

**Evaluation of video reflexive ethnography as a tool for
improvement of teamwork and communication at the multi-
disciplinary maternity unit handover**

Siobhan Kathleen McHugh

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The candidate confirms that the work submitted is her own, except where work which has formed part of jointly-authored publications has been included. The contribution of the candidate and the other authors to this work has been explicitly indicated below. The candidate confirms that appropriate credit has been given within the thesis where reference has been made to the work of others.

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All authors developed the concept for the systematic review. SM designed the study and conducted the searches, screening, data extraction and analysis with input from RL, JOH and LS. SM drafted the publication and thesis manuscript. All authors provided comments and approved the final version.

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Abstract

The implementation of video reflexive ethnography (VRE) is suggested to be a successful tool through which to prompt change and improvement at the inter-professional handover in acute healthcare. This thesis was designed to evaluate VRE as an improvement approach, focused on prompting improvement at the inter-professional clinical handover in an acute maternity team. The main aims of the work were to: 1) understand how team reflexivity has been implemented as a tool for improvement in inter-professional hospital-based healthcare teams, 2) to understand whether VRE is feasible and acceptable as a tool for improvement in an acute maternity unit, 3) the role of the facilitator in the successful delivery of VRE and 4) whether and how VRE was successful in prompting change and improvement. A mixed-methods approach was taken to address these main objectives, and a systematic review of the literature was conducted. Semi-structured interviews and ethnographic field notes were employed to gather data on the feasibility and acceptability of VRE, staff perceptions of the VRE process, and the contextual factors important in the successful delivery of VRE. Qualitative data from the reflexive feedback sessions was explored to understand how staff discovered potential issues from the video footage and collectively developed potential solutions. A short before and after survey was employed to gather the perceptions of the wider staff group on the changes to the handover process. The quantitative data generated was assessed using independent samples t-tests, and suggested significant perceived improvement in communication at the inter-professional handover. Qualitative data was assessed using a combination of inductive and

deductive thematic analysis and adapted framework analysis, and illustrated the specific discoveries and solutions identified in the reflexive feedback sessions, as well as information about feasibility, acceptability and salient contextual factors in the delivery of VRE. The qualitative data was used to develop an initial logic model to map the process of VRE. The thesis also considers the implications of the research and potential for future work, as well as limitations and the challenges of undertaking applied research in an acute healthcare environment.

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List of Abbreviations

AR	Anaesthetic registrar
CA	Consultant anaesthetist
CO	Consultant obstetrician
CS	Clinical supervisor
CW	Charlotte Wickes
ICU	Intensive care unit
JOH	Jane O'Hara
LS	Laura Sheard
MC	Midwife coordinator
ODP	Operating department practitioner
OR	Obstetric registrar
RL	Rebecca Lawton
SM	Siobhan McHugh
SN	Scrub nurse
VRE	Video reflexive ethnography

Chapter 1

Introduction

This chapter presents an overview of the literature exploring the quality and safety of healthcare and discusses specific research efforts made to improve patient safety in maternity services. The importance of contributory patient safety factors in the provision of safe and high-quality healthcare is then outlined, and the potential of video-reflexive ethnography as an adaptive socio-cultural tool for quality improvement will be explored. The overall aim of the thesis was to rigorously evaluate video-reflexive ethnography as a tool for the improvement of teamwork and communication in acute, multi-disciplinary maternity handovers. The research studies conducted to investigate and critically evaluate video-reflexive ethnography as a tool for collective learning about, and improvement of, socio-cultural contributory patient safety factors are described in the thesis aims and objectives.

1.1 Quality and safety in healthcare

NHS England (2016) identify safety, clinical effectiveness and patient-centredness as the three constructs of quality care. Although there is no universally accepted definition of quality of care, safety is considered as a central component in this multi-faceted concept. This is reflected in the increased research focus on improving and transforming patient safety issues in recent years (Watcher, 2010). The publication of '*To Err is Human: Building a Safer Health System*' by the Institute of Medicine (Kohn, Corrigan & Donaldson, 2000) was arguably a seminal moment in the modern patient

safety movement (Wachter, 2010). This paper paved the way for subsequent reports on the quality and safety of care (*'An Organisation with a Memory'*, Department of Health, 2000). These key reports were influential in outlining the key message that, although patients were being harmed through human error, it was essential to develop an understanding of why errors were occurring rather than simply accepting that the individual was to blame. Reason (2000), who was hugely influential in the delivery of these key reports, suggested that an understanding of safety in healthcare must move away from the currently dominant person approach - viewing unsafe acts as arising from individual, aberrant processes - to a systems approach in which human error is seen as a consequence of 'upstream' systemic factors rather than a cause of harm. Collectively, these reports and commentaries have acted as a stimulus for research and investment. Subsequent research efforts have led to the reduction of safety incidents through the development of improvement methods including organisational level incident reporting systems (Pham, Girard & Pronovost, 2013), the WHO Surgical Safety checklist (Treadwell, Lucas & Tsou, 2013; Walker, Reshamwalla & Wilson, 2012) and interventions to reduce healthcare-associated infections (HCAI) (Allegranzi & Pittet, 2009; Gould, Moralejo, Drey et al., 2017). Although the introduction of these, and other, patient safety measures has led to improvements in specific patient safety outcomes, some reports suggest that progress is slow. Wachter (2010) suggests that, although incremental progress may be all we can hope for in as complex an environment as healthcare, there is still increasing evidence of IT-related errors in healthcare and concerning gaps in progress in terms of accountability and shifting from a culture of blame.

Preventable deaths in healthcare remain a widespread issue (Hogan, Healey, Neale et al., 2012). In the UK, a reported 11,859 patient deaths in 2009 were judged to be preventable (Hogan et al., 2012). A series of recent reports have highlighted nationwide failures in the provision of high quality, safe patient care within the UK National Health Service (Berwick, 2013; Francis, 2013; Keogh, 2013). Research continues to find inconsistencies in the quality of care provision for patients across the NHS and extensive variation with the quality and safety of care provided regionally. Despite current stability in the reported rate of harm (Hollnagel, Wears & Braithwaite, 2015), increasing demand for health services combined with increasing complexity of these services leads to the conclusion that the rate of harm in healthcare will only increase if we do not consider novel ways of thinking about, and transforming, safety in health services.

Safety has often been considered as the absence of harm or incident. In an attempt to advance the understanding of safety in health services research, the publication of '*From Safety-I to Safety-II: A White Paper*' (Hollnagel, Wears & Braithwaite, 2015) was the catalyst for a new way of thinking about safety. As outlined by Hollnagel et al. (2015), the so-called 'Safety-I' approach defines safety to be the state in which the fewest possible incidents or accidents occur. Safety-I represented the shifting view of patient safety from one predicated on assumptions of individual liability, to a systems approach in which both the causes and contributory factors of a safety incident are identified (Reason, 2000). As such, the premise of a Safety-I approach to safety management is reactive, focusing on adverse

events and attempting to reduce the risk of things going wrong (Hollnagel, 2014).

This approach has been embodied by the introduction of patient safety frameworks, incident reporting systems and root cause analysis, with the primary aim of learning from past harms (Lawton, 2018; Mannion & Braithwaite, 2017; Parker, Wensing, Esmail et al., 2015; Reason, 1990). However, reports suggest that this simple systems approach is no longer in line with the complexity of healthcare provision, relying still on a linear cause-and-effect approach to patient safety incidents (Mannion & Braithwaite, 2017). There has been much debate about whether the lack of success in patient safety improvement since the publication of '*To Err is Human*' (2000) is indeed due to the linear approach of Safety-I models and theories, or whether this could be attributed to failure to act on contributory patient safety factors and poor quality incident reporting (Lawton, 2018). Whilst there may continue to be debate about the need for a shift away from a high-quality Safety-I approach to safety in healthcare, there can be no doubt that the increasing complexities of healthcare provision mean that healthcare organisations must be increasingly flexible in their approach to care at all levels. As such, the way we think about safety must also be flexible and adaptive.

As an often unyielding, uncertain and complex system, it is not surprising that things go wrong in healthcare. However, it should be acknowledged when thinking about safety that the provision of care, more often than not,

achieves desired and expected outcomes. Yet, the current focus on failure within the system in pursuit of safety does not help us to understand why systems practically never fail. It is important not only to acknowledge that this is the case, but also to understand the role of clinicians in being able to adapt their working practice to the complex and often changing conditions within the healthcare system; in working flexibly to ensure that things more often than not go right (Braithwaite, Wears & Hollnagel, 2015; Hollnagel, Wears & Braithwaite, 2015; Sujan, 2018). The Safety-II perspective considers the ability of a system to flexibly adapt to variable conditions, ensuring that the system routinely succeeds. The focus on how and why systems succeed under varying conditions shifts the assumption that humans are the main liability, and instead considers humans, as the most variable and adaptive component of the system, to be the reason we see relatively few poor outcomes (Hollnagel, Wears & Braithwaite, 2015). People are identified as the adaptive solution. This new way of thinking about safety has subsequently shaped a new way of thinking about health services research. Instead of focusing on why things go wrong, the Safety-II perspective allows us to consider why the system usually produces desired and expected outcomes; to consider routine and everyday practice, and how we can maintain flexibility, and the ability to adapt, in an increasingly complex system. It also allows us to consider systems and organisational level processes and how improvement in these areas of healthcare services might allow for more generalisable progress in safe healthcare provision without imposing constraints on working practice (Sujan, 2018). A Safety-II perspective to safety management therefore takes a proactive approach,

exploring how success is achieved in everyday working practice (Braithwaite, Wears & Hollnagel, 2015).

1.2 Quality and safety in maternity services

Following a series of high-profile patient safety incidents, most notably those reported in the wake of an independent investigation of services at Morecombe Bay (Kirkup, 2015), the quality and safety of UK maternity services have been under scrutiny. In recognition of the seriousness of these failings, in 2018 the UK Government announced that the newly established Healthcare Safety Investigation Branch (HSIB) would be responsible for the investigation of all patient safety investigations of incidents occurring in UK maternity services in a bid to achieve a programme of rapid learning and improvement. Prior to the establishment of the HSIB, an independent review of maternity provision in the UK National Health Service led to the publication of '*Better Births: Improving outcomes of maternity services in England*' (2016). Although the report highlights a 20% reduction in the stillbirth and neonatal mortality rate in the last decade despite increased birth statistics and increasing complexities in labour, it also reports an annual figure of £560 million spent each year compensating families following adverse events during maternity care. Management of labour, cerebral palsy and the interpretation of the cardiotocography (CTG) were identified as the most expensive categories of claim, and make up 70% of the total value of all claims in maternity services (NHS Resolution, 2018). In fact, claims following adverse events in UK maternity services represent the highest value claims reported to the NHS Litigation Authority (NHSLA; NHS Resolution, 2018). It is widely accepted that no birth is ever without risk

(Better Births, 2016), however the 2016 review aimed to provide guidance for maternity services nationally to reduce the current variation in the safety and quality of maternity care (almost half of CQC safety assessments in maternity services are either '*requires improvement*' (41%) or '*inadequate*' (7%)). It is notable that of the seven recommendations outlined by the report, all focus on improvements at a system or organisational level: personalised care; continuity of carer; safer care; investment and improved resource in postnatal and perinatal mental health; multi-professional working; working across boundaries; and a fair payment system (Better Births, 2016). In line with current literature, this suggests that it is improvement in the routine systems and processes governing healthcare professionals and their working practice that will lead to improved quality and safety of patient care (Crosby, 2012).

Of the most concerning findings in the *Better Births* (2016) report, evidence collected from the NHS Staff Survey suggests that staff in maternity services feel they lack support in the workplace (GMC National Training Survey: Bullying and Harrassment, 2014), and that midwives in particular are more likely than any other NHS staff group to feel pressured at work. Recognising the importance of workplace culture in the provision of safe care, the investigation highlighted staff reports of lack of respect and communication across disciplines, and the need for better communication with more transient maternity staff including anaesthetists, neonatologists and theatre staff. It is widely accepted that staff perceptions of teamwork and leadership are directly linked to well-being, which in turn affects the provision of safe

and high-quality care (Manser, 2009; Weller, Boyd & Cumin, 2014). Research into barriers to effective teamwork in healthcare also highlights a clear link between professional communication failures and adverse patient safety events, especially where healthcare teams are inherently multi-disciplinary (Weller, Boyd & Cumin, 2014; West, 1999). Consequently, in conjunction with the NHS *Five Year Forward* (2014) plan, the *Better Births* (2016) publication recommends a specific focus on improvement in multi-professional working and communication to break down barriers between groups of healthcare professionals and improve safety culture within maternity staff teams.

1.3 Communication in healthcare

There are numerous types of communication that healthcare professionals must navigate on a daily basis. Healthcare communications are often broken down in the literature as being either formal or informal (Coiera, 2006).

Formal communication is often defined as communication that is bound by a predetermined structure (Coiera, 2006; Coiera, Jayasuriya, Hardy et al., 2002), including clinical handover, multi-disciplinary team meetings, written patient notes, and drug or procedural order forms. Informal communication occurs when the structure of the communication is driven solely by the individuals involved (Coiera et al., 2002), which might include impromptu face-to-face conversations, telephone communications, communal whiteboards, and emails or other instant messaging services.

Communication can also happen both synchronously, and through more asynchronous means within healthcare (Foronda, MacWilliams & McArthur, 2016). Synchronous communications are real time or face-to-face

communications. They tend to be formal in nature including ward rounds, handovers and multi-disciplinary meetings, although would also include more informal impromptu conversations, often referred to as 'corridor' conversations or interactions. Asynchronous communications are those communications through which information is shared intermittently (Foronda, MacWilliams & McArthur, 2016). They most often occur through written means, whether on communal whiteboards, in patient notes, or through medication or clinical procedure orders. The resultant communication load for healthcare professionals navigating these different levels and types of communication on a day-to-day basis is clear (Coiera, 2006; Coiera et al., 2002).

Within complex, acute healthcare environments, it has been reported that up to 90% of interactions focused on information transfer have involved face-to-face or interpersonal interaction between staff, rather than the use of formal written documents (Coiera et al., 2002). In most healthcare environments this is primarily in the form of the formal communication that occurs during the clinical handover (Eggins & Slade, 2015). Research has found that quality of communication determines the majority of handover quality, with teamwork also providing an independent albeit lesser contribution to the overall quality rating of the handover (Pezzolesi, Manser, Schiffano et al., 2013). The clinical handover permeates modern-day healthcare occurring at multiple points in the healthcare delivery system, including shift changes, patient transfer between hospital departments or units, patient transfer between hospitals, and at the transition from hospital to the community

(Agha, 2012). Notably, poor clinical handover has been shown to create discontinuity in the care pathway, leading to inaccurate assessment and diagnosis, medication errors, delays in ordering specific tests or medications, increased length of hospital stay, increased clinical complications, decreased quality of patient care and even death (Jeffcott, Evans, Cameron et al., 2009; Eggins & Slade, 2015). Moreover, research has found that communication practices in healthcare delivery are particularly vulnerable at organisational interfaces, such as the clinical handover between shifts, departments or even hospitals (Foster & Manser, 2012). This has identified the clinical handover as an important area of patient safety research, with the prevention of handover errors included as part of the World Health Organisation (WHO) Patient Safety Alliance 'High Fives' Initiative (2006).

1.3 Clinical handover and patient safety in acute maternity services

Care during labour, birth and immediate post-natal care are considered among the most acute services in the UK National Health Service (Better Births, 2016). Due to the potential for both maternal and paediatric adverse patient safety events, and the general increase in the complexities present during labour and birth (Better Births, 2016), acute maternity teams are inherently multi-professional and increasingly transient. Care is provided by staff teams often comprising midwives, obstetricians and anaesthetists, with potential for involvement of theatre staff, emergency care staff and neonatologists. An increase in the age of first-time mothers (from 27.2 years in 1982 to 30.2 years in 2014), and an increasing proportion of women with

conditions such as diabetes in pregnancy, has led to a higher rate of risk and potential for intervention during birth (Better Births, 2016). Of the 648,107 births in NHS hospitals in 2015-16, only 53% were delivered solely by midwives, compared with 75.9% just 25 years ago (NHS Digital, 2016). In such a high-risk environment, aggravated by increasing complexity, staffing pressures and pressures related to the consequence of error, the need for effective teamwork and communication is amplified. It is clear that effective communication and shared mental models are essential in the provision of safe patient care, especially where care providers are working inter-professionally (McComb & Simpson, 2014). On the labour ward, as in other acute healthcare domains, the shift-to-shift handover is where staff teams develop this collective situational awareness through discussion of the current situation, anticipation of potential safety issues, and contingency planning (Berridge, Mackintosh & Freeth, 2010). There are numerous conceptual models of handover in healthcare, all of which focus on handover as a transfer of information and professional responsibility and accountability between individuals or teams of healthcare staff (Davey & Cole, 2015; Jeffcott et al., 2009). There is a growing body of literature to suggest that optimisation of multi-disciplinary handover is associated with higher quality and safer patient care (Ruhstaller, Roe, Thurlimann et al., 2006) and reduction of stress for staff (Cleland, Ross, Miller et al., 2009; Edozien, 2011).

Evidence suggests that safe and high-quality clinical handover depends on both technical and non-technical skill (Manser, Foster, Gisin et al., 2009).

Where technical skills refer to specific clinical or procedural skills, non-technical skill refers to the complementary socio-cognitive skills, such as elements of teamwork, communication and leadership, that are contributing factors to patient safety (Flin & Patey, 2009). Studies of handover in healthcare have focused almost entirely on improvement of technical or procedural skill (Pezzolesi et al., 2013).

There are two common approaches to handover communication standardisation apparent in the literature (Manser & Foster, 2011). The first approach is a more general approach to structured handover communication, defining the topics to be covered and the order in which they should be discussed, but making no reference to specific clinical content. Of these, the most widely implemented structural intervention (Reisenberg, Leitzsch & Little, 2009) has been the '*Situation, Background, Assessment, Recommendation (SBAR)*' intervention (and its derivatives: ISBAR, SBAR-R, ISBARR and ISOBAR), initially developed to improve the quality of handover (Haig, Sutton & Whittington, 2006). SBAR is recognised as providing a clear structure for the transfer of relevant information in a clinically logical order (Muller, Jurgens, Redaelli et al., 2018), and has been widely reported as improving the quality of handover on implementation, as well as improving perceived barriers to inter-professional communication amongst staff (Woodhall et al., 2008). However, a recent review of the impact of SBAR implementation on patient safety found only moderate evidence for improved patient safety, and these improvements were

generally observed when clinical communications were held over the telephone (Muller et al., 2018).

The second approach is generally more clinically specific, and defines not only the order of information transfer, but the specific content to be transferred. Catchpole, de Leval, McEwan et al. (2007) developed specific handover guidelines for handover from the operating theatre to the cardiac intensive care unit, including specific handover preparation, details of clinical tasks to be completed prior to handover, and a defined order in which specific information should be handed over. Although evaluation of the effects of such specific standardised handover protocols are often weak, often defining handover quality as adherence to previously defined protocols. That said, Catchpole et al. (2007) were also able to show that the implementation of their protocol had additional positive effects, including resultant improvements in teamwork during the handover.

The development of handover tools such as SBAR (Haig, Sutton & Whittington, 2006) and ISoBAR (Porteous, Stewart-Wynne, Connolly et al., 2009) focus on the provision of interactional structures to be followed by staff to ensure efficient information transfer. Although it is accepted that information transfer is one outcome of a successful handover, the use of standardised communication protocols and checklists presents constraints that staff must work within, and ignores the more ad hoc and informal elements of communication (Manias & Street, 2001), particularly where teams are heterogeneous and communication occurs across professional

groups. In acute healthcare environments, where situations can change extremely rapidly, and where staff teams are highly transient and multi-disciplinary, this simplified and generalised approach to clinical handover does not allow for flexibility within a complex system.

Although the development of the SHARED (situation, history, assessment, risk, expectation, documentation) handover tool specifically for use in obstetrics and gynaecology reflects the need to consider potential for risk in all patients, consideration of human factors in such an inherently complex setting is imperative (Manser et al., 2009; Pezzolesi et al., 2013). Thus, the development of a specific handover tool in obstetrics and gynaecology as the first to explicitly focus on the non-technical skills involved in shift-to-shift handovers in UK maternity teams was a forward step in healthcare research, accepting the importance of non-technical skills on the success of high quality handover (Pezzolesi et al., 2013). The tool identified communication as the main determinant of handover quality, with teamwork and situational awareness also important in overall quality scores. This literature suggests that a human factors approach to understanding how staff communicate, interact and work within acute maternity services can benefit patient safety research by understanding how staff interactions can be a defence against patient safety failures. However, as the main form of communication within and between groups of healthcare professionals, the acute clinical handover is a complex process where developing mechanisms to cultivate and build resilience could provide significant opportunities to improve patient safety (Hollnagel, Woods & Leveson, 2006; Jeffcott, Ibrahim & Cameron, 2009).

Although handover has demonstrably been identified as a focus for improvement in NTS, the tools to promote improvement outlined above still attempt to impose standardised structure to what is a dynamic and complex process (Jeffcott, Ibrahim & Cameron, 2009). When standardisation has been identified as potentially stifling effective communication in healthcare (Patterson, 2008), it is important to explore methods of improvement that embrace rather than attempt to simplify the inherent complexities of healthcare communication.

1.4 Video reflexive ethnography as a tool for improvement

A growing number of studies recognise the value of qualitative research methods, allowing more open, process-oriented and localised descriptions of routine working practice (Greenhalgh, 2002; Iedema, Forsyth, Georgiou et al., 2006; Lambert & McKeivitt, 2002; Mays & Pope, 2000). Moving from the measurement of specific health outcomes to understanding what people 'do' to achieve safe healthcare, and the values, beliefs and attitudes underpinning these actions, allows us a better appreciation of the complexities of the healthcare environment (Iedema, Forsyth et al., 2006). The increasingly intractable nature of modern healthcare systems means that it is impossible to prescribe how healthcare professionals should work, and that there must be some degree of flexibility or adaptation to context for the system to work. It is therefore important to understand this performance variability within context. Within the context of health services research, and safety and risk management, the main focus has been on an idealised and structured view of what 'should' be done – termed Work-As-Imagined (WAI) – and any deviations from this. At an organisational level, the NHS continues

to investigate adverse events using techniques such as root cause analysis to identify failing components of specific systems. Such methods are founded on the assumption that healthcare is a linear cause-effect environment, and that the success of specific processes and systems can be measured by specific clinical outcomes alone (Hollnagel, Wears & Braithwaite, 2015).

However, the acceptance in healthcare research that in-situ practice differs significantly from an idealised view of healthcare has led to the emergence of qualitative methods that allow us to view the complexities of routine clinical work to better understand the imperfect system in which healthcare staff are expected to provide high quality, safe patient care. This shift in focus to consider the way in which healthcare actually happens over time – termed as *Work-As-Done (WAD)* - allows us to observe and understand how processes and systems in healthcare are generally safe because of the ability of healthcare professionals to adapt to rapid change (Hollnagel, Wears & Braithwaite, 2015). One way of capturing the procedural, organisational and socio-cultural complexities of healthcare has been through video-based research methods (Iedema, Forsyth et al., 2006; Paterson, Botorff & Hewat, 2003; Pink, 2001).

The development of VRE as an approach to healthcare research and improvement combines 'video ethnography' (ethnographic observations and capturing video footage in situ) with 'video reflexivity' where staff (and other key stakeholders where appropriate) collectively view and discuss edited

footage (Carroll, Iedema & Kerridge, 2008). By positioning itself within various endeavours including patient safety research, healthcare improvement, health services research and implementation science, rather than aligning to one of these facets of research and improvement, the authors suggest that VRE is well placed as a more dynamic process. According to its proponents, VRE allows researchers to work in conjunction with healthcare professionals to learn about the complexities of routine clinical work, understand local risks, and optimise working practices (Carroll & Mesman, 2018; Iedema, Hor, Wyer et al., 2015).

VRE is grounded in four guiding principles (Iedema, Carroll, Collier et al., 2019): **exnovation**, collaboration, reflexivity and care. Through the process of **exnovation** (Mesman, 2011), VRE aims to make the complexities of routine clinical practices that are otherwise taken-as-given explicit to healthcare practitioners. Attending to working practices in situ foregrounds the local ecology of care, allowing both the accomplishments and issues of everyday activity to be made visible. This approach allows front-line healthcare professionals (and where appropriate patients and their families) to step back and address the situational complexity which they most often inextricably occupy (Iedema et al., 2019). As a participatory approach to learning about healthcare, VRE is positioned as a **collaborative** way of analysing and potentially redesigning everyday working practice.

Researchers work alongside stakeholders in the knowledge that they are the closest to the point of care as it unfolds, and so are best placed to contribute to learning and improvement. This is motivated primarily by the concept of

reflexivity, which encourages stakeholders to visually consider their in situ practice and prompts them to re-imagine and re-design this based on their inherent understanding of local complexities. Reflexivity is also key in the process of sense-making for the researcher, informing decisions about what to film, how to edit the footage, and how to facilitate reflexive feedback sessions. Fundamental to any improvement activity is the understanding that there is a potential for stakeholders to feel vulnerable or wary of individual judgement or performance scrutiny. In VRE, this is accentuated by the use of video footage to capture performance, and so it is imperative that staff stakeholders feel that **care** is central to the process. Staff must feel confident that any feeling of risk or embarrassment in having their own and others' working practice filmed and scrutinised is offset by the learning that can be achieved through collaborative discussion about the video footage (Iedema et al., 2019). Building on adult learning theories (Dewey, 1922), VRE proposes that learning is most effective when people can visualise and question their own habituated actions (Carroll & Mesman, 2018; Iedema et al., 2015). Allowing healthcare staff to visualise in situ footage is thought to lead to identification and discussion of potential risks, and the development and design of locally-appropriate solutions leading to safer ways of working (Iedema, 2019; Mesman, Walsh, Kinsman et al., 2019).

Since being established in the healthcare literature in 2002 (Iedema, Long, Forsyth et al., 2006), studies using VRE have focused on understanding and collaborative redesigning of clinical handover (Carroll, Iedema & Kerridge, 2008; Iedema, Ball, Daly et al., 2012), environmental and spatial factors

(Hor, Iedema & Manias, 2014), and infection control (Iedema et al., 2015). In its ability to capture the complexities of modern healthcare, and its promotion of collaborative learning and improvement, VRE is distinctive in engaging healthcare professionals and their unique insights of the local ecology of care they inhabit daily to improve the quality and safety of healthcare.

1.4.1 Video reflexive ethnography in the context of this thesis

In this thesis, I set out to evaluate the use of VRE as a tool for improvement in an acute healthcare setting. The process of VRE itself is therefore considered an improvement approach within the context of the evaluation. However it is embedded within academic research, that is, within the research methods employed for the evaluation. This is in line with the position of some of the key authors who suggest that VRE often has twin goals; to optimise or change healthcare practice, and academic research (Carroll & Mesman, 2018). This suggests that VRE can be positioned as a form of participatory action research, engaging both the researcher and participants in a process of critical reflection on practice that prompts transformative change through taking action and doing research (Stringer, 2013, pg. 1). However, the key authors seem to suggest that VRE is not tied to any specific type of research or improvement (Iedema et al., 2019). It can therefore be difficult to delineate VRE as an improvement approach from VRE as a research method within the current literature, especially where the process is used as a prompt for practice optimisation and a way in which to collect research data. That said, although this dual position is taken most often in the published literature (Carroll & Mesman, 2018), there is also evidence that VRE can be employed as a practice optimisation or

improvement approach without an additional research focus (Mesman, 2016). This literature will be explored in more detail in Chapter 3.

Although I have attempted to delineate VRE as an improvement approach within the field work that contributes to this thesis, there is inevitably some cross-over that is difficult to unpick. Specifically, focused ethnography was employed throughout the evaluation process to understand how VRE was applied within an acute maternity context. However, elements of the ethnography also served as the ethnographic element of the VRE process as a way of developing knowledge and understanding of the local context.

Over the period of time in which I have been conducting the research detailed within this thesis, the body of published literature using VRE in various healthcare settings has grown. However it is only recently that the key authors have published guidance on the application of VRE in their book *Video-Reflexive Ethnography in Health Research and Healthcare Improvement* (Iedema et al., 2019). Due to the relatively poor quality of the reporting of how VRE was 'done' within the published literature and the lack of published guidance at the beginning of this piece of work, I relied on the support of the International Association of Video Reflexive Ethnographers (VRE-IA); an experienced group of researchers who have employed VRE in various ways within different healthcare settings. I attended virtual meetings on an approximately bi-monthly basis for the duration of my study, and sought one-to-one virtual meetings with the key authors in the initial stages for guidance on my own approach to VRE within the context of this study.

1.5 Thesis aims

This chapter has provided a broad literature review on the importance of the multi-disciplinary handover in the provision of safe and high quality care in acute health services, and the potential for video-reflexive ethnography as a tool to enable the opportunity for staff-led learning about, and improvement to, contributory patient safety factors inherent in routine practices. This thesis aims to address the following questions:

1. *How is team reflexivity used to improve teamwork and communication in hospital-based inter-professional healthcare teams? A systematic review.*

This thesis aims to further our understanding of how reflexive practice has previously been used in health services research to engage multi-disciplinary staff teams in practice improvement to identify the strengths, limitations and gaps within the current literature.

2. *How does video-reflexive ethnography work?*

This thesis aims to further our understanding of how video-reflexive ethnography works as a dynamic research and improvement method.

This information was captured primarily through extensive ethnographic field notes capturing the process of VRE over time.

Additional data was captured in descriptive analysis of the reflexive feedback sessions to understand how staff engaged with the video footage, and through individual interviews where staff were asked about how they felt the feedback session allowed them to explore handover practice.

3. *How feasible and acceptable is the implementation of video-reflexive ethnography in acute maternity services?*

This thesis aims to further our understanding of the feasibility and acceptability of using video-reflexive ethnography as an improvement tool in acute, multi-disciplinary healthcare teams. Two approaches to collecting this information were used. Firstly, extensive ethnographic field notes captured the feasibility of using this improvement tool within an acute, multi-disciplinary labour ward. Secondly, labour ward staff engaged in the research project were asked about their views on the use of video-reflexive ethnography during individual interviews.

4. *Does video-reflexive ethnography lead to improvement in teamwork and communication at the multi-disciplinary labour ward handover?*

This thesis aims to further our understanding of whether video-reflexive ethnography can generate staff-led suggestions for, and implementation of, improvements in teamwork and communication during multi-disciplinary handover. Staff perspectives on the level of successful communication during the handover in its current manifestation were explored using a basic questionnaire, and results were compared to staff perspectives on the level of successful communication post-improvement. This thesis also set out to evaluate the application of VRE as an improvement approach within an acute maternity setting. Staff perspectives on improvements in all elements of teamwork and communication during the handover, and more generally on the labour ward, were sought during individual

interviews. Data from ethnographic observations and staff interviews were analysed to model an initial process theory.

1.6 Thesis Overview

A systematic review and single research study were conducted in order to address the research questions outlined above. A systematic review primarily explored approaches to prompting team reflexivity to improve teamwork and communication in hospital-based inter-professional teams. The subsequent research study was developed to address the gaps in the literature highlighted within the systematic review, specifically related to the application of VRE as an improvement approach. In the context of this thesis, VRE was not classed as a research method, however it is important to outline the process alongside the specific research methods applied in order to provide an overview of the way in which specific research methods intersect with VRE to formulate the overall process of evaluation. Briefly, the VRE process involved filming healthcare professionals working in situ (specifically focused on the clinical handover in acute maternity services in this thesis), editing the footage to highlight normal working practice and relaying this footage to the participating staff through researcher-facilitated reflexive feedback sessions. The feedback sessions were recorded and the video footage constituted research data in the context of this thesis. Healthcare professionals were also interviewed twice post-VRE to generate understanding of the feasibility and acceptability of the process, the role of the facilitator and staff perception of change and improvement. Interview data was supplemented throughout the analytic process with comprehensive researcher field notes which captured specific details of the whole research

study. Finally, staff were asked to fill out a short survey before and after the VRE process had been implemented to capture their perception of whether the handover had been improved by the changes prompted by VRE, and indeed how this related to their ability to provide high quality and safe patient care.

