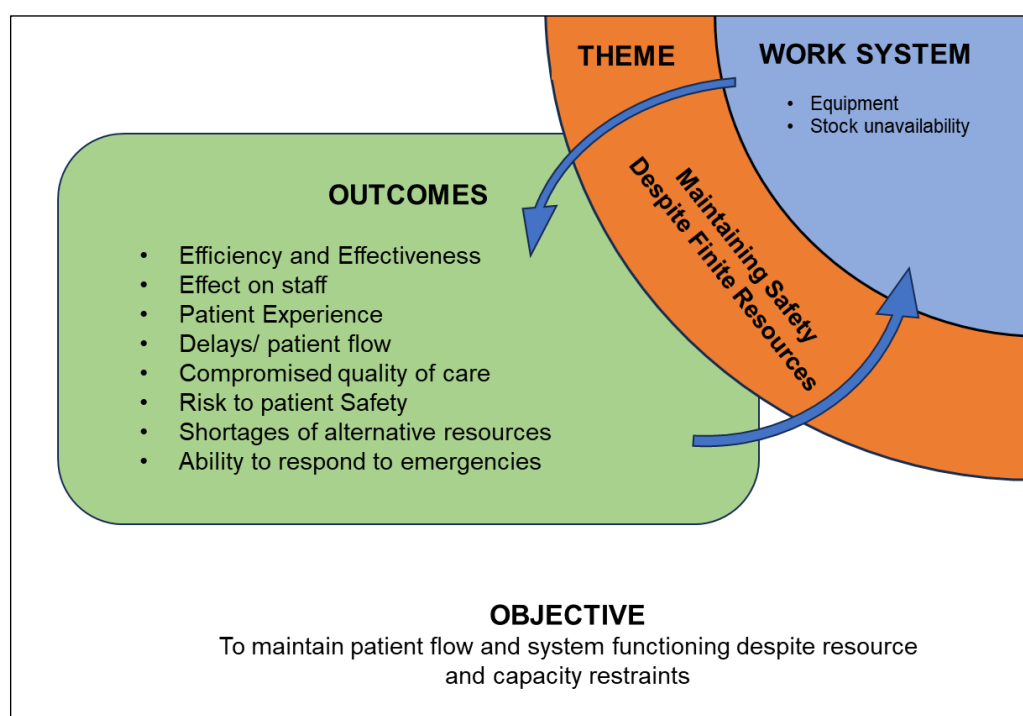


Figure 8.5: Conceptual map for theme 4

“Safety” was one of the most commonly reported objectives for adaptive practice, both in terms of patient safety, and safety of the staff (n=23/30). Analysis of this concept (figure 8.5) raises the question of why adaptation is required to keep the system safe, rather than safety being the norm? Indeed, adaptations to expected practices were commonly reported as being unavoidable or the midwives having no other choice. Whilst the inevitability of adaptive performance runs throughout the findings, within this theme it will be discussed specifically in relation to equipment issues and stock shortages, because different types of performance adaptation were seen in response to these issues. As figure 8.5 shows, wide ranging outcomes were identified, whereby adaptations may address one issue, but have unintended consequences for another. The relative implications on efficiency and effectiveness, patient- and staff wellbeing will be presented concurrently under the relevant sub-theme headings. Short staffing and bed capacity issues also contributed to this theme; however, these were addressed in theme two so to avoid repetition these factors will not be discussed again here.

### 8.1.1 Equipment

National scrutiny on maternity services was cited by several midwives and interpreted as impetus for ensuring that care is impeccable. That is, that tasks are completed on time, according to guidelines. This resulted in a tendency for care to become task orientated. As this midwife explained:

*“It becomes quite task orientated I suppose... To ensure that you are keeping that woman safe by ensuring that they've got everything they need doing, whether that's a CTG or a, you know, their observations four hourly or any medications that there are on, or doctor reviews.”* (Midwife, Site A)

However, task completion was frequently challenged by work system constraints. Nineteen out of 24 midwives interviewed referred to equipment being an obstacle to practice, in that it was often either broken or missing. The quotation below demonstrates the impact that this has on midwives being able to work safely:

*“Equipment [is an obstacle]. How hard is it to even find a thermometer sometimes? You know, like that really takes away from your care provision if you're in and out your room, in and out your room, oh you haven't got this, you haven't got that. You know, can't find this, can't find a tendon hammer to do somebody's reflexes. God knows where that's gone. There's only one on the Labour ward... I don't understand where it all goes! But you know, having that, as basic as it sounds, that makes a real difference to you just being able to go into a room and look after your woman safely... because you need these things to be able to provide that service, don't you?”*

(Midwife, Site A)

At Site A, two midwives attributed some of the issue to the forthcoming change to a new electronic patient record system, which would entail changing to new CTG machines. The midwives speculated that the Trust was not willing to replace equipment such as broken CTG transducers in the meantime because they would all be replaced soon. This could explain some of the shortages of CTG equipment; however, it does not account for other equipment shortages observed, and reported by participants at both sites, such as missing thermometers and tendon hammers;

or broken computers, printers, and blood pressure machines. Whilst there was an appreciation that the ward managers frequently ordered new stock, midwives commonly questioned where it all goes and denied knowing who was responsible for it. This sentiment was also raised by one of the managers, who commented that:

*“We endlessly order equipment. It's ridiculous. Nobody takes responsibility for it when it doesn't work or when it's not there. It often ends up piled up in places and it's always somebody else's problem. And then it's always my fault when there's not any there. We endlessly order it and try and replace it and make sure it's in the right place at the right time. I think it's an ongoing issue and I think you'd find it really hard to find a department that doesn't have the same issue.”*

(Manager, Site A)

On the other hand, a midwife at Site B reported raising equipment issues, but this not being acted on:

*“No matter how much you, you know, you sort of tell whoever about these issues, it's like it never gets, it never gets resolved. We've never got the equipment that we need really.”*

(Midwife, Site B)

Meanwhile, another midwife expressed that she thought that she was the only person who ever reported broken equipment, while other staff work around issues such as computers or printers that are not working by finding another one, without telling anyone.

These quotations illustrate variation in perceptions as to why equipment issues persist; whether things are not reported, not acted upon, or replacements not taken care of. Nonetheless, repairs take time, thus at the point of care, midwives were faced with a dilemma; whether to omit certain tasks because they did not have the right equipment or resources, or to deviate from the prescribed way of performing the task to be able to complete it. Neither of these options are ideal, and both may lead to scrutiny. For example, a manager spoke of an occasion when a midwife failed to listen in to the fetal heart for a period of time, which was criticised:

*“Sometimes you make judgement calls that aren't always... So, for example, we've just had a case that came through actually where we... where the fetal heart wasn't listened to and it was just for about three-quarters of an hour. And it was just one of those things... and the baby came out with a poor APGAR. And when I looked at it, I thought, I can say I wouldn't have probably listened in because my priority would have been making sure that the patient was comfortable, getting them to the right area. And it's almost like a bit of an educated gamble, isn't it? ... But of course, my job isn't to do that, is it? My job is to say you should... listen in to the fetal heart every 15 minutes”.*

(Manager, Site A)

In contrast, another manager spoke of a situation where a midwife had used a CTG transducer to auscultate the fetal heart instead of a handheld doppler:

*“The guidance is there, we all know about the guidance, we all know about the importance of intermittent auscultation after Each Baby Counts. It's been one of the biggest things to come out of that as learning. We talk about it; we train about it... Stick to the rules. [laughter]. Because if you go in front of a coroner, the coroner is going to say, well, how do you know that?... they're gonna criticize that practice, and a barrister will criticise it”.*

(Manager, Site A)

So, whilst one manager criticised not listening in to the fetal heart, another criticised using the wrong equipment to auscultate. This illustrates that in the presence of work system inadequacies, there may not be an ideal course of action and indeed any adaptation may be open to scrutiny. Furthermore, comparing these quotations to those of the midwives suggests a possible difference in perspective about the motivation for adaptive performance; where midwives reported adapting because they had no choice, managers alluded to deviance. As exemplified by this manager:

*“People will find a work around because actually, I don't wanna leave the room and go and get a Doppler. No, but you could call your bell and ask*

*someone to bring one in for you. You know, but they're looking for a solution to make working practices easier, but actually is that in the interest of patient safety or is that in the interest of speeding up the process? I don't know. I think it's more the latter. And we've all been there. We've been frustrated. I've been there myself. Three dopplers before you find one that works 'cause nobody could be bothered to change the battery. So now I've got to go back out and find another battery because, you know, nobody could be bothered to do it. We say about equipment. I had a HSIB case where the midwife who was interviewed said the Toco was broken and she couldn't find another one. She didn't leave the room. She didn't try to find another one. We've got a box full of them, so I actually said to HSIB, that's not correct. And whilst we'll pick that up with the individual midwife, I think the report should fairly say she failed to go and get a replacement, because actually, that's the truth".*

(Manager, Site A)

This finding ties in with theme one with regards to midwives' perceived vulnerability to scrutiny and potentially litigation for deviating from guidelines in case anything untoward were to happen. Nevertheless, adaptation is required to work around equipment issues if tasks are to be completed.

Commonly observed and reported adaptations to equipment issues included repetition of blood pressure measurement to get an accurate result; borrowing equipment from other rooms where women have already given birth, or borrowing from triage rooms; prioritising which equipment is most important to find in an urgent situation; asking a student midwife to manually mark contractions on the CTG trace when the toco transducer is not working; scanning a patient sticker instead of the ID band on the patient's wrist because the glucometer machine fails to read barcodes on wrist bands; and even moving the patient to a different delivery room when the computer system was not working. Whilst these adaptations may appear trivial, repeatedly having to overcome equipment issues can lead to frustration, as one midwife reported:

*"Equipment is a huge thing and it frustrates me beyond belief. We haven't got the equipment that we need to do the basic stuff sometimes and that's a huge barrier."*

(Midwife, Site A)

Similarly, at a midwife reported that:

*“There’s always missing equipment. There’s always faulty equipment. It seems like we get a great big load of stuff in, like every room had lamps, you know like suturing lamps. And all of a sudden, there’s only two again. So, I don’t know what happens to equipment... It’s very frustrating.”*

(Midwife, Site B)

Indeed, a midwife at Site B referred to one particular equipment issue as being a *“standard frustration”* for midwives.

The issue highlighted by the quotations above is that whilst the midwives were able to instigate adaptations or workarounds to compensate for equipment issues, it resulted in inefficiency:

*“So, I will go in and try and get a drug that we need for whatever reason, and it's not in the Omnicell [electronic drug cupboard]... we're gonna have to go to another ward to find it. And I know that happens, but it's like it's just those all those little things that actually have made the job take twice as long when you could have been doing something else. And it's just frustrating.”*

(Midwife, Site A)

Similarly, this midwife stated that:

*“Lack of equipment really, and then the equipment not working. I think that's one probably, one of the main issues with not being able to do your job efficiently is looking for equipment, equipment not working”.*

(Midwife, Site B)

The implications of this inefficiency were found to be twofold; firstly, it impacts upon patient experience; secondly, inefficiency may delay admission and transfer

procedures, which as a result hinders patient flow. These implications will be discussed below.

Several of the midwives expressed concern over how their competence was perceived when they had not got the right equipment in working order and therefore had to leave the room to find it. Furthermore, the midwife's absence may inhibit the woman from expressing concerns and receiving the support she required:

*"I wonder if it makes them have preconceived ideas about you that you're not very organised because she's in and out, in and out, all the time. You know, and she might desperately want to ask you something and you're not there. Or she may want you to do something for her and you're not there. Especially, it would be worse if she didn't have a birthing partner, if she was by herself and she was relying on you for everything."* (Midwife, Site A)

Birth choices may also be restricted where equipment such as Fetal Scalp Electrodes (FSE's) are unavailable, as the workaround for this may be to discourage maternal movement:

*"Sometimes you do feel bad as a midwife, when you say you've got all these wonderful ideas of a water birth or being mobile. And it's like I'm really sorry, that's not gonna be possible because I haven't got the equipment. So you're gonna have to lie your side for the next 7 or 8 hours while you Labour, just so I can make sure your baby's not dying, which is effectively what you're saying, just in a much fluffier way... that's part of midwifery that I don't like. I don't like taking choice away from Women."* (Midwife, Site B)

While inefficiencies due to equipment issues may directly impact upon care of the individual, it was also reported to delay admission and transfer procedures, which as a result hinders patient flow, as the quotations below demonstrate:

*“They want you to move on to your next patient and admit them, but you'll go to admit them and there's no blood pressure cuff in your room, or you can't find a tympanic. And it's... you're just on this merry go round then. And then the person in charge will be saying “Why haven't you done X, Y and Z yet?” And you think well, I'm trying, but you know, I'm missing things.”*

(Midwife, Site B)

“It delays movement... it could be that you've told her that you're gonna take her upstairs and then you go out and nothing works and then you can't print off this and then you can't... and then half an hour later... they're still sitting there... because you can't get anything to bloody work. It's very frustrating.”

(Midwife, Site A)

To negate any potential delays, midwives perceived pressure to work faster, to complete all required elements of care following the birth. However, as discussed in theme two, this may compromise the quality of care delivered, because some aspects became less of a priority, such as breastfeeding support:

*“The patients suffer... perhaps postnatally on delivery suite especially, when they need that early breastfeed support from the midwife. The midwife is quickly doing her notes because like I said, she knows that we've got somebody else waiting in the wings. So I think in that we probably don't provide the most optimum care following delivery because we are like the placentas out, she's sutured, we've done the baby examination. Right, let's do the notes and she'll be going downstairs, which is a bit disheartening, really, isn't it? When you've provided that care.”* (Midwife, Site B)

As discussed in theme one, any delay in patient flow may compound the capacity issues, which have the potential to impact upon the care and outcomes of other women who are waiting for induction of labour for example. Thus, there may be wider ramifications of equipment issues on organisational resilience in terms of maintaining routine functions.

### 8.1.2 Stock unavailability

Unavailability or unsuitability of consumable items of stock was also a concern at both sites, however adaptation to this took a more bespoke form than to the issue of broken or missing equipment, where midwives generally had to “hunt” for a replacement. One midwife spoke at length of individual adaptations that she had developed to overcome shortages or unsuitable products. For example, using a sterile anaesthetic tray if she could not find a vaginal examination pack, using normal saline to clean patients with if there are not any sterile water sachets, using tape to secure CTG transducers where the button to attach them to the straps has broken off, and using urometers for patients that did not need one because the current supply of urine collection bags were single use and unsuitable. The midwife also reported the site having run out of vomit bowls, incontinence pads, and specimen request forms. Meanwhile at Site B, a shortage of FSE’s was observed during the research. At interview, midwives reported local adaptations to this, including midwives having to sit and hold the CTG transducer in place or asking a student or the birth partner to hold it on. Also, coordinators held back a secret supply of FSE’s when supplies were known to be low so that they could restrict use by assessing the level of need. If the need was because maternal movement was inhibiting fetal monitoring, women may be encouraged to have an epidural to enable easier fetal monitoring once the woman was no longer in pain. It was also reported that taxis had previously been sent to other hospitals to borrow resources such as FSE’s and preterm labour indicators.

Enlighteningly, a manager at Site A acknowledged the scale of this risk to safety and commented that nobody tells her when supplies of something are getting low, only when they are all gone. This would appear to be the antithesis of resilience, as it implies that clinical midwives may use what they need at the time without anticipating future demand. As such, this might partly explain the link between adaptive performance and organisational resilience, as:

*“[Midwives are] finding ways around [obstacles] to get through that shift rather than having a system in place to stop it from happening again... We have good systems for the big things, but not those basic bits of care”.*

(Manager, Site A)

With this in mind, adaptations disclosed by midwives at interview to overcome resource issues may actually mask a problem and therefore prevent organisational resilience. Furthermore, using alternative resources may lead to shortages of that item when it is needed for its intended purpose. For example, if urometer catheter bags are used in place of the usual collection bags, those with the hourly measure may not be available when a patient needs strict monitoring of urine output. Interestingly, one midwife reflected upon this being a waste of resource; however, it was seen to be unavoidable in the circumstance because there remained a clinical need. Nonetheless, urometer bags were reported to be more expensive, therefore using alternative resources to compensate for shortages may have financial consequences for the Trust as well. This example may illustrate what the manager meant, that small things turn into much bigger issues if they are not acted upon:

*“I don't think it's because staff don't care. I just think it's because they're just so busy and that becomes the least of their priorities at the time because they're concentrating on other things that are more important. But again, as I said, it's even though these are little things that people are coming about, they turn into huge things eventually. So, we can't be ignoring those little things”.*

(Manager, Site A)

The summation of this finding is that adaptations to overcome barriers to care for individual women may have implications for the future care of other women, such as equipment not being available to use when needed in an emergency, or shortages of other resources when alternatives have been used as a substitute.

## 8.2 Chapter summary

The findings of this study speak of differing perceptions of what patient safety is and how it is achieved in the midwifery context; whether that be through compliance with local and national guidelines and auditable standards, or by providing a positive patient experience, or indeed by luck. It is possible that midwives may not fully recognise their own contribution to safety, nevertheless, numerous examples of adaptive performance were observed and reported as part of this research which clearly contributed to this goal. Four themes were identified which explain why

adaptive performance is required on Labour wards. These broadly concerned patient choice, patient flow, escalation practices, and equipment and stock issues.

Theme one identified that adaptation is required to provide individualised, patient-centred care when guidelines do not fit the specific circumstance, or where guidelines do not exist for a particular complexity, or on account of patient choice. However, whilst guidelines were widely cited as being for guidance not strict rules, the “*reasonableness*” of an adaptation is subjective and open to scrutiny, particularly if an adverse outcome occurs which leads to an investigation. Whereas an adaptation to support patient choice may be more justifiable because it is seen as being in the woman’s interest. Midwives were very aware they may be called to account for their actions or omissions, thus spoke of practising defensively to protect themselves against litigation. It might be perceived as easier and legally safer, to follow guidelines precisely than to individualise care which requires justification. Although, this may have consequences for the midwife’s wellbeing and perceived professional autonomy.

Adaptation is also required to balance the competing demands of individual needs within a maternity unit which delivers care to multiple women and babies at once. Limitations of the work system such as capacity and short staffing mean that it may not always be possible to meet the individual needs of all women simultaneously. Competing demands must be prioritised in order to deliver an acceptable level of care to individuals whilst maintaining patient flow through the unit so that the service may continue to function.

One way to manage the risk of being overwhelmed is through regulation of elective admissions, such as for inductions of labour and elective caesarean sections; however, this adaptation does not increase the bed capacity, so delays may ensue. This highlights a tension between the ability to respond to disruptive events, and the ability of the system to continue its routine functions; the cost of being prepared for an emergency is decreased productivity in terms of patient flow, which carries its own risk where care is delayed, for example IUD. This risk necessitates additional safeguards that add extra workload for the midwives, such as the practice of “*safety netting*” when induction of labour is delayed.

Meanwhile, the tension between individual patient needs and the organisational need of patient flow and the safety of other women resulted in perceived pressure on midwives to transfer postnatal women swiftly following birth. To enable this, physical needs and documentation requirements were often prioritised at the expense of providing breastfeeding support and parent education. Concern was expressed that this may potentially increase readmission through emergency departments with postnatal or neonatal complications; suggesting that adaptations to manage workload in one area may result in increased workload elsewhere in the system. There were also consequences for staff wellbeing, as several midwives likened maternity services to a “conveyor belt”, which decreased their job satisfaction and caused anxiety over the potential for patient safety incidents and poor outcomes. This poses a risk to future organisational resilience if the emotional effect on staff results in attrition. Therefore, the findings suggest that the degree of success of an adaptation is dependent upon which outcomes are considered, and for whom. Prioritising competing demands of multiple patients means that whilst those with the perceived greatest need may benefit from adaptative practices, others will inevitably be disadvantaged. Furthermore, whilst an adaptation may achieve the goal it is intended to, it may create other unintended consequences elsewhere in the system.

The importance of teamwork for patient safety was unanimous; however, it cannot be assumed that all members of the MDT have a shared goal at all times. Therefore, midwives demonstrate adaptive practices within their role as autonomous practitioners to achieve their desired outcome where professional differences exist. This may be to secure input from other professionals when the midwife wanted it, in spite of individual person factors and local culture; or, to prevent intervention that the midwife perceived as unnecessary. The process of escalation is not value neutral; it is open to scrutiny and judgement by other members of the team. Therefore, escalation practices may be affected by the anticipated response from the senior professional, environmental conditions such as how busy the unit is, and the perceived necessity of the intervention which the midwife predicts will ensue. Escalation decisions were also influenced by the midwife’s perspective on the degree of autonomy they held, and their confidence to advocate for women in their care.

The Labour ward coordinator was seen as a key mediator for escalation for inexperienced and junior staff. However, supporting junior staff adds significant workload alongside coordinating activity on Labour ward, which may be stressful and affect their approachability, thus inhibiting escalation. Meanwhile, the escalation of organisational concerns by coordinators may be influenced by their degree of confidence in resolutions being forthcoming. Despite this, there was a sense that escalating, even if it was perceived as paying lip service, was the right thing to do. Therefore, coordinators were found to report issues to management out of duty, rather than because they expected help to be delivered.