Chapter 2 reports a systematic review: '*Does team reflexivity impact teamwork and communication in inter-professional hospital-based teams? A systematic review and narrative synthesis*' (**thesis aim 1**). A comprehensive search strategy was applied across six electronic databases to identify peer reviewed, academic literature. Articles which explored methods of team reflexivity implemented within naturally-occurring hospital-based inter-professional teams to improve elements of teamwork and communication were reviewed. Data were extracted according to pre-defined criteria. Narrative data synthesis was applied to the included articles to a) identify and describe methods of team reflexivity; b) explore the ways in which these methods of team reflexivity have been shown to improve teamwork and communication in inter-professional teams; and c) assess the effectiveness of these methods at prompting improvement. The findings of the systematic review informed the development of the research questions and the subsequent research study described to address these questions within the thesis.

Chapter 3 reports on the process of VRE as an improvement approach. VRE does not constitute a research method in the context of this thesis, but

the process is inextricably linked to the research methods applied. This chapter therefore explores both the way in which VRE is 'done' in the context of this project, but also guidance from the wider body of VRE literature related to the delivery of the process within context (**thesis aim 2**).

Chapter 4 details the research methods employed in this study. This chapter explores the philosophical foundations in which the research is positioned, the development of the specific research questions to be addressed in this thesis, and the collective research methods and methods of analysis adopted to answer the research questions.

Chapter 5 is the first empirical chapter within the thesis, exploring factors related to the feasibility and acceptability of VRE as a tool to improve teamwork and communication at the inter-professional maternity handover (**thesis aim 3**). This study thematically explored data from the semi-structured staff interviews and ethnographic field notes both inductively and deductively to identify key factors relating the feasibility of delivering VRE in context, and how acceptable this was to healthcare staff.

Chapter 6 presented the evaluation of VRE as a tool to improve teamwork and communication within an inter-professional maternity team at handover (**thesis aim 4**). A mixed-methods approach was taken in order to determine whether and how the process was successful. This study generated novel information pertaining to the potential mechanisms of action of VRE as a

flexible improvement approach, considering the effect of contextual moderators and outcomes.

The final chapter in this thesis (**Chapter 7**) discusses the main findings of the thesis as a whole. The limitations of the research study are described, as well as the implications of the research, recommendations for future practice and the reflexive thoughts of the researcher.

1.7 The next chapter/stage of research

The next chapter presents a systematic review of the literature within this research area. The review specifically aims to collect, critically scrutinise and synthesis the relevant primary research that has examined the use of team reflexivity to improve teamwork and communication in inter-professional hospital-based teams.

Chapter 2

Does team reflexivity impact teamwork and communication in inter-professional hospital-based healthcare teams? A systematic review and narrative synthesis.

This chapter reports on a systematic review and narrative synthesis of peer reviewed studies exploring how methods of team reflexivity have been used to improve teamwork and communication in inter-professional hospital-based healthcare teams. This review was recently published in the BMJ Quality and Safety, and the full citation can be found at the beginning of this thesis (page ii). Although the evidence seems to support the use of different forms of team reflexivity as a tool for the improvement of teamwork and communication in healthcare, there is currently no collation of this literature and little understanding of the impact of team reflexivity particularly in inter-professional teams.

The methods and findings of this review are discussed in this chapter along with implications and recommendations for the delivery of team reflexivity in inter-professional healthcare teams. The findings informed the subsequent research questions addressed in the thesis.

2.1 Background

Patient safety is often defined in terms of the absence of harm or incident. But there is no consensus on what we mean by safety in healthcare organisations (Vincent, Burnett & Carthey, 2014). Traditionally, measurement and intervention for patient safety has focused on learning from specific harm events, for example, falls (Evans, Hodgkinson, Lambert et al., 2001; Healey, Scobie, Oliver et al., 2008; Morse, 2002), hospital-acquired infections (HCAIs) (Burke, 2003; Pratt, Pellowe, Wilson et al., 2007), and acute kidney injury (AKI) (Selby, Hill & Fluck, 2015). Literature has suggested that the effectiveness of this deficit-based approach may be limited relying, as it does, on retrospective reports and producing targets and recommendations based on unrealistic views of in-situ clinical work (Baxter, Taylor, Kellar et al., 2016). Further challenges to the use of a deficit-based approach to thinking about safety include engagement of front-line staff, and insufficient attention given to complexity within healthcare systems (Baxter et al., 2016; Dixon-Woods, McNichol & Martin, 2012; Hawe, Shiell & Riley, 2009). This means that change is often introduced into healthcare organisations from the top down, using representations of care in the form of reports and statistics, rather than capturing the lived experience of front-line healthcare staff, patients and families who inhabit the daily complexities of healthcare, to understand how work is done (Iedema et al., 2019).

By definition, complexity concerns '*the interrelatedness of the components within a system*' (Kannampallil, Schauer, Cohen et al., 2011), or how the components within a system influence one another. As the number of

components increases (e.g. increasing patient numbers, inter-professional working and levels of care), the complexity of the system will increase. Healthcare systems do not work in a linear manner – simply correctly or incorrectly - but are flexible, adaptive and dynamic in nature (Hollnagel, Wears & Braithwaite, 2015). There is growing recognition that quality improvement approaches must account for the increasing complexity and non-linearity in healthcare (Hollnagel, Wears & Braithwaite, 2015) and the emergence of more transient, inter-professional teams (Schmutz & Eppich, 2017). However, an understanding of the increasing complexities of healthcare provision have been wholly supported by changes in the system to support more successful inter-professional work and communication. Instead, organisational leadership often works under the assumption that most errors are due to lack of knowledge, with training and support focused on the advancement of individual and collective knowledge through the provision of clear, standardised protocols or guidelines (Edozien, 2011). Thus, training continues to occur largely within discipline-specific groups, often leading to the development of hierarchical systems with distinct ‘in-groups’ and ‘out-groups’ (Weller, Boyd & Cumin, 2014), and the perpetuation of professional silos.

Consequently, failures in teamwork and communication have been identified as substantial contributors to medical error and compromised patient safety (Reader, Flin & Cuthbertson, 2007; Weller, Boyd & Cumin, 2014). Ineffective interprofessional communication has reportedly led to poor patient outcomes, medication errors, misdiagnosis, delay in care processes, injury

or even patient death (Kohn, Corrigan & Donaldson, 2000; The Joint Commission, 2015). As such, effective teamwork and communication within and between groups of healthcare professionals is recognised as fundamental to patient safety and high quality care (Leonard, Graham & Bonacum, 2004; Manser, 2009). Thus, interventions targeting such process and relational aspects of care may provide patient safety solutions more aligned with the complex nature of healthcare.

In the literature to date, where non-technical skills are identified as an area for improvement, the methods of improvement often still rely on provision of frameworks or tools to standardise or order information (Brock, Abu-Rish, Chiu et al., 2013; Haig, Sutton & Whittington, 2006; Marshall, Harrison & Flanagan, 2009; Porteous et al., 2009). The literature suggests handover quality and the associated risks of poor quality clinical communication can be improved by the implementation of structured handover tools at a basic structural level (Haig, Sutton & Whittington, 2006). However, there is also an increasing need to consider improvement in the psychological and environmental barriers to effective teamwork and communication that have become more prevalent with increasing complexity, for instance professional silos, hierarchies and transience of care teams (Weller, Boyd & Cumin, 2014). In fact, a recent report sponsored by NHS Improvement (*Much More Than Words*, 2018) highlighted the complexity and dynamism of interprofessional communication, where interactions in healthcare communications are often centred around decisions being made in the here-and-now and in response to specific circumstances. Communications must

be flexible and contextualised, rather than being standardised or prescribed by the scripts that are often inherent in communication tools and checklists. The report goes on to suggest that spoken communication is often taken for granted, and that staff may need time to reflect on their communications, from what is being communicated, to how, why and in what circumstances information is being communicated (*Much More Than Words*, 2018). Team reflexivity is one such approach with the potential to support improvements in inter-professional teamwork and communication.

2.1.1 Reflexivity and healthcare teams

At a semantic level the capacity to be 'reflexive' means '*to bend back upon oneself*', or to engender self-awareness (Finlay & Gough, 2008). Bleakley (1999) outlined reflexivity as a process by which one can make sense of specific practices as embedded within context. Reflexivity is seen as a way to frame individual actions and behaviours with reference to the effect of the actions and behaviours of others, and the context in which these actions occur (Finlay & Gough, 2008; Iedema, 2011). Thus, reflexive methods assume that awareness of self within teams, systems or organisations is key to developing distributed intelligence, and the potential for locally-appropriate solutions (Iedema, Mesman & Carroll, 2013; Schmutz & Eppich, 2017). Team reflexivity therefore focuses on developing a continuous process of learning, allowing individuals within a team to pay critical attention to specific practices and develop an understanding of collective values that inform actions (Schmutz & Eppich, 2017). It is this social and contextual perspective that differentiates reflexivity from reflection, where individual actions are considered more distantly, in the absence of context (Iedema,

2011). Reflexivity approaches behaviour as a concept linked to the fundamental intentions of a person and how this affects social interaction and collaboration with others, rather than as behaviour being a facet of personal psychology unrelated to socio-cultural interaction (Iedema et al., 2019). Team reflexivity provides the opportunity to scrutinise personal and collective behaviours in order to learn and orient such behaviours better to the complexities of safe and high quality healthcare provision (Iedema, Mesman & Carroll, 2013; Schmutz & Eppich, 2017).

Reflexivity as a collective practice in healthcare (Ghaye & Lillyman, 2014; Schmutz & Eppich, 2017) is less well-established and researched than individual reflection (Mamede & Schmidt, 2004; Mann, Gordon & MacLeod, 2009; Ward & Gracey, 2006). However, it is argued to be appropriate for teams of healthcare practitioners to consider routine practices based on contextual and situational factors (Freshwater & Rolfe, 2001; Schmutz & Eppich, 2017). Moreover, research focusing on improvements in non-technical skills (NTS) within healthcare teams has seen the concept of reflexive practice becoming embedded within simulation training (Eppich & Cheng, 2015; Gough, Yohannes & Murray, 2016) and peer review (Boehm & Bonnel, 2010; Gopee, 2001). Team reflexivity in this context is most commonly delivered via a debriefing session during which group discussion of both technical and non-technical skills is facilitated or prompted within-group. Considering both this element of simulation training or peer review and the process more holistically, team reflexivity in this form is still often problem-centred or task-specific (Fanning & Gaba, 2007). That said,

simulation training with embedded team reflexivity is increasingly modelled on crew resource management training (CRM) which has been successfully introduced in aviation to improve collective risk management and safety behaviours. Flight crews are ad hoc and require good non-technical skills to work effectively as part of an unfamiliar team, which mirrors the increasingly transient inter-professional teams providing care in health services. Although the low accident rate in aviation makes the impact of CRM difficult to assess, studies have suggested that CRM has a positive impact on staff attitudes and behaviour (Flin & Maran, 2004). Thus, CRM training has been used as a model on which healthcare simulation training has developed, concentrating not only on the improvement of individual technical and clinical skill, but on collective technical and non-technical skills (Flin & Maran, 2004). Staff teams are required to be reflexive about their individual practice and about how the team worked collectively, focusing on non-technical skills including communication, teamwork, leadership and a shared mental model for patient care.

Although peer review in healthcare is commonly encountered as a peer dyad, more recently the concept of reciprocal peer review has included teams of healthcare professionals reviewing daily practice, and presenting collaborative debrief on the processes and interactions encountered (Aveling, Martin, Jimenez Garcia et al., 2012). This negates the potential limitations of internal professional self-regulation, but also works to mobilise the knowledge and expertise of healthcare professionals (Aveling et al., 2012). Rather than peer review being completed internally, reciprocal peer

review pairs teams from different organisations to visit, observe and provide constructive feedback on performance. Thus, paired staff teams are required to be reflexive about the practices they observe but also about their own collective practices.

A more novel approach to team reflexivity is VRE (Carroll, Iedema & Kerridge, 2008; Iedema et al., 2019; Iedema, Mesman & Carroll, 2013). Rather than attempting to strip away the complexity and context of care, VRE approaches in-situ healthcare as a dynamic process grounded within the local ecology of care (Iedema et al., 2019). This involves filming specific interactions or practices in situ and replaying appropriate clips to staff teams. Presentation of in-situ footage is suggested to make explicit to practitioners what they do to accomplish safe patient care within the inherent complexities of their everyday work (Iedema, Mesman & Carroll, 2013; Mesman, 2008). The process foregrounds 'taken-as-given' processes, which have become habituated or even invisible (Iedema, Mesman & Carroll, 2013; Mesman, 2008). Making routine practices explicit allows teams to shift away from specificity and talk at increasingly higher levels of generality to identify commonly occurring features in their working practices, and to develop a common ground on how to organise and manage these practices collectively (Iedema, 2011; Iedema, Mesman & Carroll, 2013).

2.1.2. Review Aims

Current literature clearly identifies high quality teamwork and inter-professional communication as fundamental to patient safety (Foronda, MacWilliams & McArthur, 2016; Leonard, Graham & Bonacum, 2004;

Manser, 2009; Mills, Neily & Dunn, 2008), but there is little evidence regarding the use of reflexivity to promote learning or practice improvement in inter-professional healthcare teams despite some reported successes (Iedema, Mesman & Carroll, 2013; Liberati, Gorli, Moja et al., 2015). This review therefore aims to collate the literature exploring the use of reflexivity in inter-professional teams working in the provision of hospital-based healthcare, and how these tools might impact patient safety. The review will focus on the following questions:

- How has reflexivity been used with inter-professional healthcare teams?
- How do staff respond to different methods of supporting team reflexivity?
- Does team reflexivity work to effect change in teamwork and communication?

2.2 Method

2.2.1. Search strategy

This review was guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses statement (PRISMA) (Moher, Liberati, Tetzlaff et al., 2009), and the protocol was published on PROSPERO [Registration Number: CRD42017055602]. Search terms including “reflexiv*”, “video ADJ1 feedback”, “simulat* training” or “peer assess*” identified articles relating to reflexive methods. These were combined with terms to identify hospital-based inter-professional teams. The search strategy was applied to PsychINFO, Ovid MEDLINE, PubMed, ISI Web of Science, Cochrane

Library and Cumulative Index to Nursing and Allied Health Literature (CINAHL) in January 2017 and updated in November 2017. Only studies published in the English language were included due to limited translation resources. Searches were limited to retrieve articles published after 1990 where the databases allow. The use of reflexivity in healthcare is a focal area of research with a small number of research groups. To identify further studies in publication that might meet the inclusion criteria, the lead authors in these groups were contacted. The academic search strategies and full results of all searches are detailed in *Appendix A*.

2.2.2. Eligibility criteria and study selection

The inclusion criteria are outlined in *Table 2.1*. A single reviewer (SM) screened titles and abstracts and conducted a full-text review. A sub-sample of articles were independently reviewed by CW (10%; $n = 256$). Inter-rater reliability was assessed using Cohen's kappa, and strong agreement on inclusion and exclusion of papers for full-text review was found ($k = 0.92$). Regular meetings with the second reviewer allowed discussion of article eligibility. Four hundred and one articles were selected for full text review, of which 5% were second reviewed independently by RL and JOH ($n = 20$). Inter-rater reliability was assessed using Cohen's kappa (Landis & Koch, 1977). Strong agreement ($k = 0.84$) existed for the full-text review. Discrepancies were resolved through discussion between the reviewers. Reasons for exclusion were recorded.

Table 2.1 Eligibility criteria for the inclusion of academic articles in the review.

PICOS	Eligibility Criteria
Population	<p>Any naturally occurring hospital-based healthcare teams, where a team is defined as '<i>two or more healthcare professionals linked in a common purpose</i>'.</p> <p>Teams must be inter-disciplinary.</p> <p>Any study including healthcare teams working outside of a hospital were excluded.</p>
Intervention	<p>Any studies using reflexivity, including (but not limited to) video-reflexivity and video-reflexive ethnography.</p> <p>Reflexivity is defined as '<i>a tool that allows broader attention to routine working practices, providing renewed awareness and facilitated or prompted discussion of taken-as-given processes and interactions</i>'. Reflexivity is not a linear or rigid framework or method, but a more creative and flexible approach to understanding and reshaping practice through space for collective discussion.</p>
Comparison	<p>Not relevant.</p>
Outcomes	<p>Any measure or discussion of change in knowledge, attitudes, feelings/emotions and behaviours.</p> <p>Any measure or discussion of impact on teamwork, inter-professional communication and collective values.</p> <p>Any measure of improvement in efficiency of working practice, quality of care or patient safety.</p> <p>Any measure of outcomes associated with the success of healthcare delivery within a hospital.</p> <p>Any evaluation or discussion of the quality of reflexivity as an intervention.</p>
Study design	<p>Any peer-reviewed, academic articles using any empirical study design were included.</p> <p>Qualitative, quantitative and mixed methods studies were included.</p>

2.2.3. Assessment of study quality

Study quality was assessed using the Quality Assessment Tool for Studies with Diverse Designs (QATSDD) (Sirriyeh, Lawton, Gardner et al., 2012).

The QATSDD is a validated quality assessment tool for use with methodologically heterogeneous studies, using 16 items on a 4-point Likert scale. Included studies were scored and study quality expressed as a percentage. SM conducted quality assessments for all studies. Quality assessment was independently reviewed by RL (20%; n = 3) and agreement on scores was found to be 100%. Any queries about quality assessment scores, where the primary reviewer (SM) felt the score was on a boundary, were resolved by discussion with RL, JOH and LS.

2.2.4. Data extraction and synthesis

All data were extracted by a single researcher (SM) using pre-defined data extraction points (*Appendix B*). Following the UK Economic and Social Research Council guidance (Popay, Roberts, Sowden et al., 2006), narrative synthesis was used due to the heterogeneous nature of the studies. This allowed for comment on study design, context and quality according to standard format, but also allowed similarities and differences to be explored between heterogeneous study designs (Lucas, Baird, Arai et al., 2007). Preliminary themes were developed through the data extraction process using categories, clusters and brief textual descriptions addressing the specific research questions identified in this review. Results are presented under grouped headings related to the specific research questions addressed in this review.

2.3 Results

The search strategy yielded 2566 articles excluding duplicates. In total, 15 articles met the inclusion criteria and were included in the review (see *Figure 2.1* for a flow diagram of the article selection process).

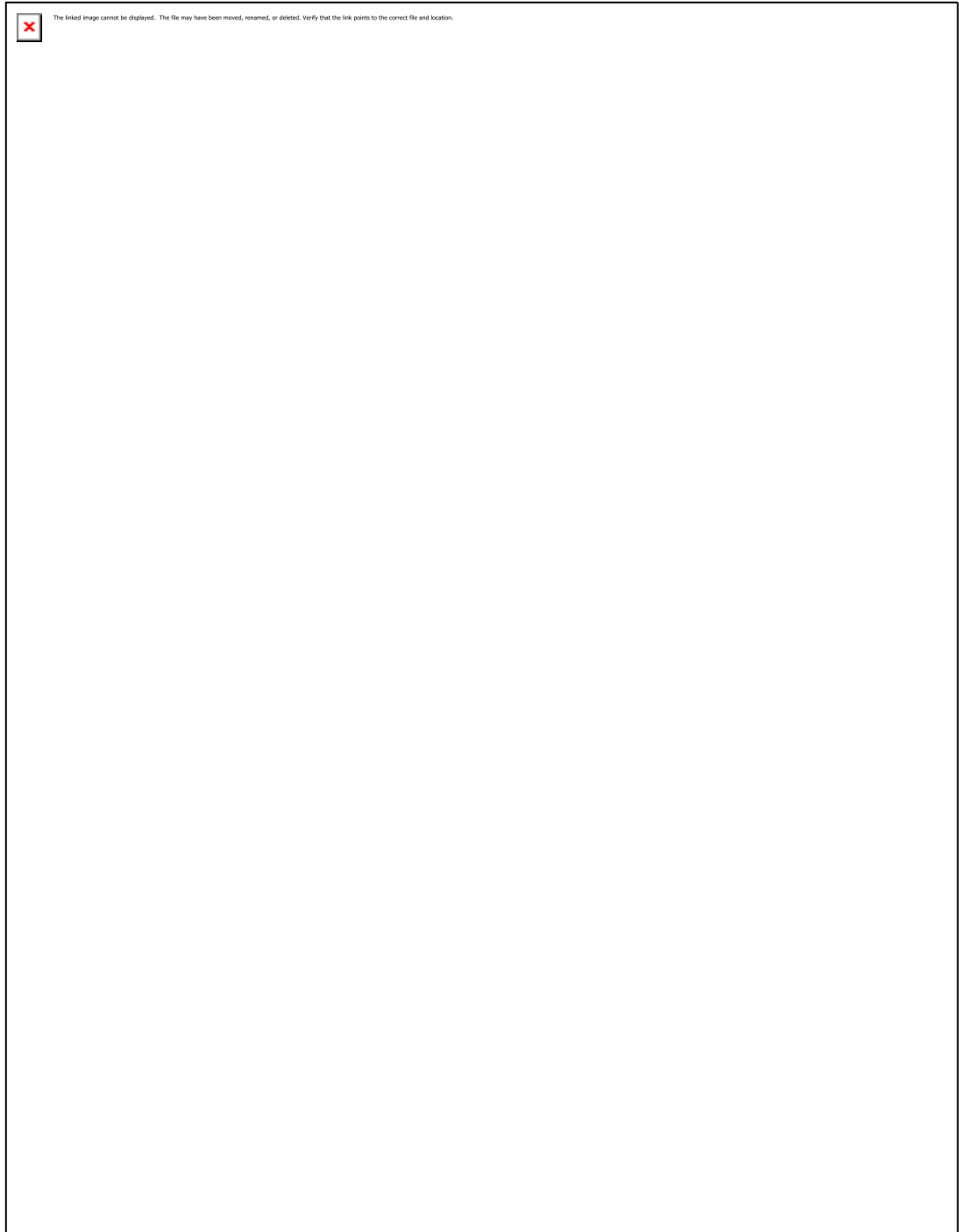


Figure 2.1 Flow diagram of the search and retrieval process.

Articles were primarily excluded for not explicitly working with naturally occurring inter-professional teams or where feedback methods did not align with the definition of reflexivity outlined (*Table 2.1*). The key characteristics of included articles are outlined in *Appendix C*.

Simulation training and VRE were the most commonly used forms of team reflexivity. It was also applied within reciprocal peer review. All included articles were set in high-risk hospital environments and set out to engender optimisation of daily practice (Carroll, Iedema & Kerridge, 2008; Hor, Iedema & Manias, 2014; Iedema, Ball, Daly et al., 2012; Iedema, Hor, Wyer et al., 2015); evaluate specific reflexive methods as quality improvement strategies (Aveling, Martin, Garcia et al., 2012; Falcone Jr, Daugherty, Schweer et al., 2008; Iedema & Carroll, 2011; Iedema, Long, Forsyth et al., 2006; Iedema, Merrick, Rajbhandari et al., 2009; Lehner, Heimberg, Hoffmann et al., 2017; Patterson, Geis, Falcone et al., 2013a); and/or develop NTS to improve safe and effective working practice (Allan, Thiagarajan, Beke et al., 2010; Fransen, Ven, Schuit et al., 2017; Patterson, Geis, LeMaster et al., 2013b; Ross, Anderson, Kodate et al., 2013) The article settings and team types for all articles are outlined in *Table 2.2*. All included articles were published between 2006 and 2017.

Table 2.2 Settings and team types for all included articles.

Author	Setting	Team type	Team size/composition
Allan, Thiagarajan, Beke et al. (2010)	24-bed dedicated paediatric cardiac intensive care unit (USA) .	Paediatric cardiac intensive care teams.	Nurses (n = 127) Cardiology, cardiac surgery and cardiac critical care fellows (n = 44) Paediatric cardiac intensive care unit attending physicans (n = 6) Respiratory therapists (n = 2) Nurse practitioners (n = 3)
Aveling, Martin, García et al. (2012)	Lung cancer teams in 30 National Health Service hospitals (UK) .	Lung cancer teams	Minimum requirement of; A clinical lead (physician) A clinical nurse specialist A multi-disciplinary team coordinator
Carroll, Iedema & Kerridge (2008)	Intensive care unit in a tertiary referral and teaching hospital (Australia) .	Intensive care unit teams	Included clinical specialists, specialist intensivists, nurses and allied health professionals.
Falcone Jr, Daugherty, Schweer et al. (2008)	Paediatric trauma unit in Level 1 paediatric trauma centre (USA) .	Paediatric trauma teams	An average team of around 6 members from; Paediatric surgeons

			(n = 11) Emergency medics (n = 7) Surgical residents (n = 72) Nurses (n = 60) Critical care fellows (n = 4) Paramedics (n = 2) Respiratory therapists (n = 4)
Fransen, van den Ven, Schuit et al. (2017)	Obstetric unit (Netherlands).	Multi-professional obstetric teams	Included gynaecologists, obstetricians, secondary care midwives and/or resident nurses.
Hor, Iedema & Manias (2014)	Two general intensive care units in a major metropolitan teaching hospital (Australia).	Intensive care unit staff teams	Included senior and junior doctors, senior and junior nurses, medical and nurse managers, ward clerks, receptionists and allied health professionals.
Iedema, Ball, Daly et al. (2012)	Emergency departments of two large teaching hospitals (one metropolitan, one regional; Australia).	Emergency department staff	Paramedics, emergency department medics and nursing clinicians.
Iedema & Carroll (2011)	Acute outpatient spinal clinic in a local metropolitan teaching hospital	Multi-disciplinary care team	Doctors, nurses, occupational therapists, physiotherapists, dieticians, social

	(Australia).		workers and peer support workers.
Iedema, Hor, Wyr et al. (2015)	Intensive care unit and mixed surgical wards in two metropolitan teaching hospitals (Australia).	Intensive care unit and surgical ward staff	107 nurses, 44 doctors, 9 allied health professionals and 17 administration and cleaning staff.
Iedema, Long, Forsyth et al. (2006)	Acute outpatient spinal pressure area clinic in a local metropolitan teaching hospital (Australia).	Outpatient unit teams	Medical, nursing and allied health staff.
Iedema, Merrick, Rajbhandari et al. (2009)	Intensive care unit (Australia).	Intensive care unit staff	Multi-disciplinary teams of healthcare practitioners. Make-up of the teams unspecified.
Lehner, Heimberg, Hoffmann et al. (2017)	Paediatric trauma unit (Germany).	Paediatric trauma unit	14 physicians including paediatric surgeons, intensivists, emergency medics and anaesthetists. 4 paediatric nurses.
Patterson, Geis, Falcone et al. (2013)	Paediatric emergency department (USA).	Paediatric emergency department	Physicians – 51% Nurses – 32% Paramedics – 4% Respiratory therapists – 3% Patient care assistant – 4% Other – 7%
Patterson, Geis,	Level 1 paediatric	All healthcare	Faculty and staff

LeMaster et al. (2013)	trauma centre (USA).	providers in emergency department	physicians, nurses, respiratory therapists, paramedics, patient care assistants, medical residents.
Ross, Anderson, Kodate et al. (2013)	Tertiary hospital trust providing a range of specialist older persons services (UK).	Staff involved in the provision of elderly care.	Health care assistants, nurses, physiotherapists and medical staff.

2.3.1. Quality assessment

Quality of studies was variable, with total scores ranging from 40% to 83% (mean = 60%) (see *Appendix D* for quality assessment scores for all included articles). Few studies justified the sample size, data collection methods or methods of data analysis. There was limited discussion of relevant theories to guide the methods used. Detailed recruitment information was not well reported, for example most studies using video did not provide appropriate detail of the process of consent or explain what would happen if members of a team did not provide consent.

Limited detail regarding specific elements of team reflexivity made it difficult to determine how reflexive feedback was delivered. This was particularly true of the facilitation of feedback, and how the feedback session itself was structured (Allan et al., 2010; Aveling et al., 2012; Falcone et al., 2008; Fransen et al., 2017; Iedema et al., 2012; Iedema & Carroll, 2011; Iedema et al., 2006; Iedema et al., 2009; Lehner et al., 2017; Patterson et al., 2013a;

Patterson et al., 2013b; Ross et al., 2013). There was limited detail regarding the methods used to analyse the effect of team reflexivity specifically with respect to NTS in most articles (Aveling et al., 2012; Carroll, Iedema & Kerridge, 2008; Iedema et al., 2012; Iedema & Carroll, 2013; Iedema et al., 2015; Iedema et al., 2006; Iedema et al., 2009; Patterson et al., 2013a) making it difficult to learn about what works and what doesn't.

2.3.2. Reflexivity in inter-professional healthcare teams

Three methods currently promoting reflexive practice in inter-professional healthcare teams were identified from the reviewed articles; team debrief post-simulation (Allan et al., 2010; Falcone et al., 2008; Fransen et al., 2017; Lehner et al., 2017; Patterson et al., 2013a; Patterson et al., 2013b; Ross et al., 2013), reciprocal peer review (Aveling et al., 2012) and VRE (Carroll, Iedema & Kerridge; Hor, Iedema & Manias, 2014; Iedema et al., 2012; Iedema & Carroll, 2011; Iedema et al., 2015; Iedema et al., 2006; Iedema et al., 2009). While the aims of these interventions are consistent, differences were apparent with respect to data collection and outcome measures. Simulation studies generally used quantitative outcome measures and studies of in-situ methods generally used qualitative data. *Table 2.3* summarises the key reflexive features of all studies.

Table 2.3 The key reflexive features of all included articles.

Author	Aim of reflexivity	Facilitation	Duration of reflexive feedback
Allan, Thiagarajan, Beke et al.	To uncover system faults or cognitive processes leading to suboptimal teamwork.	Trained physician and nurse facilitators.	No information provided.

(2010)		Video footage used.	
Aveling, Martin, García et al. (2012)	To allow a safe space to share challenges and working practices, and generate locally-appropriate solutions.	External non-clinical facilitator.	No information provided.
Carroll, Iedema & Kerridge (2008)	To engage healthcare professionals in problem-solving their own communication difficulties.	Researcher facilitation	90 minutes
		Video footage used	
Falcone Jr, Daugherty, Schweer et al. (2008)	To emphasise team performance and communication, and reinforce appropriate care principles.	No information provided.	30 minutes
		Video footage used.	
Fransen, van den Ven, Schuit et al. (2017)	To allow deeper analysis of performance by group discussion.	Two facilitators	30 minutes
		Video footage used.	
Hor, Iedema & Manias (2014)	To provide space for discussion of how clinical spaces impacted on communication practices.	Researcher facilitated.	No information provided.
		Video footage used.	
Iedema, Ball, Daly et al. (2012)	To form and articulate views about what is essential information that must be communicated, and what are the critical processes involved in handover.	No information provided about facilitation.	60 – 90 minutes.
		Video footage used.	

ledema & Carroll (2011)	To capture staff insights and ideas to strengthen the organisational and communicative dimensions of health care provision.	No information provided about facilitation.	No information provided.
Video footage used.			
ledema, Hor, Wyer et al. (2015)	To allow practitioners the space to raise questions about taken-for-granted infection control behaviours and scrutinise their own practice.	No information provided about facilitation.	No information provided.
Video footage used.			
ledema, Long, Forsyth et al. (2006)	To allow staff to identify and address previously unrecognised environmental risk factors.	No information provided about facilitation.	No information provided.
Video footage used.			
ledema, Merrick, Rajbhandari et al. (2009)	To discuss and address the strengths and weaknesses of handover practice.	Researcher facilitation.	No information provided.
Video footage used.			
Lehner, Heimberg, Hoffmann et al. (2017)	To evaluate and improve communication practices during paediatric trauma incidents.	Two person multi-disciplinary and multi-professional instructor team.	45 minutes.
Video footage used.			
Patterson, Geis,	To identify latent safety threats and subsequent multi-	Group assessment of performance.	10 minutes.

Falcone et al. (2013a)	disciplinary problem solving.		
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Patterson, Geis, LeMaster et al. (2013b)	To improve situational awareness and sharing of shared mental models.	Researcher facilitation.	No information provided.
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Video footage used.

Ross, Anderson, Kodate et al. (2013)	To focus on non-technical skills including communication and improving a shared mental model.	Clinicians and trained professionals from a dedicated simulation centre.	45 minutes.
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In seven studies, team reflexivity was embedded in simulation training programmes as collective debriefing. Teams were asked to participate in simulated practices replicating real-world emergencies (Allan et al., 2010; Falcone et al., 2008; Fransen et al., 2017; Lehner et al., 2017; Patterson et al., 2013a; Patterson et al., 2013b) or routine care practices (Ross et al., 2013). Simulating scenarios allowed staff to develop and refine skills and practices without the risk of causing harm to patients, to focus on their role within the team, and on how the team worked together to achieve specific clinical outcomes.

In eight studies, reflexive discussion was prompted following in-situ observation. Seven of these studies employed VRE as the primary reflexive method (Carroll, Iedema & Kerridge, 2008; Hor, Iedema & Manias, 2014; Iedema et al., 2012; Iedema & Carroll, 2011; Iedema et al., 2015; Iedema et al., 2006; Iedema et al., 2009). In the remaining study, staff teams heard

constructive feedback from their peers following observations of daily practice (Aveling et al., 2012). The purpose of collective reflexive discussions in both cases was to allow staff to confront the complexities of in situ practice and the space to discuss locally-appropriate solutions.

Studies included in this review generally lacked theoretical underpinning, making it difficult to gain insight into the active components of reflexivity. Although most studies used video to prompt reflexive discussion, only four studies engaged briefly in the theory of this, suggesting that viewing routine practice can promote individual and collective learning (Carroll, Iedema & Kerridge, 2008; Hor, Iedema & Manias, 2014; Iedema et al., 2006; Iedema et al., 2009). Only Iedema et al. (2015) made specific reference to adult learning theory linked to learning from reflexive feedback.

2.3.3. Staff response to team reflexivity

Reflexive feedback appears to be accepted as successful in allowing staff to explore the intrinsic complexities of their daily work and develop technical and non-technical skills (Allan et al., 2010; Aveling et al., 2012; Carroll, Iedema & Kerridge, 2008; Fransen et al., 2017; Hor, Iedema & Manias, 2014; Iedema et al., 2012; Iedema & Carroll, 2011; Iedema et al., 2015; Iedema et al., 2006; Iedema et al., 2009; Lehner et al., 2017; Patterson et al., 2013a; Patterson et al., 2013b; Ross et al., 2013). However, only one study directly conveyed staff evaluation of the feedback sessions (Lehner et al., 2017) reporting 100% of staff participants found the feedback sessions useful to inform their clinical practice.

The use of video in prompting reflexive discussion is less well defined in terms of staff acceptability and research feasibility. Iedema et al. (2006) reported staff discomfort with the potentially intrusive nature of the camera, and two studies identify the use of video footage as a potential barrier to staff engagement due to assumptions of professional judgement (Iedema & Carroll, 2011; Iedema et al., 2006). Conversely, three studies (Carroll, Iedema & Kerridge, 2008; Iedema & Carroll, 2011; Lehner et al., 2017) report that staff identify the video footage as fundamental in allowing them to view daily practice and identify areas to improve.

2.3.4. Team reflexivity to effect change in teamwork and inter-professional communication

Communication during inter-professional team working was the most prominent focus of improvement methods (Allan et al., 2010; Aveling et al., 2012; Carroll, Iedema & Kerridge, 2008; Iedema et al., 2012; Iedema & Carroll, 2011; Iedema et al., 2006; Iedema et al., 2009; Lehner et al., 2017; Patterson et al., 2013b; Ross et al., 2013), although studies also focused on environmental or process improvements (Hor, Iedema & Manias, 2014; Iedema et al., 2015) and improvements in specific patient safety measures resulting from learning about communication and collective working practices (Patterson et al., 2013a; Fransen et al., 2017). The data collection methods of all studies are outlined briefly in *Table 2.4*.

Table 2.4 The key data collection methods of all included articles.

Author	Quantitative Measures	Qualitative Data
Allan, Thiagarajan, Beke et al. (2010)	Pre-course and post-course programme evaluation questionnaires.	
Aveling, Martin, García et al. (2012)		Non-participant observation, interviews and documentary analysis.
Carroll, Iedema & Kerridge (2008)		Ethnographic observations, video footage of reflexive feedback sessions.
Falcone Jr, Daugherty, Schweer et al. (2008)	Multi-disciplinary team simulation evaluation tool.	
Fransen, van den Ven, Schuit et al. (2017)	Composite outcome of low Agpar score, severe postpartum haemorrhage, trauma due to shoulder dystocia, eclampsia and hypoxic-ischemic encephalopathy.	
Hor, Iedema & Manias (2014)		Semi-structured interviews, ethnographic observations and reflexive focus groups.
Iedema, Ball, Daly et al. (2012)	Pre- and post-implementation survey to measure nurse perceptions of new handover protocol.	Focus groups, ethnographic observation and reflexive focus groups.

	Analysis of video footage scored on specific categories proposed by ED clinicians.	
Iedema & Carroll (2011)		Interviews, documentary analysis, ethnographic observations and reflexive feedback sessions.
Iedema, Hor, Wyer et al. (2015)		Interviews, ethnographic observations and reflexive feedback sessions.
Iedema, Long, Forsyth et al. (2006)	Analysis of unit spending costs per patient admission.	Interviews, ethnographic observations and reflexive feedback sessions.
Iedema, Merrick, Rajbhandari et al. (2009)		Focus groups, ethnographic observations and reflexive feedback meetings.
Lehner, Heimberg, Hoffmann et al. (2017)	Pre- and post-course evaluation surveys.	
Patterson, Geis, Falcone et al. (2013)	Number and type of latent safety threats identified during simulations. Blinded video review of teamwork behaviours using a modified Anaesthetists Non-Technical Skills scale. Electronic survey to measure participant assessment of the course.	
Patterson, Geis,	Number of days without a	

LeMaster et al. (2013)	patient safety event in the emergency department. Knowledge tests at baseline, post-intervention and re- evaluation, Safety Attitudes Questionnaire scores.	
Ross, Anderson, Kodate et al. (2013)	Pre- and post-module questionnaire scores to assess participant self- confidence.	Simulation observations and follow- up staff interviews post-training.

The following sections of this chapter identify the main areas of improvement reported in reviewed studies, and how they were measured.

2.3.5. Communication and Teamwork

Eleven reviewed articles identify communication and teamwork within inter-professional teams as a specific area of focus (Allan et al., 2010; Aveling et al., 2012; Carroll, Iedema & Kerridge, 2008; Iedema et al., 2012; Iedema & Carroll, 2011; Iedema et al., 2006; Iedema et al., 2009; Lehner et al., 2017; Patterson et al., 2013a; Patterson et al., 2013b; Ross et al., 2013). Iedema et al. (2012) reported staff perception of improvements in information transfer during paramedic to emergency department handover following the co-design of a new protocol. The amount of information transferred reportedly increased (from 50% to 60%) but there was notably a sharp reduction in repetition of information (from 67% to 33%). Outcomes were obtained primarily through formal video analysis of pre- and post-intervention handovers and a staff survey gauging perception of the new handover

protocol. Carroll, Iedema and Kerridge (2008) observed more concise and structured dissemination of information by nurses and doctors during ICU handover following identification of issues in information transfer prompted by VRE. Iedema et al. (2009) reported perceived improvement nurse engagement during inter-professional clinical discussions, although staff still identified the need for refinement of new bedside handover interactions. Improvements in both studies (Carroll, Iedema & Kerridge, 2008; Iedema et al., 2009) were reported following observations pre- and post-VRE and unstructured discussions with staff. Patterson et al. (2013b) reported modification of communication behaviours following review of video footage by independent reviewers, using a modified version of the Behavioural Markers for Neonatal Resuscitation Scale to assess teamwork and communication pre- and post-intervention. This was the only study to link modification of team behaviours directly to patient safety outcomes, reporting a reduction in patient safety events from 2 or 3 per year to a period of over 1000 days without a patient safety event following the introduction of the training. Perceived improvement in reliable and effective communication was also reported on anonymised self-evaluation questionnaires in paediatric trauma teams following simulation-based team training, although comparison of pre- and post-intervention scores was not found to be significant (Lehner et al., 2017). Although, Patterson et al. (2013a) reported no explicit improvement in teamwork behaviours over time, more general changes to structure and culture were observed, with the shared mental model identified as being so crucial to teamwork behaviours that staff asked for this to be added to the resuscitation flow sheet to be communicated to the team within the first 5 minutes of caring for a critically ill patient.

The remaining articles identify improved discourse within teams relating to changes in process or structure. Two studies identified development of discourse about the complexities of existing processes, and collective rethinking of routine communication practices (Iedema & Carroll, 2011; Iedema et al., 2006). Although there were clear narratives about the benefits of VRE in allowing teams to articulate the complexities and dynamism of healthcare pathways in these two articles, there was no formal measure of communication or of any specific process improvement in either study. Aveling et al. (2012) also provided clear discussion of the benefits of reciprocal peer-review to allow staff to discuss issues and develop solutions, but this was not formally linked to improvements in communication. All three studies relied solely on unstructured discussion with staff and ethnographic observations, although their primary aim was to develop the use of more novel methods in patient safety research as opposed to specific practice improvement.

Ross et al. (2013) highlighted perceived improvements in inter-professional communication during clinical tasks, reporting strengthened teamwork and better communication between staff. Allan et al. (2010) also reported significantly increased likelihood of speaking up in the case of perceived inappropriate management of resuscitation events following subgroup analysis of self-report surveys pre- and post-intervention ($p < 0.001$).

2.3.6. Process Improvements

Iedema et al. (2015) reported discussion and formulation of safer ways of dealing with infection risks and infection control practices. Site-specific improvements included appointing a single staff member to prevent any contact between gowned and gloved clinicians and infected patients, other clinicians and ward equipment. Findings were reported based on detailed ethnographic observations, related field-notes and data gathered from staff interviews. Hor, Iedema & Manias (2014) also reported implementation of improved and flexible working spaces in intensive care units following video-facilitated reflexive feedback groups. Improvements focused particularly on the prevention of interruptions, such as doctors finding a quieter and more isolated space to prevent interruptions during weekly X-ray rounds. Both studies focus on structural changes, highlighting the importance of safe working spaces in enabling safer patient care and more effective teamwork.

2.3.7. Safety Outcomes

Two studies reported reflexive practice as a catalyst for improvement of safety. Fransen et al. (2017) reported reduction in trauma due to shoulder dystocia (0.25% to 0.16%) and increased levels of appropriate treatment for massive postpartum haemorrhage (0.28% versus 0.13%) following simulation designed to improve inter-professional teamwork during routine obstetric trauma. Patterson et al. (2013a) reported improved identification of latent safety threats (LSTs) during in-situ emergency trauma simulations (1 LST for every 1.2 simulations) when compared with lab-based simulation training (1 LST for every 7 simulations). Improvement in collective clinical

confidence was reported following team debrief focused on the effectiveness of teamwork as well as technical skills.

2.4 Discussion

The current systematic review explores how reflexivity has been used to target factors contributing to patient safety within inter-professional healthcare teams. Although the focus of this review has been on team reflexivity as a tool for the improvement of teamwork and communication in inter-professional healthcare teams, it is evident that the impact of team reflexivity also extends to improvements in specific routine practices and clinical processes and to specific patient safety outcomes.

2.4.1. The use of team reflexivity in healthcare

The use of reflexivity within inter-professional teams in healthcare research is becoming more widespread, reflecting the increasing complexities of safe and high-quality care. Three methods of prompting team reflexivity were identified in this review – team simulation training, reciprocal peer review and VRE - although papers differed in the way reflexivity was defined. Team reflexivity embedded within a wider simulation training or peer-review programme was often referred to as '*team debrief*' or '*team feedback*'. Nevertheless, collective discussion sessions across all methods aligned with accepted definitions of reflexivity in healthcare research (Iedema, 2019; Iedema, Mesman & Carroll, 2013; Liberati et al., 2015).

Going forward, a more detailed understanding of how team reflexivity works will be important in relation to learning and improvement in healthcare.

Continued professional education methods, including simulation training and peer-review, are grounded in an extensive body of theoretical literature, exploring situated learning through interaction as social psychological determinants of collective learning (Lave & Wenger, 1991). Although more recent literature draws on complexity theory and the concept of psychological safety underpinning VRE as a collective learning tool and improvement method (Iedema et al., 2019), there must be continued focus on exploring the factors that impact collective learning from the viewing of in-situ practice (Davidoff, Dixon-Woods, Leviton et al., 2015).

Interpreting VRE methods through the lens of complexity theory (Kannampallil et al., 2011; Lomax & Casey, 1998; Mackenzie & Xiao, 2003; Pink, 2013; Plsek & Greenhalgh, 2001) accepts the importance of personal interactions and social influences on learning within dynamic and flexible environments such as healthcare (Lave & Wenger, 1991; Plsek & Greenhalgh, 2001; Sargeant, Mann, van der Vleuten et al., 2009). Drawing on social cognitive theories, transformative learning occurs when learners can question existing knowledge of processes, systems and interactions, and the underlying beliefs and assumptions (Sargeant et al., 2009). Iedema (2019) proposes that it is the de-familiarisation effect of video footage that allows participants to ask questions of themselves and others in context that defines VRE, presenting clear links to transformative learning, specifically transformation of individual and group perspectives.

Understanding how team reflexivity works must also extend to the role of the facilitator in prompting collective learning. There is limited reference to the

role of the facilitator within the reviewed literature, despite good evidence from other research that the role of the facilitator is linked to successful reflective practice and collective learning (Brockbank & McGill, 2007; Iedema et al., 2019; Reeves, Goldman & Oandasan, 2007). Further, there is emerging evidence to suggest the importance of the facilitator in the success of collaborative or socio-cultural improvement methods in the healthcare literature (Louch, Mohammed, Hughes et al., 2019; O'Hara, Lawton, Armitage et al., 2016).

Finally, there is no exploration in the reviewed literature of whether the impact of reflexivity differs between teams, and the factors that might affect the process of collective reflexive discussion. Exploration of the relevant literature suggests that high levels of psychological safety are significantly associated with more creative team performance, and helps teams to engage in learning behaviours due to reduced anxiety and a greater willingness to honestly share knowledge that requires risk (Edmondson, 1999; Kessel, Kratzer & Schultz, 2012). Future work should explore the role, composition and culture of the team and how these factors could potentially contribute to any outcomes of collective reflexive discussion.

2.4.2. Staff perceptions

The majority of studies in this review explored the impact of team reflexivity or evaluated the methods used to prompt collective learning. Few studies investigated the acceptability of team reflexivity amongst staff, and it is unclear from the reviewed literature whether there are any issues of feasibility with reflexive methods in hospital-based healthcare teams. It is

also uncertain whether the limited number of studies in this field reflects the infancy of the concept or the difficulty of using this approach within acute healthcare environments.

2.4.3. Outcomes of team reflexivity

Two divergent observations emerged in this review regarding outcomes of team reflexivity. Studies of simulation training, by design, excised elements of the complexity of healthcare provision to focus specifically on the improvement of specific clinical procedures and the non-technical skills aligned with such procedures. Conversely, improvement methods capturing in-situ practices and interactions, such as VRE, operate within the inherent complexities of healthcare provision. As such, articles focused on simulation training methods were of higher quality, predominantly due to the level of methodological and analytical detail provided, resulting in well-defined measures of change or improvement. However, evaluation of the reflexive feedback component was not isolated from other elements of the simulation training programme, thus any reported improvement in non-technical skills could not be attributed solely to reflexive feedback.

Establishing the effectiveness of more adaptive, socio-cultural interventions like VRE is more complex, with conventional approaches to evaluation less likely to be appropriate. Reviewed studies generally relied on ethnographic observations and unstructured discussions with staff to identify change or improvement; evaluation methods better placed to capture and account for complexity. Current literature suggests encouragement of methods prompting the development of flexible and locally-appropriate goals and

solutions should be embraced (Greenhalgh, Jackson, Shaw et al., 2016).

The varied outcomes identified across reviewed studies suggest wide-ranging impact is possible where interventions engage with the complexities of acute healthcare practice.

2.4.4. Review Limitations

Poorly defined methodological information relating specifically to the reflexive elements of reviewed studies made it difficult to draw conclusive evidence about the impact of reflexivity alone. It is possible that simulation training, peer-review and VRE would trigger individuals to reflect privately on the social and contextual underpinning of collective processes even in the absence of structured team reflexivity. The nature of this review only allows assessment of team reflexivity as an activity embedded within these methods.

Despite the application of an inclusive search strategy, relevant articles may not have been identified. Articles may not have referred to team reflexivity, specifically where collective feedback was embedded within wider improvement methods.

2.4.5. Implications and Recommendations

Healthcare professionals are often best placed to suggest change or improvement to working practices. Intuitively, it makes sense for staff to be empowered to identify and make these changes. The reviewed literature suggests that simulation training imposes simplicity on complex practices (Iedema, 2019) thereby providing less opportunity for staff input in change or

improvement within their discipline due to the focus of discussion being restricted to specific scenarios, although embedding reflexive feedback allows integration of NTS development into more established clinical training methods. Reciprocal peer review provided more opportunity for staff to discuss change or improvement at a process or systems level to some extent, however quality improvement plans were based on team meetings on observations to provide local context supplemented by patient experience and audit data. Staff were thus provided the space and opportunity to discuss issues and potential solutions, although feedback on NTS within teams was dependent on individual and peer opinions or memories, and implementation of change was highlighted as requiring significant support. VRE is unique in its use of video footage to explore 'real-time' unfolding of specific healthcare practice, making explicit the complexity and dynamism of healthcare provision (Iedema, Mesman & Carroll, 2013). Outcomes are less dependent on individual opinions or memories, but on how healthcare professionals individually and collectively respond to the footage. The reviewed literature suggests that all methods of team reflexivity have some impact on the improvement of contributory patient safety factors such as teamwork and communication. Furthermore, emerging literature suggests that VRE is best placed to empower participants to implement change and optimise processes or working environments, as well as allowing teams to learn together about the complexities of their daily interactions and routine practices (Carroll & Mesman, 2018).

Importantly, the reviewed literature has highlighted particular areas for improvement relating to the study of team reflexivity in healthcare, and the reporting of findings. It is important that future studies aim to justify their use of team reflexivity with reference to the theoretical foundations of the specific tool or intervention to be used, allowing authors to account for and provide detail of methodological and analytic choices. Studies must consider the acceptability of such methods in varied healthcare environments, and must account for any issues of feasibility where they arise. Authors must focus on providing adequate description of the reflexive element of any study including the context of the reflexive session and the level of facilitation. Analytic methods used must not only be detailed within the study method, but authors must also provide clear justification for their choices. Future studies should focus on analysis of the specific impact of reflexivity on NTS in order that stronger conclusions can be made about the link between teams having the time and space to practice reflexivity, and subsequent improvements in these contributory patient safety factors.

2.5 Conclusions

Reflexivity has been identified as a practice that encourages healthcare professionals to focus on improvements in the process and relational aspects of care, with high-fidelity team simulation training, team peer-review methods, and VRE gradually becoming documented as improvement methods. The reviewed literature, combined with supporting literature in non-hospital-based care (Collier, Sorensen & Iedema, 2016; Collier & Wyer, 2016), suggests that VRE is well placed to provide more locally-appropriate solutions to contributory patient safety factors ranging from individual and

social learning, to improvements in practices and systems. Thus, a continued focus on high-quality research and reporting is required to explore how this method can be integrated into acute, high-risk organisations, and particularly how reflexive discussion can be prompted within often transient inter-professional teams to promote inter-professional learning and optimisation of routine practices.

2.6 Summary

This review aimed to collect, critically scrutinise and synthesise the relevant primary research that has examined the use of team reflexivity as a tool for the improvement of teamwork and communication in hospital-based inter-professional healthcare teams. The findings clearly indicated that all three forms of team reflexivity explored were successful tools in prompting improvement, but also that where simulation training and reciprocal peer review prompted general learning about specific clinical skills or competencies, VRE appeared to prompt more locally-appropriate solutions and led to the implementation of change. However, it was clear that the VRE literature was of poor quality overall, with little reference to the methods of data analysis used and no obvious reference to the foundational mechanisms of the VRE process. There was also little reference to the role of the facilitator throughout the VRE process, and how this might impact the nature of engagement, or indeed the outcomes reported. Nevertheless, there was evidence enough to suggest that further exploration of VRE was warranted due to the reported success of the improvements outlined in the literature to date.

2.7 The next chapter/stage of research

The next chapter will introduce VRE and explore the ways in which it can be 'done'. As VRE in this project does not constitute a research activity, this chapter aims to provide a clear overview of the process of VRE as an improvement approach to give context to the rest of the thesis.

Chapter 3

Video reflexive ethnography: How is it 'done'?

This research study involved the evaluation of VRE as an improvement approach within an acute maternity unit. This improvement approach is not considered a research method for the purposes of this study, but it is described here to provide contextual information prior to describing the research methods used to evaluate it in the next chapter (see Chapter 1, section 1.4.1 for more detail). The origins of VRE are explored, and the process of using VRE as an improvement approach in this study is described alongside exploration of the theory used to guide the process. This chapter will particularly consider how VRE is described in the current guiding literature, how it has been carried out in other acute healthcare environments, and how the process of VRE will be employed in the context of this study.

3.1 What is video reflexive ethnography?

3.1.1. Video-reflexive ethnography: A background

Existing improvement methodologies within health services research often impose boundaries by selecting only certain aspects of clinical practice for investigation (Iedema, Mesman & Carroll, 2013). This means that the interventions continue to proliferate a simplistic view of healthcare practice, or attempt constrain the natural practice variability of healthcare observed within local contexts (Hollnagel, Wears & Braithwaite, 2015). Development of specific guidelines, checklists and protocols are often assumed to fit

naturally into more complex and dynamic working practices (Iedema, Mesman & Carroll, 2013). However, where some healthcare improvement research strips away local context, such assumptions often lead to ill-fitting solutions that may cause risk elsewhere in the system. This diminishes focus on strategies that enable and support healthcare professionals to tackle situations that are inherently uncertain and complex. Rather than formal clinical or skills-based knowledge, complex situations rely on the practical knowledge of healthcare staff to respond to their dynamic nature (Nicolini, 2011). Additionally, it must be recognised that healthcare staff are most often negotiating these complex situations collectively, working together to counter complexity and uncertainty. Thus, successful improvement methods should work on the assumption that local knowledge must, at the very least, be used to provide context to more generalised understanding of healthcare practices and processes. Although, by definition, more general improvement approaches cannot always take the complexities of daily working practice into account (Berg, 2001; Iedema, Mesman & Carroll, 2013), it is suggested that by understanding local contexts, and by taking into account the practical and collective knowledge of healthcare staff within these contexts, there is a heightened chance that any emergent general and structured improvements are designed to be implemented appropriately and flexibly within context (Ovretveit, 2011). In addition, participatory improvement approaches that involve healthcare staff in the understanding of local contexts by giving them the time to take a step back to observe and collectively discuss their work provides them with a shared competence and a shared sense of the main issues and solutions. In order to fully understand this local context,

healthcare practice must be captured as it unfolds in situ (Iedema, Mesman & Carroll, 2013).

Video reflexive ethnography is an approach which allows consideration of healthcare provision as it is constructed from the habituated actions and intentions of the main stakeholders (healthcare professionals and patients). Context is embraced rather than stripped away, and the focus on in situ healthcare provision takes into account the local care environment in which these stakeholders operate on a daily basis. This is achieved by combining more traditional ethnography (such as observations and interviews) with audio-visual footage of in-situ practice, and reflexive viewing of this footage (Carroll, Iedema & Kerridge, 2008). The ability to capture the real-time complexities associated with healthcare provision within context, and to facilitate reflexive discussion based on positive and high-quality feedback, positions VRE as a participatory method for healthcare improvement and research that can bring about meaningful organisational change (Carroll, Iedema & Kerridge, 2008; Iedema et al., 2019).

The growing interest in VRE within the healthcare improvement literature has led to the publication of a comprehensive set of guidelines for application (Iedema et al., 2019) as outlined in Chapter 1. *Figure 3.1* outlines the key components of VRE as proposed in these guidelines and how they are supposed to work.

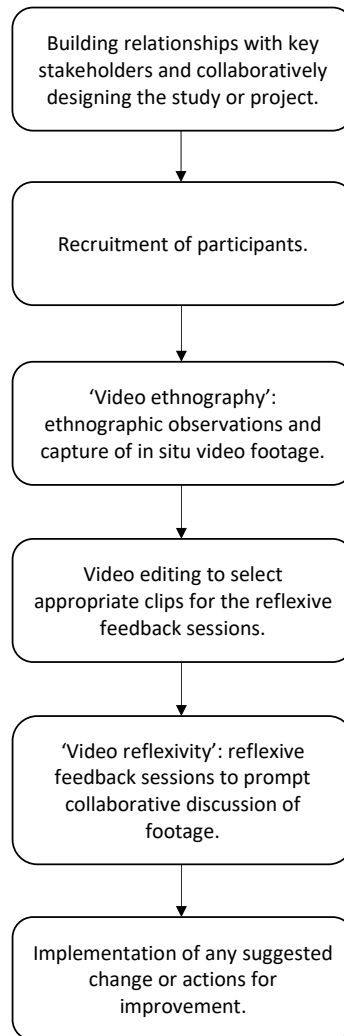


Figure 3.1 The key components of VRE as outlined in the guidelines.

However, much of the current body of literature exploring the use of VRE to optimise or improve healthcare practice highlights the flexibility of the approach for use in diverse healthcare contexts. The rest of this chapter will

explore the way the recently published guidelines suggest each key component of VRE should be done, examples of the different ways these key components have been employed in context, the way in which each key component of VRE will be applied in this study, and the theories employed to drive this work.

3.1.2. How is VRE 'done'?

VRE is a flexible, adaptive approach that begins with the assumption that healthcare is complex, dynamic and locally specific. The foundation of VRE is democratic, mobilising the tacit knowledge of front-line healthcare staff (and patients and their families where appropriate) to determine the focus of attention for those implementing the process. Although VRE can either be implemented as an improvement approach, a research method or, most commonly, with the dual aim of both, key decisions about how best to 'do' VRE are important across all implementation strategies. The facilitator plays a key role in making these key decisions in collaboration with local stakeholders and participants. In this study, the researcher acted as facilitator of VRE as an improvement approach as well as facilitating the wider research project. However, where there is no academic research element to the implementation of VRE, the facilitator role could be fulfilled by any individual (or group of individuals) with an interest in healthcare improvement (Iedema et al., 2019).

The key stages of VRE as part of the improvement approach in this study are outlined in Table 3.1 below. The table also highlights the key stages of the research study that formed the evaluation for a clearer delineation of the two process.

Table 3.1 Delineation between the use of VRE as an improvement approach, and the research study used to evaluate VRE

Improvement Approach	Research Study
<p>Preliminary meetings with senior clinical staff to identify the focus of the improvement approach. In this study, the focus was teamwork and communication at the multi-disciplinary handover.</p>	<p>Ethical approval and Trust honorary contract process.</p>
<p>Familiarisation period on the delivery suite. The aim was to meet staff, and understand their experiences of handover and how this was linked to daily work on the unit through repeated observation in situ. Familiarisation with the filming environment and the practicalities of filming in situ was also important in this period. The lengthy familiarisation period (approximately 6 months) was due to the consent process linked to the research study, and so could be shorter here where VRE is used as a standalone improvement approach.</p>	<p>Recruitment and consent process. Familiarisation with staff over a 6 month period to explain the project, distribute information sheets and collect consent. This process took longer due to junior doctor rotation, different shift patterns and the large number of staff potentially involved in the handover. Staff consent and shift patterns were then triangulated to select the weeks in which filming could occur. Focused ethnographic observation of the delivery suite occurred over this time, allowing for the capture of contextual information.</p>
<p>Video recording of the multi-disciplinary handover in situ to capture work as done. Video recording was an iterative process, taking place until there was enough footage to compile clips of around 5 minutes in length which were reflective of 'normal' handover practice. For this project, three weeks of filming was considered adequate for this to be the case.</p>	<p>Ethnographic observation of the filming process and staff responses to this. Capture of the successes and any potential difficulties in the video recording process, whether these be practical or linked to staff acceptance.</p>
<p>Editing of the video footage to compile clips of around 5 minutes in length that reflected 'normal' handover practice, focusing particularly on elements of communication and teamwork. Editing took place alongside an independent clinician who was able to identify 'normal' practice.</p>	<p>Researcher fieldnotes captured through ethnographic observation of and reflection on the editing process. Focused specifically on the practicalities of editing the video footage.</p>
<p>Five reflexive feedback sessions with staff involved</p>	<p>Researcher field notes captured through</p>

in the recorded handovers. Staff were shown the edited video clips of handover, and discussion of the structural and process aspects of the handover were facilitated by the researcher as facilitator. Prompting was only necessary where discussion was not spontaneous.

ethnographic observation of and reflection on the process of setting up, managing and delivering the reflexive feedback sessions. Focused specifically on these practicalities within an acute healthcare environment.

Dissemination of outcomes from the reflexive feedback sessions. This was done formally by the researcher as facilitator to senior unit staff, but also by staff who had attended the reflexive feedback sessions who were able to prompt change to the handover within weeks.

Semi-structured interviews with staff on the unit to explore the acceptability of VRE in an acute maternity environment. Ethnographic observation of the changes to handover. Analysis of the complete data set to form an evaluation of the use of VRE.

3.1.2.1 Setting up the project

3.1.2.1.1 Guidance in the published literature

The published guidance suggests that the initial key step in the VRE approach is an understanding that in an increasingly complex healthcare system, more generalised knowledge of working processes and practices must be contextualised with understanding of the local care giving environment to negotiate appropriate and successful improvement. More specifically, ledema et al. (2019, Pg 36) posit that generating interest from key stakeholders and potential participants allows early trust-building, although they point clearly to the necessity for understanding how to introduce and negotiate initial conversations about VRE to different groups. Whether these conversations are based on an upfront agenda brought to the process by the facilitator, or are the basis on which the focus of VRE is collaboratively developed, organisational leadership might need different

information or ask different questions to healthcare staff and other potential participants.

This guidance is clearly reflected in the published literature. Iedema et al. (2012) conducted preliminary focus groups with paramedics and emergency department staff to elicit their perspectives on communication at the handover in order to orient their filming and footage selection. Iedema et al. (2015) reported discussing and agreeing all aspects of practice to be videoed with participating practitioners and patients in their scrutiny of infection control practices on surgical wards and ICUs. When implementing VRE across transitions of palliative care, Collier, Phillips and Iedema (2015) directly asked patients what they felt was most important to their care and what they would want their clinicians to see and know, in order to direct the focus of filming and subsequent clip selection. Although the literature provides strong evidence for the importance of including potential participants in developing the primary aims of implementing VRE within a local context, there is little reporting of whether and how key stakeholders at an organisational or management level were involved in the initial stages of a project.

Although not highlighted in the published guidance as a core element of VRE delivery, the published literature suggests that initial ethnographic observations are also key in successfully setting up a project within applied healthcare. Carroll, Iedema and Kerridge (2008) undertook approximately 193 hours of general ethnographic observations over the course of 12 days

in order to understand the ICU environment, in addition to building trust and developing relationships with potential staff participants. In their study of patient and family perspectives of patient safety at the end of life, Collier, Sorensen and Iedema (2016) reported 86 days of ethnographic observations and spontaneous field interviews in the first phase of their project to understand what patients and families felt was safe or unsafe about the palliative care environment prior to filming. Similarly, Gordon, Rees, Ker et al. (2016) reported periods of familiarisation (informal discussions with potential participants totalling approximately 19 hours) and observation (totalling approximately 23 hours) at a GP practice and a hospital ward. The authors delineated the familiarisation stage as being a period of developing understanding of the local environment, developing trust with potential participants and allowing for identification of the best times for capturing video footage. This clearly led to the observation stage in which practices identified in the familiarisation stage were observed, and field notes were captured, prior to filming.