Timely completion of routine tasks was thought to ensure safety of the women; thus, it led to significant frustration when midwives were unable to do this efficiently, particularly because of faulty or missing equipment. In situ adaptation was required of midwives on Labour ward to overcome these barriers, such as borrowing from other delivery rooms, triage or the obstetric theatre; however, leaving the room to look for equipment was perceived as dangerous in emergency situations, and the inefficiency of *“hunting for equipment”* impacted upon patient experience and hindered patient flow.

Midwives were found to develop their own individual adaptations to overcome unavailability or unsuitability of consumable resources. Though it is possible that midwives find ways around obstacles to get through the shift rather than having preventative systems. Thus, adaptations to overcome resource issues may actually mask a problem and therefore prevent organisational resilience. Meanwhile, there are potential implications for other women, such as future unavailability of equipment in an emergency situation and shortages of other resources when alternatives have been used as a substitute, as well as the financial consequences for the Trust of wasteful use.

### 8.3 Chapter conclusion

The overarching finding of this study is that tensions exist in maternity care between the midwife's capacity to deliver care to individuals within a system that is designed on utilitarian principles of sharing finite resources, whilst also practicing in a way that

is defensible should an adverse outcome occur. Inadequacies in the work system, professional differences and misaligned goals necessitate adaptation to balance the competing priorities; to keep the system safe and functioning. However, the success or failure of an adaptation depends on which, and whose outcomes are considered. Adaptations may achieve the goal for which it was intended, but create unintended consequences elsewhere in the system, and risks adversely affecting the wellbeing of staff and women.

# Chapter 9 : Discussion

## 9.1 Chapter introduction

The previous chapter presented the findings from this multiple case embedded design case study. This chapter will now situate the findings within the existing body of knowledge, highlighting the study's novel contribution. The relevance of the findings to Resilient Healthcare theory will be discussed and a new theoretical model will be presented to explain the relationship between individual level adaptive performance and organisational resilience. The application to midwifery practice will be discussed, as well as the strengths and limitations of the study; to enable the reader to evaluate the credibility of the findings.

## 9.2 Addressing the research objectives

Over the last decade, several high-profile reports have called for improvement in the safety of maternity services (Kirkup, 2015; Health and Social Care Committee, 2021b; Kirkup, 2022; Ockenden, 2022). Despite the media attention, local and national efforts do not appear to have made substantial progress towards measurable improvements in outcomes for mothers and babies (Health and Social Care Committee, 2021a). This may be because traditional reductionist approaches to understanding and improving patient safety fail to adequately account for system complexity, therefore, may be inadequate to prevent avoidable patient harm (Patriarca et al., 2017). In contrast, Resilient Healthcare (RHC) presents a unique opportunity to explore supportive mechanisms that may prospectively facilitate safety; by seeking to understand how everyday clinical work usually succeeds rather than why it occasionally fails (Dekker, 2003). The core tenet of RHC theory is that in sub-optimally designed complex care systems, it is people who create safety through adaptive performance (Hollnagel, 2012; Back et al., 2016; Macrae, 2019). This is because workarounds, trade-offs or gap-filling adaptations are necessary to meet the demands of the circumstances to ensure that work is completed successfully (Hollnagel, Woods and Leveson, 2006; Righi et al., 2015).

Literature regarding adaptive performance of midwives was found to be limited and tended to focus on the psychological adaptation of individuals as a coping

mechanism rather than from a resilient healthcare perspective where adaptations to practice contribute to organisational resilience, that is the ability of the “*healthcare system*” to adapt in order to “*sustain required operations under both expected and unexpected conditions*” (Anderson et al., 2016: 62). With this in mind, this study aimed to explore adaptive performance by midwives as a resilience mechanism to contribute to safety in maternity services.

The literature review identified that it was unclear what adaptations are occurring in practice and which of them are beneficial for producing safety, and which may actually or potentially degrade system safety (Hollnagel and Braithwaite, 2018). Whilst Heggelund and Wiig (2018) identified factors which relate to the cornerstones of resilience (Anticipation, Monitoring, Responding, and Learning) in a Norwegian maternity unit, it is not clear how some of the mechanisms cited related to the defining feature of resilience: the ability of the system to adjust its functioning (Hollnagel, 2011). Thus, work was required to explore the context of how and why adaptations occur in order to ascertain how resilience mechanisms support everyday work to succeed (Anderson et al., 2013). Research was also indicated to explore the relationship between different levels of the system and consider whether action taken at each level is supportive or disruptive to adaptive capacity at other levels of the system (Anderson et al., 2020b; Wiig and O’Hara, 2021).

### 9.3 Key findings

This study identified four themes which explain why adaptations occur in midwifery practice. These were: Individualising Standardised Care Guidelines, Prioritising Competing Demands of Individuals within a Multiple-Patient Ward, Autonomous Midwifery Practice Within a Multidisciplinary Team, and Maintaining Safety Despite Finite Resources. Each of these themes pertain to specific tensions within the work system which midwives must navigate to succeed in everyday work. These were between individualised care and standardisation, between individual women and other service users, between autonomous midwifery practice and multidisciplinary teamwork, and between safety and availability of resources. The distillation of this is that adaptation is required to overcome tensions between the capacity to deliver care to individuals within a system that is designed to share finite resources between many service users.

Limitations of the work system such as physical capacity and short staffing, mean that it may not always be possible to meet the individual needs of all patients simultaneously. Meanwhile, a perception that safe care, which is defensible retrospectively, is achieved by adherence to policy or procedure, means that adaptive practice may not be organisationally supported, even though it is essential for everyday work to be successful in an imperfect system. Not only can this cause conflict for the midwife between what they would like to do and what they are able to do, but moreover, the competing demands impact upon the availability of care options and timely intervention when required for individual women. Ultimately, individual women's needs must be weighed against the organisational need of patient flow and the safety of other women. With this in mind, the ability to provide individualised maternity care may be compromised within the current work system.

## 9.4 Situating the findings within the existing literature

### 9.4.1 Goal conflicts

The tensions which necessitated adaptation in this study align well with the concept of goal conflicts (Patterson and Wears, 2015). For example, the ability to deliver acceptable care to individuals whilst other patients pose competing demands. Whilst this research is novel in the maternity context, Clark et al (2024) found that workarounds were frequently used in other healthcare settings to balance different risks and to ensure patient safety. Similarly, Debono et al (2018:49) highlighted the contextual nature of how multiple competing demands were prioritised in their study of nursing workarounds. Meanwhile, Harvey et al (2018) identified that nurses rationed care to balance the demands of patient care, organisational directives and their own professional safety. Care rationing refers to staff deciding which aspects of care are most important to deliver when it is not possible to complete all required elements, and is inevitably linked with missed care, where some elements of care are not completed (Harvey et al., 2018). This principle can be seen in the current findings where parent education and breastfeeding support were the aspects of care that were deprioritised in order to maintain patient flow, when other women were waiting for admission. Thus, individual patient experience could be seen as subordinate to the physical safety of other women. Although, this is a difficult compromise when White VanGompel and Main (2021) consider the definition of safe maternity care to encompass patient experience, including dignity, psychological

safety, and person-centred care. Indeed, the UK Network of Professors in Midwifery and Maternal and Newborn Health (2025) state that the existing safety mechanisms in maternity services fail to consider the psychological, social, and cultural aspects of safety which are interdependent with clinical outcomes.

#### 9.4.2 Task orientation

The theme of individualising standardised care guidelines in particular demonstrates a *goal conflict* (Patterson and Wears, 2015:48); on the one hand, national safety reports have recommended that maternity care should be more personalised to individual service users' needs (National Maternity Review, 2016; Ockenden, 2022). On the other hand, the dominant perception of midwives in this study was that safety is achieved through adherence to guidelines. As a result, midwives perceived an imperative to "*tick the boxes*", complying with guidelines rather than individualising care. Indeed, a parliamentary review of maternity services identified that personalised care could become a "*time-consuming tick-box exercise that is not fully integrated into women's care planning and provision*" (Health and Social Care Committee, 2021a: 15). The risk here is that ticking boxes may compromise midwife autonomy, negatively impacting upon women's care. This can be seen in the Renfrew report (2024:5), which identified that midwives in Northern Ireland were inhibited from providing the quality of care that they would like to because of working conditions which have led to:

*"...an increasingly task-focussed service and a culture that is negatively affecting both women and staff. Midwives are not able to practise the full scope of midwifery care or consistently provide the individualised care and continuity of care and carer which women told us they value and need".*

In the context of ongoing public criticism of midwifery and devaluing of midwives' professional skills, and disproportionate litigation costs (UK Network of Professors in Midwifery and Maternal and Newborn Health, 2025), the findings suggest that midwives may feel vulnerable to scrutiny and potentially litigation if they deviate from guidelines in case anything untoward were to happen (Clark et al., 2024; Feeley et al., 2019) Mannion et al., 2023). Mannion et al (2023) concur that the fear of retribution for adverse outcomes may inhibit autonomous practice. On the other hand, in keeping with the current findings, Feeley et al (2019) identified that

midwives used documentation as a means to manage their concerns around professional and medico-legal vulnerability when supporting women who choose to birth outside of guidance. Thus, the documentation required to justify any deviation from guidelines in case it is later called into question may increase the midwife's administrative workload. The findings therefore suggest that it may be perceived as easier to follow guidelines precisely than to individualise care. In effect, the predominant view of safety as being achieved through adherence to standardised guidelines stands against individualised care.

On the other hand, the findings suggest a perception that adaptations on account of patient choice may be more easily defensible for the midwife because they are intended to benefit the service user or at least considered by the midwife to be in their best interest. This is in keeping with the midwife's professional Code of Conduct (NMC, 2018) with respect to the woman's right to autonomy. With this in mind, it is possible that patient choice represents a socially acceptable reason to disclose, which may explain why it featured prominently as an objective at interview (Rees, 2011). Interestingly though, no examples of adaptations for the objective of patient choice were witnessed during the observational data collection. There may be many possible reasons for this, such as the researcher not being present at the time of discussions around birth preferences, or that instances of birth outside of guidance are relatively infrequent and therefore may not have occurred at the time that the observations were taking place. Similarly, selection bias may have affected which situations were observed, as service users who have declined certain aspects of routine care, might also decline the presence of a researcher during their birth experience. Alternatively, there may be a difference between what midwives are willing to disclose at interview and what they actually do in practice. This could be understood as *Work-as-Disclosed* which is the account that participants are willing to share publicly, based on what they perceive is expected of them and the possible consequences of their disclosure (Shorrock, 2016). Given the aforementioned vulnerability to scrutiny that midwives may feel, it is possible that midwives may report their actions differently to how they actually work, especially in view of the researcher's professional status as a midwife which may infer a power differential and a duty to report malpractice (Brinkmann and Kvale, 2019; NMC, 2019; Shorrock, 2016).

### 9.4.3 Conflicting ideologies

The present study found that adaptation was required to practice autonomously in the presence of professional differences and boundaries. This is in keeping with Clark et al (2024), who report that relational factors necessitated workarounds in 40% of the studies in their scoping review, suggesting that interpersonal skills and teamwork are important determinants of safety within the work system. A key finding of the research pertained to philosophical differences between midwives and obstetricians regarding the normalcy of birth. Whilst this is not new knowledge, the implications for patient safety are novel; that in the maternity context, the challenges of multidisciplinary working are not only restricted to communication and information sharing, but rather different philosophies of care may affect how individual professionals interpret the same information. This aligns with seminal work by Hunter (2004:266) who identified the presence of conflicting ideologies between normality focused midwifery care and the medicalised model of hospital care, which caused “*dissonance*” for midwives. Whilst Hunter and Warren (2014: 929) found that hospital policies and protocols could be restrictive of midwifery autonomy, particularly those that were seen to favour a “*risk-centred approach*”, the present study suggests that midwives sometimes implement adaptations to circumnavigate those restrictive protocols or differing ideologies. Interestingly, Catling et al (2017) report a similar adaptation to one that was observed in the present study, whereby midwives selectively withheld or limited the information they shared regarding their patient’s progress in labour to defer the time limits placed on the length of the second stage of labour with the aim of enabling a spontaneous vaginal birth. Though Catling et al (2017: 141) refer to this as “*manipulat[ing] their work to become more woman-focused*”, the action confers with the current finding that adaptation is required to practice autonomously in the presence of different perspectives on the timing and necessity of obstetric intervention in labour, and the aetiology of deranged vital sign observations. In this study, depending upon the midwife’s clinical judgment, adaptations were implemented to summon help when needed, and to deter or delay intervention which the midwife perceived as unnecessary.

Clinical escalation practices epitomise the adaptation required by midwives to balance their own clinical judgement with the obligation to follow organisational protocols whilst also navigating the challenges of interprofessional teamwork. In addition to the potential conflict between clinical judgement and accountability,

Elliott-Mainwaring (2024) describes contextual challenges such as unmanageable workload and unavailability of staff, alongside time-stamped electronic records which held staff to account. In her study of a UK maternity unit, these challenges were seen to instigate adaptive escalation practices. The resultant inability to “*keep up with escalation demands*”, threatened midwives’ psychological safety as the organisational expectations around timely documentation of the process drew attention away from patient care (Elliott-Mainwaring, 2024:230). The result being that the escalation tools had potential to be ineffective in improving patient safety where compliance with their use compromised patient care (Elliott-Mainwaring, 2024). Considering this in the light of the current findings where midwives were clear on the importance of being present with the woman in order to detect subtle behavioural changes indicative of deterioration, the escalation process in itself could be seen as a competing demand against patient care.

#### 9.4.4 Efficiency

The present study reports that midwives perceive a tension between women’s needs and organisational processes, which required negotiation to accommodate. For example, documentation requirements were perceived as a barrier to providing care, such as where a midwife spoke of the choice between being “*with woman*” or “*with computer*”; where documentation of the midwife’s activity may be faultless, but service users may feel neglected because the midwife has prioritised documentation. Kearney et al (2023:7) also found that electronic records systems were perceived to interrupt interaction with service users, consequently, in both studies, midwives delayed documentation in order to prioritise being “*with woman*”. This finding is in keeping with seminal work by Hunter and Warren (2014: 929), who discuss the requirement to balance the needs of the women and the organisation, quoting a participant who likened this to a “*duel*” in order to provide appropriate care. Similarly, Kirkham (2011:3) highlights the discord midwives experience between being “*with woman*” or “*with institution*”, where employers require obedience to guidelines, but women desire relational care.

The dualism seen in this theme between women’s needs and organisational processes may be illustrative of the difference between WAI and WAD in the “*orthodox ideology of authoritarian high modernism*” of which Hunte and Wears

(2017:125) speak, which favours efficiency and standardisation to reduce variability. They argue that it is remiss to not consider issues of power and equity when exploring the functioning of dynamic systems (Hunte and Wears, 2017). Since completing this research, Westergren et al (2025) have published startlingly similar findings, which they align to gender norms, considering rationality, efficiency, and productivity to be traditional masculine values. Corroborating the present findings and the new model of adaptive performance in Resilient Maternity Care (Figure 9.1), Westergren et al (2025: 419) identified that midwives in their Swedish study worked to balance the relational needs of the women and the organisational requirement for patient flow. They purport that masculine traits were more valued by the organisation, thus, task-orientation became prevalent whereby midwives became *“more focused on ‘doing’ than on ‘being’”*. As a result, women experienced more intervention, but less emotional support from midwives which was associated with psychological distress for the midwives. This resonates with the present study, where participants described women’s experience of maternity care as a *“conveyor belt”*, where patient flow was sometimes prioritised over women’s experience. As Tracy and Page (2019: 142) state, individualised midwifery care is difficult to provide in *“systems designed like factory production lines”*.

It is possible that the midwives who participated in this study were familiar with the seminal ethnographic work of Walsh (2006:1332), titled *“Subverting the assembly-line”*, in which he talks of the *“processing mentality”* which is present in the industrial model of centralised maternity care. Walsh (2006:1332) states that:

*“In my experience, midwives and women frequently complain about ‘conveyor belt’ labour care. Rarely though, has the organisational model of care been explored as regulator of labour length, where the objective is organisational efficiency, not clinical efficacy. By default, or design, placing restrictions on labour length has had the fortuitous spin-off of enabling bigger and bigger hospitals to cater for more and more women. Shorter labours enable more births to be managed in the one space”*.

Whether or not Walsh’s work has influenced the participants description, the similarity with the current findings is striking and supports the theme of prioritising competing demands of individuals within a multiple patient ward, where adaptations

had consequences for patient choice, patient experience, and organisational productivity in terms of patient flow. Considering this finding in light of the existing literature suggests that midwives' ability to facilitate individualised maternity care may be compromised by the organisational need for efficiency (Catling et al., 2017; Hunter, 2004; Tracey and Page, 2019; Walsh, 2006; Wagstaff et al., 2024).

A key finding of this research is that the competing needs of other patients may compromise the timeliness of individual women's care and potentially their safety. This was regularly seen with regards to delays in elective theatre procedures because the number of cases exceeded the available theatre time. Worryingly, instances were also reported of women waiting for emergency caesareans where multiple women required surgical procedures, but the two obstetric theatres were occupied or there were insufficient theatre staff to safely open another general theatre. The unfortunate consequence is that some women must wait, potentially exceeding guidelines for timely intervention, posing potential risks to mother and baby, and possibly contributing to emotional distress for the woman and family whose care is delayed. This finding exemplifies the warning of Saulnier and Topp (2024) against the assumption that resilience benefits all equally, when in fact, there may be unknown impacts or disparities in outcomes for some people more than others. Saulnier and Topp (2024:2) state that "*designing strategies and policies that are expected to create resilience means considering who may benefit and who may lose or suffer, either intentionally or otherwise*". Thus, whilst systemic issues such as short staffing, poor infrastructure, high workload and peaks in demand have been recognised as contributing to delays in care which pose a risk to patient safety (Draper et al., 2017; Healthcare Safety Investigation Branch (HSIB) 2020), strategies designed to address these issues must consider the impact upon service user experience such as delays in care, alongside the benefits for organisational processes.

#### 9.4.5 Disruptive events versus routine functions

Despite patient safety being widely cited as a priority within this study, different risks were prioritised by those at different levels of the system and at times, conflicted; a finding which echoes Anderson et al (2016). With this in mind, it cannot be assumed that everyone within the system shares the same goal all of the time. This could

result in tension between conflicting priorities. For example, in this study, whilst midwife coordinators managed admissions and patient flow in order to reserve capacity to respond to adverse events on labour ward, managers were concerned about the risk of adverse events on the antenatal ward or at home, in the presence of delays. These different perspectives may be a source of conflict between individual stakeholders, but more importantly, they represent a broader tension between maintaining the ability to respond to disruptive events, and the ability of the system to continue its routine functions. As Woods (2015) argues, increasing preparedness in one area, decreases capacity in another, making it more vulnerable to failure in other ways. The implication in the current context being that maintaining the ability to respond to emergencies, is at the cost of productivity in terms of patient flow. Patterson and Wears (2015) agree that safety is but one of multiple priorities within high-risk organisations, whose main purpose is to deliver a service, not primarily to be safe. The authors go on to suggest that:

*“The pressure to achieve multiple goals simultaneously leads to goal conflicts for those working in the organisation... Increasing production demands while maintaining the same resources optimises efficiency but lessens adaptive capacity”.* (Patterson and Wears, 2015:48).

This presents a novel contribution to resilience engineering theory, in that whilst *required operations* can be sustained under both expected and unexpected conditions through systemic adaptation (Hollnagel, 2011); this may come at a cost. It would appear that patient safety, adaptive capacity, organisational efficiency, and productivity may be conflicting goals during periods of peaks in demand.

#### 9.4.6 Midwife autonomy

Another novel contribution of this study is to illuminate the relationship between organisational resilience and midwife autonomy. On the one hand, autonomy is a defining feature of the midwife’s role (ICM, 2017b). On the other hand, midwives predominantly work within organisations and systems, which place boundaries on their practice (Elliott-Mainwaring, 2021; UK Network of Professors in Midwifery and Maternal and Newborn Health, 2025). To negotiate this balance, it appears that midwives tended to adapt within their scope of practice. That is, clinical midwives tended to perform in-situ, micro-level adaptations to overcome immediate obstacles

such as lack of equipment or resources. However, they did not necessarily appreciate the consequences for organisational resilience in the longer term, such as shortages of other equipment or failure to have broken equipment repaired or replaced. Similarly, managers reported adaptations to the organisation of workload or the available resources, for example moving staff around between areas, without necessarily considering the effect on learning opportunities to improve the skill mix profile of the workforce in the longer term. This confirms existing resilience theory which suggests that individual level adaptations may effectively mask issues in the work environment and consequently perpetuate the problem if their adaptations are not communicated with those with management responsibility (Debono et al., 2018; Lyng et al., 2021; Patterson and Wears, 2015; Woods, 2015).