3.1.2.1.2 Setting up this project

At the outset of this project, the application guidelines published in 2019 were not available so the main points of reference were the published literature and discussions with key authors in the VRE-IA group, the wider research team (RL, JOH, LS) and the clinical supervisor on this project (DW). Although there is little reference to the involvement of organisational or management level stakeholders in the literature, I met with the clinical lead on the maternity unit early in the project set-up phase to discuss the capacity on the unit, the practical details of local approvals (i.e. an honorary

contract at the Trust) and their initial thoughts on the potential focus for improvement. Although the different research administration (for example ethics forms) and protocols (for example honorary Trust contracts) required to conduct research within the NHS naturally prompt discussion with management level stakeholders, in this project the initial meeting with the clinical lead of maternity services was key in deciding to focus improvement efforts on the interprofessional clinical handover. This meeting, and subsequent meetings with the clinical supervisor (who was a senior clinician on the unit) were also essential in developing my understanding of the delivery unit as a caregiving environment and the purpose of the interprofessional clinical handover within this environment.

I did not arrange for any formal discussion of the project with large groups of potential staff participants prior to making a decision about the focal area of practice to be captured on film due to the time demands of the fieldwork within the context of a PhD. However, both the clinical lead and clinical supervisor were potential participants in the study, and during visits to the delivery unit prior to beginning the study I had informal discussions with potential staff participants who agreed that handover practice could be improved. Reflecting the practice outlined in the published literature, a period of ethnographic observation (over approximately 4 months) prior to capturing the video footage was undertaken. Although the ongoing ethnography within this study was a key element of the evaluative research method, observing the general working environment on the delivery suite enabled me to develop a basic level of understanding of the conditions in which the

potential staff participants in the project were working on a daily basis. As a naïve outsider to this clinical environment, this basic understanding was key in constructing a relevant topic guide for the reflexive feedback sessions, as well as more practically allowing me to understand some of the practicalities of how I might film the interprofessional handover most successfully.

3.1.2.2 Video ethnography

3.1.2.2.1 Guidance in the published literature

Iedema et al. (2019) highlights a number of considerations about the practicalities of capturing in situ video footage that anyone facilitating the implementation of VRE must take into account when planning a project. The authors suggest that it is not only important to effectively capture specific elements of healthcare practice selected, but capturing footage in situ means it is important that filming is carried out with respect for the local healthcare environment. This means that it is crucial to consider a number of cinematic decisions prior to filming (LeBaron, Jarzabkowski, Pratt et al., 2018). These cinematic decisions – including how many cameras are used, whether the camera will be or can be switched off at any point, whether the camera is hand-held or fixed – are particularly important as they will influence the dynamics and outcomes of the reflexive feedback sessions. Although the guidance highlights that the answers to many of these decisions will be contextually dependent, it is primarily important that the style of filming is appropriate to capture the way in which practices, processes and the provision of care are ordinarily enacted (Iedema et al., 2019).

As the video ethnographic element of VRE is a core element of the process, ledema et al. (2019, pg. 55) provide clear guidelines on these practical cinematic decisions. Where there are an increasing range of video recording devices available, they highlight the importance of selecting the appropriate camera type, and the importance of the facilitator considering the implications of this decision. ledema et al. (2019) suggest particular consideration must be given to the restrictions different cameras may place on practical elements of the footage including angle, distance, sound quality and width. That said, they also make clear that no camera will ever present a true replica of the real (Lomax & Casey, 1998; ledema et al., 2019), and so the camera must be selected based on the local environment and the salient behaviours, practices and processes to be captured.

Additionally, camera size was highlighted by ledema et al. (2019) as a consideration. One of the main limitations of any kind of observational research is the potential for the Hawthorne effect where participants may alter their behaviours due to the awareness of being observed (Adair, 1984). This is a particular consideration when filming in situ in any healthcare environment, not only because the VRE approach is centred on capturing habituated work as it is 'done', but also because the provision of safe and high quality healthcare is a priority. Therefore, video footage should not impact on the way in which healthcare staff work due to this risk or implications for care. As such camera size, and the way in which the camera is operated, are important factors.

Although there are clear and extensive guidelines on the practical considerations for capturing video footage in the published guidance, there is only brief reference to these cinematic decisions within some of the published literature. Numerous studies report the use of a small hand-held camera with a wide angle lens to achieve a 'fly-on-the-wall' style of footage (Carroll, 2009; Gordon et al., 2016). Carroll, Iedema and Kerridge (2008) also reported the use of a hand-held, digital camera. The authors reported in this study that staff participants seemed to ignore the camera, although the authors do not present any evidence to justify their supposition here.

3.1.2.2.2 Video ethnography in this study

In this project, ethnographic observation of the handover environment prior to filming was essential in order to ensure practical decisions made were that reflected the theoretical position taken in this study concerning VRE as an improvement approach. As outlined in Chapter 1, the increasing complexity of healthcare provision has resulted in new ways of thinking about safety; moving from the scrutiny of identifiable failures or the component parts of specific incidents (Safety-I) to consideration of the individual and collective adaptations to working conditions that allow things to 'go right' (Safety-II) (Hollnagel, Wears & Braithwaite, 2015). Therefore quality improvement and patient safety embedded within a Safety-II paradigm, as is true of this study, focuses on maintaining the adaptive capacity for individuals and teams to respond to changing conditions.

Within Safety-II, the concept of increasing healthcare complexity means that the reality of daily healthcare work differs greatly from the idealised view of

'normal' working conditions outlined in standardised procedures or guidelines. The implication is that improvement in the quality and safety of healthcare can only be achieved through observation of the daily realities of healthcare provision, and understanding the ways in which individuals and teams adapt to complex and flexible conditions to ensure quality and safety is, more often than not, maintained. With this in mind, the practicalities of capturing video footage of the multi-disciplinary handover were driven by the Work-As-Done (WAD) paradigm. In order to reflect the reality of the handover on a daily basis in the most comprehensive way possible on video, it was essential that the camera model, and where the camera was placed, was able to capture a holistic picture of the handover environment as well as capturing verbal interactions and any extraneous sound from the unit that was evident when attending the handover in person. The familiarisation period prior to video recording was therefore grounded in the facilitator developing a clear understanding of WAD in order to accurately capture footage that would allow staff to understand routine working practice which reflected daily performance variability.

Camera placement was particularly important due to the use of two large patient information screens during the handover. To avoid capturing any of this identifiable patient information, being able to place the camera to exclude these screens, whilst not excluding any element of the handover routine, was ethically important. By observing the handover it was clear immediately that a wide-angle lens would be necessary to capture the whole handover environment due to the number of staff attending handover, and

how they arranged themselves within the handover environment. Capturing all staff on screen at all times meant both verbal and non-verbal interactions between all members of staff would be captured for the duration of the handover. As handover happens in a fixed location, I chose to use a discrete, fixed-location Go Pro camera mounted above the patient information screens. The Go Pro could also be operated remotely, which meant I could remove myself from the handover area to further reduce any potential for the Hawthorne effect (Adair, 1984). This is particularly important when framing the improvement approach within the WAD paradigm. Considering the suggestion that there are limitations to the capacity of video to fully reflect reality (Iedema et al., 2019), it was imperative that staff were working with a true sense of normality to minimise this. The use of a discrete camera would have been obsolete if I was present during the handover, increasing the likelihood of staff being acutely aware of being observed. Minimising my presence during the handover process meant that WAD would be as accurately captured as possible, allowing reflection on and consideration of footage of the most 'real' version of the handover possible through a video lens.

In addition to camera selection, the preliminary observations also allowed me to set out the parameters of filming prior to capturing the video footage. This included deciding to begin filming as soon as staff started to enter the handover area, and stopping the footage once the obstetric staff left for the ward round as this was the cue that handover was over. These parameters of the video footage were important to ensure the important elements of the

handover were captured in the understanding that foregrounding staff to the process itself would likely prompt them to extrapolate about other elements of working practice where they felt it appropriate or necessary. This is in line with the 'hologrammatic' effect of in situ video footage, where the accurate capture of WAD is posited to elicit a connection to the viewer in response to what they see on screen, but also those processes that happen around this. It was therefore important to accurately capture the handover as linked to work prior to and following this process.

3.1.2.3 Video editing

3.1.2.3.1 Guidance in the published literature

Once captured, the video footage is edited into short clips to be shown at the feedback sessions. Through the process of abduction (Tavory & Timmermans, 2014) sections of film highlighting similar phenomena are grouped into short clips. The guidance clearly suggests that this process is key to creating a reflection of the 'real' that will prompt discussion about the salient elements of in situ care provision outlined when setting up the project. Iedema et al. (2019, pg. 83) suggest that this process should therefore be a collaborative and iterative process guided not only by the facilitator but also by participants or other 'experts' with a good understanding of the local care environment.

There is good evidence that the guidelines suggested by Iedema et al. (2019) are already being implemented in VRE studies to date. Carroll, Iedema and Kerridge (2008) outline coding of video footage based on two key questions about who is and isn't speaking, and the specific information

being communicated in their study of communication practices on an ICU. Hor, Hooker, Iedema et al. (2017) reported including clips which specifically showed routine practice that required attention to infection prevention and control in their study of prevention of cross-contamination on hospital wards. The authors of this study also highlighted the introduction of clips based on whether participants had expressed an interest in viewing a specific practice, which was the position taken by numerous other authors of VRE projects (Hor, Iedema & Manias, 2014). As such, there was little mention of the direct input of participants or 'experts' in the editing process, but it was clear that the views of participants were taken into account by the facilitators in these projects.

3.1.2.3.2 Video editing in this project

In this project, clip selection focused on representing the different levels of communication and team-working that occurred during the handover on delivery suite; clinical communication within and between professional silos, social communication and non-verbal communication. Decisions about clip selection during the video editing process were driven by theoretical understanding of the importance of non-technical skills (NTS) in the provision of safe and high quality healthcare. There is strong evidence that ineffective teamwork, communication failures and workplace hierarchies can contribute to failures in patient safety, especially within multi-disciplinary staff teams (Mishra, Catchpole & McCulloch, 2009). NTS scoring systems - namely the Oxford NOTECHS (Mishra, Catchpole & McCulloch, 2009), the Observational Teamwork Assessment for Surgery (OTAS) tool (Hull, Arora, Kassab et al., 2011) and the Explicit Professional Oral Communication

(EPOC) observation tool (Kemper, van Noord, de Bruijne et al., 2013) – were studied, adapted and combined with researcher field notes of the handovers captured during the initial familiarisation period to create a flexible editing schedule with clips selected on their reflection of specific NTS. Clip selection in this study therefore aimed to capture the following NTS elements that were reflective of routine daily practice:

- Leadership of the handover
- Maintenance or building of the team culture
- Human interaction – verbal and non-verbal
- Situational awareness
- Procedural planning
- Anticipation of potential risk

I edited all footage alongside an independent clinician (JG) following guidance from members of the VRE-IA, and in recognition of my own naivety in relation to the clinical handover. The input of the independent clinician was particularly important in helping to include only those elements of the handover that reflected daily practice, adhering to the WAD paradigm within which VRE is framed in this thesis. Due to the assumption that reflexive feedback sessions would last around an hour, two clips of around five minutes in length were produced in this project. Narrative transcripts of the two video clips can be found at the beginning of Appendix I to provide a clear account of what participants in the reflexive feedback sessions were able to view.

3.1.2.4 Video reflexivity

3.1.2.4.1 Guidance in the published literature

The final core element of the VRE process is the point at which participants are invited to review the resulting footage in facilitated reflexive feedback sessions. Iedema et al. (2019) suggest that the aim of these sessions is to enable participants to see activities and aspects of practice that may otherwise be, or may start to become, habituated. Although clip selection is fundamental in motivating collective discussion of working practice, the practical approach to, and facilitation of, the reflexive feedback sessions is also key.

Iedema et al. (2019) suggest that an understanding of the more general concepts of dialogue are particularly key to moderating the reflexive feedback sessions. The authors draw attention to a particular typology that includes 'dialogic' statements (those that encourage discussion) and 'monologic' statements (those that close down a conversation or draw particular points of discussion to a close). Although it seems that 'dialogic' statements might be better placed in the context of the reflexive feedback session as a modus of knowledge mobilisation and collaborative discussion, facilitators must be aware of 'monologic' statements as a way of setting boundaries to protect the psychological safety of participants. These 'monologic' statements also have the more practical use of moving the discussion along if there is a particular time limit. In addition to this more general guidance for the facilitator, Iedema et al. (2019) set out some potential prompts or questions that could be used by the facilitator to stimulate discussion in addition to more project specific questions:

- Can you describe what is happening in this clip?

- Is this what usually happens?
- Is there anything which this clip doesn't show which is important for understanding what is happening?
- What were you thinking/feeling when this was happening?

Although the more specific discussions within the reflexive feedback sessions are guided predominantly by clip selection and the interpretation of the video footage by participants, there are certain conditions under which it would be expected both the facilitator and participants would be working within to elicit 'exnovation' (Iedema et al., 2019). It is particularly important that the principles of active listening and non-judgemental response are adhered to by both the facilitator and participants. It is also key that the facilitator remains attuned to both the discussion itself (to enable clear summarising of points made and reframing of the discussion to open up new avenues) and to the affective elements of collective discussion (which may involve capitalising on positive emotions or enthusiasm, or moderating negative emotions, palpable tension or excessive proliferation of hierarchies).

It is clear from the literature that approaches to VRE vary, and this is reflected in the practical nature of reflexive feedback sessions across studies being widely heterogeneous (Carroll, Iedema & Kerridge, 2008; Collier, Phillips & Iedema, 2015; Hor, Iedema & Manias, 2014; Iedema et al., 2012; Iedema et al., 2015). The number, composition and purpose of reflexive feedback sessions is prompted primarily by the aim of the research study and the environment in which the research is undertaken. The number and

size of reflexive feedback sessions is generally well reported across most published literature, although only a small number of published studies outline the potential prompts or questions used by the facilitator to guide discussion (Collier, Phillips & Iedema, 2015).

3.1.2.4.2 Video reflexivity in this study

In this study, the aim of the research was to gain insight into staff perceptions of teamwork and communication at the clinical handover, and whether and how this could be improved. It was necessary, therefore, to involve those staff who would participate in the handover, but also to understand that this focus would preclude other staff on the unit who did not play a role in this specific procedure.

Initially, the aim of this part of the study was to get all staff from each recorded handover to attend reflexive feedback sessions together. However, taking into account the large number of staff attending the handover (up to between 18 and 20 staff members), the number of different specialist roles within one handover (between 6 and 8), the different shift times and patterns of each team member, and the different workplace demands on each team member, it quickly became apparent that it would not be possible to work with the whole team at the same time. Instead, I found that flexibility in the number and composition of the reflexive feedback sessions was essential. This was also imperative due to the rapidly-changing context within which staff were working on the acute delivery unit. Due to this flexibility, I set a minimum requirement that the total number of reflexive feedback sessions would attempt to capture at least one staff voice from each of the staff

groups involved in the handover on a daily basis. The target sample size for the reflexive feedback groups was initially set at between 8 and 15 participants, and was based upon group sizes achieved in the current literature detailing the use of VRE in acute healthcare settings (Carroll, Iedema & Kerridge, 2008; Hor, Iedema & Manias, 2014; Iedema et al., 2012; Iedema et al., 2015). This initial sample size was reviewed again as the study progressed as it was found to be difficult to achieve this sample size due especially to different and changing shift patterns as outlined above. Referring back to the wider VRE literature (Collier, Phillips & Iedema, 2015; Collier & Wyer, 2016), the target sample size for the reflexive feedback groups was reduced to a minimum of two participants. The revised aim in each small reflexive feedback session was then that the staff group involved staff voices from different groups to aid particularly in perspective-taking and meaning-making, which are inherently collaborative processes.

The improvement project included a final total of five reflexive feedback sessions, ranging in length from 25 and 115 minutes (M = 63 minutes). The staff composition of each feedback session is detailed in Table 3.2 below.

Table 3.2 Staff participants in each feedback session by job role

<u>Feedback Session</u>	<u>Staff Participants</u>
1	Consultant obstetrician; Consultant anaesthetist; Obstetric registrar (n = 3)
2	Midwife coordinator; Obstetric registrar (n = 2)
3	Operating department practitioner (ODP); Scrub nurse (n = 2)
4	Midwife coordinator; Anaesthetic registrar (n = 2)

In this project I (SM) facilitated all reflexive feedback sessions. By virtue of being a naïve observer, this directed the way in which the session was facilitated. The video clips were shown to staff participants at the beginning of the reflexive feedback session, with the only preliminary guidance being to concentrate on the environmental, process and structural elements of the handover as a whole, rather than individual performance. Staff were also advised that they were able to talk over the film if they wished, and that the footage could be paused and rewound if necessary.

Being relatively unacquainted with the healthcare processes under scrutiny, I was able to ask simple questions about the ways of working that could allow staff to access the foundations of why and how work is 'done' if necessary to prompt discussion. Prompts throughout the reflexive feedback sessions were iterative and reactive to the spontaneous topics of discussion, but a general structure to the session was framed using the guiding questions below that were developed from discussion with members of the VRE-IA:

- Is this clip reflective of what normally happens at the handover?
- Can you describe what is happening in the clip?
- Is there anything this clip does not show?
- Are there any ways you can think of to improve the handover?

Therefore, in this project, all reflexive feedback sessions were framed with the aim of progressing the collective discussion towards the discovery of issues and the development of any practical solutions.

3.1.2.5 Filming the reflexive feedback sessions

3.1.2.5.1 Guidance in the literature

The current guidance suggests that, although filming the reflexive feedback sessions is not a core element of the VRE process, that this is a way of allowing the improvement or research team to revisit each session and to summarise and analyse not only the session itself but how best to help implement any potential further action (Iedema et al., 2019, pg. 126).

However, the guidance also makes clear that there must be good justification for recording these sessions that can be explained to staff, and that consent must be checked at least verbally prior to recording the sessions even where staff have provided consent in the initial stages of the project.

3.1.2.5.2 Filming reflexive feedback in this project

In this project, these reflexive sessions were video recorded, although this is not an essential part of the VRE process. However, filming of the reflexive sessions allowed me to analyse the collective scrutiny of the video clips and to collate any suggested actions. It also had the secondary advantage of allowing me to scrutinise my own practice. As a researcher trying to intervene in a complex system such as acute healthcare, many of the decisions made throughout the course of the research will be made 'in the moment' or in response to local context. This is also true of the reflexive feedback session itself, where the format and level of discussion is not only guided by the clips selected, but by the specific staff involved in the session. Being able to revisit the reflexive feedback session through video footage allowed me to reflect on my own behaviours during the feedback session, to

understand how they may have affected the dynamics and how the level and type of facilitation I provided differed across sessions.

It is worth noting here, with particular reference to the findings of the systematic review (see Chapter 2), that there is no guidance in the current VRE literature about the process of analysis of data from the reflexive feedback sessions.

3.1.2.6 Implementation

It is very difficult to provide any general guidance on how implementation of change following VRE is 'done' due to the numerous specific organisational factors that will affect the nature and process of implementation. It is generally expected, from the current VRE literature, that any suggested actions from the reflexive feedback session will be collated and relayed to relevant individuals or groups within the organisation, but the way in which these individuals or groups are identified, and the process of feedback, are varied where reported at all.

In this project, the initial process of implementation of change was in fact driven by the participating staff themselves. This was done in the first instance without my knowledge, with staff developing a new protocol for handover based on how they had observed the process was being 'done', and how they felt this process could be optimised. Albeit this new protocol was then ratified by the obstetric leadership on the delivery suite, staff participants drove this from conception to implementation of change. That said, it was important that all suggested actions for handover optimisation

were relayed to the unit leadership team in order that they could scrutinise and evaluate the benefits and potential risks (if any) of each. Thus, in this project the findings of the reflexive feedback were presented to the clinical leadership team for obstetrics in a dedicated feedback meeting. This was arranged as a semi-formal presentation, rather than a facilitated discussion of the suggested actions.

3.1.3. Researcher Reflexivity

It is critical that the concept of researcher reflexivity is embedded within the process of VRE. As is evident in the way Carroll and Mesman (2018) outline the three ways of 'doing' VRE, the way the facilitator positions themselves within the project will have a proportionate effect on the outcomes (Iedema et al., 2019). Thus, the evidence suggests that facilitators have an awareness of the three-stage framework outlined by Nicholls (2009); self-reflexivity, relational reflexivity and collective reflexivity. The process of the researcher reflecting on their own position within the research project, particularly on the opportunities and limitations of the ways in which they are positioned at each stage, is described as self-reflexivity. Relational reflexivity, by definition, refers to facilitator evaluation of their own capacity for, and development of, relationships with participants at all stages of the process. Finally, collective reflexivity refers to facilitator reflection on, and understanding of, how the design and implementation of the VRE process relates to progress throughout, as well as the outcomes. Enabling learning of both participants and facilitators is one of the foundational concepts of VRE, and so it is imperative that researcher or facilitator reflexivity is prioritised as a key element of the process. In this project, researcher reflexivity was

captured in researcher field notes captured over the course of the project as a whole.

3.2 General Discussion

In the present study, the way in which VRE is 'done' clearly reflects the current literature that describes VRE as a flexible improvement approach that can act with a dual purpose where the process is embedded within research. It is clear from the literature that the four guiding principles of VRE are the foundation of the theoretical concepts of the process (Iedema et al., 2019), but beyond these guiding principles, there is currently very little guidance about how to do VRE in the published literature. Although the findings of a systematic review of the literature (Chapter 2) suggests that there is a gap in the published literature related to the theoretical lens through which VRE is delivered, the review also highlighted the poor reporting of the method of delivery of VRE. The present study provides a more practical guide to how VRE is 'done' in context.

Although this section of the thesis provides a novel overview of the ways of 'doing' VRE in presenting practical methodological information from this study to support the more general guidance in the literature, there is still little exploration of the way in which data generated from the VRE process is analysed. It is important that, where the literature suggests that VRE can work in a dual fashion as both an improvement approach and a research method, future research should address the collection of specific units of

data and any methods of analysis that might be appropriate to explore the outcomes of the process.

3.3 Summary

This chapter aimed to provide context to the main body of the thesis by outlining the process of VRE, or how this is 'done'. The chapter clearly delineates the main elements of the VRE process, presenting an overview of the process as outlined in the current literature, aligned with the process as undertaken in this project. It was clear from overlaying the VRE process carried out for the purposes of this thesis with the way in which the process is explored within the current literature, that local contextual factors were fundamental in many of the methodological decisions. However, it is also clear that the VRE literature must be improved in certain aspects of more general process guidance, specifically in the reporting of potential methods of data analysis where VRE is embedded within a research study.

3.4 The next chapter/stage of research

The next chapter will outline the research methods employed in this project. The specific research questions defined from preliminary exploration of the relevant literature will be outlined in this chapter, and the study design and methods of analysis employed to address all of the research questions will be defined. This chapter will also explore the philosophical foundations of the research, with particular reference to the positioning of the researcher.

Chapter 4

Research design and method

The research studies included in the systematic review (Chapter 2) highlighted the potential of VRE as an improvement approach. However, they also identified gaps in the current published literature exploring the use of VRE in a hospital-based healthcare setting. The specific gaps identified were: reporting of the feasibility and acceptability of the implementation of VRE within naturally occurring inter-professional teams; the role of the facilitator in the successful delivery of VRE; and the mechanisms by which VRE led to change or improvement. This study intended to complement the systematic review findings by ensuring that the gaps identified in the literature were clearly addressed, synthesised and reported. In this chapter the main research methods selected to address these gaps will be outlined.

It is postulated that a mixed-methods approach to evaluation of VRE within acute healthcare will give a more detailed understanding of whether and how the process works as an improvement approach. This chapter describes the research questions that underpin the research study, and the methods applied to address the research questions. Inductive and deductive approaches were applied to ensure that the evaluation process was founded in understanding of specific concepts from the current literature and where this study applies this understanding in addition to exploring the novel concepts emergent within the study data.

4.1 Defining the research questions

As a predominantly qualitative research study, the research questions defined guide the focus of the study, as well as the methods and analytic techniques employed (Corbin & Strauss, 2008). This focus on research questions, rather than defined objectives or hypotheses, allows for an iterative and flexible approach to the study as data is generated.

The central research questions for this study were:

- 1) Is VRE an acceptable and feasible improvement approach in acute maternity services?
- 2) Does VRE lead to improvements in teamwork and communication at the multi-disciplinary handover?
- 3) How does VRE lead to learning and improvement in an acute healthcare environment?
 - a) What is the role of the facilitator in the successful delivery of VRE?
 - b) What are the mechanisms of action by which VRE might be successfully delivered in an acute healthcare setting?

The rest of this chapter will explore the epistemological position which oriented this thesis, the qualitative methodology employed, and the main study design used to answer the research questions.

4.2 Philosophical foundations of research

The process of designing a research study must always begin with the philosophical assumptions that the researcher will make regarding the knowledge required and how this will be attained (Creswell & Miller, 2000). It is important as a researcher to be aware of these assumptions and to be

explicit about how these assumptions shape the way knowledge is sought (Creswell & Plano Clark, 2011). Within qualitative inquiry it is also important for the researchers to be reflexive, acknowledging their own world views, paradigms and beliefs, and being actively aware of how these inform the conduct of the inquiry (Creswell & Miller, 2000). A variety of different philosophical perspectives to qualitative inquiry have been described, however research paradigms are constantly evolving and there is little consensus on how to classify them. Given the differences in terminology applied to these paradigms, it is increasingly important to explicitly focus on one in the pursuit of clear research knowledge. I have chosen to focus on Creswell's (2003) description of four specific paradigms that inform qualitative research inquiry: post-positivism, constructivism, advocacy/participatory and pragmatism.

A paradigm can be defined as a set of basic beliefs or assumptions, defining the nature of the world, the individuals place in the world, and providing a world view of the possible relationships the individual can have to the world and its parts (Guba and Lincoln, 1994). More simply, a paradigm is a set of basic beliefs or assumptions that guides action. These basic beliefs are based on three key questions which are outlined by Guba and Lincoln (1994), each of which constrains the answer to the next:

1. Ontology: What is the nature of reality? What can be known about reality? What do we know about how things really are and how they work?

2. Epistemology: What is the relationship between the knower and what can be known? How do we know what we know?
3. Methodology: How can the inquirer find out what they believe can be known?

Thus, a researchers' ontology, epistemology and methodology are contained within their research paradigm. In identifying a paradigm with which to align this research study, I have considered my own world view and experiences, and importantly the research questions I aim to address. The research questions in this thesis require me to understand how multiple participants navigate and understand the behaviours, attitudes and values underpinning their working practices, and their perspectives on VRE as a lens through which they can negotiate collective awareness of how these factors might underpin specific habituated processes. This aligns with a postpositivist paradigm. Considering the philosophical assumptions aligned with this paradigm, I have specifically chosen to orient this research within the critical realist paradigm, which I will go on to justify further below.

4.2.1 Critical Realism

As a meta-theory, critical realism is difficult to define, but it is generally accepted to sit between positivist and interpretivist paradigms. Archer et al. (2016) suggests that critical realism offers an alternative to the more scientific positivist paradigm and the interpretivist paradigm which focuses on hermeneutics at the cost of explanation and causation. Critical realism is one of the most common postpositivist paradigms, based on the assumption that there is an objective reality independent of individual thought; there are multiple subjective interpretations of a single objective reality (Collier, 1994).

The basic assumptions of critical realism are that a reality exists and operates without our knowledge of it, and that our knowledge of the world and our accounts of reality are fallible and situated in history, society and culture (Archer et al., 2016; Collier, 1994).

In understanding critical realism as a paradigm, I draw on the work of Archer et al. (2016). Realism is central to the critical realist position, and is born from the assumption that social scientists often favour epistemology over ontology. Critical realism combines interpretation and explanation to conduct inquiry into social structures, individual behaviours, culture, and the causal determinants of human actions and interactions within complexity and heterogeneity. It accepts a relativist epistemology, embracing the understanding that knowledge is always dependent on context, social influence and human activity, thus an individuals' representation of the world will always be fallible and dependent on perspective. Researchers must therefore employ judgemental rationality, appreciating that not all individual accounts will be created equal, and attempting to identify objective reasons for affirming or accepting certain accounts over others. While Archer et al. (2016) clearly outline the assumptions underpinning critical realism, they also accept that there is no one unitary framework or methodology that unites critical realists. However, it is most commonly aligned with ethnographic methodology, providing a rich and holistic insight into individuals' views and actions, and the social context of these actions. Ethnography is widely accepted as the study of social interactions, individual and collective behaviours, and perceptions of these interactions and

behaviours within groups, teams and organisations (Reeves, Kuper & Hodges, 2008). Researchers observe and interact with participants in their natural setting, becoming immersed in the environment as an active participant. Ethnography as a methodological position is accepted as a qualitative strategy of inquiry.

4.2.2 Qualitative Strategy of Inquiry

Considering my own philosophical assumptions alongside the research aims of this thesis, a qualitative strategy of inquiry is employed through the majority of the thesis, with critical realism as the general philosophical grounding. The aim of qualitative research is to engage in naturalistic enquiry, using the experiences and views of participants to develop concepts that allow researchers to make sense of specific phenomena (Pope and Mays, 1995). Thus qualitative research provides an 'insider' view of human behaviour, assigning it both context and meaning. Qualitative inquiry is particularly useful when, as in the case of this thesis, the concepts to be explored are novel or lacking in theory (Morse, 1991).

This study seeks to evaluate VRE within acute multidisciplinary healthcare teams, with a view to understanding staff perceptions of the method and exploring the success of the method in prompting change and perceived improvement in teamwork and communication at handover. This involves exploring participant and researcher experiences of collective reflexivity, and using these experiences to make sense of VRE as an improvement method in an acute healthcare setting. Therefore the thesis aim and associated research questions align with the use of a qualitative strategy of inquiry.

4.3 Methodology

4.3.1 Ethnography

Ethnography is the study of social interactions, societal perceptions and behaviours that occur within teams, organisations and communities (Reeves et al., 2008). It is both a method and a product (Savage, 2000), and is described as a dynamic process of understanding how people see and account for their world (Nader, 2011). Ethnography is a truly inductive method, through which researchers develop albeit tentative theoretical explanations based on deep and often iterative exploration of their data (Reeves et al., 2008). Central to the ethnographic method is the concept of reflexivity, that is the relationship the researcher shares with the environment they are investigating (Reeves et al., 2008). Underpinned by critical realism, reflexive ethnographic research is explicit about the relationship the researcher shares with the participants and the environment to be investigated, and how researcher experiences can influence the construction of knowledge about an objective reality. The researchers authority to provide only the most legitimate account of a particular phenomenon is no longer accepted (Savage, 2000), and critical ethnography accepts that there will be different subjective accounts of the same reality.

Rather than a single method, an ethnographic approach to research will usually incorporate a range of methods, and can combine both qualitative and quantitative inquiry. Today, the term ethnography is commonly applied to any small scale social research carried out in situ. By definition,

ethnographic research contextualises events and focuses on the meaning underpinning individuals' actions (Savage, 2000). Rather than one clear method, researchers must consider their own philosophical stance when deciding which method of ethnography to use. Different kinds of ethnography have foundations in different ideas on how to construct knowledge (Hammersley & Atkinson, 1994).

4.3.2 Critical ethnography

Critical ethnography as an ethnographic methodology was developed to restructure traditional ethnographic research processes in order to understand the implicit factors perpetuating inequality within specific settings. Although adhering to many of the core assumptions of traditional ethnography, critical ethnography has its antecedents in critical theory, and its aim is not only to understand or describe specific environments, communities and cultures, but to change them (May, 1997). Critical ethnography differs from traditional ethnography in not just asking 'What is this?' but considering 'What could this be?' (Thomas, 1993).

Critical ethnography, although grounded in interpretive aims, refutes the attempts of traditional ethnography to divorce theory from data collection (May, 1997). Critical ethnographers accept that ethnography is both contextual and reflexive, and that no researcher can be completely naïve or disinterested, and that a researcher must always begin with a theoretical position, although this position is considered fallible and open to critique (May, 1997; Thomas, 1993). Critical ethnography accepts the reflexive nature of ethnographic research, emphasising the importance of the

relationship between the researcher, the participants and the environment in understanding subjective experiences, and constructing knowledge of an objective reality.