Professional autonomy is perceived as key to patient safety in this study. Midwives were willing to adapt to work system pressures to maintain patient safety (for example staying late, or going without breaks), but this needed to be on their own terms. Indeed, Hunter and Warren (2014) found that the ability to exercise autonomous choice and control over practice challenges was essential to midwives' psychological resilience. Though it was generally accepted by midwives in this study that managers may realistically not be able to provide what was needed, for example more staff; escalation was important to ensure organisational awareness of what was happening clinically, even if the midwives were able to resolve adverse situations by themselves. With this in mind, the ability to escalate concerns to managers is key to organisational resilience because it enables monitoring. On the contrary, where midwives perceived a dismissive response to escalation, this not only had impact upon their morale and wellbeing, but also affected their likelihood of escalating in the future. This presents a risk that midwives may deal with subsequent issues by themselves and not escalate which may jeopardise organisational resilience going forward. This may be an illustration of what Woods (2015: 7) refers to as the potential for organisations to "*undermine, inadvertently, their own sources of resilience as they miss how people step into the breach...*". A supportive response from managers to escalation of concerns was essential to ensure that midwives retained a sense of control over situations, and that the channels of communication remained open. This finding therefore presents a lateral answer to the question of which adaptations are beneficial for producing safety, and which may actually or potentially degrade system safety (Hollnagel and Braithwaite,

2018), that it may be the adequacy of communication between midwives and managers moreover the nature of the adaptations themselves which determine the effect on system safety. Similarly, considering whether action taken at each level of the system is supportive or disruptive to adaptive capacity at other levels of the system (Anderson et al., 2020b; Wiig and O'Hara, 2021), may be more concerned with the nature of the response to escalation rather than necessarily the action taken. Upward communication must be supported if midwives are to safeguard the continued functioning of the system during expected and unexpected conditions, in a way which is conducive to organisational monitoring and learning. With this in mind, a more "*generative partnership*" approach, based on dialog between those at different levels of the system is advocated to enable learning across the maternity care system (Hunte and Wears, 2017: 126).

In keeping with the findings of Heggelund and Wiig (2018), the midwife coordinator in this study was found to be a linchpin in securing safety on labour ward as they were seen as a source of support and guidance for clinical midwives and acted as an intermediary for escalating concerns to obstetricians and managers. However, the findings highlight the burden that this responsibility placed on midwives in this role. Supporting staff as well as coordinating the activity on labour ward added significantly to the coordinator's workload. Whilst Heggelund and Wiig (2018:94) suggest that within a supportive culture, this role enables responsiveness at the micro level, this study identifies the opposite to be true also; coordinators could become less approachable to staff as their workload supporting junior staff increases, which could inhibit midwives from raising concerns. The impact of this was that learning opportunities may be sacrificed when the ward is busy, in order to prioritise patient flow. In effect, individual staff needs pose competing demands as well as the needs of service users. Supporting staff to learn and practice new skills required intentional adaptation by coordinators to reorganise the workload, utilising other members of the MDT in flexible and creative ways. With this in mind, this study endorses the recommendations of Heggelund and Wiig (2018) for a longer-term focus on staff learning and development rather than just addressing the immediate challenges. Building on this, research is recommended which explores how coordinators can be supported in their role to balance the learning and development needs of junior midwives and manage the workload effectively, in ways that are not detrimental to their own health and wellbeing.

#### 9.4.7 Psychological impact on midwives

A key feature of this study has been the effects of adaptive performance on the midwives. The findings suggest that it is the midwives who bear the psychological cost of trying to balance competing priorities, either because they are unable to provide the quality of care that they would like to, or because they may be criticised for not meeting organisational requirements. This is conferred by the work of Debono et al (2018: 54), who found that the tension between “*bottom-up challenges of day-to-day work and top-down pressures*” which necessitate adaptation, over time can impact upon nurses’ wellbeing, contributing to fatigue and burnout. This is not to say that competing demands do not exert pressure on others higher up in the organisation; middle managers also face an impossible conflict between upward and downward pressures (Johnson and Lane, 2019). However, there may be a unique psychological element to the pressure on front line staff who are party to the immediate, sharp end consequences of adapting to work system deficiencies. For example, the worry that midwives reported experiencing after some shifts where they felt like they had “*played God*” (Midwife, Site B) in making prioritising decisions on which women to invite in for induction of labour and which women had to wait at home, which carried a potential risk to fetal mortality and morbidity.

Whilst there is scant research on this topic in the maternity context, Nyssen and Bérastégui (2019) question whether organisational resilience occurs at the expense of individual resilience in emergency doctors and police officers. Their exploratory findings were inconclusive, but the authors speculate that the emotional distance required for individuals to manage crises at the time, may be degenerative to their psychological health and empathy in the long term (Nyssen and Bérastégui, 2019). A key difference here is the source of the emotional effects. Where Nyssen and Bérastégui (2019) cite acute crisis situations, the present study suggests the cause may be the chronic complexities of everyday work as midwives reported frustration with repeatedly adapting to contextual barriers such as having to look for equipment that was missing or broken. Interview data indicated a collective perception amongst midwives that the system is sub-optimally designed; however, participants denied knowing whose responsibility it was to address issues. This resonates with the findings of Catling et al (2017) who found that midwives became resigned to the impervious nature of work system challenges and felt powerless to change them, which consequently affected their mental health and wellbeing. As Nyssen and

Bérastégui (2019) point out, resilience is grounded in the relationship between the individual and the work system. With this in mind, individual resilience as a psychological capacity may be more closely aligned to the resilience engineering perspective than previously thought, as the cost of organisational resilience may be individual wellbeing. Indeed, Moran et al (2023: 674) reported very similar systemic factors to this study, which were reported to impact upon midwives' psychological resilience, including:

*“Staff shortages, poor skill mix, excessive workloads, abandonment of agreed upon staff to patient ratios, time constraints, uncertainty around roster or area of work, lack of flexible work options, increasing medicalization and clinical complexity, and risk-averse hospital policies and protocols that inhibited midwifery autonomy and clinical decision-making”.*

It is possible to infer from this that in-situ adaptive performance to overcome work system deficiencies may impact upon individual psychological resilience if midwives feel powerless to change the underlying chronic issues. Furthermore, midwives in the present study also reported a cyclical effect where the emotional strain on individual midwives leads to sickness, absence and attrition, which in turn increases the workload for the remaining staff. This suggests a mutually dependent relationship where organisation resilience may be at the cost of individual resilience, but individual resilience affects the organisation's future resilience to adverse pressures.

#### 9.4.8 Permissible adaptations

Whilst resilient healthcare literature suggests that it is the adaptive performance of people within the system that ensures organisational resilience (Hollnagel, 2011), the findings of this study suggest that midwives may be unaware of the contribution they make to organisational resilience, as positive outcomes were sometimes attributed to luck. It is possible that midwives used the word '*luckily*' as a figure of speech rather than truly believing that desirable outcomes result by happenstance. However, it speaks of an interesting juxtaposition when considered in the light of the findings around learning from incidents; midwives were cognisant of their accountability when a patient safety incident occurred but seemingly did not claim responsibility for achieving optimal outcomes. This may be reflective of the novelty

of resilient healthcare as a paradigm, which is not well understood in healthcare (Wiig and Fahlbruch, 2019). Furthermore, it may be illustrative of the prevailing Safety-1 perspective taken at the study sites, where organisational learning predominantly focused on reviewing the causes of patient safety incidents (Hollnagel, Wears, and Braithwaite, 2015). Thus, staff may not be familiar with the concept of learning from success as well as failure. Nevertheless, this presented an interesting paradox where midwives were reluctant to deviate from local guidelines in case an incident occurs, for which they would be held accountable; however, when an incident did occur, the organisation reportedly implemented “*knee jerk*” changes to guidelines without necessarily appreciating the impact on clinical staff. This highlights not only the imperfection of current guidelines in complex adaptive systems, but also suggests a possible ideological disparity where organisational, structural adaptations are permissible, but individual, in-situ adaptations are not. This is divergent to the findings of Heggelund and Wiig (2018) who concluded that procedures, checklists and protocols promoted resilience by controlling and reducing unwanted variability in uncomplicated situations. In contrast, the present study suggests that these documents may in fact propagate more variation as clinicians adapt to implement them, overcoming work system barriers.

Woodward (2023) recognises that policies and guidelines do not always consider the interrelationship with other existing policies, or the unintended consequences of implementation, such as the increase in workload of staff, resource requirements and training needs. Similarly, Woods (2011) cautions that national adaptations may not be replicable in other settings because they may have unintended consequences when applied in a different context. Thus, national policies and guidelines are not always workable in practice without local or individual adaptation. This was seen in the current research where the practice of fresh eyes which was intended to support detection of fetal deterioration, was observed to be back-timed in the documentation to ensure compliance with auditable standards when it had been performed late due to contextual barriers such as unavailability of staff. This presents a risk that adapting new practices to overcome work system barriers may result in unforeseen consequences. Particularly if staff do not understand the rationale for the change, the task may not be carried out in the way that was intended and therefore, does not achieve the purpose it was intended to. Instead, practices designed to prevent adverse events may become burdensome to clinicians where

they are perceived as another tick box to complete. This study therefore concurs with the recommendation of Elliott-Mainwaring (2024), that organisations should formally acknowledge and learn from the workarounds and adaptive processes that occur in everyday practice in order to support both systems performance and human wellbeing.

Furthermore, the findings highlight the importance of qualitative research in understanding how everyday work occurs. Where some midwives in this study attributed desirable outcomes to luck, one manager spoke of managing little things that were “*fortunately picked*” up during a fresh eyes assessment. Although the local guideline advised fresh eyes or fresh ears assessment to ensure identification and escalation of any deviation from normal, the requirement was only to assess the fetal heart rate and any risk factors present. The guideline did not require midwives to look at other environmental factors such as pool temperature, to use the example stated by the manager. It would appear from the manager’s perspective that the benefit of fresh eyes is actually the peer support that it affords, rather than solely the assessment of the fetal heart rate recording. However, the evidence to confirm this interpretation is limited to only one manager. Consequently, observational research is recommended to understand the mechanism by which interventions that are implemented to improve safety, actually work (or otherwise).

## 9.5 Theoretical implications: A new model for resilience engineering in maternity care

The Concepts for Applying Resilience Engineering (CARE) model (figure 3.4) by Anderson et al (2016) suggests that clinicians (and others) must adapt in situ to misalignments between demand and capacity, which produces Work-as-Done (WAD). Given that success and failure are considered to stem from the same system behaviour, the CARE model identifies that acceptable and unacceptable outcomes result from the adaptations which people make to enable the system to keep functioning when demand exceeds capacity. A key critique of this model is that it is underdefined because adaptations occur for other reasons besides mismatched capacity and demand (Anderson et al., 2020b). Similarly, the criteria for acceptable and unacceptable outcomes are subjective and moveable, dependent upon the priorities of different stakeholders (Anderson et al., 2016). Building upon this, the

current research suggests that in the maternity care context, whether the outcome of an adaptation is successful or unsuccessful depends upon whose needs are prioritised and therefore, which outcomes are considered.

Furthermore, the findings of this study identified that people at different levels of the maternity care system do not necessarily share the same goal all of the time. At the national level, NHS England (2025) drive the delivery of safe, but also cost-effective health services. Similarly, NICE guidelines upon which most local guidelines are based, are produced on the basis of the greatest good for the greatest number, that is, cost effectiveness of treatments to share out finite resources equitably (NICE, 2025). At the organisational level, the priority appeared to be measurable standards of safety and efficiency in terms of patient flow, to enable the service to continue to function. At the individual level, midwives were concerned with the quality of care provided as experienced by the patient as well as being able to defend their practice against scrutiny if an adverse outcome were to occur. The result of these differing priorities, is that the midwife who provides care at the sharp end, has to adapt to balance the needs of the individual patient against the organisational needs of patient flow and measurable indicators of care quality. With this in mind, the outcomes are also in balance when considered from the different perspectives. Rather than being a dichotomy, the outcome may be simultaneously successful for the organisation and unsuccessful for the service user or vice versa. Meanwhile, the findings suggest that it is the midwives who bear the weight of balancing the competing priorities. Thus, organisational resilience may occur at the cost of individual wellbeing. These findings have been used to adapt the CARE model as can be seen in figure 9.1, below.

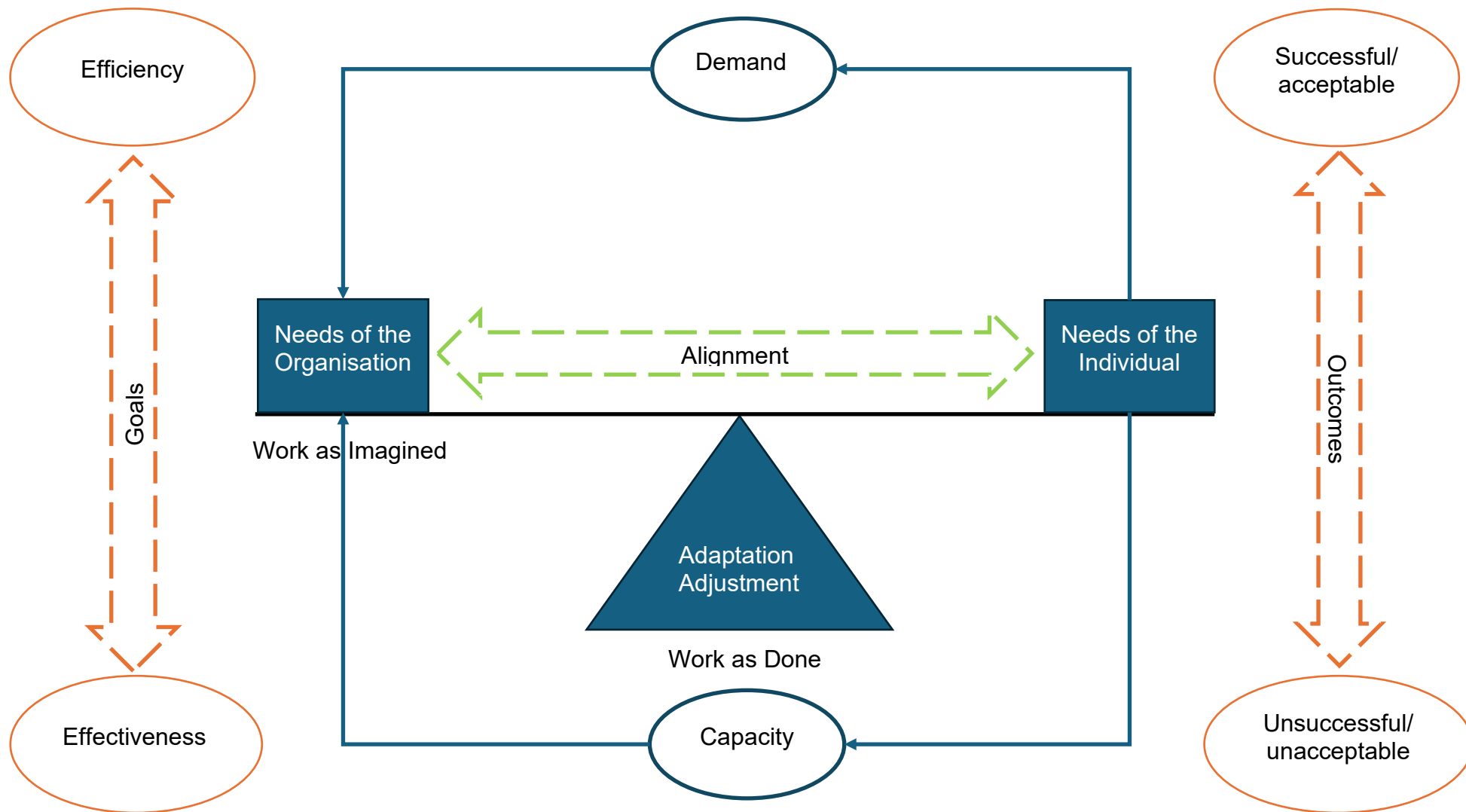


Figure 9.1: The role of adaptive performance in Resilient Maternity Care

This model illustrates that resilience lies in the balance between organisational and individual (service user and midwife) needs. The individual (midwife or midwife manager) is the adaptive point, which moves to balance the different needs. Where they sit within the system levels influences which needs are prioritised. For example, those at the management end of the scale may be closer to the organisational needs, whereas individual midwives may be closer to patient needs. In this model, success depends on the outcomes that are measured. The model can be used dynamically to demonstrate this relationship, as shown in figure 9.2, whereby moving the pivot point towards the organisational needs results in less successful outcomes for the individual. For example, prioritising organisational needs may result in successful outcomes of efficient patient flow, whereby the service continues to function acceptably. However, at the same time, the midwife may perceive that they do not have sufficient time to provide care, and the service is reported by service users to feel like a conveyor belt. As a result, patient experience may suffer, as may midwife job satisfaction and wellbeing.

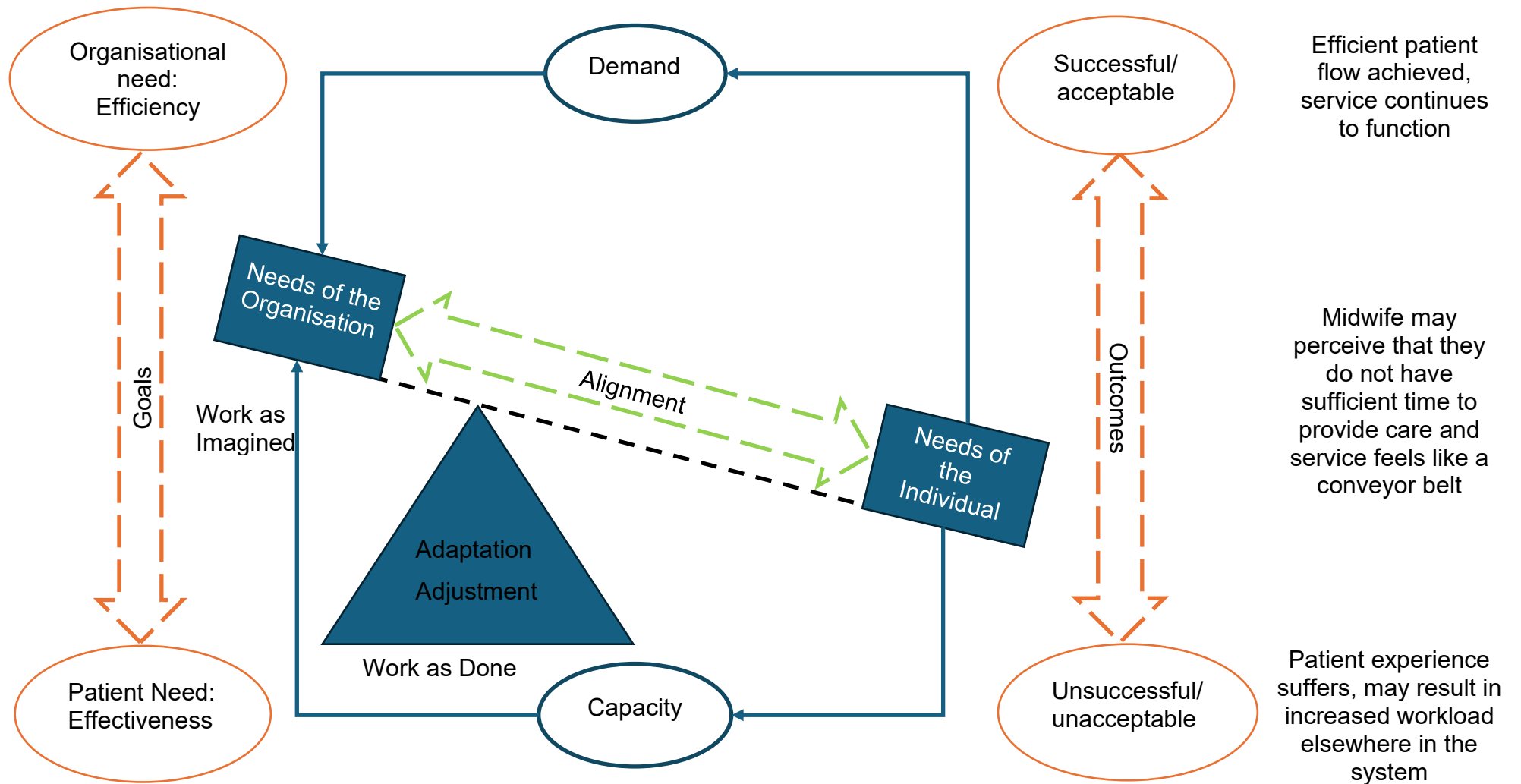


Figure 9.2: Outcomes of Adaptation Prioritising Organisational Needs

What the model does not show but ought to be borne in mind, is the effect of adaptations elsewhere in the system or in coupled systems. For example, in the scenario above, there is potential of increased workload elsewhere in the system, such as later emergency department readmission due to missed care at this point of contact.

In contrast to the CARE model (Anderson et al., 2016), in this model demand and capacity are external to, but add pressure to the WAI versus WAD relationship and are linked to the individual and organisational needs. When the needs of the individual increase, so does demand on the system. As seen in figure 9.3, this inevitably leads to a decrease in efficiency but may result in more acceptable outcomes for the individual.

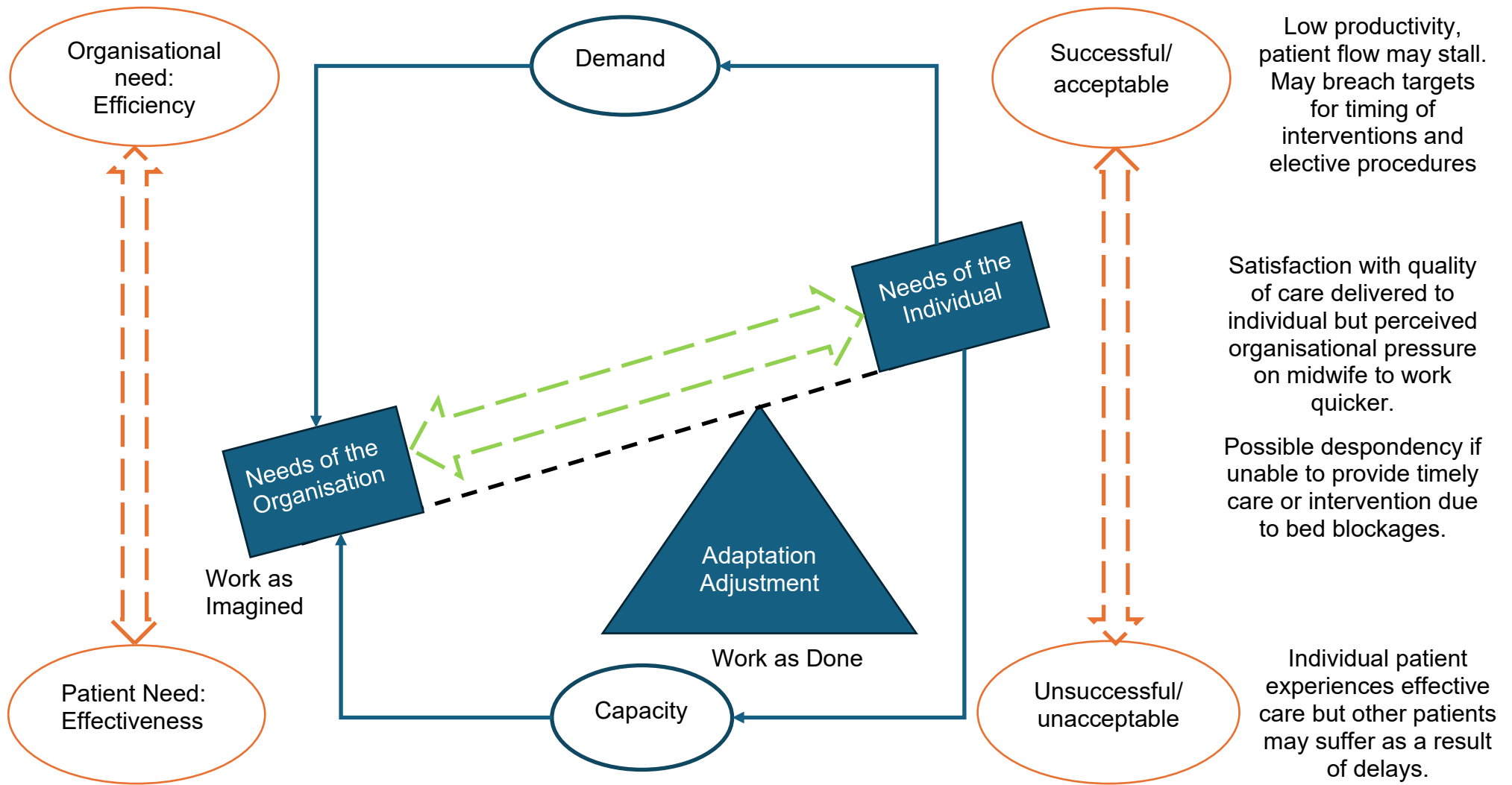


Figure 9.3: Outcomes of Adaptation Prioritising Individual Patient

Crucially, what this model shows is that increased demands in terms of individual patient needs results in reduced capacity. The consequence of this is that whilst the individual patient may experience effective care, other patients may suffer as a result of delays to their care and reduced availability of finite resources. Hence, this model depicts the overarching finding of this research that adaptation is required to balance the competing demands of individuals within a maternity service which delivers care to multiple service users at once. This novel contribution builds on the existing literature which suggests that adaptation results from misalignment between capacity and demand (Anderson et al., 2016); to express that success or failure of adaptations is relative to different demands that the organisation and the individual may place on the system, which may be in opposition.

## 9.6 Potential applications of the new model

Transferability of the findings to other settings is not the purpose of case study research (Yin, 2009). Nevertheless, description of the context of the cases studied was provided within the findings to enable the reader to assess whether they are applicable to other settings (Houghton et al., 2013:16; Cleland et al., 2021; Sibbald et al., 2021; Glette and Wiig, 2022). Given that the national maternity and neonatal investigation has identified that capacity and workload pressures affected the choices available to women at multiple NHS Trusts (Amos, 2026), it is clear that the requirement to balance capacity and demand is applicable to other maternity settings besides those studied here. Whilst the adaptive point in the model is the midwife in this case, it is possible that front-line clinicians in other areas of healthcare may also identify the need to balance individual patient needs against organisational requirements in their own work. However, the objective set out in Chapter 6.2 was to develop a model to explain the relationship between individual level adaptive performance and organisational resilience. Thus, the purpose of the case study was to contribute to theoretical development, moreover transferability to other settings (Lewis and Richie, 2009). As identified in the chapter 4.4, there was scant pre-existing literature on the application of RHC theory in midwifery practice, though workarounds had been reported (James et al., 2019; Kearney et al., 2023). Therefore, the devised model provides a useful first step towards developing RHC theory in this context. In the absence of specific resilient maternity literature, this model should be evaluated in light of the theoretical foundations of resilient

healthcare, human factors and patient safety which were explored in the literature review chapters of this thesis (Glette and Wiig 2022).

In keeping with the CARE QI handbook which seeks to apply RHC principles to improve quality and safety in healthcare organisations (Anderson and Ross (2020), a potential use of the devised model may be to support the development and evaluation of quality improvement activities in maternity services and potentially beyond. Prior to developing an intervention, the amended model could be used to help QI teams to understand how everyday work currently occurs, including where adaptive practice is required to balance competing priorities (Anderson and Ross, 2020). Where the CARE QI handbook suggests that resilience interventions either aim to reduce capacity versus demand misalignments, or to support adaptation (Anderson and Ross, 2020), the current work builds upon this by bringing together these objectives. The Adaptive Performance in Resilient Maternity Care model can be used dynamically to consider potential impact of an intervention upon the success or acceptability of outcomes for individual service users and for organisational priorities. Meanwhile, the effect of increasing demand or decreased capacity can be visualised. Thus, the model could enable anticipation of the benefits and potential consequences of any intervention, for different stakeholders within the system.

## 9.7 Clinical Implications: learning from everyday practice

The findings of this study speak of the necessity of adaptive performance to overcome competing priorities within maternity services. Specifically, to provide individualised, patient-centred care whilst complying with national and local guidelines; to deliver acceptable care to individuals whilst other patients pose competing demands; to fulfil the midwife's role as an autonomous practitioner whilst working within a multidisciplinary team environment; and to maintain patient flow and system functioning despite resource and bed capacity restraints. Considered collectively, these tensions raise significant clinical implications for staff and service users in connection with the ability to make autonomous decisions.

As highlighted in theme four, there was a sense amongst the midwives that adaptation was unavoidable in everyday work because of system constraints. However, managers advocated for following rules, suggesting that deviation from Trust guidelines leaves midwives vulnerable to scrutiny. This suggests that midwives working in sub-optimal work systems may face an impossible dilemma when the prescribed course of action is unachievable. Whatever action is taken may produce unsatisfactory outcomes for one or more stakeholders, whether that be frustration for the midwife, poorer patient experience, inefficiency in task completion, slower patient flow, or potential for unwanted clinical outcomes and the resultant risk of litigation.

A potentially controversial finding of this study is that competing priorities may compromise women's choice as the available options to individuals may be limited by the needs of the organisation and/ or other women. Given that this study did not seek the views of service users, it is not known whether women and families are aware of this possibility, whilst national investigation reports publicly recommend individualised, patient-centred care (Ockenden, 2022). It is possible that this is setting women up with unattainable expectations. However, the overwhelming sentiment expressed by the midwives and most managers in this study was that midwives were doing the best that they could in difficult circumstances. One Midwife exemplified this, saying that:

*"I think everybody does get cared for well in this unit. The midwives are stretched. I think they're stretched in every part of the country, but I think no midwife goes to work to do a bad job. I think the system makes them sometimes not able to do the best job that they can. I think no one intends doing that... you can't always say that you give... you skim the top of what you need to do. But I think when you get those feedbacks from your audits, it makes you realise actually, we do a damn good job with what we've got put in front of us, and most of the time. You're never going to get it perfect all of the time, but you don't intend getting it wrong".*

(Midwife, Site B)

Ultimately, this study calls for a change in perspective, where maternity staff are viewed as an asset to safety rather than a threat to it. Given the discrepancy between national reports which advocate personalised care and the apparent priority of achieving national quality standards, it would appear that change is required at the national level to adopt a Safety-II perspective of how safety is achieved in practice. However, it is recognised that change takes time, and this perspective may be too great a step from the status quo. In the first instance, a review of the existing quality standards that organisations are required to meet could be used to streamline the compliance burden for midwives, in order to release time to care.

An incremental step towards implementing resilience theory at the local level in maternity services could be to nurture local opportunities for upward communication from clinical staff to those in management positions. The aim being to support learning from everyday practice which is necessary for organisational monitoring and learning. It is possible that this could also contribute towards improving the emotional wellbeing and morale of midwives by facilitating autonomy and a sense of control over their working environment rather than powerlessness to change a work system that is collectively known to be suboptimal.

## 9.8 Strengths and limitations

Akin to the finding of this study that outcomes are neither wholly successful or unsuccessful, likewise aspects of the research methods can also be considered as both strengths and limitations. For example, a potential limitation of the study is the broadness of the topic; exploring resilience on labour ward generally without specifying a particular aspect of care that was to be investigated. It is possible that this approach sacrificed depth of analysis for breadth because of the large volume of data that were produced. However, the strength of this approach was that the data collection was more participant led rather than the researcher presupposing what aspects of practice were important or relevant to the midwives in clinical practice. A challenge with this was that participants sometimes misunderstood the topic of resilience in healthcare, leading interview discussions on a tangent about individual midwives' psychological resilience. Nevertheless, this produced

interesting findings when considered within-case; illuminating the effect of frequent changes to practice on midwives' wellbeing.

In planning this study, the role of the researcher as a registered midwife was considered to be an advantage as the emic perspective which this experience brought could provide insight into the clinical and national context of care (Cleland et al., 2021). Furthermore, the observer-as-participant role that this background enabled was beneficial to the interpretation of data, considering the short time period in which to become familiar with the setting (Gold, 1958). The benefits of being an insider were realised in the conduct of the research as the researcher's professional status facilitated access for observations because the presence of another midwife in the room during labour and birth was not unexpected or unusual for the staff or service users. Consequently, every midwife that was approached agreed to participate in the observational phase and every service user asked, welcomed the researcher in.

Being a midwife was also seen to facilitate a rapport with interview participants which aided communication and openness (Cleland et al., 2021). This perhaps may not have been the case had the researcher been a complete outsider. However, it must be acknowledged that the interpretation of the data is inevitably shaped by the researcher's experience (Jamie and Rathbone, 2022). It is possible that the researcher's prior knowledge and experience may have contributed to assumptions of the data that a non-midwife would have required clarification of (Ormston et al., 2014). This can be seen in the interview transcripts where midwives used the phrase "*you know...*" instead of completing a sentence. At the time, their meaning seemed clear; however, during later analysis it became apparent that alternative words could be inserted into these gaps, which would alter the participant's meaning. In this instance, member checking with those who had participated in the research may have been useful for clarification; however, the research protocol did not allow for this for ontological reasons (Graneheim and Lundman, 2004; Houghton et al., 2013). Consequently, to address this limitation, caution was applied to how the data were interpreted, to ensure that quotations were kept in context of the surrounding text. This is where the Framework method was useful, as charting the data retained the participants' words (Gale et al., 2013). This is why in some cases, larger quotations are included in the findings chapter than is perhaps usual, so that the reader can

evaluate the interpretation in context. The Framework method also enabled frequent reference back to raw data by including the reference to the source location in the interview transcripts (Gale et al., 2013). This enabled the researcher to check consistency with the participants' original meaning throughout the stages of data analysis. To aid confirmability, a reflective diary was also kept throughout, to maintain cognisance of the researcher's impact upon the analysis (Ormston et al., 2014; Finlay, 2021). Glette and Wiig (2022) propose that peer debriefing may reduce the risk of confirmation bias, thus potential biases were discussed with the supervisory team. Similarly, emerging findings were discussed informally with service users and midwives of various grades to sense-check, with positive affirmation that the broad findings resonated with their experience. Whilst agreement between peers and the researcher may infer greater credibility of the findings (Lincoln and Guba, 1985), ultimately credibility of the findings is evaluated by the reader (Lincoln and Guba, 1985; Houghton et al., 2013; Berg et al., 2018). Nevertheless, this aspect of the data analysis has provided a good learning opportunity for the researcher of the importance of clarifying meaning at the time of the data collection.

A strength of this study is the use of different methods to triangulate the findings (Nemeth et al., 2011; Berg et al., 2018). Using observation and interviews highlighted differences between Work-as-Done and Work-as-Disclosed (Shorrock, 2016), which could be followed up at interview to explore the rationale for differences. Conversely, a limitation was that there was no requirement for observation participants to also participate in an interview. Therefore, in practice, these were mostly different people. The disadvantage of this was that the researcher could not ask interview participants to explain their rationale for specific adaptations that they had been witnessed performing. However, given the potential for adaptations to be viewed as deviance (Debono et al., 2018), such a direct approach could have been counterproductive if questions were perceived as accusatory or threatening to participants. In fact, asking participants about adaptations that had been performed by anonymous others allowed the midwives to distance themselves from any potentially dubious practices that could be criticised. This led to an interesting outcome, which was that midwives were more likely to report their own adaptations as being to support patient choice, which was justifiable; but the adaptations of others were reported as unique to those individuals, inferring error or

deviance. So, whilst the methods used may have limited the understanding of individual motivations, the findings speak of the culture in maternity services, where deviation from routine practice is not widely accepted. Therefore, despite the apparent limitation of the methods, the resultant findings are valuable.

The selection of cases could be considered a limitation in this study as these were partly determined by access and logistics. This convenience sampling approach could of course pose a risk of selection bias (Ruffa, 2019). Indeed, it is possible that alternative findings could have been produced had other study sites been used. However, in reality, the two study sites produced very similar data. Though the contexts differed, the Trusts faced similar challenges, such as increased numbers of inductions of labour and elective caesareans, short staffing, poor skill mix, insufficient bed capacity, broken or missing equipment and shortages of consumable resources. Given this similarity, the broad themes of the findings are likely to be transferrable to other tertiary maternity units in England; although, the aim was theoretical generalisability rather than transferability to other settings. Achievement of this aim can be seen in that whilst both sites were subject to the same national guideline changes, the way that each Trust implemented them differed according to their local confines. Local changes were then individually adapted by midwives to make them usable in the real world. This highlights that variation may be amplified through the system when changes are disseminated in a top-down approach. Conversely, different structural adaptations were implemented by the organisations to address the specific incidents that had occurred at their sites, again resulting in variation in practices. With this in mind, the value of the current findings is not in identifying replicable practices from the cases, but in the learning achieved from these cases about the way the system adapts to challenges and maintains its routine functions.

On a personal level, the Framework method was both a strength and a limitation for the researcher conducting the analysis. On the one hand, the method was useful for mapping all of the data so that outliers were clearly visible in the matrix produced, and being able to see what every participant had said about each code or theme ensured that extreme or unusual views were not lost or minimised by louder voices (Gale et al., 2013). However, the method was very time-consuming. The use of computer assisted data analysis software was helpful in the coding process as other

transcripts could easily be searched for similar instances of a concept to ensure consistent processing. However, the auto-summarise feature populated the matrix with the coded text caused an excessive amount of additional work as each cell had to be reviewed and often rewritten because the verbatim text which had been extracted did not make sense in isolation. As mentioned above, frequent reference back to the original transcripts was required to ensure that the context and accurate meaning of the text was retained. In hindsight, the framework method may be more conducive to a more highly structured data collection method, where all of the participants are asked exactly the same questions, thus the scope of the data is narrower, resulting in fewer disparate codes. A highly structured approach would not have been appropriate in the current study though, given the exploratory nature of the objectives. Of course, an alternative qualitative analysis method could have been chosen, such as thematic analysis, as used in other resilient healthcare studies. However, the incremental steps of the Framework method appealed to the novice researcher because it appeared to offer more transparency of how the findings were derived (Gale et al., 2013). Upon honest reflection, this choice may reflect the researcher's prior lack of confidence in producing trustworthy findings without demonstrable evidence of robust methods. With this in mind, utilising the Framework method has been a valuable learning experience which has resulted in greater confidence. Nevertheless, for future research a less involved method is recommended which alleviates some of the unseen administrative burden.

## 9.9 Conclusion

This chapter has compared the findings of this case study within the existing body of knowledge, to produce a novel contribution in the form of a new theoretical model which explains the relationship between individual level adaptive performance and organisational resilience. The findings have also been applied to midwifery practice, suggesting that midwives' ability to facilitate individualised care may be compromised by the organisational need for efficiency and a perception that safe, legally defensible care is achieved by adherence to policy or procedure. Finally, the strengths and limitations of this study have been discussed to enable the reader to evaluate the credibility of the findings. The following chapter will conclude the thesis and present recommendations from this work for future research and practice.

# Chapter 10 : Conclusion and Recommendations

## 10.1 Introduction

The previous chapter discussed the findings of this multiple case, embedded design case study, highlighting the tensions within the work system which necessitated adaptive performance. The culmination of which was that adaptation is required to overcome tensions between the capacity to deliver care to individuals within a system that is designed to share finite resources between many service users. In essence, midwives adapt to balance the needs of individual women, against the needs of the organisation for efficiency and productivity. This chapter will now conclude what these findings mean for maternity services and the development of resilient healthcare theory more broadly. Recommendations will also be made for future research and practice in light of this study's novel contribution to knowledge.

## 10.2 The role of adaptive performance in Resilient Maternity Care

Chapter one presented a potted history of thirty years of government reports and publications which have made recommendations for reform in maternity services to humanise care, making it woman-centred; facilitating choice, control and continuity of care (Chief Nursing Officers of England, Northern Ireland, Scotland and Wales, 2010; DoH, 1993; DoH, 2007; National Maternity Review, 2016). However, none of these reports have wholly succeeded in bringing about improvements to the safety of maternity services (McIntosh and Hunter, 2014; UK Network of Professors in Midwifery and Maternal and Newborn Health, 2025). Multiple factors have been implicated in this, such as fear of change, lack of funding and increasing medicalisation of pregnancy and childbirth (McIntosh and Hunter, 2014; Mander and Murphy-Lawless, 2013). However, the findings of this study suggest a more ideological concern; the very notion of personalised care may be in conflict with the current institutionalised delivery of maternity services, which seeks to standardise and streamline processes to manage the throughput of women in order to be resilient to system failure.

Despite patient safety being widely cited as a priority within this study, different risks were prioritised by those at different levels of the system and at times, conflicted. At the national level, NHS England (2025) and NICE (2025) are not only responsible for delivering safe services but also prioritise the cost effectiveness of treatments and services to share out finite resources equitably, ensuring value for tax-payer money. At the organisational level, the priority at the two study sites appeared to be achievement of measurable standards of safety, and efficiency of patient flow to enable the service to continue to function. At the individual level, midwives were concerned with the quality of care provided as experienced by the patient as well as being able to defend their practice against scrutiny if an adverse outcome were to occur. Therefore, a key contribution of this study to the theoretical understanding of resilient healthcare, is that in the maternity care context, whether the outcome of an adaptation is successful or unsuccessful depends upon whose needs are prioritised and which outcomes are considered. This can be seen in the dynamic Role of Adaptive Performance in Resilient Maternity Care Models in figures 9.1 to 9.3, where the midwife is the adaptive point balancing the needs of the woman and the organisation, in the context of variable capacity and demands. This novel contribution builds on the existing literature which suggests that adaptation results from misalignment between capacity and demand (Anderson et al., 2016); to express that success or failure of adaptations is relative to different demands that the organisation and the individual may place on the system, which may be in opposition.

In keeping with the RE literature which suggests that adaptive performance is essential for everyday work to succeed (Hollnagel, Woods and Leveson, 2006), the findings suggest that adaptation to overcome system constraints is unavoidable in the maternity care setting. However, this may lead to an impossible dilemma when managers advocated for adherence to rules, suggesting that deviation from Trust guidelines leaves midwives vulnerable to scrutiny. In this context, there is no perfect solution; whatever action is taken may produce unsatisfactory outcomes for one or more stakeholders. The impact of these contextual barriers was multiple, as shall now be summarised.

### 10.3 Overcoming contextual barriers

Firstly, inadequate resourcing led to delays and inefficiency in care. In this study, limitations of the work system such as inadequate bed capacity, short staffing, equipment and resource issues meant that it was not always possible to meet the individual needs of all patients simultaneously. The unfortunate consequence was that some women had to wait, potentially exceeding guidelines for timely intervention. This posed potential risks to the safety of mother and baby where care is delayed and could also contribute to emotional distress for the woman and family. With this in mind, the ability to provide individualised maternity care may be compromised within the current work system. This finding exemplifies the warning of Saulnier and Topp (2024) against the assumption that resilience benefits all equally, when in fact, there may be unknown impacts or disparities in outcomes for some people more than others. As HSSIB (2025a) report that the maternity safety landscape is overcrowded with recommendations and conflicting agendas, this study recommends that engagement work should be undertaken between stakeholders to arrive at a consensus on the priorities in maternity care, and to innovate longer term strategies to support both patient safety, including patient experience, and efficiency and productivity. Strategies designed to address these issues must consider the impact upon women's experience such as delays in care, alongside the benefits for organisational resilience.