4.3.3 Rationale for choosing critical ethnography

This study aims to evaluate the use of VRE to improve teamwork and communication in acute multidisciplinary healthcare teams, including an exploration of staff experiences of the method. Critical ethnography was chosen to achieve this, and this section explores the rationale for selecting this methodology.

My earlier work in Chapter 2 suggested that team reflexivity can lead to improvement in NTS in multidisciplinary healthcare teams. Ethnography can be used to construct understanding of social interactions and behaviours that occur within teams and organisations (Reeves et al., 2008). Other researchers have also recognised the importance of NTS development on patient safety and have similarly used ethnography to evaluate improvement methods and study improvement (Leslie, Paradis, Gropper et al., 2014). Considering this, ethnography is an appropriate methodology for this study.

Critical ethnography, specifically, was selected as it aligns with my epistemological position (outlined in Section 4.3 above). Critical realism, and therefore critical ethnography, accepts that an individuals' representation of a single objective reality is always subjective and grounded in perspective (Archer et al., 2016; Collier, 1994), and seeks to understand the contextual

factors shaping these perspectives. More specifically, critical ethnography seeks not just to understand the contextual factors and social dynamics that shape individual perspectives, but also how these factors could be changed for the better.

4.4 Methods

4.4.1 Design

This research study involved the evaluation of VRE as a healthcare improvement approach. This activity does not constitute a research method in this study and so is not detailed here, but full details of the method of VRE can be found in Chapter 3. Although, in the wider literature, VRE is often employed as part of a wider research study focused on improvement, in order to evaluate the potential of VRE this process was considered as removed from the research element of this study.

This study employed a mixed-methods approach, with a predominantly qualitative design. Three distinct research methods were utilised to answer the research questions outlined.

4.4.1.1 Focused ethnography

Focused ethnography was the main data collection method in this thesis; this is a distinctive sociological ethnography particularly adopted in applied research (Knoblauch, 2005). Focused ethnography has been commonly used in the investigation of groups, communities and teams where there is clear social and cultural differentiation. Although complementary to more

conventional ethnographic methods, focused ethnography is clearly characterised by comparatively short-term field visits. This reduction in data collection time when compared to more conventional ethnographies is generally compensated for by the intensity of the data collection process and, commonly, the use of audio-visual technologies for data collection and analysis. This generally means that the subjective experience of the researcher is not as intense in focused ethnographic methods, however this is compensated for by the depth and intensity of data analysis. Focused ethnography is therefore most commonly used to study communication and communicative behaviours, where audio-visual technologies can supplement and support subjective researcher observations (Knoblauch, 2005). As this method of data collection results in extensive and in-depth accounts of socially constructed communications and communicative behaviours, it was an appropriate approach for the main aim of the study.

A partial framework to guide in-situ observations of handover before and after VRE was developed from the general literature on teamwork and communication behaviours in multi-disciplinary healthcare teams. Validated teamwork and communication scoring tools for use with multi-disciplinary staff teams were explored (Flin, Martin, Goeters et al., 2003; Frankel, Gardner, Maynard et al., 2007; Mishra, Catchpole & McCulloch, 2009) and the most commonly occurring teamwork and communication behaviours were extracted. The framework was flexible and only provided a partial guide to observations; this reflected my developing understanding of the purpose

of the multidisciplinary handover and the contextual factors influencing the handover. The main concepts to guide observations included:

- Intra- and inter-professional communication
- Situational awareness
- Leadership
- Cooperation

Audio-visual recording was used to support researcher observation of reflexive feedback sessions. The VRE literature was explored for guidance on the depth and main points of observation from the audio-visual footage, but (as outlined in Chapter 2) methodological detail in this literature was lacking. Exploration of literature detailing video analysis of group discussion provided some general focus for observation (including body language, vocal pitch and vocal tone). Observation of reflexive feedback sessions were focused more generally on individual and collective behaviours; this reflected the aim of the thesis as an exploratory evaluation of VRE with acute healthcare staff teams.

4.4.1.2 Semi-structured interviews

In depth, semi-structured interviews were used to collect data on staff perceptions of VRE. These are described as subjective and intimate encounters that can elicit deep and detailed narratives by asking open-ended questions from a pre-decided interview schedule (Whiting, 2008). The schedule generally comprises a set of core questions with associated prompts, allowing flexibility in the structure and flow of the interviews, and allowing the researcher to pursue important or interesting points that may arise (Creswell, 2007; Jamshed, 2014). As this is a flexible way of collecting

in-depth subjective narratives about a single phenomenon from multiple participants, it was an appropriate approach to explore staff perceptions of VRE.

This study took a deductive approach to the development of the interview schedule. The schedule was developed from a general review of the VRE literature and through reflections on reference to staff perceptions of team reflexivity in Chapter 2. The interview schedule was also discussed at length within the research team (RL, JOH, LS). The same general schedule was used for all staff members, although the questions were flexibly delivered with regard to the level of involvement of each member of staff in the VRE process. The questions specifically aimed to guide participants through the retrospective consideration of the process of VRE and/or the implementation of any change or improvement. This interview schedule was flexible and was reviewed after each interview in an iterative process of revision where appropriate. This reflected my developing understanding of how staff viewed the use of VRE, and my developing understanding of its use in an acute maternity unit. The full interview schedule can be found in *Appendix E*.

4.4.1.3 Staff survey

During the periods of ethnography before and after the reflexive feedback sessions, staff members were asked to answer two simple statements to assess their satisfaction with the handover process, and whether information transfer during the handover was generally adequate for them to carry out their role on the delivery suite safely during their shift. These statements were developed based on the theoretical position of previous video-reflexive

studies that video-reflexivity as an improvement method should foster greater feelings of psychological safety (Iedema et al., 2019) and better communication between staff teams allowing vital information to be transferred more easily. The two statements were:

1. I felt able to raise, or contribute to, a discussion during the handover today.
2. I felt I received/provided all necessary information today to allow me/my colleagues to safely carry out my/their shift.

The responses to each question were rated on a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). The decision to ask only two questions in this survey was a pragmatic one, based on the understanding of the time demands on staff immediately following handover. The idea of this short survey was to gather information from a larger group of staff about perceived improvement in the handover process to supplement more detail-rich qualitative data.

4.4.2 Setting and participants

Front-line maternity services in UK hospitals are among the most complex and acute of clinical services (Better Births, 2016). The delivery suite, attending to women in active labour, has a rapid patient turnover and is overseen by inherently inter-professional staff teams concerned with the care of the mother, and the safe delivery of the child. This is the most acute of the maternity services, where obstetric teams and theatre teams must work together to provide safe care. The formal handover in the delivery suite, involving both teams, is therefore essential in the complete transfer of

clinical information between and within inter-professional staff teams to ensure safe and high-quality patient care.

This study was conducted in the delivery suite of a large teaching hospital in the North of England. The delivery suite itself is classed as a medium sized unit, with 4650 births taking place there between April 2017 and April 2018. This is around 0.7% of all live births in the UK within the same 12-month period, and approximately 40% of all live births within the NHS Trust the hospital belongs to in the same year. The unit comprises 10 labour rooms, 2 birthing pools and a specialised neonatal unit. The delivery suite has both midwifery-led and consultant-led care where appropriate, and there are two theatres available for any elective or emergency procedures.

The unit is run daily by a Band 7 midwife who coordinates the midwifery staff for the day and oversees the care of all patients on the unit at any one time. All midwives, including the coordinator, work 12.5-hour shifts from 7.30am – 8pm or 7.30pm – 8am. The half hour crossover for midwives allows the day and night coordinators to hand over to one another in a midwife-only handover at 7.30am/7.30pm, and midwives taking over one-to-one patient care to hand over individually once assigned to a patient during this handover. For all non-emergency births, patient care will normally be provided directly by the midwife, with little to no obstetric support. For the day consultant on the delivery suite, a shift will normally run from 8.30am, when handover begins, to 8pm although this shift pattern will vary depending on the number of women on the unit at any one time, and the complexity or

potential for risk in each case. Consultants work a week on delivery suite, known as a hot week, on a rotational basis and are based in an office just off delivery suite itself. The rest of the core obstetric team (registrar, SHO and any rotating junior doctors) work a similar shift length of around 12 hours and are responsible for providing any initial support to midwives during more difficult or complex births where additional clinical support is required.

Registrars and SHOs will also carry out most of the surgical intervention on delivery suite, whether elective or emergency, under the guidance of the consultant. The theatre staff are based in an office off delivery suite, next to the two obstetric theatres. Anaesthetic consultants work one fixed day per week on delivery suite. They are responsible for overseeing the anaesthetic provision for the unit, whether this be administration of epidurals during birth or caesarean section, or the administration of general anaesthetic in more complex or emergency cases. The anaesthetic consultant is supported by an anaesthetic registrar who, like the obstetric team, will carry out most of the clinical work on a daily basis, unless consultant support is deemed necessary. Theatre cases are supported by a team of theatre staff including scrub nurses and ODPs. Apart from the Band 5 and 6 midwives, all staff working on delivery suite are involved in the multi-disciplinary handover that takes place on the unit at 8.30am every morning. The handover is typically run by the consultant anaesthetist, and has a set structure which involves the anaesthetist running through the theatre list for the day using the WHO Safer Surgical Checklist (Mahajan, 2011) and the Band 7 midwife and night registrar then taking over leadership of the handover to provide an obstetric handover of all women currently on the unit. Information transferred during this handover not only allows the obstetric team to get a good idea of the

progress of each of the women on the unit and any potential risks, but is also used as a way for the theatre team to organise their elective theatre list whilst bearing in mind any potential for emergencies that may arise from women already in active labour.

4.4.2.1 Eligibility criteria

Staff members involved in the multi-disciplinary handover were recruited to the study. This included a broad range of clinical expertise and experience. Participants were eligible if they were permanent members of staff with the trust who were fully qualified within their particular profession. In addition, staff were only eligible for recruitment into the study if they were involved in the multi-disciplinary handover on a regular basis.

4.4.3 Sample size

In quantitative research, sample size tends to be defined by attempting to achieve a compromise between the need for statistical power and a level of timeliness and economy that fits within the parameters of the study (Dupont & Plummer, 1999). The optimum sample size for survey distribution in this study was 92 participants, that is, the number of participants needed to detect a particular difference in the mean scores before and after the intervention. Over the whole study period, the total number of staff who were eligible for participation in the survey (that is, the total number of staff who might at one point be involved in the handover) was calculated at approximately 120.

Typically, in qualitative research, sample size is less well defined and researchers often turn to the most commonly reported sampling suggestions (Charmaz, 2006; Creswell, 2013; Morse, 1994). However, Morse (2000) posits that such sampling suggestions are too often taken as standard without question. Drawing on reflexivity in qualitative research, Emmel (2013) suggests that qualitative sampling should be an iterative process throughout the duration of the research. Regarding ethnography specifically, the sampling suggestions are limited. Morse (1994) suggests between 30 and 50 participants as appropriate for an ethnography. However Creswell (2013) suggests that ethnography should focus less on specific sample size and more on the participants being of a single culture sharing group.

Given that the main focus of this thesis is to evaluate the use of VRE with an acute multi-disciplinary maternity team, it is appropriate to consider a more flexible approach to sampling based more firmly on Creswell's (2013) suggestion that participants are all part of one culture sharing team or group. The target sample size for the main focused ethnographic element of the research was between 40 and 65 participants. This number was chosen with reference to the sampling suggestion of Morse (1994) as well as guidance from current VRE literature which suggests that as many members of staff as possible are empowered to participate (Iedema et al., 2019).

The target sample size for the interviews was 8-15 participants from the larger sample selected for focused ethnography. This number was chosen with reference to literature that suggests saturation of common themes is

achieved with between 6 and 12 interviews (Guest, Bunce & Johnson, 2006). This initial sample size was reviewed as the study progressed and, although found to be adequate for participants involved in the VRE element of the study, there was no representation here of the perceptions of any staff members not involved directly in VRE but on whom any change to handover processes may have an effect. Thus the target sample size for the interviews was expanded to between 12 and 20 participants, with the understanding that the common perceptions across the two staff groups were likely to differ. Sampling was a combination of opportunistic sampling and purposive sampling. The main sampling for the interviews was opportunistic as the interview group were initially sampled from within the staff group involved in the reflexive feedback sessions, and any staff members not involved in the reflexive feedback sessions who had expressed an interest in being involved in the latter stage of the project or providing their opinion. Purposive sampling was employed within this to ensure the interviews captured the views on improvement across all staff groups.

4.4.4 Ethical considerations

Ethical approval for this study was granted by the University of Leeds School of Psychology ethics committee (Reference: PSC-170). The main ethical issues related to informed consent, confidentiality and data management.

All participants were required to give informed consent to participate in the study. Consent was taken separately for the ethnographic element of the study and for the interviews, as not all staff members who took part in the observation, filming and reflexive feedback were expected to be interviewed. Additionally, this meant staff could consent to be interviewed without

consenting to be observed and filmed. The participants were given a comprehensive overview of the purpose of the study and each of the component elements of the research process, including the specific components of VRE. Staff were also notified that they could withdraw at any time without providing an explanation. Following a full explanation of the project and receipt of the participant information sheet, staff were given at least 24 hours to decide if they were willing to take part.

Some personal data was collected for the purposes of contacting participants to arrange video-recording, reflexive feedback sessions and interviews. All personal data collected was kept in a locked filing cabinet in a locked office. Audio-visual recordings of clinical handover and reflexive feedback sessions were immediately uploaded into an encrypted file on an encrypted laptop which could only be accessed by the primary researcher and wider research team where necessary. Recordings were then deleted from the portable recording device. Any identifiable patient information was redacted from recordings before the researcher left the NHS site. Study data is stored for up to 3 years in accordance with the University of Leeds guidelines to allow access to data requested regarding any publications. All participants were advised that their study input would remain confidential except in the circumstance where serious patient safety events or safety concerns were identified. In this situation it was advised that observation or recording would be stopped and concerns would be escalated to the clinical lead of maternity services.

4.4.5 Recruitment

The clinical lead for Obstetrics and Gynaecology at the participating NHS Trust was initially approached and together we agreed that VRE could serve as a useful improvement method with specific regard to multi-disciplinary handover. The clinical lead identified that a priority for patient safety on delivery suite was teamwork and communication within the multi-disciplinary team at handover, and how staff worked together to ensure safe working practices on the delivery suite. There was specific focus on the level and nature of communication between the obstetric team and the theatre team, and whether any improvements could be made to make the two teams more integrated. The discussion culminated in the clinical lead giving full consent for the use of VRE to explore teamwork and communication during the handover, and consent for the evaluation of this improvement method as a central part of this thesis.

Opportunity sampling was used to capture survey responses from all staff members on the delivery suite. During periods of ethnographic observation both prior to and following reflexive feedback, the facilitator distributed the survey to all staff who attended the handover. The survey was explained to all members of staff face-to-face by the researcher. Consent was assumed where staff completed the survey.

Staff participants for the qualitative elements of the study were identified during preliminary visits to the delivery suite. All recruitment was carried out in person by the primary researcher, and all staff were made aware of the

project and the presence of the researcher on the delivery suite throughout the project. Face-to-face consent also enabled staff members to ask any questions about the project. The project was verbally explained and staff were provided with a detailed participant information sheet (see *Appendix F* for the participant information sheet). Staff members were given at least 24 hours to consider providing informed consent, after which the researcher returned and consent was taken (see *Appendix G* for the consent form). This process was repeated for the interview stage of the study (see *Appendix H* for the consent form relating specifically to staff interviews).

If a participant was interested in taking part in the study they contacted the researcher directly, either in person or using the contact details provided on the participant information sheet. Following this initial contact, the participant and the researcher decided upon a convenient reflexive feedback session for the participant to attend or a convenient time for the interview to take place. All reflexive feedback sessions took place in a private meeting room on the delivery suite. Reflexive feedback sessions lasted between 25 and 115 minutes ($M = 63$ minutes) depending on the time availability of the participants, or how much they wanted to say within the sessions. Interviews lasted an average of 58 minutes in the month following the reflexive feedback session, and an average of 43 minutes for the follow-up.

4.4.6 Data Collection

4.4.6.1 Focused ethnography, reflexive feedback and staff survey

Consent for the researcher to be present on the delivery suite for periods of focused ethnography lasting the duration of the project was provided by the

NHS Trust with an Honorary Contract following ethical approval. The researcher was present on delivery suite for a period of four months prior to filming. The researcher took field notes reflecting on the process of the multi-disciplinary handover, staff behaviours during handover, the general culture on the ward, and the process of recruitment and consent. As outlined in Chapter 3 (section 3.1.2.2), the initial period of ethnography also served a wider purpose which informed the subsequent delivery of VRE by developing my own understanding of the local working environment on the delivery unit and the purpose of the clinical handover within this.

Written informed consent was sought from all study participants for filming of the multi-disciplinary handover and participation in the reflexive feedback sessions. Informed consent was checked against staff rotas prior to filming. Before the handover began, consent was checked verbally with all staff participants. The researcher remotely operated the video camera so as not to intrude on the handover. Recording began as staff arrived to the handover, and the filming was stopped when staff left the handover area. The researcher took field notes reflecting on the filming process, the handover and the response and behaviours of staff members. Five hours of initial handover footage was collected and edited as outlined in Chapter 3. Staff were then invited to take part in reflexive feedback sessions to review the footage. Before the reflexive feedback session began, consent was checked verbally with all staff participants, and they were reminded to focus on the process, systems and organisational factors affecting handover rather than individual performance. Reflexive feedback sessions were filmed. The

researcher took field notes reflecting on staff availability for the feedback session, staff behaviours and attitudes during the session and their own role as the facilitator. The video recordings were not fully transcribed verbatim, but were narratively transcribed by the researcher to capture both the salient verbal and non-verbal elements of the feedback session. These narratives were condensed into a descriptive document detailing a brief outline of the edited video footage watched, the reflexive discussion prompted (including how and when issues were raised and the discussion of solutions), and any implementation of potential solutions.

Four months after the last reflexive feedback session, the researcher was present on the delivery suite for a period of focused ethnography lasting two weeks. The researcher took field notes reflecting on the changes made to the handover, general staff behaviours and attitudes during handover, and the general team culture on the ward. Two hours of handover footage was filmed during this period of time to allow the researcher to revisit the changes and reflect on them further.

During the periods of ethnography before and after reflexive feedback, the researcher distributed a short self-report survey to all staff attending handover. For the post-VRE measure, staff took the survey between two and four weeks after the changes to handover had initially been implemented. The survey was distributed to staff immediately prior to the handover, and measured staff perception of the handover process. Responses were collected in a box placed at the exit point of the handover area meaning staff

could deposit their survey responses anonymously. Survey responses from both pre- and post-reflexive feedback were collected and entered into Microsoft Excel for analysis.

4.4.6.2 Interviews

Written informed consent was sought from all study participants for participation in the interviews. At the beginning of each interview participants were given a verbal overview of the interview and how it related to the overall study. Verbal consent was also checked, and participants were reminded that all responses would remain confidential and anonymous. An audio recording was made of each interview. The researcher took field notes reflecting on the verbal responses of the participants and how they linked to the topic guide. The audio recordings were transcribed verbatim by the researcher (SM).

4.5 Data Analysis

4.5.1 Analysis of survey data

Survey data was analysed using independent samples t-tests. One t-test was calculated for each of the survey measures to compare the mean response of staff before and after changes implemented following VRE.

4.5.2 Analysis of interview data and researcher field notes

Analysis of all interview data and ethnographic field notes was completed using both deductive and inductive methods of thematic analysis. The process of analysis was guided by the six-phase approach to thematic analysis (Braun & Clarke, 2006): data familiarisation, initial code generation,

searching for themes, reviewing potential themes, defining and naming themes, reporting results. The researcher became familiar with the data by listening to the audio recordings of the interviews, transcribing them verbatim and carefully reading and re-reading the transcripts. Meaningful units of the text that addressed specific research questions – the feasibility and acceptability of VRE, the role of the researcher and the success of the VRE approach to improvement - were subsequently identified. Where units of text related to similar concepts, they were grouped together into preliminary categories and named to form provisional codes. A short description summarising each provisional code was produced and revisited throughout the process of analysis to ensure it was appropriate to the units of text included within. Following preliminary development of these provisional codes, the whole data set was then systematically reviewed to confirm the codes, code descriptions and supporting units of text. Regular discussion of the emergent codes with independent researchers (LS, RL, JOH) reduced the level of subjectivity within the analysis. The provisional codes were subsequently finalised into a definitive set of codes. A provisional set of key themes were then established from these definitive codes, and salient quotations from the units of text that represented these themes were identified. Determining the names, descriptions and organisation of the key themes was an iterative process which involved researcher reflexivity as well as regular and extensive discussion with the wider supervisory team (RL, JOH, LS). The final names and organisational level of these key themes was established through these discussions, and a finalised thematic synthesis was agreed.

4.5.3 Analysis of data from reflexive feedback sessions

Approaching analysis of data from the reflexive feedback sessions was more complex due to a lack of guidance about specific methods of analysis in the published VRE literature. Where video footage of the reflexive feedback sessions was the unit of analysis, discussions within the wider research team suggested that standard thematic analysis of a verbatim transcription would not capture the intricacies of the non-verbal as well as verbal communication behaviours inherent in the collaborative discussion. It would also be difficult if transcribing verbatim to accurately represent the interaction between what participants were viewing on screen, and their reactions to the video footage. For this reason, conversational analysis was also discounted. This may have provided good insight into the way in which the researcher-as-facilitator prompted discussion, and the specificities of verbal interactions between staff members during collaborative discussion. However, understanding of the importance of non-verbal communication and the potential influence of perceived hierarchies or silos (Foronda, MacWilliams & McArthur, 2016) suggests that analysis of both the visual and verbal elements of the feedback session must be captured in any analysis.

This section of the chapter will explore a novel approach to data preparation designed specifically for this thesis, and the integrated analysis of this data.

4.5.3.1 Data preparation

The process of data preparation was designed through extensive discussion with the wider research team (LS, RL, JOH). The central focus of the reflexive discussion was the edited video footage of the handover captured

in situ. This was the common starting point across all five reflexive feedback sessions, and so it was decided that data prepared from the audio-visual recording of the reflexive feedback sessions must include an initial summary of the video footage that staff across all feedback sessions observed. All discussions, whether spontaneous or prompted, were contingent on participant reaction to the video footage, thus it was important to understand what was viewed in addition to the subsequent discussions.

The novel approach to data preparation developed for this thesis aimed to capture both the salient verbal and non-verbal communication behaviours, in addition to any pertinent contextual information. A single researcher (SM) became familiar with the data through watching and re-watching both the edited video footage of the handover and of the five reflexive feedback sessions. Detailed transcription of all audio-visual footage followed the period of familiarisation. Transcription was descriptive, capturing all salient information whether verbal or non-verbal. Verbatim quotes were included where appropriate. The process of data preparation was iterative, and the researcher (SM) met regularly with the wider research team (LS, RL, JOH) to watch sections of the audio-visual recordings to validate the transcription and reduce the level of subjectivity in deciding on the most salient elements of the footage to include in the descriptive transcription.

The initial data preparation stage led to extensive descriptive transcriptions of the edited handover footage and the five reflexive feedback sessions (see *Appendix I* for an example of the detailed descriptive transcript). As the

reflexive feedback sessions lasted between 25 and 115 minutes (M = 63 minutes), these extensive descriptive transcriptions were lengthy and textually rich data sources. Discussion between the researcher (SM) and the wider research team (LS, RL, JOH) led to an iterative decision to condense the extensive descriptive transcriptions to reduced descriptive narratives for each reflexive feedback session (see *Appendix N* for an example of the reduced narrative). Each reduced descriptive narrative included salient detail about the video footage the participants watched (this reduced descriptive was the same across all five reflexive feedback sessions and was included for context) and the feedback session itself, focusing specifically on what staff discovered about the handover, how staff discovered knowledge, and whether and how opportunities for change were explored.

4.6.3.2 Data analysis

Three key questions formed the framework for the analysis of data from the reflexive feedback sessions. These questions were:

1. What did the staff discover about the handover process and how did they discover this information?
2. What were the opportunities for change (if any) and how were they articulated?
3. Did staff overlook any potential issues in the footage?

For the purposes of this thesis, data pertaining to question 1 were labelled as **discoveries**. Opportunities for change evident in the data were labelled as **solutions**. Potential issues identified by the researcher on familiarisation with the footage that staff did not raise during the reflexive feedback sessions are labelled as **potential misses**.

The questions outlined above were used to directly guide the analysis of the condensed narrative and extensive descriptive transcriptions. As the concepts of discoveries, solutions and potential misses formed a clear directed framework for the analysis of data, an adapted form of framework analysis was employed. Framework analysis in its most common form (Ritchie & Spencer, 1994) is popular as an approach in the analysis of health services research data. It enables researchers to systematically manage and analyse their data through the application of five key stages: familiarisation, identifying a thematic framework, indexing, charting, and mapping and interpretation. It provides an in depth approach to exploration of the data and allows for inclusion of deductive as well as emergent concepts. The adapted form of the approach employed for the purposes of this thesis took a wholly deductive approach to identification of a thematic framework based on three concepts of interest outlined above. This is in line with the literature that suggests framework analysis is an appropriate analytic method for applied studies in which specifically delineated issues are to be explored (Lacey & Luff, 2001).

Both the familiarisation stage and identification of the analytic framework were iterative processes throughout the data preparation stage outlined above. At the indexing stage, each of the reflexive feedback sessions was analysed in turn. A single researcher (SM) applied the thematic framework to the condensed narrative initially and any discoveries, solutions or potential misses were assigned to the framework in an accurate manner. Following

this in-depth analysis of the condensed narrative, the researcher (SM) supplemented data that had been applied to the framework, linking any relevant sections of the extensive narrative transcript. The qualitative software NVivo 10 was used to collate data from transcripts.

The mapping and interpretation process was influenced by the aim of the research to explore whether and how VRE led to improvements in teamwork and communication at the inter-professional handover. The key discoveries, solutions and potential misses within each feedback session were mapped to highlight the connections between what was discovered, any recommended actions for improvement and any issues that were potentially left undiscovered. Comparisons were made within and between reflexive feedback sessions to gain an understanding of both the vertical and horizontal moderators of salient discoveries and solutions.

4.6.4 Evaluation of VRE as an improvement approach

Analysis of the full qualitative data set was the foundation for the evaluation of VRE within the context of this thesis. Following Medical Research Council (MRC, 2019) guidelines which advocate for more extensive use of qualitative evaluation to produce theory of how specific interventions might work, a logic model was developed from the qualitative data to represent the underlying theory and process of VRE. Although more simple logic models generally fail to represent the interactions between the intervention and the local context, the recent development of more dynamic and flexible logic models have been suggested to be more appropriate in the evaluation of more complex and fluid healthcare interventions (Mills, Lawton & Sheard, 2019). Deductive thematic analysis of the qualitative data from this study (as outlined in

section 4.6.2) was used to develop a Type 4 logic model to reflect the dynamism of VRE as a complex intervention which is delivered in context. As VRE is already reported in the literature to be complex and adaptive (Iedema et al., 2019), the Type 4 logic model was adopted to develop understanding of how the process of VRE might be affected by contextual factors. An underpinning narrative was primarily developed from the qualitative data to describe the evidence-base for the development of the logic model. Specific mechanisms explored in this logic model were drawn from the work of Mills, Lawton and Sheard (2019), who reported on the dynamic relationships between the facilitator, the recipients of the intervention, contextual moderators and outcomes.

4.7 Quality assessment

For the purposes of reliability across all qualitative analytical processes, the researcher (SM) met regularly with experienced, independent assessors (LS, RL, JOH) to discuss the emergent themes and concepts. For the purpose of reliability of the data from the reflexive feedback sessions, the three experienced independent researchers (LS, RL, JOH) independently extracted the discoveries, solutions and potential misses to a sub-set of transcripts (n = 2). This process was important to assess the extent to which the framework used to guide the analysis was a good representation of the content within these transcripts. The researcher (SM) and one of the independent assessors who is an expert in qualitative methods (LS) met regularly to discuss the condensed summary documents. This process was carried out to ensure that mapping and interpretation of the key discoveries and solutions was not based on the subjective interpretation of the

researcher (SM), but were a reliable representation of the overall data set. This was particularly important when considering the researcher was embroiled in the affective dimension of the VRE process.

4.8 The next chapter/stage of research

The next chapter (Chapter 5) focuses on the factors relating to the feasibility and acceptability of VRE as an improvement approach in an acute healthcare environment. The chapter collates data from semi-structured staff interviews and ethnographic field notes to develop a clear understanding of the specific factors linked to the feasibility and acceptability of the approach both within an acute maternity unit, and with an inherently inter-professional staff team. A novel lens will be shed on the research data to specifically explore the salient factors linked to the feasibility and acceptability of the approach where it is embedded within a wider health services research project, attempting to delineate and extract the factors specifically related to the delivery of VRE as constitutes improvement. The qualitative data described in this chapter informed the holistic evaluation of VRE in Chapter 6, and allowed for specific consideration of the contextual factors affecting the feasibility of delivery of VRE and the acceptability of the process as perceived by an inter-professional staff team and the researcher-as-facilitator.

Chapter 5

Evaluating the feasibility and acceptability of implementing video-reflexive ethnography in acute maternity services

Prior to evaluation of the impact of VRE on teamwork and communication during multi-disciplinary handover in Chapter 6, the feasibility and perceived acceptability of VRE within acute maternity services will be assessed. This chapter presents an overview of the salient factors linked to feasibility and acceptability of VRE as an improvement method in acute maternity services. Within this we consider any issues of feasibility and the methodological successes and staff perception of acceptability. The aim of this section of the study is to add to our understanding of issues of feasibility specific to implementation of the VRE process and our understanding of staff perceptions of the VRE process.

5.1 Method

A flexible deductive qualitative methodology was employed in this study. Data collection took place from January 2017 until August 2019, during the entire VRE process. Ethical approval and participant recruitment information is outlined in full in Chapter 4. Data collection information for the whole study is also outlined in Chapter 4. The question of feasibility and acceptability was addressed through data collected in the form of focused ethnographic researcher field notes and semi-structured interviews with participants following reflexive feedback. This section of the study set out to answer the following research question:

- Is VRE an acceptable and feasible improvement approach in acute maternity services?

A flexible deductive approach to thematic analysis was undertaken for this section of the study in line with the critical realist stance of this thesis (Fletcher, 2017). This process was guided by the six-phase approach to thematic analysis (Braun & Clarke, 2006): data familiarisation, initial code generation, searching for themes, reviewing potential themes, defining and naming themes, reporting results. Taking a deductive approach allowed for a flexible top-down approach to coding where themes relating to project feasibility and acceptability were derived from ideas and concepts brought to the process by the researcher. A list of potential themes was drawn from existing literature, systematic review findings (Chapter 2), and key concepts drawn from field visits. The implementation science literature suggests that the feasibility and/or acceptability of implementing complex interventions in healthcare relies on flexibility to adjust to the fluidity of numerous different factors in the local environment and the incorporation of practitioner voice (Waltz, Powell, Matthieu et al., 2014). Considering feasibility alone, the literature suggests that underutilisation of theory in the published literature, as is a limitation of the published VRE literature (highlighted in Chapter 2), makes it difficult for facilitators to understand how the intervention works from process to implementation (Waltz et al., 2014). Thinking specifically about the existing VRE literature, the most prominent issues of feasibility in the delivery of VRE as an interventionist improvement approach are issues surrounding participant consent and the particular need for ensuring project clarity for participants (Iedema et al., 2019). The most prominent issues of

acceptability in the delivery of VRE centre around the development and maintenance of relationships between the facilitator and participants and how these relationships foster psychological safety throughout the process (Iedema et al., 2019). Taking a directed approach to analysis of the content meant that these potential themes were used to guide the initial coding. A single researcher (SM) reviewed all fieldnotes and transcripts, flexibly amended and supplemented the initial themes and applied codes to the data. This flexible approach to coding meant that any unanticipated themes not arising from the initial directed approach were included in the final coding framework.

5.2 Context

Before exploring feasibility and acceptability, it is important to delineate the two concepts specifically with regard to VRE to provide context to this section of the thesis. Both feasibility and acceptability will be defined and explored within this chapter, however the feasibility of implementation of VRE in acute maternity services focused on the practical implementation of the process and how this is facilitated within the local environment. Due to the participatory nature of VRE as an improvement method, acceptability focused on both the practical and affective perception of staff members about the process.