Secondly, in-situ adaptive performance to overcome work system deficiencies had the potential to inadvertently decrease organisational resilience in the longer term, for example if substituting equipment led to other shortages. In this context, individual level adaptations may effectively mask issues in the work environment and consequently perpetuate the problem if adaptations are not communicated with those with management responsibility (Debono et al., 2018; Lyng et al., 2021; Patterson and Wears, 2015; Woods, 2015). This study presents novel insight into organisational learning which is a core pillar of resilient healthcare (Hollnagel, 2017). Midwives were cognisant of their accountability when a patient safety incident occurred, therefore were reluctant to deviate from local guidelines in case an incident occurs, for which they would be held accountable. However, when an incident did occur, the organisation implemented changes to guidelines at pace without necessarily appreciating the impact on clinical staff. This highlights not only the imperfection of current guidelines in complex adaptive systems, but also

suggests a possible ideological disparity where organisational, structural adaptations are permissible, but individual, in-situ adaptations are not. It is recognised that policies and guidelines are not always workable in practice without local or individual adaptation (Woodward, 2023). Consequently, checklists and protocols may in fact propagate more variation and produce unintended consequences, as midwives adapt to implement them, overcoming work system barriers and professional differences. Thus, upward communication must be supported if midwives are to safeguard the continued functioning of the system during expected and unexpected conditions, in a way which is conducive to organisational monitoring and learning. Furthermore, where top-down changes are made in practice, these ought to be evaluated to ensure that the desired outcomes are achieved without inducing undesirable, unintended consequences. Elliott-Mainwaring (2024) asserts that organisations should formally acknowledge and learn from the workarounds and adaptive processes that occur in everyday practice in order to support both systems performance and human wellbeing. With this in mind, a more “*generative partnership*” approach, based on dialog between those at different levels of the system is advocated to enable learning across the maternity care system (Hunte and Wears, 2017: 126).

Thirdly, adaptive performance is essential for everyday work to be successful in an imperfect system, yet midwives did not feel supported to deviate from what they were expected to do. This appeared to be due to an overriding perception that safe care, which is defensible retrospectively, is achieved by adherence to policy or guidelines. This had the potential to cause psychological conflict for the midwives where a tension was perceived between women’s needs and organisational processes; between what the midwife would like to do and what they were able to provide within the bounds of the available resources (Catling et al., 2017; Downe, 2010; Feeley et al., 2019; Hunter, 2004; Walsh, 2006; Wagstaff et al., 2024).

Whilst midwives may adapt their practice to personalise care for individual women, this is not consistently supported by the organisation within which they work. As a result, midwives used adaptative practices to circumnavigate restrictive risk-centred escalation protocols and differing ideologies in order to fulfill their professional duty to optimise physiological childbirth (NMC, 2019). Depending upon the midwife’s clinical judgment, adaptations were implemented to summon help when needed,

and to deter or delay intrapartum intervention which the midwife perceived as unnecessary. Midwives were clear on the importance of being present with the woman in order to detect subtle behavioural changes indicative of deterioration, therefore, the escalation process in itself could be seen as a competing demand against patient care. Similarly, Elliott-Mainwaring (2024) reported that escalation tools had potential to be ineffective in improving patient safety where compliance with their use compromised patient care (Elliott-Mainwaring, 2024). The implication of this is that practices designed to prevent adverse outcomes may become burdensome to clinicians where they are perceived as another tick box to complete. As such, there is a tendency towards task-orientation where maternity care becomes like a “conveyor belt”. As midwives may become “more focused on ‘doing’ than on ‘being’” (Westergren et al., 2025: 419), women may experience more intervention, but less emotional support.

Although this study applied a Human Factors lens to explore Resilient Healthcare as a theoretical foundation to safety in maternity services, the findings echo of seminal work by midwifery researchers such as Walsh (2006), Downe (2010), Hunter and Warren (2014), and Kirkham (2011:3) regarding the industrialised model of maternity care where midwives experience a discord between being “with woman” or “with institution”. In this context, the predominant Safety-I view in contemporary maternity services of safety being achieved through adherence to standardised guidelines stands against individualised care. Where employers require obedience to guidelines, women desire relational care. The risk here is that “ticking boxes” as the midwives phrased it, may compromise midwife autonomy and negatively impact upon women’s care. Less tangible aspects of care such as breastfeeding support and parent education in particular may be rationed to prioritised patient flow, though this may present other risks to the health and wellbeing of women and babies after discharge home. The implication is that existing safety mechanisms in maternity services may focus on the physical aspects of care but inadequately consider the psychological, social, and cultural aspects of safety which are interdependent with clinical outcomes (UK Network of Professors in Midwifery and Maternal and Newborn Health, 2025). This study therefore recommends that Maternity services reconsider how safety is defined and move away from the legalistic tick box approach of safety through compliance, towards a Safety-II perspective which values adaptive practice to enable success in everyday work.

Ultimately, change is required at the national level and there is optimism that this is possible. Since completing this research, an interim report of the ongoing national Maternity and Neonatal Services Investigation (MNSI) has been published (Amos, 2026). The similarities are stark. Capacity issues, culture and leadership, the response to adverse events, inadequate facilities and workforce factors, all reported to put pressure on the system, with staff *“often working beyond capacity, impacting on the quality of care provided”*. (Amos, 2026: paragraph 63). Indeed, the report recognises the impact that responding to these pressures on a daily basis has on staff and the context in which they work. This acknowledgement is novel, given the historic *“blame culture”* in English maternity services (Health and Social Care Committee, 2021a: 3), where previous investigation reports have taken a largely person-focused approach, identifying individual failures as contributing to unwanted outcomes (Kirkup, 2015; Ockenden, 2020). In contrast, Baroness Amos (2026: paragraph 73) asserts an intention towards a *“whole system approach... which will enable a step change in the provision of maternity and neonatal services”*. However, this will take time. As identified at the beginning of this thesis, the oversight of maternity services is complex and crowded; efforts to improve safety in maternity services have thus far been hindered by the multitude of competing national directives from different agencies (HSSIB 2025a). Latest figures suggest that there are in excess of 748 current national recommendations for maternity and neonatal care (Amso, 2025). In the immediate term, a review of the existing quality standards that organisations are required to meet could be used to reduce the compliance burden for midwives, in order to release time to care.

Taking a Systems view of safety; maternity services should consider the wellbeing of the midwives alongside that of the women. In this study, repeatedly having to adapt to chronic issues that they felt powerless to change, impacted upon midwives' psychological resilience. Consequently, individual resilience as a psychological capacity may be more closely aligned to the resilience engineering perspective than previously thought, as the cost of organisational resilience may be individual wellbeing. Nyssen and Bérastégui (2019) speculate that the emotional distance required for individuals to manage crises at the time, may be degenerative to their psychological health and empathy in the long term. It is possible to hypothesise therefore, that organisational resilience and individual psychological resilience of staff are mutually dependent. However, research is required to explore this possible

relationship. More importantly, this study identified the crucial role that midwife coordinators play in adapting the workload distribution and staffing allocation to balance skill mix to meet service need, however this may be at the cost of providing learning which is important for future resilience in the workforce. Alternatively, supporting junior staff alongside coordinating activity across the maternity unit may be detrimental to their own welfare. Consequently, this study endorses the recommendations of Heggelund and Wiig (2018) for a longer-term focus on staff learning and development rather than just addressing the immediate challenges. Building on this, research is recommended which explores how coordinators can be supported in their role to balance the learning and development needs of junior midwives and manage the workload effectively, in ways that are not detrimental to their own health and wellbeing.

## 10.4 Summary of recommendations

1. Stakeholder engagement should be conducted to build consensus on the priorities in maternity care and devise long-term strategies to address these, which consider the impact upon women's experience, alongside the benefits for organisational resilience. The Role of Adaptive Performance in Resilient Maternity Care Model (figure 9.1) can be used by organisations to consider the potential consequences of safety actions such as system reconfigurations or redesign, for different elements of the system.
2. Upward communication must be supported if midwives are to safeguard the continued functioning of the system during expected and unexpected conditions, in a way which is conducive to organisational monitoring and learning.
3. Changes implemented in practice ought to be evaluated not only against the desired outcomes but also for undesirable, unintended consequences. Workarounds and adaptive performance provide valuable insight which may support both systems performance and human wellbeing. This should include the wellbeing of the midwives alongside that of the women.
4. Maternity services should reconsider how safety is defined and move away from the legalistic tick box approach of safety through compliance, towards a Safety-

II perspective which values adaptive practice to enable success in everyday work.

5. Existing national quality standards that organisations are required to meet should be reviewed, with the aim of reducing the compliance burden for midwives, in order to release time to care. It is recognised that the ongoing MNSI may produce additional recommendations which NHS Trust are required to incorporate. However, Amos (2026) alludes to a Safety-ii perspective in this current investigation, which aims to understand the context of success and failure, in order to consistently deliver safe care. The final MNSI report is eagerly anticipated.
6. Further research is required to explore the relationship between organisational resilience and the individual psychological resilience of midwives.
7. Research is recommended to explore mechanisms to support midwife coordinators in their role to balance the learning and development needs of junior midwives and manage the workload effectively, in ways that are not detrimental to their own health and wellbeing.

## 10.5 Thesis conclusion

The overwhelming sentiment expressed by the participants in this study was that midwives were doing the best that they could in difficult circumstances. This thesis has illuminated some of the barriers that midwives face in practice, and the adaptations that are required to be able to keep the service running whilst also delivering care which meets the physical, emotional, psycho-social and spiritual needs of women and their families. At the very least, it is hoped that this work will enable an empathetic understanding of the difficulties maternity services face in providing consistently safe care to those who use the service and those who work within in it. Being “*with-woman*” involves caring relationships which can be mutually beneficial to the woman and the midwife (Power, 2015:654). Conversely, when care does not go well, it has consequences for all involved. As this final quotation exemplifies, adaptive practice may be unavoidable, but that does not mean that inadequacies in the system are acceptable:

*“We have to adapt to situations and sometimes these kind of things, you bring them home with you. Because you care about the patients, so you want to give them the best care, but you realise that this is not always possible, and it’s out of your control, basically. So, yeah. Frustration is the first thing I can think when we have to adapt to situations. We do adapt to situations a lot of the time. At the end of the day, we do it, but it’s not ideal.... The fact that you couldn’t have done anything else, doesn’t mean that you feel Ok, that’s fine. That you don’t care. You care anyway”.*

(Midwife, Site A)

The ultimate vision for this thesis is that the findings and recommendations may be taken on board and addressed by stakeholders at all levels of the maternity care system, to achieve the aim of the Human Factors; to optimise system performance and human wellbeing (International Ergonomics and Human Factors Association (2026)). That is, that midwives may be able to provide individualised, woman-centred, relational care, in a work system which values their contribution to safety and enables them to practice to their full autonomous scope.

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# Appendices

## Appendix 1: University Independent Peer Review process



### INDEPENDENT PEER REVIEW APPROVAL FEEDBACK

<b>Researcher Name</b>	Rachael Martin
<b>Title of Study</b>	Adaptive performance of midwives as a Resilience mechanism to improve safety in maternity services: a multiple case, qualitative embedded design case study.
<b>Status of approval:</b>	<b>Approved</b>

Thank you for your submission to the Independent Peer Review (IPR) Panel. Your application is now approved

#### **Action now required:**

You must now apply to the Integrated Research Applications System (IRAS) for approval to conduct your study. You must not commence the study without Health Research Authority (HRA) approval, and relevant site-specific approvals. Please note that the University Sponsor contact to be named on the form is Prof Nachi Chockalingam.

Please forward a copy of the letter you receive from the IRAS process to [ethics@staffs.ac.uk](mailto:ethics@staffs.ac.uk) as soon as possible after you have received approval.

Once you have received HRA approval, and participating Trusts/organisations have confirmed their capacity and capability to support your study, you can commence your research. You should be sure to do so in consultation with your supervisor.

You should note that any divergence from the approved procedures and research method will invalidate any insurance and liability cover from the University. You should, therefore, notify the Panel of any significant divergence from this approved proposal.

When your study is complete, please send an end of study report to Dr Edward Tolhurst: [e.tolhurst@staffs.ac.uk](mailto:e.tolhurst@staffs.ac.uk). A template can be found on the ethics Blackboard site.

#### **Comments for your consideration: None**

A handwritten signature in black ink, appearing to read 'E Tolhurst'.

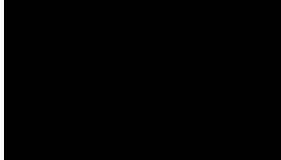
**Signed:** Dr Edward Tolhurst  
University IPR coordinator

Date: 21<sup>st</sup> December 2022

## Appendix 2: HRA approval



Mrs Rachael Martin



Email: [approvals@hra.nhs.uk](mailto:approvals@hra.nhs.uk)  
[HCRW.approvals@wales.nhs.uk](mailto:HCRW.approvals@wales.nhs.uk)

11 April 2023

Dear Mrs Martin

**HRA and Health and Care  
Research Wales (HCRW)  
Approval Letter**

**Study title:** Adaptive performance of midwives as a Resilience mechanism to improve safety in maternity services: a multiple case, qualitative embedded design case study.

**IRAS project ID:** 321241

**Protocol number:** n/a

**REC reference:** 23/EM/0034

**Sponsor** Staffordshire University

I am pleased to confirm that [HRA and Health and Care Research Wales \(HCRW\) Approval](#) has been given for the above referenced study, on the basis described in the application form, protocol, supporting documentation and any clarifications received. You should not expect to receive anything further relating to this application.

Please now work with participating NHS organisations to confirm capacity and capability, in line with the instructions provided in the "Information to support study set up" section towards the end of this letter.

**How should I work with participating NHS/HSC organisations in Northern Ireland and Scotland?**

HRA and HCRW Approval does not apply to NHS/HSC organisations within Northern Ireland and Scotland.

If you indicated in your IRAS form that you do have participating organisations in either of these devolved administrations, the final document set and the study wide governance report (including this letter) have been sent to the coordinating centre of each participating nation. The relevant national coordinating function/s will contact you as appropriate.

Please see [IRAS Help](#) for information on working with NHS/HSC organisations in Northern Ireland and Scotland.

**How should I work with participating non-NHS organisations?**

HRA and HCRW Approval does not apply to non-NHS organisations. You should work with your non-NHS organisations to [obtain local agreement](#) in accordance with their procedures.

**What are my notification responsibilities during the study?**

The standard conditions document "[After Ethical Review – guidance for sponsors and investigators](#)", issued with your REC favourable opinion, gives detailed guidance on reporting expectations for studies, including:

- Registration of research
- Notifying amendments
- Notifying the end of the study

The [HRA website](#) also provides guidance on these topics, and is updated in the light of changes in reporting expectations or procedures.

**Who should I contact for further information?**

Please do not hesitate to contact me for assistance with this application. My contact details are below.

Your IRAS project ID is **321241**. Please quote this on all correspondence.

Yours sincerely,



Helen Poole

Approvals Specialist

Email:[approvals@hra.nhs.uk](mailto:approvals@hra.nhs.uk)

Copy to: *Prof Nachi Chockalingam*

## List of Documents

The final document set assessed and approved by HRA and HCRW Approval is listed below.

<i>Document</i>	<i>Version</i>	<i>Date</i>
Copies of materials calling attention of potential participants to the research [Midwife Observation Advertisement Poster]	1.0	16 November 2022
Copies of materials calling attention of potential participants to the research [Midwife Observation Dates Poster]	1.0	16 November 2022
Copies of materials calling attention of potential participants to the research [Service User Observation Advertisement Poster]	1.0	16 November 2022
Copies of materials calling attention of potential participants to the research [Service User Observation Dates Poster]	1.0	16 November 2022
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Evidence of Sponsor insurance or indemnity (non NHS Sponsors only) [Staffordshire University Professional Indemnity Insurance]		01 August 2022
Interview schedules or topic guides for participants [Observation Schedule]	1.0	16 November 2022
Interview schedules or topic guides for participants [Midwife Interview Guide]	1.0	16 November 2022
Interview schedules or topic guides for participants [Manager Interview Guide]	1.0	16 November 2022
IRAS Application Form [IRAS_Form_01022023]		01 February 2023
Letters of invitation to participant [Midwife Interview Recruitment Email]	1.0	16 November 2022
Letters of invitation to participant [Manager Interview Recruitment Email]	1.0	16 November 2022
Organisation Information Document [Organisation Information Document]	1.0	13 December 2022
Other [Applicant response to REC provisional opinion]		15 March 2023
Other [Applicant response to REC provisional opinion]		30 March 2023
Other [RMC_protocol_v1.2_30.03.23_tracked]	1.2	30 March 2023
Other [Staffordshire University Employers and Public Liability Insurance]		01 August 2022
Participant consent form [Midwife Interview Consent Form]	1.2	30 March 2023
Participant consent form [Manager Interview Consent Form]	1.2	30 March 2023
Participant information sheet (PIS) [Service User Observation PIS]	1.1	28 February 2023
Participant information sheet (PIS) [Service User PIS tracked changes]	1.1	28 February 2023
Participant information sheet (PIS) [Midwife Observation PIS]	1.2	30 March 2023
Participant information sheet (PIS) [Midwife Observation PIS tracked changes]	1.2	30 March 2023
Participant information sheet (PIS) [Midwife Interview PIS]	1.2	30 March 2023
Participant information sheet (PIS) [Midwife interview PIS tracked changes]	1.2	30 March 2023
Participant information sheet (PIS) [Manager Interview PIS]	1.2	30 March 2023
Participant information sheet (PIS) [Manager interview PIS tracked changes]	1.2	30 March 2023
Research protocol or project proposal [RMC Protocol]	1.2	30 March 2023
Schedule of Events or SoECAT [RMC Schedule of Events]	1.0	13 December 2022
Summary CV for Chief Investigator (CI) [CV Rachael Martin ]		21 December 2022
Summary CV for student [CV Rachael Martin ]		21 December 2022
Summary CV for supervisor (student research) [CV Sarahjane Jones]		21 December 2022
Summary CV for supervisor (student research) [CV Paul Bowie]		21 December 2022

### Information to support study set up

The below provides all parties with information to support the arranging and confirming of capacity and capability with participating NHS organisations in England and Wales. This is intended to be an accurate reflection of the study at the time of issue of this letter.

Types of participating NHS organisation	Expectations related to confirmation of capacity and capability	Agreement to be used	Funding arrangements	Oversight expectations	HR Good Practice Resource Pack expectations
Research activities and procedures as per the protocol and other study documents will take place at participating NHS organisations.	Research activities should not commence at participating NHS organisations in England or Wales prior to their formal confirmation of capacity and capability to deliver the study in accordance with the contracting expectations detailed.	An Organisation Information Document has been submitted and the sponsor is not requesting and does not expect any other agreement to be used with participating NHS organisations of this type.	Study funding arrangements are detailed in the Organisation Information Document	A Local Collaborator should be appointed at participating NHS organisations.	Where an external individual will be conducting any of the research activities that will be undertaken at this site type then they would be expected to hold a Letter of Access. This should be issued be on the basis of a Research Passport (if university employed) or an NHS to NHS confirmation of pre-engagement checks letter (if NHS employed). These should confirm Occupational Health Clearance. These should confirm standard DBS checks and appropriate barred list checks.

### Other information to aid study set-up and delivery

*This details any other information that may be helpful to sponsors and participating NHS organisations in England and Wales in study set-up.*

The applicant has indicated that they do not intend to apply for inclusion on the NIHR CRN Portfolio.

## Appendix 3: Research Ethics Committee favourable opinion



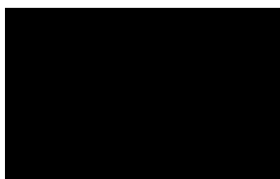
### East Midlands - Nottingham 1 Research Ethics Committee

The Old Chapel  
Royal Standard Place  
Nottingham  
NG1 6FS

Telephone: 0207 104 8271

**Please note:** This is the favourable opinion of the REC only and does not allow you to start your study at NHS sites in England until you receive HRA Approval

04 April 2023



Dear Mrs Martin

<b>Study title:</b>	<b>Adaptive performance of midwives as a Resilience mechanism to improve safety in maternity services: a multiple case, qualitative embedded design case study.</b>
<b>REC reference:</b>	<b>23/EM/0034</b>
<b>Protocol number:</b>	<b>n/a</b>
<b>IRAS project ID:</b>	<b>321241</b>

Thank you for your letter of 30<sup>th</sup> March 2023, responding to the Research Ethics Committee's (REC) request for further information on the above research and submitting revised documentation.

The further information has been considered on behalf of the Committee by the Chair.

## Confirmation of ethical opinion

On behalf of the Committee, I am pleased to confirm a favourable ethical opinion for the above research on the basis described in the application form, protocol and supporting documentation as revised, subject to the conditions specified below.