5.3 Feasibility

This section of the chapter will explore the concept of feasibility within health services research and, more specifically, related to implementation of quality

improvement in acute healthcare. Issues surrounding the assessment of feasibility in the implementation of flexible and dynamic improvement approaches will also be explored in relation to VRE. The main themes and sub-themes regarding the feasibility of the implementation of VRE with interprofessional teams in acute maternity services are then presented with representative supporting quotes.

5.3.1 Introduction

Exploration of the feasibility of any process is, by definition, an examination of a process or method to evaluate how possible or reasonable it is to implement. In this case, VRE is the process of focus. It is important to explore the often dual nature of VRE here. Carroll & Mesman (2018) suggest that VRE often spans the boundaries of health services research and quality improvement. As is the case in this thesis, VRE as a process is classed as a quality improvement approach and as such does not constitute research, however this process is often embedded within the wider context of a participatory action research approach. For this reason, the feasibility of implementing the process of VRE within a wider health services research project is important, in combination with exploration of the feasibility of VRE as a quality improvement process.

When evaluating any quality improvement method, it is important to evaluate whether the method itself is feasible, considering the most successful practices to give the best chance of success, in addition to considering any feasibility issues (Geboers, van der Horst, Mookink et al., 1999). Before VRE can be accepted and implemented in acute healthcare environments, its

feasibility must be discussed. The current literature suggests that it is feasible to implement VRE as a small-scale improvement method in hospital-based healthcare (Carroll, Iedema & Kerridge, 2008; Hor, Iedema & Manias, 2014; Iedema et al., 2012; Iedema et al., 2016). However, the findings reported in Chapter 2 suggest that feasibility, although implied, has not been fully explored in the literature to date. Important indicators for feasibility are the extent to which the method can be implemented in acute healthcare environments, the extent to which staff engage with the method, and the potential for implementation of any improvement.

Current VRE literature is unclear on the need to consider feasibility. This is further complicated by the variable reference in the literature of VRE as a research method or as an improvement method. As is outlined above, VRE often spans research and quality improvement, and within much of the published literature it is difficult to extricate. Although much of the published literature cites VRE as being framed within a participatory research context, it is also important to highlight the quality improvement lens through which much of this published literature addresses healthcare processes and services. It is therefore important to consider feasibility of VRE from this dual perspective, as an improvement approach often embedded within a research process. Collier et al. (2015) suggest that arguments about feasibility are drawn from more traditional methods of acquiring knowledge where adherence to strict research protocols is considered essential to producing generalisable outcomes (Iedema, 2011). They propose that in focusing primarily on the development of relationships between the researcher and

the participant, and how these relationships rely on building appropriate levels of confidence and trust for all stakeholders to confront change, VRE is not bound by the same general considerations about feasibility. This does not, however, preclude VRE from issues of feasibility, but the authors suggest that the considerations here may be different to those of a more inflexible and scientific methodology. Iedema et al. (2019, pg. 39) advise that key feasibility concerns relating to VRE may arise from clinicians' and senior management preconceptions about the method being inferior to more scientific methods, often regarded in healthcare as being more 'rigorous'. They also suggest that feasibility may be difficult to completely evaluate initially, as the impact of video footage on participants' awareness of their own and collective practices may not become apparent immediately.

Results of empirical studies, and systematic review evidence, indicate that VRE is well placed to provide insight into the complexities of daily healthcare provision, and allow staff and patients the space to reflexively consider any issues or improvements, and collaboratively explore locally appropriate solutions (Iedema et al., 2019). Evaluation of the feasibility of VRE as an adaptive socio-cultural approach, however, is challenging not least due to the focus on context-specific learning and improvement rather than the pursuit of context-free and generalisable constructs (Iedema et al., 2019, pg. 39). VRE projects are therefore difficult to evaluate using more conventional frameworks and metrics, including standard feasibility protocols (e.g. randomised controlled trials, parallel cluster randomisation or the stepped wedge design). This section aims to explore the feasibility of using VRE in

acute maternity services in order to gain understanding of the important factors underpinning the VRE process, and an applied understanding of the considerations that have been identified in the literature thus far.

Considerations of feasibility will concentrate on implementation of the key mechanisms of VRE - focused ethnography, video recording and reflexive feedback (see Chapter 3 for a full overview of the VRE process) – within the context of a health services research project.

5.3.2 Results

As outlined in Chapter 4 (section 4.4.2), one delivery suite in a single NHS Trust was involved in this study. Over the course of the study, 17 members of the multi-disciplinary staff team took part in semi-structured interviews following the completion of the main VRE process. Eleven of the seventeen staff had been involved in the reflexive feedback sessions. In addition, a further six members of staff who were not directly involved in VRE consented to be interviewed when changes to handover had been made about their understanding of the project and the effect of any change on the wider staff team. All interview participants involved in the VRE process were interviewed once in the month immediately following the reflexive feedback session, and once up to four months after the reflexive feedback session, when changes to handover had been made. Interview participants who were not involved in the VRE process were interviewed once in the period of four months following the changes implemented to the handover. One of the consultant obstetricians involved in the feedback sessions was not interviewed due to involvement as a clinical supervisor on the project. Although input into the reflexive feedback session was welcomed due to this

member of staff not having seen the footage prior to the session, involvement in the wider project (including recruitment and consent processes) was assumed to give a different perspective under which interview questions might be interpreted and answered. Thus, informal discussions with this member of staff were captured throughout the VRE process in detailed field notes. The number of staff belonging to each job role involved in the interview process is detailed in *Table 5.1*.

Table 5.1 The number of staff in each role interviewed.

<u>Staff Role</u>	<u>Number of staff interviewed</u>
Consultant Obstetrician	3
Consultant Anaesthetist	2
Midwife Coordinator	3
Obstetric Registrar	3
Anaesthetic Registrar	2
Scrub Nurse	3
ODP	1

It is noted that there were no junior doctors involved in the reflexive feedback sessions or interview process. This is due to the fact that the feedback sessions almost primarily took place over the rotation period for junior doctors, thus the junior doctors involved in the filming process were no longer working on the delivery suite at the point of feedback. It was, however, assumed that capturing feedback and interview data from all other staff groups would provide a large enough range of staff opinions on the process with which to confidently proceed. Junior doctor perceptions of the handover were also captured within the quantitative survey data.

All interviews took place on the telephone as this allowed most flexibility. Interviews in the month immediately following reflexive feedback lasted an average of 58 minutes (range 47 to 72 minutes). Interviews following changes to handover lasted an average of 43 minutes (range 36 - 51 minutes).

Although the feasibility of the VRE process was the main focus of analysis, general information related to the feasibility of research in an applied healthcare context was apparent in the data. In particular this related to issues with ward access, appropriate space and time to recruit busy healthcare staff and hold-ups in the approvals process. As these issues are well reported in the applied healthcare literature (Geboers et al., 1999; Shojania & Grimshaw, 2005), no attempt will be made to explore them here. Only factors relating to the feasibility of the VRE process specifically will be referred to.

Five overarching themes related to the feasibility of VRE as an improvement approach embedded within a wider research project were identified from the data: *laying the groundwork, practicalities of an effective process of consent, agreement to be filmed, the reflexive feedback session* and *power to change*. Sub-themes were determined under each of these overarching themes. Three of these primary themes were developed from examination of the existing literature and the results of the systematic review (Chapter 2): *practicalities of an effective process of consent, agreement to be filmed* and

power to change. The other two themes were not guided by the existing literature, and were evident only from the data of this study. Researcher field notes were the primary source of data from which themes regarding feasibility were extracted. Coding of interview data supplemented the field notes particularly with regard to *agreement to be filmed* and *the reflexive feedback session*.

5.2.2.1 Laying the groundwork

5.3.2.1.1 Importance of clinician buy in

It was evident from the initial stages of the project that clinician buy-in would be central to the success of the project. Early field notes, however, reflected the initial feeling that the key clinician buy-in would come from senior staff at the beginning of the project. Buy-in of clinicians in positions of leadership was not only important primarily from a practical perspective, but also as a point of confidence building for wider staff involvement.

'the initial meeting with the clinical lead was very successful and she was extremely positive about supporting the project, giving capacity within her unit based on our discussions and agreeing to her own involvement in the first filming and feedback sessions' [Researcher Field Notes]

While it seemed vital to have the permission of the clinical lead – particularly as a way in to conversations with other clinical staff – the role of the clinical lead following this initial meeting was minimal. Despite saying that she would let staff know about the study and her approval of it, most staff approached during the period of focused ethnography and the recruitment process had not received this communication.

'Although all of the staff were very welcoming this morning and happy for me to observe the handover, they hadn't received any project information over email from the clinical lead as discussed in our previous meeting... They were very receptive when I did discuss the project with them' [Researcher Field Notes]

The introduction of a clinical leadership fellow, who had worked as an obstetric registrar on the unit in the early stages of the project had an immediate impact as the period of focused ethnographic observation began, allowing the researcher to develop a clear understanding of a working day on the delivery suite. It was clear throughout the ethnographic field notes that this period of shadowing was essential in understanding the local context in which staff were working. Although there are clear benefits to the researcher-as-facilitator being naive in terms of clinical understanding, the success of VRE was contingent on a level of understanding of the context of healthcare provision. Understanding of the purpose of the handover was identified throughout the field notes as key particularly in successful facilitation of the reflexive feedback sessions. A clear understanding of how the handover fit into the daily working pattern and the purpose of this form of information transfer for all staff participants was important in being able to respond appropriately to reflexive discussion and ask questions relevant to the handover process itself.

'The purpose of the handover became much clearer today as I was able to ask [CLF] about job roles, specific acronyms and points of discussion, and how the day progressed to and from this point'
[Researcher Field Notes]

Well-regarded clinicians within the unit who were prepared to champion the project were critical in building the support from other clinicians. This was particularly pertinent during the process of consent where staff were first made aware of the VRE process in its entirety. However, VRE is a multi-step process with periods of intense engagement between the researcher-as-facilitator and the staff participants, and periods of time where the researcher-as-facilitator was not present in intense periods on the unit. It was clear throughout the field notes that the project champions were not only important during recruitment, but in retention of staff throughout the process, especially in the maintenance of staff engagement during such periods where there was less active research presence.

'I have been introduced to so many members of staff just walking around the unit with [CS] today handing out information sheets, and his enthusiasm when he is talking about the project is clearly infectious with other staff members. I can see straight away that he is popular with his colleagues...seeing his involvement seems to pique their interest in VRE and how it could lead to improvement. He can sell the project from a staff perspective rather than just coming from a research perspective' [Researcher Field Notes]

5.3.2.1.2 Making VRE work in context

The heaviest demands on the researcher-as-facilitator were related to the practicalities of the VRE process, most notably the filming and editing process, and the subsequent reflexive feedback sessions. The practicalities of filming a handover in situ were discussed at length prior to beginning the project, but it was only once present on the delivery suite that the researcher

was able to plan for the technical practicalities required of the VRE process. Although the type of camera to be used had been decided prior to the fieldwork with input from members of the global VRE community, camera placement could only be determined once the researcher had observed the handover itself and the environment in which this took place;

'Having seen the handover area today, and observed the handover itself, I can already see where the camera should be best placed to capture all staff attending, and to minimise the capture of any identifiable patient information' [Researcher Field Notes]

It was important that the focus of the editing process was well defined prior to any video editing taking place, and clinical presence during the editing process was invaluable where the researcher was not a clinician;

'It was much easier to cut down the footage when referring to the pre-defined areas of teamwork and communication we had identified with [CL] in the preliminary meetings about the project' [Researcher Field Notes]

'[CP] was really clear during the whole editing process about what was normal practice, and what would be important to keep in the final clips' [Researcher Field Notes]

When it came to organising the reflexive feedback sessions it became clear that it would be impossible to bring together a multi-disciplinary group of 8-15 people at any one time. Midwife coordinators and theatre staff found it very difficult to get time to be released, whereas for obstetric doctors there was designated time, usually on Friday afternoon, where they could engage

in the reflexive sessions. Various sections of the field notes document referred to specific discussions with the wider research team about particular reasons for a more flexible approach to the reflexive feedback sessions. The difficulties of managing issues of interdisciplinarity including different shift patterns and different levels of role flexibility when on shift were specifically highlighted as practical reasons for smaller group feedback sessions. However, issues with initial staff reluctance to and anxiety about watching and scrutinising handover footage in large, interdisciplinary staff groups were also cited as barriers to organisation of larger feedback sessions. This was not as common a reason given by staff as issues of time demands, however some level of anxiety was reflected in staff who had consented to being filmed disengaging from direct contact about attendance at reflexive feedback sessions, or giving no reason for being unable to attend.

'We have decided to be more flexible with the feedback sessions as it was evidently not feasible to get all staff together at one point to watch the footage. Holding smaller sessions means we are less bound by the environment and so [CS] is sure that there are plenty of spaces on delivery suite we can use for smaller reflexive sessions...'

[Researcher Field Notes]

Although there were initial concerns that lower staff numbers in each feedback session might affect the level or depth of conversation achieved, the smaller groups did not seem to have a negative effect on how the staff responded to the video footage. The initial reluctance or apprehension from staff about the potential for discussing the handover in interprofessional groups also seemed to be negated by discussions with the researcher-as-

facilitator where necessary, and there was no reluctance reported during the feedback sessions themselves.

'There were only three staff members in the feedback session today, but the conversation was spontaneous following the footage and flowed well...all staff members seemed to be able to contribute within the feedback session as and when they wished' [Researcher Field Notes]

Regarding the potential limitation of staff time, participants seemed to be much more receptive to attending the feedback sessions if they were able to dictate times which were easier for them, rather than the researcher dictating the times based on room bookings or access to space within the department. Field notes captured uptake in staff agreement to participate in reflexive feedback sessions following this shift in the organisation of the sessions.

'I think, the feedback, I couldn't make any of the pre-selected times because we don't get the training time like the doctors do, so erm, I, it was much easier to arrange a time directly with you (SM: ok) because I could just work it 'round my shifts...erm...and when it was less likely I'd be caught up' [Midwife Coordinator, MC2]

5.3.2.2 Practicalities of an effective process of consent

The initial process of consent was related to the video recording of the handover in situ. Although the process of VRE did not constitute a research method in this project, consent to be filmed was deemed important not only in the context of the wider research project but also as a contributory factor in initial trust building between the researcher-as-facilitator and potential staff

participants. Of the practicalities of the process of consent to be filmed, it was evident from the data that one of the key difficulties for the researcher-as-facilitator was access to staff rotas to enable planning of filming. Without the staff rotas it was difficult to ensure all staff on a particular handover had provided consent to be filmed. However, access to the rotas did not necessarily mean that planning was easier.

'The staff rotas are not easy to read and only the obstetric staff are included, so I haven't been able to plan ahead in as much detail as I had hoped for the first round of filming... I need access to theatre staff rotas to be able to see which staff members I still need to approach for consent' [Researcher Field Notes]

The transient nature of the handover teams meant that groundwork in gaining staff consent could sometimes be undone by last minute rota or shift changes. Even where the researcher-as-facilitator had identified specific days on which all staff on the shift rota had provided consent to be filmed, there were numerous examples in the field notes of last minute shift changes affecting the filming process.

'I wasn't able to film as planned this morning... When checking verbal consent with staff as they arrived at handover, the consultant had changed and the new consultant on shift had not been recruited to the study. She provided verbal consent immediately, but I had to explain that ethically she needed the proper time to consider project details and provide informed consent' [Researcher Field Notes]

This proved to be a practical issue highlighted throughout the fieldwork, but it is also clear that there is little contingency against this aside from having flexibility in the project schedule.

'Today was the third day this week I have been unable to film the team as expected due to rota changes. Staff are very understanding of the issue and have highlighted staffing issues on numerous occasions. The unit being short-staffed is leading to more rota changes than would be expected' [Researcher Field Notes]

Although consent to be involved in the qualitative interviews – the main research element of the project – was referred to briefly in the data, these specific concerns only relate to consent to the main participatory components of the VRE process.

5.3.2.3 Agreement to be filmed

5.3.2.3.1 Engagement of staff

It was evident that when staff understood the purpose of the project they were interested in being involved. The foundation of this understanding was particularly important, with the field notes detailing at numerous points that staff engagement prompted by understanding of the project was driven by interpersonal conversations with the researcher-as-facilitator. The importance of the researcher-as-facilitator as the face of the VRE process (and, by extension, the wider research project) was particularly salient.

'I feel that staff are starting to recognise me on the unit now, and they seem so interested in learning about VRE and the potential implications of the project for them. I heard some of the staff talking to

each other really positively about the project today when they saw me pass the reception area' [Researcher Field Notes]

The majority of staff developed their understanding of the project and specific elements of the VRE process through questioning the researcher-as-facilitator in order to gather more detail. Interestingly, staff asked similar questions, suggesting that although standard research protocols such as participant information sheets might be important as supplementary information, healthcare staff prefer to interact at an interpersonal level to gather project information. It was particularly evident throughout the field notes that healthcare staff wanted to understand the justification for project decisions, and the particular benefit potential outcomes could have on working practices, staff well-being or patient safety. Project value, not written into a participant information sheet, was clearly important to staff.

'All of the staff approach in clinic today asked very similar questions about the video footage, including how it would be stored, who would see it, and what the video footage would add to the project that observation or discussion don't' [Researcher Field Notes]

Senior grade staff in particular raised questions specifically about patient information and confidentiality during the filming and editing process. Engagement with staff regarding these questions allowed more protracted discussion of the potential issues and, consequently, co-creation of some of the more practical decisions related to capturing in situ video footage.

'One of the consultant anaesthetists asked straight away where the camera would be placed and what would happen if identifiable patient information was captured' [Researcher Field Notes]

5.3.2.4 The reflexive feedback session

5.3.2.4.2 Effective facilitation

As the central focus of the VRE process, it was evident that preparation for the reflexive feedback sessions must involve consideration of how to facilitate collaborative discussion. Field notes suggest that there was initial concern by the researcher-as-facilitator that the tendency may be for individuals to watch themselves and their own behaviours on the footage rather than focusing on the process and structural elements of the handover. However, facilitation was identified as key in ensuring effective collaborative discussion of these higher-level concepts. Staff participants were particularly clear about the importance of facilitator clarity and instruction prior to watching the footage as to their focus whilst viewing the footage and in the subsequent discussion. This was a point made evident in most of the interviews with staff who had attended the feedback sessions.

“The way you were so clear in asking us to focus specifically on the process level of the handover, and focus right in on you know the teamwork and communication and how we work together, it meant I didn’t really focus too much on myself which even surprised me!”

[Midwife Coordinator, MC1]

Sensitivity to participants watching themselves back on the video footage was also identified as important particularly through staff interview data. It was expected that staff might be apprehensive prior to the reflexive feedback session, and the researcher-as-facilitator demonstrating awareness of this through clear instruction and thus the creation of a safe

space for staff was clearly important to all staff as outlined through the interview data.

“I was a little, well you can probably understand, I was a little apprehensive when I knew I was sat with people I worked with watching myself [SM: yeah], but as soon as you said it was about processes and the team I relaxed more because I sort of felt even if anyone tried to raise anything individual you were aware and would redirect the conversation back you know?” [Obstetric Registrar, OR3]

5.3.2.5 Power to change

5.3.2.5.1 The importance of structural power

It became evident that senior staff involvement was imperative in the construction and implementation of change post-reflexive feedback. Structural hierarchies mean that only senior staff are involved in meetings and discussions at an organisational level, where there is a space to present ideas for change or improvement.

‘[CA] has discussed the new handover at the Anaesthesia business meeting and they are keen to roll it out across all the LW handovers which is great’ [Email from CS in Researcher Field Notes]

Although senior staff involvement was important in finding the space to present ideas for change at an organisational level, staff of all grades were consulted on suggested changes to the handover protocol by senior staff prior to implementation of solutions. This interaction reflected data particularly from the field notes that suggested that disparate staff groups were able to identify issues and discuss potential solutions or opportunities

for change, yet only staff of a certain level of seniority had the autonomy and perceived power to drive and implement change.

Negotiating autonomy for all staff involved in the reflexive feedback process was highlighted as a particular difficulty for the researcher, where the structural hierarchies meant that staff did not all feel able to drive change.

'The interviews today were difficult at times because it seems that staff below consultant level feel unable to drive any change and so this is an added layer to negotiate when considering how to disseminate the discoveries made by staff, and who we disseminate these results to. It is important to ensure that all staff feel their ideas from this process are valued' [Researcher Field Notes]

The researcher-as-facilitator had an important role in ensuring potential hierarchies affecting perceived power to implement change were levelled. Senior staff driving change could only translate the changes discussed in their respective feedback sessions. A key part of the process was the collation of suggested changes discussed across all feedback sessions and the translation of these changes by the researcher-as-facilitator to key stakeholders at an organisational level.

'The unit leadership team seemed receptive to the suggested changes to the handover, and they were particularly interested following the successful implementation of the new handover protocol driven by the staff themselves.' [Researcher Field Notes]

5.4 Acceptability

This section of the chapter will explore the concept of acceptability within health services research and, more specifically, related to implementation of quality improvement in acute healthcare. Issues surrounding the acceptability of implementing flexible and dynamic improvement approaches will also be explored with specific reference to VRE. The main themes and sub-themes regarding the feasibility of the implementation of VRE with interprofessional teams in acute maternity services are then presented with representative supporting quotes.

5.4.1 Introduction

Acceptability of an intervention or improvement method can be defined as *“the degree to which an intervention is satisfactory to those asked”* (Padmanathan & De Silva, 2013). The concept of acceptability has become a key consideration when designing, evaluating and implementing healthcare improvement methods or interventions (Sekhon, Cartwright & Francis, 2017). Although feasibility and outcome measures are often the main focus when considering how an intervention or improvement method would be more successfully delivered, improvement methods often rely on the sustained engagement of key stakeholders, and so acceptability is important at all stages of delivery (Sekhon, Cartwright & Francis, 2017). In their 2015 guidance document to researchers, the UK MRC (2015) refers to acceptability, and although the document fails to offer a general definition of acceptability or specific materials for assessing acceptability in patients and healthcare providers, examples of qualitative collection of acceptability include interviews and focus groups.

Considering the current VRE literature, the central challenge raised with respect to acceptability is the use of video to capture in-situ practices and processes (Iedema et al., 2019). One of the key issues relates to stakeholder perceptions of the aim of the project, and how the use of visual methods underpins this aim (Cox, Drew, Guillemin et al., 2014; Iedema et al., 2019). In the review of VRE studies focusing specifically on improvements in teamwork and communication (Chapter 2), there is little exploration of how justification for the use of visual methods is raised with potential participants, both at the point of recruitment and throughout the study. There is, however, more guidance on how to approach recruitment of participants within the wider body of literature which focuses specifically on audiences who are unfamiliar with VRE, and those who might have concerns about the acceptability of capturing in situ working practices on film (Iedema et al., 2019).

Although the challenges of VRE are clearly addressed within sections of the wider literature, as with feasibility, there is no direct reference to measurement of acceptability of healthcare providers. Following MRC guidelines (2015) on exemplar methods of qualitatively measuring acceptability this section of the chapter aims to evaluate the acceptability of using VRE in acute maternity services with particular reference to the acceptability of the core elements of the VRE process - focused ethnography, video recording and reflexive feedback (see Chapter 3 for a full overview of the VRE process) – within the context of interdisciplinarity.

5.4.2. Results

As outlined in Chapter 4 (section 4.4.2), one delivery suite in a single NHS Trust was involved in this study, and 17 members of the multi-disciplinary staff team took part in semi-structured interviews following the completion of the main VRE process. The interview schedule employed for all staff can be found in Chapter 4. Full demographic information for the participants can be found in section 5.3.2 above.

Two overarching themes relating specifically to acceptability were identified from the data: *staff feelings about VRE* and *changing perceptions*. Three further themes were identified which reflected staff perceptions of the acceptability of the process – *building relationships*, *perception of worth* and *wider impact*. Scrutiny of the themes within the wider research team highlighted overlap with themes generated in other sections of this thesis. Staff participants clearly felt that the process of building relationships with the researcher-as-facilitator was important to their feeling positive about the VRE process. However, exploration of gaps in methodological reporting in the published literature provided stronger justification for the practical process of building these relationships at different points in the delivery of VRE would be better reported in the earlier section of this chapter concentrating on feasibility (see section 5.2.2.1). Both *perception of worth* and *wider impact* related specifically to staff perceptions of their involvement following completion of the VRE process and implementation of resultant changes made to the handover. These changes are not presented in this

thesis until Chapter 6, and so staff perceptions of these changes are explored in greater detail in the next chapter.

Within this section of the chapter, each of the overarching themes and sub-themes related to acceptability are defined and presented below with supporting excerpts. One of the themes (*staff feelings about the VRE process*) was brought to the coding process from the existing literature. The second theme was inductively generated from exploration and coding of the data set. Both themes focused specifically on acceptability were derived in the main from the interview data, however field notes were extremely valuable in supplementing the coding process.

5.4.2.1 Staff feelings about VRE

5.4.2.1.1. Positivity

It was evident throughout the data that staff generally felt positive about the use of VRE. Interviews particularly reflected staff positivity about the opportunity to view their work as it is done, rather than relying on their own perceptions of the handover. Drawing attention to work as done through video footage provides the opportunity for staff to focus on the positive elements of their working practice as well as any opportunities for change.

'I think the thing that made us get involved as staff is that we could see and talk about positive things we do as well as thinking about what we might be able to change really (SM: yeah)... We never have that in training or CPD sessions, it's very much focused on what we need to improve all the time' [Midwife Coordinator, MC2]

'It was actually really good to feel that someone wanted to listen to our ideas and views on what we do every day rather than telling us what to do or what to change' [Scrub Nurse, SN1]

There was a sense of awareness when discussing the project with the staff that elements of handover practice could be improved, and this led to a more positive reception most perceptibly during the recruitment phase. Interviews with most staff pointed to the importance of understanding the project aims in their choice to provide consent. However interviews with more senior staff reflected an element of positivity about the potential for improvement, and an understanding about the opportunities provided by the project.

'I think there was a real buzz about improving the handover you know... That for me was a real pull to be involved because I've felt improvement was necessary for a while and this sort of validates what I was thinking' [Consultant Anaesthetist, CA1]

There was also positivity about the video footage itself and the insight this allowed staff. Where the general purpose of the handover is the effective transfer of essential clinical information to enable the provision of safe and high quality patient care, staff focus during the handover was primarily the transfer and receipt of patient information. Staff were clear that this precluded them from concentrating on any of the more process or structural factors related to the handover. This was a pertinent point made across most staff interviews. More generally staff were particularly appreciative of being provided the space to think about and discuss daily tasks, and the autonomy to develop appropriate ideas for improvement.

'I couldn't believe that what I was seeing was the same handover if I'm honest... There were just so many things I could see straight away that I would never have thought about without actually seeing the handover from a different perspective and when I'm not having to think about holding all of this information in my head' [Midwife Coordinator, MC2]

The limited time demands of the process of VRE was highlighted by some staff as being a positive element of implementation, particularly in an acute and dynamic healthcare environment. Comparison of the limited time demands of the complete VRE process with other implementation projects suggested that VRE is more acceptable with respect to specific practical factors. This is particularly reflective of the in situ elements of VRE.

'I was shocked at how little was really expected of us, because a lot of this we would have been doing anyway, you know the handover and things... Compared to other research projects where we're asked to give up quite a lot of time to attend training sessions or do surveys and things, it just feels more like we're quite central to this, like that the research is for us' [Obstetric Registrar, OR2]

Positivity regarding implementation of VRE on the delivery suite was also evident in staff members who were not directly involved in the process. Some had spoken to other members of staff about what involvement in the project entailed, but more generally data from field notes suggests that VRE had prompted more open communication between staff members about the handover process and their thoughts and feelings about the handover.

'I was chatting to one of the reg's during lunch and she was so positive about watching the film back and the ideas that had come from her group... It made me wish I'd been on shift at the right time so I could have been involved and seen the handover from that perspective. She's told me some of the ideas though and I'm thinking more about them all now whenever we handover, where I stand and whether people can hear me and things' [Obstetric Registrar, OR1]

5.1.2.1.2 Concerns

The most widely reported element of concern in staff interviews was a perceived lack of understanding of how changes were or could be implemented following reflexive feedback. Staff were keen to be reassured that any ideas raised during feedback sessions would be relayed to individuals or groups with the power to drive change. This led some staff members to question the level of autonomy provided by VRE, and how suggested improvements would be translated to meaningful change. That said, most staff qualified these statements by maintaining that creating space for conversations about change and improvement is the first step to translating this into practice.

'It's interesting because it feels great to have the space to discuss ideas and plans for improvement, but then what happens to those ideas? (SM: ok, yeah) Are we expected to run with them and try and work out ways of implementing them? I don't really know so, yeah, it's a great starting point but now where do we go?' [Obstetric Registrar, OR1]

5.4.2.2 Changing Perceptions

It was clearly evident that participants' perceptions of VRE changed as they became more involved in the process itself. Staff reflecting back on the feedback sessions reported it being easier to watch themselves back than they originally thought. In all interviews staff participants made some reference to feeling more positive about the video footage after the reflexive feedback sessions, even where they had not indicated any initial apprehension.

'I was so worried about watching back if I looked like I was just stood there not inputting anything I would be embarrassed (SM: ok) but I wasn't watching myself at all more everyone and the team' [Scrub Nurse, SN2]

In addition to individual perceptions of viewing the video footage, staff also found that they were better able to focus on the more structural elements of the handover than they anticipated because of the viewpoint provided by the camera. The fixed camera captured the whole handover environment making it easier for participants viewing the footage to identify and scrutinise factors important to the handover as a collective, interprofessional practice.

'I think it helped seeing the handover from above, like, seeing the whole thing it meant I was straight away focusing on the environment and the whole team and how we were communicating together and what that looks like' [Midwife Coordinator, MC1]

It was not only the perception of elements of the VRE process that changed during the project, but VRE prompted staff perceptions of the handover process to change. This was evident during the reflexive feedback sessions

where staff were viewing the handover from a new perspective. Although this was only directly referred to in one staff interview, numerous staff made reference to the video footage drawing attention to the positive elements of their work as well as any potential areas for improvement.

'At the beginning of the session I remember thinking this is going to be awful because I had quite a negative feeling of handover thinking it was something we have to do...erm...but we don't really do well, but actually seeing it I was seeing the positive stuff we do as well as things we maybe need to change. I felt more positive coming out of that than going in, and so the next time I was in handover I remember thinking it was ok' [Obstetric Registrar, OR1]

This also filtered into other aspects of daily working practice for some staff, who reported better appreciation of the quality of healthcare provision within an environment that was more socially and practically complex than they had otherwise been aware of.

*'After the feedback session I actually felt like I was more positive at work because the video really showed how hard the environment is and actually we do, we really do well to navigate all of that, erm, so yeah I just felt like I was even interacting more positively with people, with other staff and patients because it's harder than we give ourselves credit for what we do (**SM: yeah**), and it was nice to think about it positively' [Obstetric Registrar, OR2]*

5.5 Discussion

The primary aim of this section of the study was to identify key factors pertaining to the feasibility and acceptability of VRE as a tool for improvement in acute maternity services within the context of a wider research project. With the systematic review demonstrating a lack of reporting of such factors in the published literature, this section of the study provided an opportunity to understand whether VRE is both feasible and acceptable for use in an acute maternity environment. The rationale was to try and generate a more detailed understanding of whether and why it is feasible to use VRE as a tool for improvement in acute healthcare, and how the process was perceived by healthcare staff participants and the wider staff team. Understanding the factors relating to feasibility and acceptability within specific healthcare contexts is imperative if VRE is to be recommended more widely as a tool for improvement in such environments.

To achieve these aims the following research questions were posed:

1. Is video-reflexive ethnography a feasible tool for change and improvement in acute maternity services?
2. Is video-reflexive ethnography acceptable to staff in acute maternity services?

As anticipated, numerous factors were highlighted as being related to the feasibility and acceptability of using VRE in an acute healthcare setting. Five major themes related to feasibility were described in detail with supporting excerpts: *laying the groundwork, practicalities of an effective process of consent, agreement to be filmed, the reflexive feedback session and power*

to change. Two major themes relating to acceptability were described in detail with supporting excerpts: *staff feelings about VRE* and *changing perceptions*. These themes and associated sub-themes will now be discussed in relation to the existing literature, in order to illuminate the most crucial factors relating to feasibility and acceptability, and how these factors can be used to guide future VRE work in acute healthcare environments.

5.5.1 Research question one: Is video-reflexive ethnography a feasible tool for change and improvement in acute maternity services?

Factors at every stage of the VRE process were deemed important to consider in terms of feasibility. In accordance with the literature, the preliminary stages of the project up to the point of participant recruitment were recognised as being crucial to the success of the process itself. Leadership buy-in to improvement is identified as key to the success of an improvement approach within the wider healthcare implementation research literature (Aarons, Ehrhart & Farahnak, 2014; Akins & Cole, 2005;). Furthermore, in their book on the use of VRE in health research and healthcare improvement, Iedema et al. (2019) suggest that setting up a VRE project takes time and patience, and requires a level of tenacity especially when thinking about building relationships with key stakeholders. They are clear that recognising the different strategies for presentation and discussion of the project with different audiences (e.g. clinicians, managers, patients and families) is key groundwork that not only allows potential participants and stakeholders to become familiar with the project itself, but also enables them to ask questions, gain awareness of the potential implications of the

project, and, importantly, to become comfortable with the research team and their presence on the unit (Iedema et al., 2019). Previous research has also highlighted the importance of laying the groundwork in developing mutual terms of research between the key stakeholders from the healthcare site and the researchers, and in establishing trust relationships between potential participants and the research team (Carroll, Iedema & Kerridge, 2008). Furthermore, the authors suggest that initial trust building forms important cross-boundary relationships that can engender more rapid social change. Carroll, Iedema & Kerridge (2008) also advocate for the importance of a local clinician on the research team who will promote the study locally. The findings from the current study support this supposition, suggesting that a local clinician on the research team can not only be useful for the promotion of the study internally, but also improves the speed at which the preliminary stages of the research project, namely local approvals and understanding of the local environment, can be addressed. Interestingly, although the formation of positive stakeholder relationships is identified as key to laying the groundwork in this study, researcher field notes also provide insight into some of the difficulties involved, and the demands on the researcher during this period. As illustrated in the systematic review findings (Chapter 2) these more practical points relating to project feasibility receive much less attention in the published literature than more general project information, and are particularly lacking in peer-review publications.

Previous research which explored the use of video reflexive ethnography to reshape ICU ward round practices reported that staff agreement to be filmed

was motivated by an understanding of the communication issues inherent on the unit (Carroll, Iedema & Kerridge, 2008). The findings of the present study support this notion, as staff on the maternity unit were more amenable to providing consent once they understood the aims of the study. However, findings from the present study suggest that agreement to be filmed is not only linked to an understanding of the issues to be addressed, but also to an understanding of the research process. Most notably, this study provides insight into clinician awareness of research ethics, and particularly how sensitive patient information and personal participant data will be protected by the research team. Interestingly this was principally a concern for staff of a higher grade, who were reported as asking more questions about the storage of research data, and how patient information would be redacted. In line with VRE application guidelines (Iedema et al., 2019), staff were also more likely to agree to filming once they were reassured that the footage was not part of any judgement or audit process.

Although the process of consent could be argued to be inextricably linked to agreement to be filmed when related to the research process, the findings of this study highlighted some of the practicalities of pursuing consent from healthcare staff not evident thus far in the published literature. Access to staff areas to enable individual preliminary contact with potential staff participants, and access to staff rotas to ensure researchers were aware when full handover teams had provided consent to be filmed, were essential to the research team, but also problematic when considering project feasibility in the acute maternity unit. Although some such issues are likely to

be project specific, an understanding of these more general issues of feasibility are essential in providing guidance on the application of VRE in healthcare environments, if only as preliminary guidance for consideration for research teams. A flexible approach to the consent process was also highlighted as imperative in this project, in line with previous research that highlights the importance of researcher presence on the unit for a period of time prior to filming to allow for the process of recruitment and consent (Carroll, Iedema & Kerridge, 2008; Hor, Iedema & Manias, 2014; Iedema et al., 2019).

Although previous literature focuses on the guiding principles of VRE to provide general guidance on how to facilitate reflexive feedback sessions (Carroll, Iedema & Kerridge, 2008; Hor et al., 2014; Iedema, Mesman, Carroll, 2013; Iedema et al., 2019), there is also acceptance of the challenges of bringing healthcare professionals together at the same time to review the footage. The literature suggests that organising structured meetings within acute healthcare environments where staff are time limited and often over-stretched in terms of their working hours can be challenging, however the suggestion that organising such sessions within already existing structures such as team meetings (Iedema et al., 2019), is somewhat at odds with the findings of this study. Data from this study primarily suggests a flexible approach to the timing and the location of the feedback sessions, and also to the size and make-up of the participant groups attending the sessions. It is important to note this may be particularly relevant in acute maternity services where the staff teams attending

handover are inherently more transient, and where theatre staff in particular work outside of the existing structures of the obstetric team. Furthermore, the published VRE literature makes no reference to the more affective dimension of arranging reflexive feedback sessions with interprofessional staff teams. The wider health services research literature suggests perceived hierarchies and silos are still inherent between homogeneous staff groups within interdisciplinary healthcare teams (Hughes & Salas, 2013; West, 1999). The results of this study suggest that concerns or apprehension about sharing ideas and collaborative discussion in large interprofessional staff groups must be taken into account and addressed where necessary when arranging reflexive feedback sessions. Furthermore the data in this study raise the question of whether this lack of large multi-disciplinary discussion could have been an issue for either generating discoveries or solutions or indeed which solutions were implemented. An understanding of these potential issues is key in planning future research.

In line with previous literature, the data from this study identified the concept of care as being imperative to the success of the reflexive feedback sessions (Iedema et al., 2019). Participants recognised the importance of the researcher-as-facilitator in providing and maintaining a safe space throughout the feedback session, and thus in the alleviation of any anxiety they may have felt not only about watching themselves back on film, but about the focus of the subsequent discussion. This is particularly important when considering team learning behaviours, with literature identifying the positive association between team psychological safety and successful

collective learning (Edmondson, 1999; Edmondson, Kramer & Cook, 2004). The concept of care here can be closely aligned with the concept of psychological safety; a psychologically safe environment is one which is deemed safe for interpersonal risk taking (Edmondson, 1999), and both watching oneself on film and the discussion of potential issues could be construed by staff as personal risk taking within their organisational teams.

One of the most pertinent feasibility issues in this study was the implementation of solutions articulated by staff during reflexive feedback sessions. Both researchers and participants reported being unsure about how solutions discussed during the reflexive feedback sessions would be implemented. Notably this was linked to the notion of structural power or hierarchical gradients in line with the literature identifying the proliferation of steep hierarchies still present within healthcare teams (Green, Oeppen, Smith et al., 2017). These gradients were particularly apparent between obstetric and theatre staff, although interestingly obstetric staff up to registrar level in this study did not feel they were in a position to affect change. Although these hierarchies were apparently inherent, the data suggest that these were more practical than socially driven. Staff did not report feeling they were unable to suggest change to higher grade colleagues, however they did not feel in a position to drive change, whether this was because they were unsure who they would discuss ideas for change with, or because they were not part of the organisational working groups where ideas for change could be presented or agreed. However, there is evidence in the literature to suggest that participatory methods such as VRE position power

as a shifting, rather than static, source of creativity, empowerment and uncertainty (Gallagher, 2008). This suggests that methods such as VRE prompt a more dynamic representation of power to participants which elicits both positive and negative affect. It is therefore important to consider, not simply with regard to the feasibility of future VRE studies but also more generally, that even in teams where the social culture is positive, it is the organisational structures that may cause the perpetuation of hierarchies and silos (Hughes & Salas, 2013).

Specifically relating to the outcomes of a VRE study and the implementation of ideas, the data highlights the difficulties such organisational structures may present to researchers when trying to guarantee or maintain equality of opportunity for staff at all levels. The data here suggest this is strongly linked to both positive team culture, and also to senior clinician buy in. However, there is very little in the literature to guide researchers in bridging the gap between ideas raised and ideas implemented. Much of the previous literature reports successful change to communication processes (Carroll, Iedema & Kerridge, 2008; Collier, Phillips & Iedema, 2016; Iedema et al., 2012) or working practices (Hor, Iedema & Manias, 2014; Wyer, Iedema, Hor et al., 2017), and in some cases that the outcome of the VRE process has exceeded the expectations of both clinicians and researchers, suggesting that the implementation of change is feasible. However only Iedema et al. (2012) report key stakeholder meetings to discuss output from reflexive focus groups with the aim of developing a new protocol. Where the outputs are more locally focused, there is no reference to how or whether

researchers and clinical staff negotiate approvals for change. Interestingly, nor does previous literature report the number and nature of all suggested changes resulting from the reflexive feedback sessions, and how many suggestions were then successfully implemented. As the data from the current study suggests that not all staff are able, or know how to access the correct organisational structures to drive change, this could have implications for which suggested improvements are driven forward and accepted into working practice.

5.5.2 Research question two: Is video-reflexive ethnography acceptable to staff in acute maternity services?

Several factors concomitant with the acceptability of the VRE process were identified within the data, interestingly derived both from staff involved in the process and the wider staff body. In accordance with the literature, staff generally felt positive about the VRE process especially where their understanding of locally required improvements were aligned with the aims of the project itself. Carroll, Iedema and Kerridge (2008) found that staff agreement to participate in a VRE project to improve ICU handover was motivated by previous discussions about communication problems within the department. The data also highlighted staff positivity for the VRE process as being linked to their previous experience of being filmed. Rather than the filming of in situ processes causing staff to be less engaged, the data clearly shows that healthcare staff are comfortable with this element of the process where they have previously experienced this in a professional capacity. Iedema et al. (2019) suggest that we can often assume healthcare staff will have been filmed previously in their career, whether this be during training,

continued professional development or, as is becoming more common, for the purposes of television or other visual media. Previous literature suggests that healthcare staff and patient participants show awareness of the impact of the video as providing a different perspective on otherwise habituated practices (Carroll, Iedema & Kerridge, 2008; Collier, Phillips & Iedema, 2016; Hor, Iedema & Manias, 2014; Iedema et al., 2012), and that they are particularly positive about the reflexive feedback sessions creating a space for collective discussion of issues and related solutions. Staff insight into the role of the video in providing a new perspective on current ways of working was evident in the data, as was a clear feeling that VRE provided a level of autonomy over daily working practices that was not normally afforded to staff. Conversely, there were staff who were not positively engaged in the project, but rather than this lack of engagement being related to the acceptability of the VRE process, individual preferences about being filmed or seeing oneself on film were cited as the reasons for non-participation. This is in line with the current literature that suggests participants may feel that seeing oneself on film would be a source of embarrassment (Iedema et al., 2019). The main point of contention with regard to the acceptability of VRE from a staff perspective was the translation of creating a space for collective discussion into tangible improvement. Iedema et al. (2019) suggest in their guidelines that perspectives on what should be improved might be divergent and, as such, evaluation of outcomes should be considered within the context of the local factors that might have shaped such outcomes. That said, there is little guidance within the current literature that explores how researchers can navigate the interface between the solutions discussed by all staff in the reflexive feedback sessions and the

implementation of appropriate solutions for improvement. It is important that future research attempts to understand how best to negotiate change and improvement, as this is evident as being a limiting factor in the acceptability of the process of VRE to healthcare staff.

Although initial data suggested that staff showed some concern about watching themselves back on film or use of the footage in professional audit in line with previous literature (Iedema et al., 2019), overall project data showed that staff perceptions of VRE tended to become more positive as they became more involved in the process. Where some staff initially assumed they would be drawn to their own individual performance whilst watching the footage, it was evident from the data that healthcare staff participants in the reflexive feedback sessions were acutely aware of the different perspective offered by the video footage, and how this enabled them to look past individual to collective practice. In line with the current literature suggesting that VRE has a 'hologramatic' effect, staff were able to see past their own individual performance to appreciate the complexity and intricacy of the handover process within a multi-disciplinary team (Iedema et al., 2019). Not only did this lead to a renewed appreciation of the VRE process following the reflexive feedback session and an increasingly positive understanding of what the process could offer, but the data is also clear that staff perspectives on the handover process itself changed throughout the process. Although all feedback sessions led to discussion of specific issues and solutions (see Chapter 6), it is important that within the process of VRE staff were also able to appreciate the good practice that occurred within the

complexity of multi-disciplinary working. This is regarded as an important factor of VRE and, furthermore, is clearly imperative to creating a positive view of the VRE process among healthcare staff participants regardless of any tangible outcomes.

5.6 Limitations

Limitations of this element of the study include the self-report nature of the interviews which meant that the discussions could be subject to interpretation bias by both the researcher and the participants. Furthermore, the small sample size relative to the maximum population size could have caused a sampling bias.

5.7 Summary

This aspect of the study highlighted the numerous factors related to the feasibility and acceptability of the application of VRE in an acute healthcare environment. Analysis of the data identified five factors relating to the feasibility of implementing VRE (laying the groundwork, practicalities of an effective process of consent, agreement to be filmed, the reflexive feedback session and power to change) and two factors relating to acceptability (staff feelings about VRE and changing perceptions). The findings shed light on the feasibility of the delivery of VRE in context, and whether and how this is perceived as acceptable by healthcare staff working within an inter-professional staff team. Furthermore, they provide a novel lens on understanding the feasibility and acceptability of the delivery of VRE within the context of an acute maternity unit by capturing staff perceptions of the process as well as the experiences of the researcher. The findings of this

aspect of the study emphasise the need for further exploration of the feasibility of the process within inter-professional teams in different healthcare contexts.

5.8 The next chapter/stage of research

The next chapter (Chapter 6) focuses on evaluation of VRE as an approach in the improvement of teamwork and communication in acute inter-professional maternity teams. The chapter collates data from the whole study to map the key processes and interactions that lead to successful delivery of the aims of VRE application. A novel lens will be shed on the research data to specifically explore the role of the facilitator when VRE is embedded within a wider research project, and how the researcher-as-facilitator role is thus embedded within the whole process. The qualitative data described in this chapter informed specific factors that were a focus of the holistic evaluation of VRE in Chapter 6, and allowed for specific consideration of the contextual factors affecting the role of the facilitator and thus, the project outcomes.

Chapter 6

Video reflexive ethnography as an improvement approach targeting teamwork and communication at the inter- professional handover: An evaluation

This section of the study intended to build on the systematic review findings by reporting specifically on the success of the VRE process on the improvement of teamwork and communication, as well as the contextual moderators affecting process delivery. This is important to ensure that the evidence informing the delivery of VRE as an improvement approach is a balanced account of key factors from the current literature, and a novel understanding of VRE delivery based on the context in which the process is implemented. It is postulated that a mixed-methods approach will provide a more detailed understanding of the most pertinent factors relevant to the perception of change and improvement, and the salient factors affecting the application of VRE in context. This chapter describes how data from the complete study data set were collated to model an initial process theory.

6.1 Introduction

6.1.1 Communication and teamworking in healthcare

Research has identified lack of confidence, distractions in healthcare settings, lack of structure and standardisation in formal clinical communications, and inherent and perceived hierarchies as barriers to effective communication in healthcare practice (Foronda, MacWilliams &

McArthur, 2016). All such barriers can be linked to the increasing complexities of healthcare provision, and the resultant increase in multi-disciplinary working across all sectors of healthcare, where teams are both spatially and temporally dispersed (Carroll, Iedema, Kerridge, 2008). In particular, increased interprofessional working and interaction has highlighted the different approaches to clinical communication training for healthcare professionals. It is widely accepted that doctors are trained to be succinct and logical in their clinical communications, preferring brief and organised transfer and receipt of information (Rodgers, 2007). Conversely, nurses and allied health professionals are generally trained to be more descriptive and highly narrative in their transfer of information (Rodgers, 2007). Literature has identified such differing communication styles as being a common source of communication error, and additionally a source of frustration which then creates a less integrated and collaborative team working environment (Foronda, MacWilliams & McArthur, 2016). Although it can be argued that both communication styles can be appropriate in different situations, the lack of consistent integrated communication training or awareness of different communication styles between staff groups means that frustrations or concerns about the level or tone of communication can negatively affect both staff relationships and, more importantly, the quality and safety of care particularly during inter-professional working (Dixon, Larison & Zabari, 2006).

Communication within a complex adaptive system such as healthcare is also affected indirectly by factors related to team structure and the physical

environment. Perceived hierarchies within the team structure can inhibit effective communication, and many of the current improvement approaches focused on healthcare communication are designed to flatten or reduce the effects of these structural hierarchies (Haig, Sutton & Whittington, 2006). In addition, healthcare as a complex adaptive system does not only reflect the interpersonal elements of the service, but also the non-linearity and fluidity of the physical environment. Particular barriers to communication related to poor physical environment include increased interruptions, decreased privacy and decreased or ineffective social space (Foronda, MacWilliams & McArthur, 2016).

6.1.2 Communication, teamwork and the inter-professional clinical handover

6.1.2.1 The importance of the clinical handover

UK healthcare, in particular, has much to gain from a focus on improving handover practice. Not only does the UK have the second lowest ratio of doctors to patients in Europe (1.7/1000 compared to 3.0-5.0/1000 in most countries in the EU), the introduction of the European Working Time Directives (EWTD) has led to an increase in the number of handovers required on a daily basis due to the mandated 48-hour working week (Agha, 2012). One of the difficulties when considering improvement of clinical handover is that there are multiple different conceptual and practical models of clinical handover within healthcare, both at a national and international level (Jeffcott, Evans, Cameron et al., 2009). Although it would be expected that the explicit function of the clinical handover is the transfer of clinical information between individuals and teams within the overall care system on

a particular unit or department, different national guidelines also focus on the transfer of responsibility and accountability of the care process between staff members and teams (British Medical Association, 2004). This highlights the significance of the clinical handover related not only to continuity, but also the quality and safety, of patient care. The importance of robust transfer of clinical information and continuity of patient care is emphasised in the sentinel patient safety report *To Err is Human* (2000), and the UK Department of Health report *An Organisation with a Memory* (2000) highlights more generally the importance of handover in the delivery of safe healthcare.

6.1.2.2 Handover improvement approaches

To date, much of the research focus on clinical handover has identified a lack of standardisation or structure as being the most pertinent area for improvement (Agha, 2012). During the handover, a combination of environmental factors (e.g. noise, overcrowding, high workload pre- and post-handover), interruptions, and patient care activities threaten the quality of verbal information transfer (Borowitz, Waggoner-Fountain, Bass et al., 2008; Catchpole et al., 2007; Manser & Foster, 2011). Reflecting on the complexities of the multiplicity of components of clinical communication, and the link to misunderstanding and error (Muller et al., 2018), it is assumed that assigning a level of structure to such communication practices will act to overcome these barriers and reduce the probability of error (Muller et al., 2018). This view has been enhanced by the successful implementation of structured tools such as the WHO safer surgery checklist, which has been linked with reduced in-hospital mortality (Mahajan, 2011; van Klei, Hoff, van

Aarnhem et al., 2012). Based on this growing empirical evidence from other areas of the healthcare delivery process which suggest assigning structure can reduce both content and process variability, research efforts have focused on the development of different tools designed to assign more structure to these formal clinical communications.

Although individual studies have identified some positive effects of implementing standardised protocols, the effect of standardisation and structural tools to support clinical handover has not been explored through systematic empirical examination (Manser & Foster, 2011). In addition, literature has suggested that the potential unintended consequences of attempting to apply standardisation to a complex and flexible process such as the clinical handover could, in fact, have negative implications for patient safety (Patterson, 2008). As yet no high-risk organisations, with the exception of the nuclear submarine industry, have successfully applied structure to a verbal handover or transition (Patterson & Woods, 2001). Under conditions of considerable communication load as in healthcare, where large amounts of data are available but pragmatically impossible to transfer or discuss, the function of the verbal handover is to support the incoming practitioner or team to gather a brief “narrative” of the situation on the ward or unit. Such verbal communication then supports the more macro-cognitive functions required to work successfully in complex and high-risk situations, including problem recognition, analysis, sensemaking and planning (Patterson, 2008; Woods & Hollnagel, 2006), and allows healthcare staff the autonomy to decide the most important information to transfer in

each situation to aid these processes. Assigning a standardised structure to the handover then removes this more flexible narrative and autonomous element, and is likely to create a situation in which staff are more concerned with adherence to a specific structure than reporting information within the remit of their own, or their collective, situational awareness. Human factors research in particular suggests that assigning a simple structure to a complex socio-technical process as the clinical handover does not result in simplicity, and in fact may constrain the ability of staff to tailor their communication to relevant contextual factors (Patterson, 2008). It seems clear that improvements to the clinical handover should therefore consider the complex social and technical elements of the handover, rather than trying to enforce simplicity and rigidity on a complex and flexible process.

6.1.2.3 VRE as a complex intervention

Just as healthcare staff must engage with, and manage, the service complexities inherent in contemporary healthcare settings, researchers must also engage with these rapidly changing contexts. Thus far, health service research has been generally slow to respond to the need for modes of investigation or improvement that are better attuned to these complexities (Grypdonck, 2006). To fully understand the processes and practices that define everyday healthcare, and thus to improve such processes and practices where necessary, study methods are needed that focus on complexity as a central rather than a marginal construct. As outlined in Chapter 3, VRE is a research tool that attempts to account for complexity. Notably, current literature has shown this to be a successful method in the improvement of ward-based communication and teamwork, specifically at

the multi-disciplinary handover (Carroll, Iedema & Kerridge, 2008; Iedema et al., 2012). But there has been little exploration in the published literature of how these improvements have come about and why video footage combined with collaborative reflexivity is important in prompting learning and improvement in processes and practices. The primary focus of literature exploring the use of VRE in healthcare has been in tertiary care, and there has been consideration within that about learning and improvement prompted by VRE in acute care services. However there has been no research as yet on the use of VRE in acute maternity services. This chapter will therefore explore the following two research questions:

1. Does VRE improve teamwork and communication at the handover in acute maternity services?
2. How does VRE lead to learning and improvement in an acute healthcare environment?

6.2 Method

Full details of the setting of this study, ethical approval and participant recruitment can be found in Chapter 4. The full interview schedule and full details of the procedure for sampling and data collection can also be found in Chapter 4. Empirical data for this chapter was sourced from the full study data set. The first section of this chapter explores the quantitative data set collected, to determine a basic measure of whether teamwork and communication at the handover were perceived to have changed following reflexive feedback sessions. This was calculated using independent samples t-tests, measuring the before and after scores of staff participating in

handovers across the duration of the project. Although some respondents will have completed the questionnaire both before and after the changes prompted by VRE were implemented, we treated the samples as independent because rotations and shift patterns meant that samples were at least 50% independent of one another. The second section of this chapter evaluates VRE as a tool to prompt change or improvement in teamwork and communication at the multi-disciplinary handover, and investigates how the pattern of change or improvement manifests over the duration of the study. As outlined in the results of the systematic review in Chapter 2, and subsequently explored in Chapters 3, there is little guidance in the current literature regarding the links between the VRE process and the observed changes or improvements reported. With this in mind, this evaluation of VRE is not only focused on the core outcomes related to improvement of teamwork and communication at the handover, but also attempts to understand how VRE works within a dynamic and complex acute maternity unit. The analysis for the evaluation was therefore completed in two parts. The methods of analysis are briefly outlined here, but full details of the process of analysis can be found in Chapter 4. Primarily, adapted framework analysis of the descriptive transcripts from the reflexive feedback sessions and thematic analysis of interview data and ethnographic field notes allowed abstraction of the core outcomes of VRE related to improvement of communication and teamwork at the MDT handover. Additionally, in order to holistically evaluate the process of VRE, a Type 4 Logic Model was developed around these core outcomes using a deductive approach to thematic analysis of the data to provide the opportunity for those facilitating the process to adapt it to context, and to understand more about how

contextually-sensitive facilitators affect the way VRE is delivered and the outcomes that are produced (Mills, Lawton & Sheard, 2019).

6.3 Results

As outlined in Chapter 4, one delivery suite in a single NHS Trust was involved in this study. Over the course of the study 98 members of the multi-disciplinary staff team provided survey responses to measure perceived effectiveness of communication at the multi-disciplinary handover. Fifty-seven staff members answered the survey prior to the implementation of changes to the handover, and 41 staff members answered the survey following the implementation of changes. Staff responses to the survey were anonymous so I was unable to conduct a within-person analysis across the two time points, and as such independent samples t-tests were carried out for each survey measure. There were two registrar rotation periods in the time between the pre- and post-VRE surveys being administered, so it is also likely a small proportion of staff answering the post-VRE survey would not have answered the survey prior to any changes. Sixty-four members of the multi-disciplinary staff team participated in at least one element of VRE. The numerical breakdown of staff participating in each aspect of VRE is outlined in *Table 6.1*. This also shows the number of staff of each clinical role participating at each stage.

Table 6.1 Staff participating in each aspect of VRE by job role.

<u>VRE Element</u>	<u>Total number of participants</u>	<u>Number of participants by job role</u>
Filming	64	Consultant obstetrician (n = 4) Consultant anaesthetist (n = 4) Obstetric registrar (n = 13) Anaesthetic registrar (n = 11) Midwife coordinator (n = 5) Operating department practitioner (n = 9) Scrub nurse (n = 11) Junior doctor (n = 7)
Reflexive feedback	12	Consultant obstetrician (n = 1) Consultant anaesthetist (n = 1) Obstetric registrar (n = 3) Anaesthetic registrar (n = 1) Midwife coordinator (n = 2) Operating department practitioner (n = 1) Scrub nurse (n = 3)
Follow-up interviews	17	Consultant obstetrician (n = 3) Consultant anaesthetist (n = 2) Obstetric registrar (n = 3) Anaesthetic registrar (n = 2) Midwife coordinator (n = 3) Operating department practitioner (n = 1) Scrub nurse (n = 3)

It is important to point out that, although *Table 6.1* includes staff numbers participating in the interview phase of this study, this is an adjunct to VRE in order to provide follow-up information, and is not considered an essential part of the VRE process. However, in this project the interviews were used as part of the evaluation of VRE for use in acute maternity services.

6.3.1 Does VRE lead to improvement in teamwork and communication at inter-professional clinical handover?

Prior to understanding whether VRE led to perceived improvements in teamwork and communication at the handover, it is first important to understand the initial handover process. Diagrammatic representation of the process can be found in *Figure 6.1*.

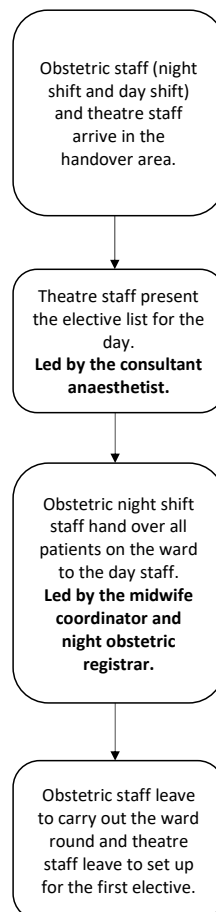


Figure 6.1 A diagrammatic representation of the handover process prior to VRE.

6.3.1.2 Reflexive feedback sessions

In total, 64 members of staff were involved in at least one element of VRE.

All 64 members of staff were filmed during the multi-disciplinary handover, either during the filming of the handover in situ prior to the reflexive feedback sessions, or during filming of the newly structured handover. Some of the 64 staff were filmed both before and after the changes. These staff members were generally the more senior staff members, in particular the consultants and midwife coordinators, who do not rotate between Trusts or hospital wards in the manner of the registrars and theatre staff, respectively.

Twelve of the 64 staff filmed took part in the reflexive feedback sessions.

The staff make-up of each of the five reflexive feedback sessions is outlined in *Table 6.2*.

Table 6.2 The staff roles of participants in each feedback session.

<u>Feedback Session</u>	<u>Staff Participants</u>
1	Consultant obstetrician; Consultant anaesthetist; Obstetric registrar
2	Midwife coordinator; Obstetric registrar
3	Operating department practitioner (ODP); Scrub nurse
4	Midwife coordinator; Anaesthetic registrar
5	Consultant anaesthetist; Obstetric registrar; Scrub nurse

There were two clear objectives in each feedback session which were the identification of perceived issues with the handover (**discoveries**) and the collective discussion of potential solutions to these issues (**solutions**).

Information about these labels can be found in Chapter 4. The output from each reflexive feedback session was not simply as clear cut as considering the objectives. Thus, this section will also explore the **ancillary outputs**, including positive discoveries made by staff, and any potential misses or unexplored solutions. Each feedback session will first be explored individually highlighting any of the key objectives or additional discussions. The key outcomes of the feedback sessions will then be collated into a clear map of discoveries and solutions, with further mapping of the ancillary outputs.

Prior to discussion of the key discoveries and solutions in each feedback session, it is important to consider the expected discoveries. Having observed a number of handovers in the ethnographic phase of the study, and then during the process of filming and video editing, I reflected on the issues I recognised from a naïve perspective. Expected discoveries included:

- Staff at the back of the handover being visibly unable to hear.
- Not enough space for all staff attending the handover.
- Staff working in the handover area who did not seem to be involved in the handover.
- A split between the obstetric team and the theatre team.

This section of the chapter will explore the five reflexive feedback sessions in turn. Interpretation of feedback sessions included analysis of spoken words, gestures and body language.

6.3.1.2.1 Reflexive feedback session one

The staff members attending this feedback session were a consultant obstetrician, a consultant anaesthetist and an obstetric registrar. In summary, there were four discoveries in this feedback session:

1. Staff at the back of the handover are unable to hear.
2. The handover is disconnected between obstetric and theatre staff.
3. Staff members not involved in the handover take up space during the handover.
4. The handover serves a different purpose for different staff members.

These discoveries led to the collective discussion of two solutions:

1. Staff not involved in the handover should be asked to move for the duration of the handover.
2. The handover should be restructured so that the obstetric handover occurs first. This allows night staff to leave and the theatre staff time to see the electives list before teams coming together for the multi-disciplinary element of the handover to discuss the theatre list.

In this reflexive feedback session, staff made these discoveries and collaboratively explored solutions within their understanding of the handover and how this contributed not just to teamwork and communication among members of the multi-disciplinary team, but also their understanding of the more complex intersection between the handover and patient safety, complexity and staff well-being.

6.3.1.2.1.1 Discoveries and solutions

Discoveries from each feedback session were identified through the process of condensing and scrutinising the descriptive transcription of the audio

visual file. *Appendix I* and *Appendix N* demonstrate this process for the first reflexive feedback session, including the detailed transcription, and the condensed narrative.

The consultant anaesthetist (CA) in this session raises the point that theatre staff at the back of the handover must not be able to hear the handover discussion as the footage is playing. Interestingly, **discovery one** (D1) is made prior to the point on the video footage where a member of the theatre staff is seen raising their hands to their ears. In a subsequent interview the CA explained:

“...erm, it was quite obvious, you know, just they all looked like they’d switched off. The theatre staff, you know, everyone at the back they weren’t tuned in so it was clear they couldn’t hear” [Consultant anaesthetist interview, CA1]

D1 is stand-alone at this point in the session with no further discussion while the video footage is shown. Immediately after the footage, the consultant obstetrician (CO) spontaneously raises **discovery two** (D2), intimating that from the visual footage it is clear that the current handover is disjointed. D2 leads the CA to make **discovery three** (D3) in quick succession, pointing out that staff sat at the computers in the handover area on the still image on screen aren’t involved in the handover process. He links this back to D1, that staff at the back of the handover cannot hear the presentation of important patient information. Discussion between the two consultants carries on spontaneously linking the three discoveries and why they are problematic, showing particular insight into the resultant effect on communication and

teamwork. They pay particular attention to the amount of preparation of detailed handover information, and the resultant duplication of work if this has to be relayed after the handover to any staff that did not hear. Although the consultants are clearly tuned in to the perceived issues at the handover arising from the footage, they do not spontaneously discuss any potential solutions. That said, when directly questioned by the facilitator, the CA in particular is forthcoming with the suggestion that any staff not involved in the handover could be asked to move for the duration of the handover (**solution one (S1)**). It is clear that the consultants see the three discoveries to this point as being linked, as S1 would automatically create extra space closer to the point of information transfer allowing theatre staff to hear the transfer of information. This would additionally negate the need for regular 'work-arounds' post-handover.