## Good practice principles and responsibilities

The [UK Policy Framework for Health and Social Care Research](#) sets out principles of good practice in the management and conduct of health and social care research. It also outlines the responsibilities of individuals and organisations, including those related to the four elements of [research transparency](#):

1. [registering research studies](#)
2. [reporting results](#)
3. [informing participants](#)
4. [sharing study data and tissue](#)

## Conditions of the favourable opinion

The REC favourable opinion is subject to the following conditions being met prior to the start of the study.

Confirmation of Capacity and Capability (in England, Northern Ireland and Wales) or NHS management permission (in Scotland) should be sought from all NHS organisations involved in the study in accordance with NHS research governance arrangements. Each NHS organisation must confirm through the signing of agreements and/or other documents that it has given permission for the research to proceed (except where explicitly specified otherwise).

Guidance on applying for HRA and HCRW Approval (England and Wales)/ NHS permission for research is available in the Integrated Research Application System.

For non-NHS sites, site management permission should be obtained in accordance with the procedures of the relevant host organisation.

Sponsors are not required to notify the Committee of management permissions from host organisations.

## Registration of Clinical Trials

All research should be registered in a publicly accessible database and we expect all researchers, research sponsors and others to meet this fundamental best practice standard.

It is a condition of the REC favourable opinion that **all clinical trials are registered** on a publicly accessible database within six weeks of recruiting the first research participant. For this purpose, 'clinical trials' are defined as:

- clinical trial of an investigational medicinal product
- clinical investigation or other study of a medical device
- combined trial of an investigational medicinal product and an investigational medical device
- other clinical trial to study a novel intervention or randomised clinical trial to compare interventions in clinical practice.

Failure to register a clinical trial is a breach of these approval conditions, unless a deferral has been agreed by the HRA (for more information on registration and requesting a deferral see: [Research registration and research project identifiers](#)).

If you have not already included registration details in your IRAS application form you should notify the REC of the registration details as soon as possible.

#### Publication of Your Research Summary

We will publish your research summary for the above study on the research summaries section of our website, together with your contact details, no earlier than three months from the date of this favourable opinion letter.

Should you wish to provide a substitute contact point, make a request to defer, or require further information, please visit: <https://www.hra.nhs.uk/planning-and-improving-research/application-summaries/research-summaries/>

**N.B. If your study is related to COVID-19 we will aim to publish your research summary within 3 days rather than three months.**

During this public health emergency, it is vital that everyone can promptly identify all relevant research related to COVID-19 that is taking place globally. If you haven't already done so, please register your study on a public registry as soon as possible and provide the REC with the registration detail, which will be posted alongside other information relating to your project. We are also asking sponsors not to request deferral of publication of research summary for any projects relating to COVID-19. In addition, to facilitate finding and extracting studies related to COVID-19 from public databases, please enter the WHO official acronym for the coronavirus disease (COVID-19) in the full title of your study. Approved COVID-19 studies can be found at: <https://www.hra.nhs.uk/covid-19-research/approved-covid-19-research/>

**It is the responsibility of the sponsor to ensure that all the conditions are complied with before the start of the study or its initiation at a particular site (as applicable).**

#### **After ethical review: Reporting requirements**

The attached document "After ethical review – guidance for researchers" gives detailed guidance on reporting requirements for studies with a favourable opinion, including:

- Notifying substantial amendments
- Adding new sites and investigators

- Notification of serious breaches of the protocol
- Progress and safety reports
- Notifying the end of the study, including early termination of the study
- Final report
- Reporting results

The latest guidance on these topics can be found at <https://www.hra.nhs.uk/approvals-amendments/managing-your-approval/>.

### Ethical review of research sites

[Omit this sub-section if no NHS sites will be taking part in the study, e.g. Phase 1 trials in healthy volunteers]

#### NHS/HSC sites

The favourable opinion applies to all NHS/HSC sites taking part in the study, subject to confirmation of Capacity and Capability (in England, Northern Ireland and Wales) or management permission (in Scotland) being obtained from the NHS/HSC R&D office prior to the start of the study (see "Conditions of the favourable opinion" below).

#### Non-NHS/HSC sites

I am pleased to confirm that the favourable opinion applies to any non-NHS/HSC sites listed in the application, subject to site management permission being obtained prior to the start of the study at the site.

### Approved documents

The final list of documents reviewed and approved by the Committee is as follows:

<i>Document</i>	<i>Version</i>	<i>Date</i>
Copies of materials calling attention of potential participants to the research [Midwife Observation Advertisement Poster]	1.0	16 November 2022
Copies of materials calling attention of potential participants to the research [Midwife Observation Dates Poster]	1.0	16 November 2022
Copies of materials calling attention of potential participants to the research [Service User Observation Advertisement Poster]	1.0	16 November 2022
Copies of materials calling attention of potential participants to the research [Service User Observation Dates Poster]	1.0	16 November 2022
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Other [Applicant response to REC provisional opinion]		30 March 2023
Other [RMC_protocol_v1.2_30.03.23_tracked]	1.2	30 March 2023
Participant consent form [Midwife Observation Opt-out consent form]	1.1	13 March 2023
Participant consent form [Midwife Interview Consent Form]	1.2	30 March 2023
Participant consent form [Manager Interview Consent Form]	1.2	30 March 2023
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Summary CV for student [CV Rachael Martin ]		21 December 2022
Summary CV for supervisor (student research) [CV Sarahjane Jones]		21 December 2022
Summary CV for supervisor (student research) [CV Paul Bowie]		21 December 2022

### Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

### User Feedback

The Health Research Authority is continually striving to provide a high quality service to all applicants and sponsors. You are invited to give your view of the service you have received and the application procedure. If you wish to make your views known please use the feedback form available on the HRA website: <http://www.hra.nhs.uk/about-the-hra/governance/quality-assurance/>

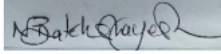
### HRA Learning

We are pleased to welcome researchers and research staff to our HRA Learning Events and online learning opportunities– see details at: <https://www.hra.nhs.uk/planning-and-improving-research/learning/>

**IRAS project ID: 321241 Please quote this number on all correspondence**

With the Committee's best wishes for the success of this project.

Yours sincerely



pp

**Mr Paul Hamilton  
Chair**

Email: Nottingham1.rec@hra.nhs.uk

Copy to: Prof Nachi Chockalingam

# Resilient Maternity Care study – happening in Labour ward soon

If you are a midwife who works on Labour ward, I need to your help!

## Resilient Maternity Care

The aim of this study is to explore how midwives adapt their performance according to the conditions they are working in, to keep the service running safely. The idea of adaptive performance comes from the theory of Resilience Engineering, which is well established in other industries but currently underexplored in Midwifery.

The project wants to learn what stops you from doing your job and if or how you change what you do to overcome these problems. The project also wants to know how being flexible as a midwife can make maternity care safer

### What does the study involve?

Rachael will be observing activity on the Labour Ward, covering the full range of shifts over the next 12 months. This may involve watching you providing direct patient care if you allow me to. This study uses a verbal consent approach, so if you do not want to participate in this research, please inform me on the day of observation.

This research is separate from the Trust; the purpose is not to audit practice or to report non-compliances to your employer. Observational data will be collected for the sole purpose of this research project and will remain confidential and anonymous. No personal data will be recorded as part of the observation.

### What's in it for you?

Participation is voluntary and unpaid. However, it is hoped that this study will enable improvements to be made in your working environment which support you to do your job and thus improve safety for staff and service users.

## Rachael Martin



This research is part of a PhD in Patient Safety and Human Factors at Staffordshire University. Rachael is a Registered Midwife with 15 years of experience in the UK and Australia, in clinical practice, education and clinical governance.

**Dates will be advertised one week in advance.**

**For more information, please visit this webpage: [INSERT QR CODE HERE](#). Or contact the researcher at [Rachael.Martin@research.staffs.ac.uk](mailto:Rachael.Martin@research.staffs.ac.uk)**

TRUST LOGO  
TO GO HERE

RMC IRAS ID: 321241 midwife observation recruitment poster v1.1 26.04.23



# Resilient Maternity Care study dates

This study will be happening in Labour Ward on the dates below. Midwives, if you are on shift during these times, please help me by allowing me to observe your practice.

**Observation periods:**  
**INSERT DATES HERE:**

## Resilient Maternity Care

The aim of this study is to explore how midwives adapt their performance according to the conditions they are working in, to keep the service running safely. The idea of adaptive performance comes from the theory of Resilience Engineering, which is well established in other industries but currently underexplored in Midwifery.

The project wants to learn what stops you from doing your job and if or how you change what you do to overcome these problems. The project also wants to know how being flexible as a midwife can make maternity care safer

### What does the study involve?

Rachael will be observing activity on the Labour Ward. This may involve watching you providing direct patient care if you allow me to. This study uses a verbal consent approach, so if you do not want to participate in this research, please inform me on the day of observation.

During the observations I will be as unobtrusive as possible, being sensitive not to interrupt you or disturb the family's birth experience. Please feel free to carry on as normal, you do not need to change your practice because of my presence.

### What's in it for you?

Participation is voluntary and unpaid. However, it is hoped that this study will enable improvements to be made in your working environment which support you to do your job and thus improve safety for midwives and service users.



This research is part of a PhD in Patient Safety and Human Factors at Staffordshire University. Rachael is a Registered Midwife with 15 years of experience in the UK and Australia, in clinical practice, education and clinical governance.

**For more information, please visit this webpage: **INSERT QR CODE HERE.** Or contact the researcher at [Rachael.Martin@research.staffs.ac.uk](mailto:Rachael.Martin@research.staffs.ac.uk)**

TRUST LOGO  
TO GO HERE

RMC IRAS ID: 321241 midwife observation dates recruitment poster v1.1 26.04.23



## Resilient Maternity Care study - happening in Labour ward soon

This project will be going on at the hospital where you are booked, around the time that you are due to give birth. Please would you allow me to observe your care if you are on Labour ward during these times.

### Resilient Maternity Care

The purpose of this project is to look at how being flexible as a midwife can make maternity care safer. This is based on the idea that midwives change how they work according to the conditions that they are working in. For example, they may find new ways to do things or work around problems to make sure that tasks get done and the service keeps running smoothly. The plan is to watch activity on the Labour ward to find out what things stop midwives from doing their job and if or how they can change what they do to overcome these problems.

#### What does the study involve?

The project will be looking at what midwives do, not watching you but this might include watching how they care for you in labour. You do not need to do anything; I only ask that you allow me to be present to observe your midwife working.

As a midwife myself, I recognise that birth is a private and sensitive time and do not want to cause you any discomfort. When observing your care, I will be discreet and not interrupt your birthing experience. However, if you do not want me to be present during your care, please inform your midwife and I will not enter your room. You do not need to explain the reason your decision.

#### What's in it for you?

Participation is voluntary and unpaid. However, it is hoped that this study will contribute to service improvement which may benefit yourself in the future if you have another baby, or other future service users and midwives.



This research is part of a PhD in Patient Safety and Human Factors at Staffordshire University. Rachael is a Registered Midwife with 15 years of experience in the UK and Australia, in clinical practice, education and clinical governance.

**Dates will be advertised one week in advance.**

**For more information, please visit this webpage: [INSERT QR CODE HERE](#). Or contact the researcher at [Rachael.Martin@research.staffs.ac.uk](mailto:Rachael.Martin@research.staffs.ac.uk)**

TRUST LOGO  
TO GO HERE

RMC IRAS ID: 321241 Service user observation recruitment poster v1.1 26.04.23



# Resilient Maternity Care study dates

This project will be happening in Labour Ward on the dates below. Your care may be observed if you are on Labour ward during these times.

**Observation periods:**  
**INSERT DATES HERE:**

## Resilient Maternity Care

The purpose of this project is to look at how being flexible as a midwife can make maternity care safer. This is based on the idea that midwives change how they work according to the conditions that they are working in. For example, they may find new ways to do things or work around problems to make sure that tasks get done and the service keeps running smoothly. The plan is to watch activity on the Labour ward to find out what things stop midwives from doing their job and if or how they can change what they do to overcome these problems.

### What does the study involve?

The project will be looking at what midwives do, not watching you but this might include watching how they care for you in labour. You do not need to do anything; I only ask that you allow me to be present to observe your midwife working.

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This research is part of a PhD in Patient Safety and Human Factors at Staffordshire University. Rachael is a Registered Midwife with 15 years of experience in the UK and Australia, in clinical practice, education and clinical governance.

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TRUST LOGO  
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RMC IRAS ID: 321241 service user observation recruitment poster v1.1 26.04.23



## Appendix 6: Participant Information Sheet (PIS) for midwives



### Participant Information Sheet Midwife Observations (WP 1.1)

(Version 1.2: 30.03.2023)



### **Adaptive performance of midwives as a Resilience mechanism to improve safety in maternity services: a multiple case, qualitative embedded design case study (Resilient Maternity Care)**

I would like to tell you about a research study which is going on at the hospital where you work. This information sheet is provided to tell you why the research is being done and what it may involve for you. If anything is not clear or you have any questions, I will happily answer them. Contact details are provided at the bottom of this leaflet.

#### **What is the purpose of the study?**

The purpose of this study is to look at how being flexible as a midwife can make maternity care safer. This is based on the idea that midwives change how they work according to the conditions that they are working in. For example, they may find new ways to do things or work around problems to make sure that tasks get done and the service keeps running smoothly. The project plans to observe activity on the Labour ward to find out barriers that hinder midwives from doing their job and if or how they can change what they do to overcome these problems.

This study is primarily an educational undertaking as part of a PhD programme. However, the motivation for this research is that as a Registered Midwife, I want to contribute to improving maternity services for the safety of birthing people and families, and for the wellbeing of staff who work there. It is hoped that the findings from this work will benefit midwives like you in the future, by improving the working environment to support you in your future practice.

#### **Why have you been invited?**

The study will be going on at the hospital where you work for the next 12 months. Therefore, it is important to let you know that I may be present undertaking observations on Labour ward when you are on shift.

You are being invited to take part because you are a clinical midwife who works on Labour ward which has unpredictable demands, requiring you to work adaptively. Your experience is valuable.

#### **Do you have to take part?**

You do not have to take part in this project, participation is entirely voluntary, and your decision will not affect your legal rights. I have provided this information sheet to help you decide.

The dates that are agreed for me to attend Labour ward to undertake this research will be advertised on posters at the hospital one week beforehand so that you know when I will be there. On the observation days, I will introduce myself to the staff on duty and ask for verbal consent to observe you providing care. If you decline, I will not approach you again or enter your delivery room, however, I may still be present in other areas of Labour Ward, observing other midwives during your shift, but I will not record any data about you.

### **What will happen to you if you take part?**

I will be observing midwives working on the labour ward on several occasions to cover the full range shifts times and days. At the start of the shift, I will introduce myself to the shift co-ordinator and the midwives on duty. If you are on shift during this time, I may ask to watch you providing direct patient care on Labour ward. I will ask you to inform the service user(s) that you are caring for that I am present that day and provide them with an Information Sheet if they have not already accessed this electronically. Please then ask them if they are happy for me to be present to watch your care, inform me of their decision and document this in their maternity notes. You are not expected to formally consent people to participate in a research study, the requirement is only for verbal consent from service users for me to be present. If the service users have any questions about the study, I will happily answer them. If the service user declines for me to be present, that is fine. Please advise me of this and I will not enter their room.

Whilst observing practice, I will have a guide sheet to help me focus on what might be relevant to the study, you can ask to see this if you wish. I may make notes in a notebook at the time or immediately afterwards, to compare with other cases later. I will not record your name or any other personal information so you will remain anonymous. This research is separate from the Trust; the purpose is not to audit practice or to report non-compliances to your employer. Observational data will be collected for the sole purpose of this research project and will remain confidential and anonymous.

During the observations I will be as unobtrusive as possible, sitting or standing quietly out of the way. I may quietly ask you to explain what you are doing or why, but I will be sensitive to not interrupt you or disturb the family's birth experience. Please feel free to carry on as normal, you do not need to change your practice because of my presence. I will not participate in clinical care in any way except in the rare event of a potentially dangerous situation when my professional duty as a midwife would override my role as a researcher.

### **Expenses and payments**

You will not be paid to participate in this study.

### **What are the possible benefits of taking part?**

Participation in the study will not directly benefit you. The benefit of participation is to contribute to understanding how midwives work and the ways that they maintain safety in their working environment. This will hopefully contribute to service improvement which may benefit you in the future.

### **What are the possible disadvantages and risks of taking part?**

There are no interventions or experimental treatments in this study, it is purely observational. Therefore, there are no physical risks or disadvantages of taking part in this

project. There is a potential disadvantage of psychological discomfort as a result of being observed. However, it is considered that participation in this study poses no additional risk to those you would normally face at work where you might be observed by student midwives or medical students.

Should you become upset by my presence, you can ask me to leave at any time for a break or to discontinue the observation entirely, without affecting your legal rights.

If you were to become distressed by participating in the research, please speak to me whilst I am still present on the labour ward to observe, or contact the professional midwifery advocate (PMA) at the Trust.

There is also a potential risk to your professional registration if practice was observed that contravened the Nursing and Midwifery Council (NMC) (2018) Code, which the researcher as a registrant would be required to report to the NMC.

### **What happens when the research study stops?**

After the observational period has ended, no further participation is required. You may be invited to participate in a one-to-one interview, but this is not a requirement of having been observed. As no personal information will be collected during the observations, I will not contact you again after your contact with me on Labour ward.

The research will run until December 2023 with the final report due to be submitted to Staffordshire University by September 2024. Findings from the study may be published in academic journals, but you will not be identifiable in either the PhD thesis or any publications.

### **What if there is a problem?**

If you have a concern about any aspect of this study, please ask to speak to me and I will do my best to answer your questions. Contact details for myself and those at the University who are overseeing this research are given at the end of this information sheet. If you remain unhappy and wish to complain formally, please contact the Trust's Research and Development Manager. Alternatively, you may contact the Director of Research at Staffordshire University which is the Sponsor for this study. Contact detail are provided at the end of this information sheet. Contact details are provided at the end of this information sheet.

### **Will your taking part in the study be kept confidential?**

Yes. Confidentiality is assured because no personal information will be collected. No place names or other identifiable information related to the hospital will be recorded in the observation notes, to protect your anonymity. You will not be identifiable in the final report or any publications about this research.

Please be aware that your right to confidentiality would be breached if I were to witness malpractice which presents a risk to service users or the public, or a safeguarding issue, or criminal activity. These issues require reporting in accordance with the law and/ or Nursing and Midwifery Council (NMC) requirements.

### **What will happen if you don't want to carry on with the study?**

If you allow me to observe your practice, you can change your mind at any time and ask me to leave or opt out of any further involvement, without giving a reason. This will not affect your legal rights. However, it is not possible to un-see what has already been seen so any observational information collected prior to your withdrawal may still be included in the study.

### **What will happen to the results of the research study?**

The study is to be written up as part of a PhD program and will be submitted to Staffordshire University by September 2024. Following completion, results can be obtained on request by email (see contact details below) and findings may be disseminated via conference presentations and academic journal publications.

### **Who is organising and funding the research?**

This research is being organised by Staffordshire University where the Chief Investigator has been awarded a Doctoral Scholarship. The research itself has not received any specific funding.

### **Who has reviewed the study?**

The study has been reviewed by Staffordshire University's Independent Peer Review process, Staffordshire University ethics proportionate review, a favourable NHS Research Ethics Committee opinion and has received approval from the Health Research Authority to be carried out according to the research protocol which can be viewed on request.

### **Further information and contact details**

**Chief-Investigator:** Mrs Rachael Martin, RM, PGCHE, MSc, BSc, FHEA.  
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**Academic Supervisor:** Dr Sarahjane Jones, PhD, SFHEA, BMedSci.  
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Email: [n.chockalingam@staffs.ac.uk](mailto:n.chockalingam@staffs.ac.uk)

For complains:

Dr Tim Horne  
Director of Research  
Cadman Building,  
Staffordshire University  
Email: [tim.horne@staffs.ac.uk](mailto:tim.horne@staffs.ac.uk)

Trust Research and Development Manager [Insert details here once study site confirmed]

# Appendix 7: Service User Information Sheet (SuIS) for women.



## Service User Information Sheet Midwife Observations (WP 1.1) (Version 1.1: 28.02.2023)



### **Adaptive performance of midwives as a Resilience mechanism to improve safety in maternity services: a multiple case, qualitative embedded design case study (Resilient Maternity Care)**

I would like to tell you about a research project that is going on at the hospital where you are booked to give birth. This information sheet is provided to tell you why the research is being done and what it may involve for you. If anything is not clear or you have any questions, I will happily answer them. Contact details are given at the bottom of this leaflet.

#### **What is the purpose of the study?**

The aim of this study is to look at how being flexible as a midwife can make maternity care safer. This is based on the idea that midwives change how they work according to the conditions that they are working in. For example, they may find new ways to do things or work around problems to make sure that tasks get done and the service keeps running smoothly. The plan is to watch activity on the Labour ward to find out what things stop midwives from doing their job and if or how they can change what they do to overcome these problems.

This study is part of a PhD course of study. However, the reason for looking at this topic is that as a Registered Midwife, I want to help to improve the safety of maternity care for birthing people and families, and for the wellbeing of the staff who work there.

#### **Why have you been invited?**

The project will be going on at the hospital where you are booked, around the time that you are due to give birth. Therefore, it is important to let you know that I may be present undertaking observations when you are admitted to the Labour Ward.

You are being asked for permission for a researcher to watch your midwife doing her work whilst she is caring for you in labour ward. This is because Labour ward is busy and unpredictable, so midwives have to change the way they work to adapt.

The project will be looking at what midwives do, not watching you but this might include watching how they care for you in labour. You do not need to do anything; I only ask that you allow me to be present to observe your midwife working. As a midwife myself, I recognise that birth is a private and sensitive time and do not want to cause you any discomfort. When observing your care, I will be quiet and not interrupt your birthing experience. However, if you do not want me to observe your care, you can say no, without any need to explain why.

## **Do you have to take part?**

You do not have to take part in this project, your decision will not affect your care or legal rights. I have provided this information sheet to help you decide.

The dates that are agreed for me to attend Labour ward to watch the midwives will be advertised on posters at the hospital one week beforehand. Also, when you are admitted to Labour ward, your midwife will inform you if I am present that day. They will then ask you if you are happy for me to be present. You do not need to do anything, the midwife will document your decision in your notes and tell me if you have given permission for me to watch them caring for you. If you do not agree to this, then your midwife will ask me not to enter your room but I may still be present in other areas of Labour Ward, watching other midwives during your stay.

## **What will happen to you if you take part?**

I will be watching midwives working on the labour ward and may ask to come into your room to watch your midwife work. I will have a guide sheet to help me focus on what might be relevant to the study and I may make notes in a notebook at the time or straight afterwards, to compare with other cases later. I will not write down your name or any other personal information so you will stay anonymous.

Whilst watching your midwife, I will be as quiet as possible, sitting or standing out of the way. I may quietly ask your midwife to explain what they are doing or why, but I will be sensitive to not interrupt your care or disturb your birth experience. I will be there to watch your midwife, not you, so please feel free to carry on as normal, you do not need to change your birth plans because of my presence. I will not take part in your care in any way except in the rare event of a potentially dangerous situation when my professional duty as a midwife would override my role as a researcher.

## **Expenses and payments**

You will not be paid to take part in this study.

## **What are the possible benefits of taking part?**

Taking part in this project will not directly benefit you. But, it may help people to understand how midwives work and how they keep the maternity unit safe.. This may be used to improve maternity services in the future which may benefit yourself if you have another baby, or other people in the future.

## **What are the possible disadvantages and risks of taking part?**

This study is watching what normally happens on labour ward, it is not testing any new procedures or treatments. This means that there are no physical risks of taking part in this project. The only possible risk of taking part is that you might feel uncomfortable or upset by having a researcher watching your care. However, there are often student midwives or medical students watching care on labour ward so taking part in this study does not pose any extra risk to you than you might normally expect. Should you become upset by my presence, you can ask me to leave at any time for a break or stop the observation completely, without affecting your care or legal rights.

If you were to become distressed by taking part in the project, please ask to talk to me whilst I am still on the labour ward, or you could ask to speak to the professional midwifery advocate (PMA) at the Trust. I will not write down any personal information or contact details so I will not be able to follow you up after the observation period has ended. If you are still upset and wish to discuss your birth experience afterwards, you can access existing listening/ debriefing services at the Trust where you gave birth, or the Patient Advice and Liaison Service (PALS). Contact details are given at the end of this leaflet.

### **What happens when the research study stops?**

You will not be asked to do anything else after I have finished watching your care on labour ward. As no personal information will be collected, you will not be contacted after you see me on Labour ward.

The project will run until December 2023 with the final report due to be handed in to Staffordshire University by September 2024. Findings from the study may be published in academic journals, but your name will not appear in any publications.

### **What if there is a problem?**

If you have a concern about any aspect of this study, please ask to speak to me and I will do my best to answer your questions. Contact details for myself and those at the University who are overseeing this research are given at the end of this information sheet. If you remain unhappy and wish to complain formally, you can do this through NHS complaints procedure. Please contact the Patient Advice and Liaison Service (PALS) department at the hospital. Contact details are provided at the end of this information sheet.

### **Will your taking part in the study be kept confidential?**

Yes. You can be sure that your taking part in the study will be kept confidential because no personal information will be collected. No place names or other identifiable information related to the hospital will be written down in the observation notes, to protect your anonymity. You will not be identifiable in the final report or any publications about this research.

Information collected will be used solely for the purposes of this study. Some parts of the data collected for the study will be looked at by authorised persons from Staffordshire University, who are organising the research. They may also be looked at by authorised people to check that the study is being carried out correctly. All will have a duty of confidentiality to you as a research participant.

The right to confidentiality would be breached if I were to observe something that threatens the safety of children or vulnerable adults (safeguarding), or if I see criminal activity which requires reporting in accordance with the law and/ or Nursing and Midwifery Council (NMC) requirements.

### **What will happen if you don't want to carry on with the study?**

If you allow me to watch your care, you can change your mind at any time and ask me to leave, without giving a reason. This will not affect your care or your legal rights. However, it is not possible to un-see what has already been seen so anything I have noted before you ask me to leave may still be used in the study.

## **What will happen to the results of the research study?**

The study is to be written up as part of a PhD program and will be handed in to Staffordshire University by September 2024. Following completion, results can be obtained on request by email (see contact details below) and findings may be disseminated via conference presentations and academic journal publications.

## **Who is organising and funding the research?**

This research is being organised by Staffordshire University where the Researcher has been awarded a Doctoral Scholarship. The research itself has not received any specific funding.

## **Who has reviewed the study?**

The study has been reviewed by Staffordshire University's Independent Peer Review process, Staffordshire University ethics proportionate review, an NHS Research Ethics Committee, and has received Health Research Authority approval to be carried out according to the research protocol which can be viewed on request.

## **Further information and contact details**

**Chief-Investigator:** Mrs Rachael Martin, RM, PGCHE, MSc, BSc, FHEA.  
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**Research Sponsor:** Staffordshire University  
**Contact:** Professor Nachi Chockalingam  
Professor Of Clinical Biomechanics  
School of Health, Science and Wellbeing  
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Stoke on Trent.

Email: [n.chockalingam@staffs.ac.uk](mailto:n.chockalingam@staffs.ac.uk)

Patient Advice and Liaison Service (PALS) [Insert details here once study site confirmed]

## Appendix 8: Observation schedule

1. What is the adaptation from expected practice? (Strategy)
2. What factors in the work environment necessitate the adaptation? (Situational Conditions)  
e.g. work load, staffing, skill mix, equipment, resources, unforeseen events
3. What factors support midwives to make this adaptation? (Resources and enabling conditions)  
e.g. support from managers, adequate resources, sufficient staffing
4. What is the purpose or intended outcome of the adaptation? (Objective)
5. How does this adaptation affect service users? (Sharp end interactions)
6. How does this adaptation affect organisational resilience? (Blunt end interactions)
7. Which cornerstone of resilience does the adaptation contribute to? (Anticipation, Monitoring, Responding or Learning)

# Recruiting Midwives to participate research about safety

If you are a midwife who works on Labour ward, I need to hear from you!

## Resilient Maternity Care

The aim of this study is to explore how midwives adapt their performance according to the conditions they are working in, to keep the service running safely. The idea of adaptive performance comes from the theory of Resilience Engineering, which is well established in other industries but currently underexplored in Midwifery.

The project wants to learn what stops midwives from doing their job and if or how they change what they do to overcome these problems. The project also wants to know how being flexible as a midwife can make maternity care safer

### What does the study involve?

- A one-off individual interview with Rachael, which will last up to 60 minutes.
- Interviews can take place at the hospital or virtually via MS Teams if you prefer.
- Interviews will be recorded with your permission and transcribed verbatim to enable qualitative analysis.
- All information will be confidential and anonymised.

**What's in it for you?** Participation is voluntary and unpaid. However, it is hoped that this study will enable improvements to be made in your working environment which support you to do your job and thus improve safety for staff and service users.

### Please contact me if you meet the following eligibility criteria:

- Registered Midwife, band 5 upwards
- Employed at this hospital for a minimum of one month
- Working clinically in a direct patient care role
- Based on labour ward

## Rachael Martin



This research is part of a PhD in Patient Safety and Human Factors at Staffordshire University. Rachael is a Registered Midwife with 15 years of experience in the UK and Australia, in clinical practice, education and clinical governance.

**For more information, please visit this webpage: [INSERT WEBSITE URL HERE](#). Or contact the researcher at [Rachael.Martin@research.staffs.ac.uk](mailto:Rachael.Martin@research.staffs.ac.uk)**

TRUST LOGO  
TO GO HERE

RMC IRAS ID: 321241 MW Interview Recruitment poster v1.0 16.11.22



## Appendix 10: Interview recruitment email

Dear Midwives,

Please see email below/ attached from Rachael Martin who is a midwife, conducting a PhD research study at the Trust. Rachael is seeking midwives to participate in a one-off interview about safety in maternity services. More information is provided in the attached Participant Information Leaflet.

If you would like to volunteer or find out more about the study, please email Rachael at [Rachael.Martin@research.staffs.ac.uk](mailto:Rachael.Martin@research.staffs.ac.uk).

Kind regards,

(Local collaborator)

TRUST  
LOGO TO



Dear Midwife,

I am writing to you to invite you to participate in a research study that I am currently undertaking at your Trust, about safety in Maternity Services. The purpose of the Resilient Maternity Care study is to explore how midwives adapt or adjust what they do according to the conditions they are working in, to keep the service running safely. The principle of adaptive performance comes from the theory of Resilience Engineering, which is well established in other industries but currently underexplored in Midwifery.

This study is primarily an educational undertaking as part of a PhD programme. However, the motivation for this research is that as a Registered Midwife, I want to contribute to improving maternity services for the safety of birthing people and families, and for the wellbeing of staff who work there. It is hoped that the findings from this work will contribute to service improvement which may benefit midwives in the future, by improving the working environment.

### Rachael Martin



Rachael is a Registered Midwife with 15 years of experience in the UK and Australia, in clinical practice, education and clinical governance. She is currently undertaking a PhD in Patient Safety and Human Factors at Staffordshire University, whilst working clinically on Labour Ward at University Hospitals of Coventry and Warwick.

**What does the study involve?**

- A one-off individual interview with myself, which will last up to 60 minutes.
- The interview can take place at the hospital or virtually via MS Teams if you prefer.
- The interview will be recorded with your permission and transcribed verbatim to enable qualitative analysis.
- All information will be confidential and anonymised.

**Why am I asking you?**

You are being invited to take part because you are a clinical Midwife who works on Labour Ward which has unpredictable demands, requiring you to work adaptively. Your experience is valuable.

Participation is voluntary and unpaid. However, your contribution to this study may enable recommendations to be made on how maternity services can support their staff to work effectively, thus improving safety for staff and service users.

I hope that you will share my enthusiasm for this project. I have attached a participant information sheet for more information. If you would be willing to participate in an interview, or have any questions about the study, please email me at: [Rachael.Martin@research.staffs.ac.uk](mailto:Rachael.Martin@research.staffs.ac.uk).

Thank you for taking the time to read this email.

Kind regards,

Rachael.



### Participant Information Sheet Midwife Interviews (WP 1.2)

(Version 1.2: 30.03.2023)



## **Adaptive performance of midwives as a Resilience mechanism to improve safety in maternity services: a multiple case, qualitative embedded design case study (Resilient Maternity Care)**

We would like to invite you to take part in our research study. Before you decide we would like you to understand why the research is being done and what it would involve for you. One of our team will go through the information sheet with you and answer any questions you have. Talk to others about the study if you wish. Ask us if there is anything that is not clear.

### **What is the purpose of the study?**

The purpose of this study is to explore how midwives adapt or adjust what they do according to the conditions they are working in, to keep the service running safely. The principle of adaptive performance comes from the theory of Resilience Engineering, which is well established in other industries but currently underexplored in Midwifery.

This study is primarily an educational undertaking as part of a PhD programme. However, the motivation for this research is that as a Registered Midwife, I want to contribute to improving maternity services for the safety of birthing people and families, and for the wellbeing of staff who work there. It is hoped that the findings from this work will benefit midwives like you in the future, by improving the working environment to support you in your future practice.

### **Why have I been invited?**

You are being invited to take part because you are a clinical Midwife who works on Labour ward which has unpredictable demands, requiring you to work adaptively. Your experience is valuable.

### **Do I have to take part?**

It is up to you to decide whether or not to take part. If you do decide to take part, you will be given this information sheet to keep and be asked to sign a consent form. If you decide to take part, you are still free to withdraw without giving a reason, at any time within 2 weeks of being interviewed. After this time the information you have provided will have been incorporated into the analysis and cannot then be removed. Withdrawal from the study will not affect your legal rights.

### **What will happen to me if I take part?**

The study involves a one-to-one interview with Rachael in which she will ask about your experience as a midwife on labour ward. This study is part of a PhD program and as such

is separate from the Trust. You are free to be honest and truthful in your responses. The interview will take place in privacy at your workplace or virtually via MS Teams if you prefer. It will last around an hour, depending on how much you have to say. The interview will be audio recorded by the interviewer, to be transcribed later for the purpose of analysis. Interview recordings may be transcribed by a professional transcriber. If you chose to participate virtually, the interview will be video recorded, and the embedded transcription software will be used. Recordings will be destroyed following transcription. Transcripts will be de-identified and non-identifiable direct quotations may be published.

### **Expenses and payments**

You will not be paid to participate in this study.

### **What are the possible benefits of taking part?**

Participation in the study will not directly benefit you. The benefit of participation is to contribute to understanding how midwives work and the mechanisms that you use to maintain safety in your working environment. This will hopefully contribute to service improvement which may benefit yourself, other staff and service users.

### **What are the possible disadvantages and risks of taking part?**

There is a potential psychological risk, that interview participants could become distressed by topics discussed during the interview. However, interviews will be participant led, meaning that you choose what you want to talk about, and you decide what you are happy to disclose. It is not intended that the interviews will be psychologically distressing but if you should become upset by anything discussed during the interview then you can choose to stop at any time for a break or to discontinue the interview without any detriment to yourself. If any unresolved distress were to arise from the participating in the interview, you are advised to contact the Professional Midwifery Advocate (PMA) at the Trust, whose role is to support midwives' wellbeing and safety of the public.

There is also a potential risk to your professional registration, in that the researcher has a legal duty to report to the Nursing and Midwifery Council any observed or disclosed malpractice that presents a risk to patients or members of the public.

### **What happens when the research study stops?**

After the interview has concluded, no further participation is required. However, if you would like to receive the findings, please advise the researcher, and provide contact details on the consent form for these to be sent to you. If you consent to being contacted, you may be invited to participate in a feedback focus group following completion of the study. This is not a requirement of participation in the study and is entirely voluntary. If you tick no to being contacted on the consent form, you will not receive any further communication from the Researcher.

The research will run until December 2023 with the final thesis to be submitted to the University by September 2024.

### **What if there is a problem?**

If you have a concern about any aspect of this study, you should ask to speak to the Researcher who will do their best to answer your questions. The Researcher's contact details and those of the research sponsor are given at the end of this information sheet. If you remain unhappy and wish to complain formally, please contact the Trust's Research and Development Manager. Alternatively, you may contact the Director of Research at Staffordshire University which is the Sponsor for this study. Contact detail are provided at the end of this information sheet.

### **Will my taking part in the study be kept confidential?**

Yes. Confidentiality is assured. Interviews will be digitally recorded and then an identification code applied before it is transcribed. Transcription may be conducted by a professional transcriber who is an approved supplier of Staffordshire University, with whom appropriate agreements are in place for data protection. All place names and identities will be omitted during transcribing to protect your anonymity. Individuals will not be identifiable in the final analysis or report. Information obtained will be used solely for the purposes of this study. However, information pertaining to clinical practice issues may be given to your line manager or Professional Midwifery Advocate in the event of a disclosure which requires reporting in accordance with the law or NMC requirements.

If you join the study, some parts of the data collected for the study will be looked at by authorised persons from Staffordshire University, who are organising the research. They may also be looked at by authorised people to check that the study is being carried out correctly. All will have a duty of confidentiality to you as a research participant.

### **How will we use information about you?**

We will need to use information from you for this research project. This information will include your name and contact details. People will use this information to do the research or to check your records to make sure that the research is being done properly. People who do not need to know who you are will not be able to see your name or contact details. Your data will have a code number instead. We will keep all information about you safe and secure. Once we have finished the study, we will keep some of the data so we can check the results. We will write our reports in a way that no-one can work out that you took part in the study.

All research data will be kept securely for 10 years. After this time your data will be disposed of securely. During this time all precautions will be taken by those involved to maintain your confidentiality, only members of the research team will have access to your personal data.

Your data will be processed in accordance with the UK General Data Protection Regulation (GDPR) and the Data Protection Act, 2018.

The data controller for this project will be Staffordshire University. The university will process your personal data for the purpose of the research outlined above. The legal basis for processing your personal data for research purposes under the UK GDPR is a 'task in the public interest'.

Questions, comments and requests about your personal data can be sent to the Staffordshire University Data Protection Officer. If you wish to lodge a complaint with the Information Commissioner's Office, please visit [www.ico.org.uk](http://www.ico.org.uk).

### **What are your choices about how your information is used?**

- You can stop being part of the study at any time, up until two weeks after the interview. You do not have to give a reason for your decision to withdraw, and your legal rights will not be affected. If you withdraw after 2 weeks from the interview, the information you provided may have already been analysed and so cannot be erased.
- We need to manage your records in specific ways for the research to be reliable. This means that we won't be able to let you see or change the data we hold about you.

### **Where can you find out more about how your information is used?**

You can find out more about how we use your information:

- at [www.hra.nhs.uk/information-about-patients/](http://www.hra.nhs.uk/information-about-patients/) or
- at [www.hra.nhs.uk/patientdataandresearch](http://www.hra.nhs.uk/patientdataandresearch)
- by asking one of the research team, or
- by sending an email using the contact details at the bottom of this leaflet.

### **What will happen to the results of the research study?**

The study is to be written up as part of a PhD program and will be submitted to Staffordshire University by September 2024. Following completion, results can be obtained on request by email (see contact details below) and findings may be disseminated via conference presentations and academic journal publications.

### **Who is organising and funding the research?**

This research is being organised by Staffordshire University where the Chief Investigator has been awarded a Doctoral Scholarship. The research itself has not received any specific funding.

### **Who has reviewed the study?**

The study has been reviewed by Staffordshire University's Independent Peer Review process, Staffordshire University ethics proportionate review, an NHS Research Ethics Committee and has received Health Research Authority approval to be carried out according to the research protocol which can be viewed on request.

### **Further information and contact details**

**Chief-Investigator:** Mrs Rachael Martin, RM, PGCHE, MSc, BSc, FHEA.  
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Email: [Rachael.martin@research.staffs.ac.uk](mailto:Rachael.martin@research.staffs.ac.uk)

**Academic Supervisor:** Dr Sarahjane Jones, PhD, SFHEA, BMedSci.  
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Interim Associate Dean for Research and Enterprise  
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**Research Sponsor:**  
Contact:

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Professor Nachi Chockalingam  
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School of Health, Science and Wellbeing  
R114a, Staffordshire University  
Leek Road  
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Email: [n.chockalingam@staffs.ac.uk](mailto:n.chockalingam@staffs.ac.uk)

For complains:

Dr Tim Horne  
Director of Research  
Cadman Building,  
Staffordshire University  
Email: [tim.horne@staffs.ac.uk](mailto:tim.horne@staffs.ac.uk)

Trust Research and Development Manager [Insert details here once study site confirmed]

# CONSENT FORM (v1.2\_30.03.2023)

## Midwife Interviews

**Title of Study:** Adaptive performance of midwives as a Resilience mechanism to improve safety in maternity services: a multiple case, qualitative embedded design case study (Resilient Maternity Care)

**IRAS ID:** 321241

**Name of Researcher:** Rachael Martin

\* Required

### Consent to participate

1. Full name \*

2. I confirm that I have read and understand the information sheet version number .....dated..... for the above study and have had the opportunity to ask questions.

\*

Yes

3. I understand that my participation is voluntary and that I am free to withdraw at any time until two weeks after my participation without giving any reason, and without my employment or legal rights being affected.

\*

Yes

4. I understand that my interview will be audio recorded if conducted face-to-face, or video recorded if conducted virtually and that the recording will be destroyed after it has been transcribed.

Yes

5. I understand that relevant sections of data collected in the study may be looked at by authorised individuals from Staffordshire University, and regulatory authorities where it is relevant to my taking part in this study. I give permission for these individuals to have access to these records and to collect, store, analyse and publish information obtained from my participation in this study

\*

Yes

6. I understand that my personal details will be kept confidential. I understand that the interview will be recorded and that anonymous direct quotes from the interview may be used in the study reports.

\*

Yes

7. I agree to take part in the above study.

\*

Yes

8. Please type your full name to sign the consent form electronically

\*

## Contact permissions

9. I would like to receive a copy of the findings by email

Yes

No

10. Following completion of the study, there may be opportunities to participate in a feedback focus group to discuss the findings. I would like to be contacted by email about opportunities to participate in a focus group to discuss the findings of the study.

Yes

No

11. Please provide your work email address if you answered yes to questions 8 or 9

---

This content is neither created nor endorsed by Microsoft. The data you submit will be sent to the form owner.

 Microsoft Forms

## Appendix 13: Interview guide for midwives

### **Ice-breaker questions**

How long have you been a Midwife?

What is your current role?

What is your clinical background (where have you worked before?)

### **Safety**

I am interested in how midwives create and maintain safety in labour ward. What are your thoughts on this?

How does what you do contribute to safety (resilience) of the unit as a whole?

How does this affect the way that you work?

On an individual level, how do you anticipate and monitor for risks to the woman and family you are looking after? (anticipating and monitoring)

If you perceive a threat to a woman's safety or detect a deterioration in her condition, how do you respond? (responding).

Do you feel supported to escalate concerns?

### **Adaptive practice**

The theory that I have been exploring suggests that it is people adjusting the way they work which keeps the system safe and functioning despite pressures or unforeseen events which might derail operations.

What do you think about this?

Can you think of a situation where you have had to adapt your practice from what you think you should be doing? (strategy)

- What were you "supposed" to do and what did you do differently?
- Why was this? (objective)
- What were the circumstances (situational conditions) that necessitated the adaptation?

OR/ have you seen other people doing things differently from what they are supposed to do?

***Examples of adaptations identified in the observational phase to be discussed here***

....

Potential questions:

- Have you seen this example in practice?
- Why do you think midwives might do this?
- How do you think that affects safety/ organisational resilience?

Are there any obstacles that prevent you from practicing in the way you would like to?

- How does this make you feel?
- How do you overcome these obstacles? (resources/ enabling conditions)

What do you do if you have competing demands and you cannot do everything?

Do you ever ask for help if you cannot manage to do everything?

How do your managers support you to do your job (blunt end interactions)?

**Organisational resilience**

How do you think safety is created and maintained at the organisational level?

One theory suggests that there are four cornerstones of resilience: Monitoring, Responding, Anticipating and Learning.

Can you think of any mechanisms that are used in maternity to anticipate or monitor for risks to safety or to the smooth functioning of the unit?

How does the unit respond to risks to safety? For example, if demand outstrips capacity.

How does the organisation learn from adverse events or near misses? How do you personally hear about these events and how might it change your practice?

How do you think organisational safety mechanisms e.g. audit and risk management practices, affect patient care? What do you think is the women's experience (sharp end interactions)?

*\* NB. This interview guide is to illustrate the sort of questions that may be asked during the semi-structured interviews with clinical midwives, but the guide will be amended following analysis of the observational data in phase one of the case study. The questions are a guide to help direct the interviews. They are not intended to be used prescriptively or exclusively. Other questions may be asked in response to the participants' leading. It may not be necessary to use all of these questions if the participant has a lot of relevant information to share.*

## Appendix 14: Midwife-manager PIS



### Participant Information Sheet Manager Interviews (WP 2.1)

(Version 1.2: 30.03.2023)



### **Adaptive performance of midwives as a Resilience mechanism to improve safety in maternity services: a multiple case, qualitative embedded design case study (Resilient Maternity Care)**

We would like to invite you to take part in our research study. Before you decide we would like you to understand why the research is being done and what it would involve for you. One of our team will go through the information sheet with you and answer any questions you have. Talk to others about the study if you wish. Ask us if there is anything that is not clear.

#### **What is the purpose of the study?**

The purpose of this study is to explore how midwives adapt or adjust what they do according to the conditions they are working in, to keep the service running safely. The principle of adaptive performance comes from the theory of Resilience Engineering, which is well established in other industries but currently underexplored in Midwifery.

This study is primarily an educational undertaking as part of a PhD programme. However, the motivation for this research is that as a Registered Midwife, I want to contribute to improving maternity services for the safety of birthing people and families, and for the wellbeing of staff who work there. It is hoped that the findings from this work will contribute to service improvement which may benefit midwives in the future, by improving the working environment.

#### **Why have I been invited?**

You are being invited to take part because you are a Midwife who works in a managerial role on Labour ward, where demands are unpredictable, requiring you to work adaptively. Your insight and experience are valuable.

#### **Do I have to take part?**

It is up to you to decide whether or not to take part. If you do decide to take part, you will be given this information sheet to keep and be asked to sign a consent form. If you decide to take part, you are still free to withdraw without giving a reason, at any time within 2 weeks of being interviewed. After this time the information you have provided will have been incorporated into the analysis and cannot then be removed. Withdrawal from the study will not affect your legal rights.

#### **What will happen to me if I take part?**

The study involves a one-to-one interview with Rachael in which she will ask about your experience as a manager on labour ward. This study is part of a PhD program and as such

is separate from the Trust. You are free to be honest and truthful in your responses. The interview will take place in privacy at your workplace or virtually via MS Teams if you prefer. It will last around an hour, depending on how much you have to say. The interview will be audio recorded by the interviewer, to be transcribed later for the purpose of analysis. Interview recordings may be transcribed by a professional transcriber. If you chose to participate virtually, the interview will be video recorded, and the embedded transcription software will be used. Recordings will be destroyed following transcription. Transcripts will be de-identified and non-identifiable direct quotations may be published.

### **Expenses and payments**

You will not be paid to participate in this study.

### **What are the possible benefits of taking part?**

Participation in the study will not directly benefit you. The benefit of participation is to contribute to understanding how midwives work and the mechanisms that you use to maintain safety in your working environment. This will hopefully contribute to service improvement which may benefit yourself, other staff, and service users.

### **What are the possible disadvantages and risks of taking part?**

There is a potential psychological risk, that interview participants could become distressed by topics discussed during the interview. However, interviews will be participant led, meaning that you choose what you want to talk about, and you decide what you are happy to disclose. It is not intended that the interviews will be psychologically distressing but if you should become upset by anything discussed during the interview then you can choose to stop at any time for a break or to discontinue the interview without any detriment to yourself. If any unresolved distress were to arise from the participating in the interview, you are advised to contact the Professional Midwifery Advocate (PMA) at the Trust, whose role is to support midwives' wellbeing and safety of the public.

There is also a potential risk to your professional registration, in that the researcher has a legal duty to report to the Nursing and Midwifery Council any observed or disclosed malpractice that presents a risk to patients or members of the public.

### **What happens when the research study stops?**

After the interview has concluded, no further participation is required. However, if you would like to receive the findings, please advise the researcher, and provide contact details on the consent form for these to be sent to you. If you consent to being contacted, you may be invited to participate in a feedback focus group following completion of the study. This is not a requirement of participation in the study and is entirely voluntary. If you tick no to being contacted on the consent form, you will not receive any further communication from the Researcher.

The research will run until December 2023 with the final thesis to be submitted to the University by September 2024.

### **What if there is a problem?**

If you have a concern about any aspect of this study, you should ask to speak to the Researcher who will do their best to answer your questions. The Researcher's contact details and those of the research sponsor are given at the end of this information sheet. If you remain unhappy and wish to complain formally, please contact the Trust's Research and Development Manager. Alternatively, you may contact the Director of Research at Staffordshire University which is the Sponsor for this study. Contact detail are provided at the end of this information sheet.

### **Will my taking part in the study be kept confidential?**

Yes. Confidentiality is assured. Interviews will be digitally recorded and then an identification code applied before it is transcribed. Transcription may be conducted by a professional transcriber who is an approved supplier of Staffordshire University, with whom appropriate agreements are in place for data protection. All place names and identities will be omitted during transcribing to protect your anonymity. Individuals will not be identifiable in the final analysis or report. Information obtained will be used solely for the purposes of this study. However, information pertaining to clinical practice issues may be given to your line manager or Professional Midwifery Advocate in the event of a disclosure which requires reporting in accordance with the law or NMC requirements.

If you join the study, some parts of the data collected for the study will be looked at by authorised persons from Staffordshire University, who are organising the research. They may also be looked at by authorised people to check that the study is being carried out correctly. All will have a duty of confidentiality to you as a research participant.

### **How will we use information about you?**

We will need to use information from you for this research project. This information will include your name and contact details. People will use this information to do the research or to check your records to make sure that the research is being done properly. People who do not need to know who you are will not be able to see your name or contact details. Your data will have a code number instead. We will keep all information about you safe and secure. Once we have finished the study, we will keep some of the data so we can check the results. We will write our reports in a way that no-one can work out that you took part in the study.

All research data will be kept securely for 10 years. After this time your data will be disposed of securely. During this time all precautions will be taken by those involved to maintain your confidentiality, only members of the research team will have access to your personal data.

Your data will be processed in accordance with the UK General Data Protection Regulation (GDPR) and the Data Protection Act, 2018.

The data controller for this project will be Staffordshire University. The university will process your personal data for the purpose of the research outlined above. The legal basis for processing your personal data for research purposes under the UK GDPR is a 'task in the public interest'.

Questions, comments and requests about your personal data can be sent to the Staffordshire University Data Protection Officer. If you wish to lodge a complaint with the Information Commissioner's Office, please visit [www.ico.org.uk](http://www.ico.org.uk).

## **What are your choices about how your information is used?**

- You can stop being part of the study at any time, up until two weeks after the interview. You do not have to give a reason for your decision to withdraw, and your legal rights will not be affected. If you withdraw after 2 weeks from the interview, the information you provided may have already been analysed and so cannot be erased.
- We need to manage your records in specific ways for the research to be reliable. This means that we won't be able to let you see or change the data we hold about you.

## **Where can you find out more about how your information is used?**

You can find out more about how we use your information:

- at [www.hra.nhs.uk/information-about-patients/](http://www.hra.nhs.uk/information-about-patients/) or
- at [www.hra.nhs.uk/patientdataandresearch](http://www.hra.nhs.uk/patientdataandresearch)
- by asking one of the research team, or
- by sending an email using the contact details at the bottom of this leaflet.

## **What will happen to the results of the research study?**

The study is to be written up as part of a PhD program and will be submitted to Staffordshire University by September 2024. Following completion, results can be obtained on request by email (see contact details below) and findings may be disseminated via conference presentations and academic journal publications.

## **Who is organising and funding the research?**

This research is being organised by Staffordshire University where the Chief Investigator has been awarded a Doctoral Scholarship. The research itself has not received any specific funding.

## **Who has reviewed the study?**

The study has been reviewed by Staffordshire University's Independent Peer Review process, Staffordshire University ethics proportionate review, and an NHS Research Ethics Committee, and has received Health Research Authority approval to be carried out according to the research protocol which can be viewed on request.

## **Further information and contact details**

**Chief-Investigator:** Mrs Rachael Martin, RM, PGCHE, MSc, BSc, FHEA.  
School of Health and Social Care,  
Staffordshire University  
Blackheath Lane,  
Stafford.

Email: [Rachael.martin@research.staffs.ac.uk](mailto:Rachael.martin@research.staffs.ac.uk)

**Academic Supervisor:** Dr Sarahjane Jones, PhD, SFHEA, BMedSci.

Professor in Healthcare Safety and Performance  
Interim Associate Dean for Research and Enterprise  
School of Health and Social Care,  
Staffordshire University  
Blackheath Lane,  
Stafford.

Email: [Sarahjane.jones@staffs.ac.uk](mailto:Sarahjane.jones@staffs.ac.uk)

**Research Sponsor:**

Contact:

Staffordshire University  
Professor Nachi Chockalingam  
Professor Of Clinical Biomechanics  
School of Health, Science and Wellbeing  
R114a, Staffordshire University  
Leek Road  
Stoke on Trent.

Email: [n.chockalingam@staffs.ac.uk](mailto:n.chockalingam@staffs.ac.uk)

For complains:

Dr Tim Horne  
Director of Research  
Cadman Building,  
Staffordshire University  
Email: [tim.horne@staffs.ac.uk](mailto:tim.horne@staffs.ac.uk)

Trust Research and Development Manager [Insert details here once study site confirmed]

## Appendix 15: Interview Guide for Midwife Managers

### **Ice-breaker questions**

How long have you been a Midwife?

What is your current role?

What is your clinical background (where have you worked before?)

### **Safety**

I am interested in how midwives create and maintain safety in labour ward. What are your thoughts on this?

How do you think midwives on the labour ward contribute to safety of the unit as a whole?

### **Adaptive practice**

Can you think of any examples of situations where midwives work differently from what is written in the policy?

- Why do you think this is? (objective)
- How do you feel about this?

Do you think midwives should be supported to work adaptively or should variation be standardised?

How is variation in practice monitored?

### ***Examples of adaptations identified in the observational phase to be discussed here***

....

Potential questions:

- Have you seen this example in practice?
- What do you think about it?
- Why do you think midwives might do this?
- How do you think that affects safety/ organisational resilience?

The theory that I have been exploring suggests that it is people adjusting the way they work which keeps the system safe and functioning despite pressures or unforeseen events which might derail operations.

What do you think about this?

### **Organisational resilience**

How do you think safety is created and maintained at the organisational level?

One theory suggests that there are four cornerstones of resilience: Monitoring, Responding, Anticipating and Learning.

What mechanisms are used in maternity to anticipate or monitor for risks to safety or to the smooth functioning of the unit?

How does the unit respond to risks to safety? For example, if demand outstrips capacity.

How does the organisation learn from adverse events or near misses? How do midwives on the labour ward learn from these events?

How do you think organisational safety mechanisms e.g. audit and risk management practices, affect patient care? What do you think is the women's experience (sharp end interactions)?

How do audit and risk management practices affect midwives working on labour ward?

How does the organisation learn from midwives working clinically on the labour ward?

\* NB. This interview guide is to illustrate the sort of questions that may be asked during the semi-structured interviews with midwife-managers. The questions are a guide to help direct the interviews but are not intended to be used prescriptively or exclusively. Other questions may be asked in response to the participants' leading. It may not be necessary to use all of these questions if the participant has a lot of relevant information to share.

# Appendix 16: Protocol amendment approval

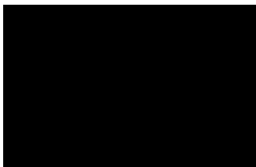


## East Midlands - Nottingham 1 Research Ethics Committee

2 Redman Place  
Stratford  
London  
E20 1JQ

Tel: 0207 104 8271

17 January 2024



Dear Mrs Martin

**Study title:** Adaptive performance of midwives as a Resilience mechanism to improve safety in maternity services: a multiple case, qualitative embedded design case study.

**REC reference:** 23/EM/0034

**Protocol number:** n/a

**Amendment number:** RMC/a2

**Amendment date:** 06 November 2023

**IRAS project ID:** 321241

The above amendment was reviewed by the Sub-Committee in correspondence.

### Ethical opinion

The members of the Committee taking part in the review gave a favourable ethical opinion of the amendment on the basis described in the notice of amendment form and supporting documentation.

### Approved documents

The documents reviewed and approved at the meeting were:

<i>Document</i>	<i>Version</i>	<i>Date</i>
Completed Amendment Tool [321241_RMC.a2_signed ET]	1.0	06 November 2023
Copies of materials calling attention of potential participants to the research [Midwife Interview recruitment email]	1.1	06 November 2023
Copies of materials calling attention of potential participants to the research [Midwife Interview recruitment poster]	1.1	06 November 2023
Copies of materials calling attention of potential participants to the research [Midwife interview recruitment social media post]	1.0	10 November 2023

Copies of materials calling attention of potential participants to the research [Manager Interview recruitment email]	1.1	06 November 2023
Letter from sponsor [321241_RMC_IPR feedback_approval for amendment]	1.0	13 November 2023
Participant consent form [Midwife interview consent form]	1.3	10 November 2023
Participant consent form [Manager interview consent form]	1.3	10 November 2023
Participant information sheet (PIS) [Midwife Interview PIS]	1.3	06 November 2023
Participant information sheet (PIS) [Manager Interview PIS]	1.3	06 November 2023
Research protocol or project proposal [RMC Protocol]	1.3	06 November 2023

### Membership of the Committee

The members of the Committee who took part in the review are listed on the attached sheet.

### Working with NHS Care Organisations

Sponsors should ensure that they notify the R&D office for the relevant NHS care organisation of this amendment in line with the terms detailed in the categorisation email issued by the lead nation for the study.

### Amendments related to COVID-19

We will update your research summary for the above study on the research summaries section of our website. During this public health emergency, it is vital that everyone can promptly identify all relevant research related to COVID-19 that is taking place globally. If you have not already done so, please register your study on a public registry as soon as possible and provide the HRA with the registration detail, which will be posted alongside other information relating to your project.

### Statement of compliance

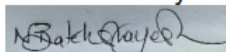
The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

### HRA Learning

We are pleased to welcome researchers and research staff to our HRA Learning Events and online learning opportunities— see details at: <https://www.hra.nhs.uk/planning-and-improving-research/learning/>

<b>IRAS Project ID - 321241:</b>	<b>Please quote this number on all correspondence</b>
----------------------------------	---

Yours sincerely



pp

**Mr Paul Hamilton**  
**Chair**

E-mail: Nottingham1.rec@hra.nhs.uk

**East Midlands - Nottingham 1 Research Ethics Committee**

**Attendance at Sub-Committee of the REC meeting on 16 January 2024**

**Committee Members:**

<i>Name</i>	<i>Profession</i>	<i>Present</i>	<i>Notes</i>
Mr Paul Hamilton Chair	Retired Local Government Officer	Yes	
Mrs Katharine Kings	Retired Specialist Practice Nurse	Yes	

**Also in attendance:**

<i>Name</i>	<i>Position (or reason for attending)</i>
Nina Bakhshayesh	Approvals Adminisatrtor

## Appendix 17: Social media advertising

**Resilient Maternity Care**  
*Exploring how midwives keep maternity services safe and running through adaptive performance.*

**Recruiting Midwives to participate in an interview about safety**

**If you are a midwife who works on Labour ward, I need to hear from you!**

**What's involved:** A one-off individual interview of up to one hour at the hospital or via MS Teams.

**What's in it for you?** Participation is voluntary and unpaid. However, you will be offered an opportunity to be entered into a prize draw to win one of five £50 gift vouchers as a mark of gratitude for your time.

For more information, please contact: [Rachael.Martin@research.staffs.ac.uk](mailto:Rachael.Martin@research.staffs.ac.uk)

RMC IRAS ID: 321241 MW Interview Recruitment Post\_v1.0\_10.11.23

### Accompany text to read:

*"[Trust name] Labour ward midwives needed to participate in a research study about how you contribute to safety. Please email me to find out more."*

## Appendix 18: Initial coding framework for site B

Adaptation	Situational conditions	Resources and Enabling conditions	Objectives	Sharp end interactions (affect on service users)	Blunt end interactions (affect on organisational resilience)	Cornerstone of resilience
	Capacity	Helicopter view	Safety of ward	Delay or disruption in care	Managed workload	Anticipation
	Availability of staff	Coordinator / Flow Co support	Balancing clinical priorities	Clinical outcomes	Compliance with auditable standards and legislation	Monitoring
	Labour ward busy	Enough Time	Timely completion of tasks	Ability to respond to emergencies	Efficiency and effectiveness	Responding
	Short staffing	Midwife's autonomy	Routine care provision	Inefficiency	Patient Flow	Learning
	Individual workload	Knowledge	Compliance with guidelines	Compliance with guidelines	Defensive practice	
	Patient complexity	Delegation to Student midwife*	Effective monitoring	Effective patient care.	Continuation of care	
	Equipment issues	Available equipment & resources	Accurate and timely documentation	Patient experience	Risk to accurate records	
	Competing demands / priorities	Electronic records	Detection of deterioration	Effective monitoring	Adverse outcomes	
	Lack of knowledge	Midwife's skill and experience	Labour progression	Safe staffing	Quality of care provision	
	Time	Available alternative method	Workload management	Unmanageable workload	Increased workload	
	Inaccessible or unclear guidelines	Available capacity	Avoid adverse events/ outcomes	Avoided adverse events	Reduced capacity	

	<p>Clinical condition</p> <p>Poor skill mix</p> <p>Policy and procedure</p> <p>Lack of training*</p>	<p>Stable clinical condition</p> <p>Manager Support*</p> <p>Safety netting procedures</p> <p>Birth partner support</p> <p>Early intervention</p> <p>Adequate staffing</p> <p>Manageable workload</p>	<p>Clinical outcomes</p> <p>Patient choice</p>	<p>Avoided unnecessary intervention</p>	<p>Preserved safety of the ward</p> <p>Effect on future care</p> <p>Masked problem</p>	
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## Appendix 19: Additional codes from Site B Interview data

Additional codes from Interview data						
Adaptation	Situational conditions	Resources and Enabling conditions	Objectives	Sharp end interactions	Blunt end interactions	Cornerstone of resilience
Midwife, Site B	Personalities or person factors  Professional differences	Teamwork  Ability to question or escalate  Huddles or Handovers  Midwife motivation		Effect on Staff	Change in practice or potential for variability  Communication of Changes  Trust awareness	
Midwife, Site B		Ward round		Potential for error	Retention	
Midwife, Site B	Culture  Unavoidable or no other option		Accessible information			
Midwife, Site B	*Lack of training or support		Patient Safety		Reputation or Public Trust	
Midwife, Site B		Delegation to Student midwife or other	Custom and practice			
Midwife, Site B					Financial implications	
Manager, Site B		Midwife Flexibility				
Manager, Site B		*Leadership or Manager support				

Appendix 20: Framework matrix for Objectives Theme for Site B

Participant	Objectives															
	Accessible information	Accurate and Timely Documentation	Avoid Adverse Events or Outcomes	Balancing Clinical Priorities	Clinical Outcomes	Compliance with Guidelines	Custom and Practice	Detection of Deterioration	Effective Monitoring	Labour Progression	Patient Choice	Patient safety	Routine Care Provision	Safety of Ward	Timely Completion of Tasks	Workload Management
1																
2																