After viewing the second video clip, it is the CA again who makes **discovery four (D4)** from the footage, raising the suggestion that different parts of the handover are more appropriate for different members of staff therefore affecting staff engagement throughout. Following prompting by the facilitator, the obstetric registrar focuses on the split purpose for the obstetric and theatre teams, from which the two consultants enter into a more protracted discussion. D4 prompts the most discussion in this handover, with the CO in particular referencing complex adaptive systems theory and both consultants using this as a platform for discussion about how many different people need to hear the handover information and how this information translates into the work of both teams in an acute environment. Through this discussion, all

three members of staff begin to discuss the potential for splitting the handover differently, and it is the obstetric registrar who finally raises **solution two** (S2), suggesting reframing of the handover. Again, his input leads then to protracted discussion of S2 between all three members of staff in which they collectively develop a clear plan for restructuring the handover. Interestingly they concentrate initially on better transfer of information as being the purpose of this restructuring but they move quickly onto the impact of restructuring on staff well-being. This initially focuses on allowing night staff to leave earlier but also explores the important safety-netting purpose of the handover for night staff who are handing over complex information following a full shift. The facilitator also prompts suggestion from the registrar that the restructured handover might mean that theatre staff are more likely to feel able to actively input into the handover.

6.3.1.2.1.2 Ancillary outputs

This reflexive feedback session was extremely focused, with all three staff members keen to enter into discussion about potential issues and how they could be resolved, as well as undertaking more high level discussion about the wider effect of these potential issues and solutions. As such, staff in this session did not make any positive discoveries about the handover process. However, there was one **potential miss** during this session which was the difference in leadership at the handover in the two video clips. Although the consultant anaesthetist makes reference to the fact that different consultants sit in different positions in the handover, he is doing this with regard to staff being better able to hear when the consultants sit in the middle of the handover rather than at the front. There is no further discussion of how the

handover is led and whether the different leadership styles all contribute to a positive handover experience, or indeed whether handover leadership style should be more streamlined for the purposes of continuity. When interviewed the obstetric registrar suggested that this might have been due to the focus of the feedback sessions;

'I think, really, we erm, well we seemed to cover the really fundamental structural issues with the handover and the process itself [SM: ok, yes] and really concentrating on particular leadership maybe feels more an individual reflection, erm, for those people.' [Obstetric registrar interview, OR1]

6.3.1.2.2 Reflexive feedback session two

The staff members attending this feedback session were a midwife coordinator and an obstetric registrar. In summary, there were four discoveries in this feedback session:

1. Staff at the back of the handover are unable to hear.
2. The handover environment is poor.
3. Staff members not involved in the handover take up space during the handover.
4. There are regular interruptions to the handover.
5. The handover works well as a supportive space for staff and has a positive impact on staff well-being.

These discoveries led to the collective discussion of four solutions:

1. Staff not involved in the handover should be asked to move prior to handover starting.
2. Tables could be moved from the handover area to create more space.

3. The staff leading the handover could be spread out rather than all sitting together at the front of the handover.
4. The handover could be re-structured to allow night staff to leave, which would mean the obstetric handover happening before the theatre checklist.

In this reflexive feedback session, staff made these discoveries and collaboratively explored solutions with the primary focus of improving the environment. Discussions were rooted in what is done in other units, and at times justifying certain aspects of the handover with reference to the poor environment. Staff participants seemed clear in their idea of the issues with the handover, but they seemed more reticent to be as decisive on solutions. Both staff members seemed to evaluate the impact of any changes, just as they had evaluated the current handover process through the footage.

6.3.1.2.2.1 Discoveries and solutions

While the facilitator is outlining the focus of the feedback session being the process and organisational aspects of the handover, the midwife coordinator (MC) immediately suggests that these will all be poor before seeing any of the video footage. There is no discussion after this comment but it seems to indicate that the wider staff feeling that elements of the handover on delivery suite could be improved reflects the feeling of the ward management in preliminary study discussions.

Although both the MC and obstetric registrar (OR) make comments to one another during the footage, **discovery one** (D1) occurs immediately as the footage ends. Although discussion is prompted by the facilitator with a more

general question about whether the footage is reflective of a normal handover, the MC immediately points out that the staff at the back of the handover clearly can't hear. Although she intimates that this is because the discussion is being led by a small group at the front of the handover, her verbal exploration of this leads her to make **discovery two** (D2) of this session; that the handover environment itself is poor and is causing isolation of those staff at the back of the handover. This triggers more lengthy discussion of how the poor environment, close to the reception desk, might be a contributory factor in the volume at which staff at the front of the handover speak, therefore linking this directly with D1. The discussion between the two staff here is spontaneous but very practically oriented, focusing on staff not filling the space in the best way which contributes to the theatre staff in particular being further away from the main point of information transfer (**discovery three**). Although more practical, it leads the obstetric registrar to raise **solution one** (S1) suggesting that staff sitting in the handover area who are not involved in the handover need to be moved.

'I think, actually the video was really good at helping us, well, I thought helping us see how handover actually happens, you know, and it did reflect that. But even just the still image on the screen, erm, you could see straight away about the environment. It was staggering for me...' [Obstetric registrar interview, OR2]

Staff members in this feedback session focus their discussion primarily on the reasons these potential issues have arisen. The MC in particular raises the fact that there are no other computers for midwives to work at if they are inputting confidential information, and that the handover environment is

inflexible due to the need for the patient information screens showing both patient information and the CTG traces for mothers and babies. It is down to the facilitator to drive the conversation away from justification for these issues, to more collaborative development of potential solutions. The MC suggests that staff could be asked to leave the handover area if they aren't involved in the handover (S1), but this is only a brief comment which leads to **discovery four** (D4) which is completely unprompted. The MC raises the attendance of the neo-natal team at the beginning of the handover, a relatively new addition to the handover structure, and the OR immediately agrees and highlights this as a form of interruption to the handover.

'...it was like being transported into a handover and thinking about the whole process and thinking that that interruption at the beginning really frustrates me.' [Midwife coordinator interview, MC1]

There is a lot of comparison in this feedback session with handover at another delivery unit within the Trust which is held in a separate room, suggesting that the staff members in this particular feedback session link the issues with handover with the open and poorly arranged environment. It takes the facilitator to directly ask participants before they start to discuss solutions. As with the focus of the discoveries, the focus during the discussion of solutions is the handover environment. Participants in this feedback session seem to associate all of the handover issues with the poor environment, and so discussion of solutions focuses on very practical suggestions including moving the furniture to create space (**solution 2**). However, they also use the poor environment as a way of justifying other

solutions, such as integrating senior staff throughout the handover rather than them always being sat together at the front (**solution 3**).

The final discovery in this session was that the structure of the handover could be improved (**discovery 5**), however this was prompted directly by the facilitator. Both staff members agreed that night staff are currently affected negatively by having to stay for the duration of the handover, however the MC almost immediately moves away from the staff well-being element and back to the handover environment by suggesting that the night staff being able to leave would create more space (**solution 4**). What is particularly noticeable in this feedback session is that the obstetric registrar is more cautious here about the suggestion of changing the structure of the handover, as opposed to being more relaxed with suggested changes to the environment. Both staff members also seem wary of creating a division by splitting the handover, and propose a trial of any suggested solutions. Interestingly, both staff members refer back to the handover environment when considering potential solutions, suggesting that staff members standing to hand over would create more space. That said, the OR does intimate that this would mirror the set-up of surgical safety checklists in other departments.

6.3.1.2.2.2 Ancillary outputs

This reflexive feedback session was much less focused and it was clear that the staff participants were extremely comfortable with one another as the discussion between them was fluent and relaxed. Although on occasions this meant that the conversation became tangential to the main focus of the

feedback session, allowing discussion to flow freely between the two staff members often resulted in information that, although not directly linked to specific discoveries or solutions, marked important learning for the participants. This was particularly evident in their changing attitude to the handover itself. Prior to the video footage, it was clear that both staff members were pre-empting issues, however an initially trivial discussion about how the evening shift-change handover differed from this morning handover led both members of staff to agree that they felt the morning handover was the best handover of the day in terms of the structure, organisation and support.

'[The feedback session] was a bit of a lightbulb moment, because you are almost conditioned that any research or audit is about something bad being made better [SM: ok, right], and then I sat there thinking hang on, this isn't anywhere near as bad as we think it is really. It can be improved, errm, but we are working in this awful environment and doing pretty well actually.' [Midwife coordinator interview, MC1]

As in the first feedback session, the only **potential miss** in this session focused on leadership. Although this led from discussion of an environmental solution, both staff participants pointed out that the consultants being sat on the table in the handover meant that they were sat above the more junior staff handing over to them. The staff were clear to point out that they were sure there was nothing hierarchical in this behaviour, and that it was more a habituated behaviour being sat in the same position in each handover, but the idea of hierarchy whether it be perceived or evident is apparent with these staff participants.

There was also a positive discovery in this feedback session, not focused on the environment but on the importance of the handover for staff well-being. The OR used a personal experience of being given space to talk about a neonatal death during the handover, and the positive effect of the subsequent support and reassurance from other staff members about the treatment decisions. Both staff members agreed that the social element of the multi-disciplinary handover in allowing space for communication between otherwise busy and transient staff teams was incredibly important.

6.3.1.2.3 Reflexive feedback session three

The staff participants in this reflexive feedback session were an operating department practitioner (ODP) and a scrub nurse. In summary, there were two discoveries in this feedback session:

1. Staff members at the back of the handover are unable to hear.
2. The handover environment is poor.

These discoveries do not lead to the collective agreement on any solutions.

6.3.1.2.3.1 Discoveries and solutions

Discussion is not spontaneous following the video footage in this feedback session, but a prompt by the facilitator about whether the footage is reflective of a daily handover leads to the immediate discovery that the handover generally takes place between a small number of staff near the information screens who have to talk quietly due to the open space and the sensitive nature of some of the information (**discovery 1**). When prompted to discuss the handover space, the ODP identifies the inefficient use of

space and the problem of noise from the reception desk and the unit itself **(discovery 2)**. The ODP, however, is quick to justify the use of this space due to the need for the patient information screens.

Discussion of solutions was less forthcoming here, and had to be directly prompted by the facilitator. The discussion at this point in the feedback session gets less focused and both staff participants seem to find it difficult to collaboratively identify solutions. They seem unsure about splitting the handover, and are protective over the role of the theatre staff and the importance of their place at the obstetric handover for a full picture of any potential emergencies. Staff move the discussion quickly and briefly back to the fact that the handover occurs between a small number of staff near the information screens which causes those who can't hear to switch off.

6.3.1.2.3.2 Ancillary outputs

In this reflexive feedback session, although both staff participants seem initially clear that there are issues particularly with the handover environment and how this affects staff engagement with the handover process, they do not seem able to clearly see how this could be improved. The facilitator in this session suggests a number of improvements, however the two staff participants seem to give reasons why potential solutions may not work rather than trying to see how change may lead to improvement. There is a clear understanding of what they, and the rest of the theatre team, would like to get from the handover, but there seems little appreciation of the more collective focus of the obstetric teams as well. There is a lack of

decisiveness which seems to stem from a lack of confidence in their own position within the team.

'It was, erm, well, no it was great to see the handover work and there were definitely issues. You know I learned a lot but solutions, ermm. But then how do we know they will work for everyone? Yeah, I don't know if I can speak for everyone because we don't decide things, we just do them.' [ODP interview, ODP1]

6.3.1.2.4 Reflexive feedback session four

The staff participants in this feedback session were a midwife coordinator and an anaesthetic registrar. In summary, there were four discoveries in this feedback session:

1. Staff members at the back of the handover are unable to hear.
2. The handover environment is poor.
3. Staff members not involved in the handover take up space during the handover.
4. The handover is currently disjointed.

These discoveries led to the collective discussion of three solutions:

1. The handover should be moved to a private room.
2. The handover should be re-structured both in terms of process and environment.
3. All staff should stand for the duration of the handover.

In this reflexive feedback session, staff made these discoveries and collaboratively explored solutions with the primary focus of improving teamwork and a shared purpose. It was clear that having a member of staff from both the obstetric team and the theatre team in this session allowed for

clearer discussion of how staff from both teams feel about the combined handover, and how this could be more aligned to promote equality across the two teams. The staff pair were very focused and brief in their discussion of any issues, and instead focused on the development of a practical solution, working back from what they felt the best case scenario could be for the handover to how that could potentially be achieved.

6.3.1.2.4.1 Discoveries and solutions

The anaesthetic registrar (AR) immediately raises the fact that the theatre staff at the handover can't hear during the footage as one of the staff members clearly raises their hands to their ears on the screen, and discussion of **discovery one** between the staff participants occurs spontaneously following the first video clip. This discussion leads the staff directly to **discovery two**; that there are staff in the handover area working who are preventing the theatre staff from being closer to focal point of the handover. **Discovery three** is that the handover environment is poor, and although this is initially raised as a contributory factor to discoveries one and two, the AR and midwife coordinator (MC) enter into more in depth discussion about specific issues with the environment. In particular, they focus on the handover area opening out onto the reception area and main delivery unit corridor and the potential issues here with sharing of sensitive information. Interestingly both members of staff concentrate less on the need for the patient information screens here, feeling more strongly about the correct information comfortably being shared and being heard. **Solution one** in this session is therefore that the handover takes place in a closed room to negate issues with the poor environment. Both staff ground their discussion

here in a deeper understanding of patient safety for mother and baby, and they are the only staff to raise issues and discuss solutions with reference to the specific complexities of the delivery unit.

'I think that's what makes it such a difficult environment generally really. It's like no other speciality. Erm, you know really acute medicine isn't specialised, you know what I mean they can see anyone coming in. Here it's so specific and we have to remember that, you know we can't just say right well ICU do it like that so labour ward will.' [Anaesthetic registrar interview, AR1]

Discovery four comes from discussion of this solution following a prompt from the facilitator about whether a different environment might contribute to better staff engagement throughout. The AR first suggests that the handover is disjointed and that staff engagement reflects this as they only tune in to their respective theatre or obstetric sections, however it is particularly interesting in this session having a member of both teams that the discussion immediately turns to how this can be solved to integrate both staff teams better. Although they suggest restructuring of the handover in the same way as in other sessions (**solution two**), with the obstetric handover prior to the list handover, the discussion here is focused on the best way to ensure that staff engagement is a priority when doing this. There is less obvious reference to staff well-being as in other feedback sessions, but more reference to developing a shared mental model by creating a more dedicated handover space where all staff felt equally involved. The suggested solutions here were therefore more practical in nature, from having a closed room which would allow all staff to hear and in turn may

then support better engagement, to staff standing rather than sitting down to better replicate a theatre list handover and to promote focus and equality for both teams (**solution three**). Both staff members were also quick to point out that this larger environmental change would target all issues raised, and moving the handover away from the delivery suite reception area would move this away from a purely obstetric space.

'Once you notice the issues it feels quite natural, erm, well quite natural to think well how could we address them all, not just each in turn. I think we were on the same page there. We have to think, well, what is practical? Can we make massive changes or will that have other risks. We're very practically minded us coordinators (laughs).'

[Midwife coordinator interview, MC2]

It is interesting that neither member of staff raised any potential issue in moving the handover in terms of not having the patient information screens for reference.

6.3.1.2.4.2 Ancillary outputs

There was very little need for facilitation in this feedback session.

Interestingly, although the AR initially made all of the discoveries, this session felt like a spontaneous and collaborative discussion between two colleagues. Following the video footage, the conversation between the two flowed initially in a very focused manner, identifying potential issues, but then in a more collegiate and protracted way to identify and agree on a potential solution.

Although there were no positive discoveries in this session, both staff were positive about the handover prior to the video footage and the way in which the multi-disciplinary handover was the only time both staff teams had shared space to socially catch up or get to know one another. It was clear in the less concentrated focus on issues that this discussion was more about how to build on this shared space and feeling of collegiality.

6.3.1.2.5 Reflexive feedback session five

The staff participants in this feedback session were a consultant anaesthetist, an obstetric registrar and a scrub nurse. In summary, there were three discoveries in this feedback session:

1. The handover environment is poor.
2. Staff at the back at the handover are unable to hear.
3. Staff members not involved in the handover take up space during the handover.

These discoveries led to the collective discussion of one main solution and individual discovery of a second solution:

1. The handover should be re-structured so that the obstetric handover happens prior to the theatre list.
2. Staff working in the handover area who are not involved in the handover should be asked to move.

In this feedback session there was a very focused period where the staff went over the footage and discussed specific discoveries. Although the subsequent discussion of solutions was prompted, the staff clearly have a good understanding of the purpose of the handover for both teams, and how this could be maximised in terms of the handover structure. They root their

justification of this solution in wider consideration of how communication both within and between teams is linked to patient safety, and the wide-ranging effect that relatively small changes to handover could make.

6.3.1.2.5.1 Discoveries and solutions

The poor handover environment was raised spontaneously by the consultant anaesthetist (CA) immediately after the video footage was shown, and this discovery (**discovery one**) led the three staff members straight into a very frank discussion about the effect of the environment on theatre staff being unable to hear the handover information (**discovery two**) and about staff at the computers compounding this already poor environment (**discovery three**). These two additional discoveries were clearly seen as being contributory to the initial discovery that the handover environment was poor, although later on in the discussion of solutions they are considered as issues in their own right. There is a great deal of reference to the video footage here, with staff using specific examples from the clips to exemplify their discoveries. The CA in particular takes a lead here and is the only member of staff across all feedback sessions who has replayed sections of the footage, specifically those sections that show staff visibly unable to hear, and showing the overflow of staff away from the main handover boards due to the lack of space.

The discussion of solutions to these issues was prompted by the facilitator, but the CA and OR in particular entered quickly into a discussion about potentially re-structuring the handover in the same way as was suggested in other feedback sessions (**solution one**). They root their justification of this

on how the theatre checklist is normally run and the way it is designed to be used by staff who already have all available patient information. The SN is initially very quiet, but once asked directly by the CA, suggests that even the adapted obstetric theatre checklist can only be useful to theatre staff if they know about any potential issues on the unit as well as the electives list especially in the preparation of specialist equipment where required. There is consideration for how this could be reflected in improved patient safety where theatre teams felt more prepared and informed about potential emergencies. The SN in particular labours this point, highlighting the link between obstetric emergencies and negative outcomes for both mother and baby where communication prior to the emergency has been poor.

'I think the video actually showed that the board makes the obstetric handover a habituated process. Everyone is, erm, well the information is just read out and then sometimes the reg or coordinator chip in with some basic information, but yeah, I'm there thinking I can read but is there anything even just the tiniest thing we might need to know or prep for and maybe us coming round part way through might remind them we're here for this reason you know? I'd never even thought about it before.' [Scrub nurse interview, SN2]

Interestingly the CA at the end of the session references the role of the consultants and others who take a lead at the handover in being more aware of the smaller solutions, focusing particularly on moving staff who might be working at the computers in the handover area for the duration of the session (**solution two**). There is no collaborative discussion of this solution, more a monologue from the CA about the influence of the video footage in

prompting individual staff to make changes to their own practice that will benefit the collective multi-disciplinary team.

6.3.1.2.5.2 Ancillary outputs

The staff in this feedback session, particularly the CA, seemed very keen to explore the video footage to justify their initial thoughts about potential issues. There was a sense that they had come to the session with issues in mind and that the video footage confirmed their own personal reflections on the handover process.

'It was really quite a shock to me, probably all of us that we've all or most staff at handover are probably thinking hmmm, not really sure this is the best way of doing this and then there's just no outlet to raise that or talk about it. It's not really what you bring up over lunch or whatever, and actually I always felt a bit like I didn't want to, well, I didn't come across negative I think.' [Obstetric registrar interview, OR3]

There was a sense in this session that everything discussed needed clear justification, although rooting the discussion of solutions in the wider patient safety arena seemed to come very naturally to all three staff members. It was particularly interesting that the scrub nurse became so involved in this element of the collective discussion about restructuring the handover, but did not voluntarily get involved in the discussion until invited by the consultant. This suggested that there was a perceived hierarchy between the two, although this was not evident in earlier discussions about issues.

'I think the issues were clear, they were erm, well on the screen and the video you know it was there. I felt more nervous about offering my

view on how to improve because I knew what I wanted to say but I'm not senior and I don't know how much scope (tails off)... It's my issue really I think or confidence, erm. It was nice to be invited in and straight away I was involved.' [Scrub nurse interview, SN2]

6.3.1.2.6 Overview of core outcomes

Although staff in all five feedback sessions were briefed in the same way and watched the same footage (as outlined in Chapter 3 and Chapter 4), there were clear differences in the ways staff interacted within the feedback sessions, and in the focus of each of the five sessions. Regardless of this, the discoveries and solutions made in all sessions had some level of overlap. Although staff prioritised different discoveries within each session, the solutions discussed were more aligned across all five sessions. This particularly reflects the higher level structural changes that staff discussed across most feedback sessions, whether prompted or unprompted, and how they were able to extrapolate to these higher level solutions to address the issues in combination rather than at an individual level.

Although it is true that the key learning points of the reflexive feedback sessions were the identification of potential issues and solutions related to teamwork and communication, this presents a simplified idea of what was discovered, and indeed what was not discovered, across the five feedback sessions. Understanding the positive discoveries, non-discoveries and discoveries that were expected by the facilitator but were not articulated around the original mapping of the core issues and solutions creates a more accurate depiction of the key outputs horizontally across the sessions.

Although these peripheral outcomes were not directly related to teamwork and communication, more complex mapping of discoveries across all feedback sessions better reflects the potential depth of learning that can be achieved from VRE.

6.3.1.3 Implementation of a new handover structure

Although staff groups successfully abstracted four solutions to the six main issues discovered in the reflexive feedback sessions, there was no clear discussion in any of the feedback sessions about how the potential solutions would be implemented across the unit. Staff in two feedback sessions made reference to the ease of implementation when discussing specific solutions, particularly re-structuring or moving the handover. There were also some individual comments from more senior staff members about how they might implement particular environmental changes into their own practice when leading the handover, but there was no clear pathway for staff to ensure implementation of changes to the handover to attempt to alleviate the issues raised (as raised when considering the acceptability of VRE in Chapter 5).

'The midwife coordinator in particular was quite sure that she would go forward in improving her own practice from that point. She was clearly confident that she would be able to move non-attending staff from the handover area and would have no problem in doing so! Staff did seem to learn about their individual practice as well as collective practices in this feedback session.' [Researcher field notes]

Despite initially being no clear discussion in the reflexive feedback sessions about how any of the solutions could be implemented, as is clearly outlined in Chapter 5, the presence of senior staff members in two of the reflexive

feedback sessions was instrumental in the implementation of the two key solutions across the whole unit. Within two weeks of the final feedback session, the consultant anaesthetists involved two of the feedback sessions met with one of the consultant obstetricians to develop a new handover protocol. Although this protocol was developed spontaneously from the solutions discussed during only these two feedback sessions and occurred prior to any feedback from the facilitator, the protocol focused on restructuring the handover which was suggested at four of the five reflexive sessions. Following the initial meeting between the consultants, one of the consultant anaesthetists developed guidelines for a potential new handover structure to incorporate the two main solutions discussed (see *Figure 6.2* for a diagrammatic representation of the new handover protocol).

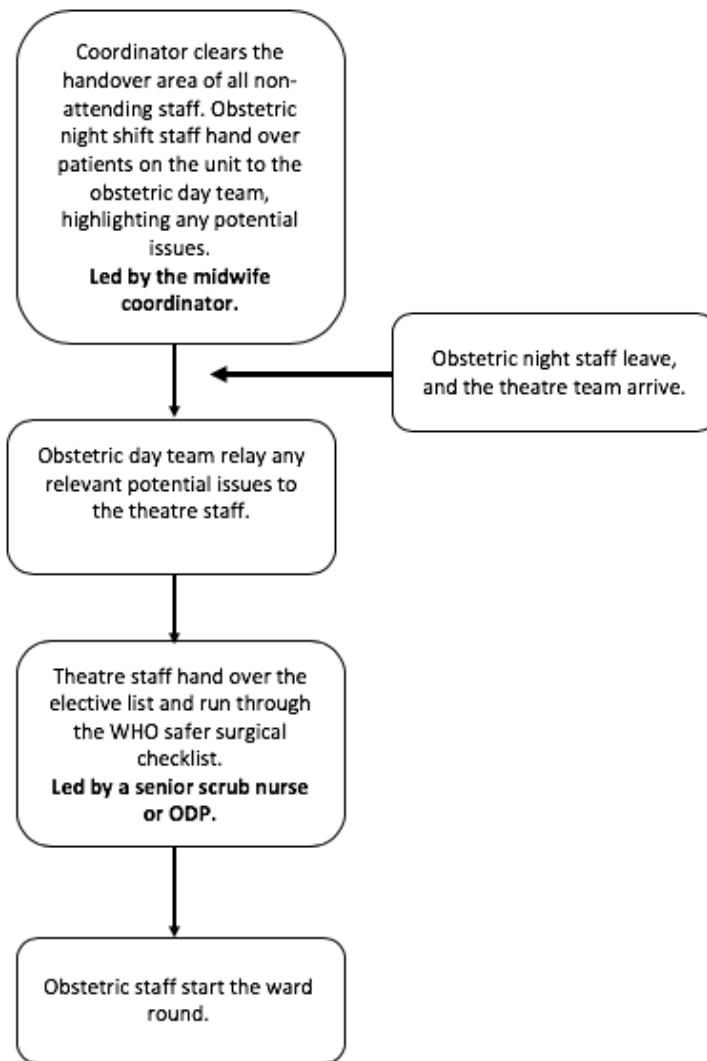


Figure 6.2 A diagrammatic representation of the new handover protocol.

Within three weeks of the final feedback session, this new protocol had been discussed with all members of staff across the theatre team. Positive feedback from these discussions was shared with one of the obstetric consultants, who then shared this with the clinical lead of obstetric services who agreed that the new handover protocol could be run. Within a month of the final feedback session, the new handover structure had been implemented on the delivery suite.

The structural changes made to the handover process primarily allow for better flow of information. Without a clear understanding of any potentially high-risk patients on the delivery suite, it is difficult for the theatre staff to properly prepare the electives list. The way the handover was framed prior to the changes meant that the electives list was presented before the obstetric handover, so the information presented in the electives list often had to be amended. The structural changes also had an impact on staff well-being. Prior to changes, the obstetric night team had to be present for the whole duration of the handover to transfer important information about patients on the delivery suite to the day team. The obstetric handover occurring before the electives list meant that night shift staff could leave once they had handed over to the day team. Furthermore, this created more physical space in the handover area for the theatre team.

It should be noted that the suggested solution involving the removal of one of the tables from the handover area was not implemented, nor was the suggestion that the handover could be moved to a different location. These suggested solutions were fed back to the clinical lead by the facilitator in order that all solutions raised by the staff were shared with the leadership team on the delivery unit.

6.3.1.1 Survey responses

Ninety eight responses to the short post-handover questionnaire (Chapter 4) were completed (n = 57 pre-VRE; n = 41 post-VRE). The means and standard deviations for each group are shown in *Table 6.3*.

Table 6.3 Descriptive statistics for the survey measures.

	Pre-VRE		Post-VRE	
	Give information	Receive information	Give information	Receive information
Mean	2.95	3.93	3.42	4.44
Standard deviation	1.32	0.84	0.88	0.50

Staff reported that they felt more able to raise or contribute to a discussion during handover following the changes to the handover process prompted by VRE when compared to reported scores pre-VRE ($t = 4.15$, $df = 96$, $p < .001$). Staff also reported feeling more confident that the necessary patient information had been transferred during handover to allow themselves and the wider MDT to carry out their roles successfully post-VRE when compared to reported scores prior to any changes in the handover structure ($t = 6.89$, $df = 96$, $p < .001$). The pre-post differences in both cases were significant. The data also shows that the standard deviation in reported scores is reduced for both responses following the changes to handover structure, meaning less variability in responses.

6.3.2 How does VRE lead to learning and improvement in an acute healthcare environment?

Having explored the core outcomes of VRE both qualitatively and quantitatively, research question three has been addressed showing that VRE clearly led to perceived improvement in communication and teamwork at the handover. However, it is now important to address research question four to understand how VRE leads to change and improvement. As an acute service the socio-contextual factors on the delivery suite changed on an

almost daily basis, thus presenting not only different contextual factors under which staff are required to work, but also presenting different contextual factors under which VRE was delivered. With this in mind, evaluation of VRE in the improvement of teamwork and communication at handover in an acute maternity environment could not rely solely on whether VRE led to improvement, but must also explore the contextual factors under which the whole process of VRE occurred. The flexibility of the VRE process, and how this affected the role of the facilitator and the relationships developed with and between staff teams are therefore key to understanding the process and the outcomes. Having explored the core outcomes of VRE primarily through consideration of data from the reflexive feedback sessions, evaluation of the VRE process as a whole must consider the full qualitative data set to understand not just whether VRE worked to prompt improvement, but also how this occurred both specifically within the delivery suite environment, and more generally.

From this analysis of the qualitative data set, I developed a Type 4 logic model to map a novel process theory for VRE (see *Figure 6.3* for the logic model). Although this logic model was developed from the data explored below, presenting the logic model here allows for better understanding of how the data was mapped.

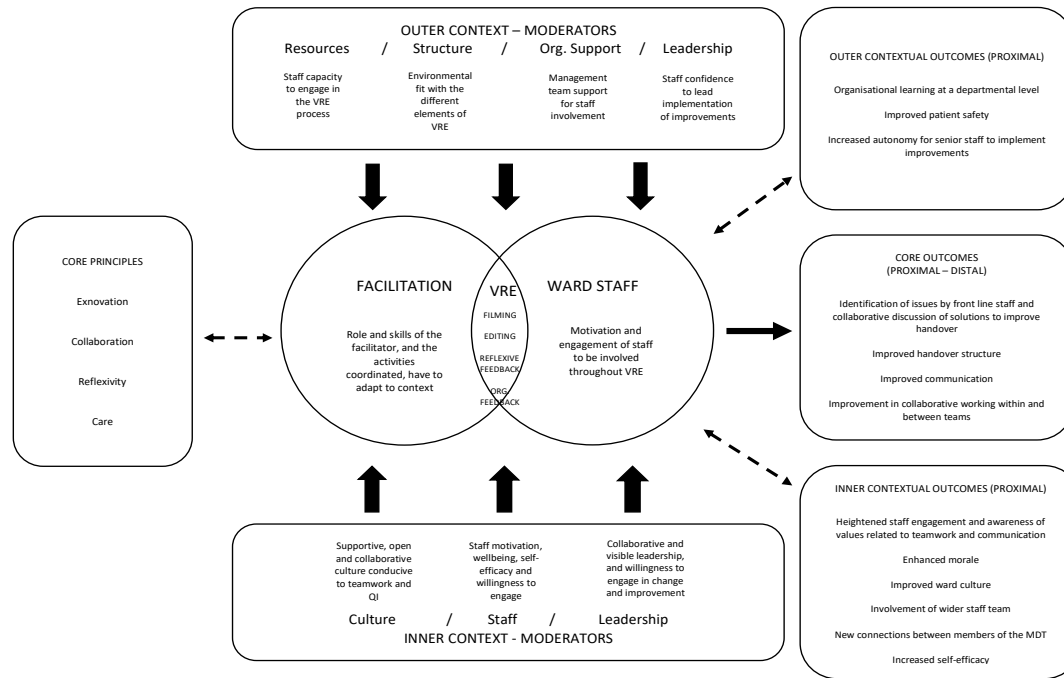


Figure 6.3. A Type 4 Logic Model for VRE. This logic model lists the core mechanisms of VRE (rather than a precise list of activities and resources) to allow for variation in delivery both within and across settings. The model shape has been designed based on the model outlined in Mills et al. (2019) to address the influence of context and complexity on VRE. 1. Roles – The two circles of the Venn diagram convey that the roles and relationships between the facilitator and the ward staff must be adapted to fit the potential fluctuation in the capacity and motivation of ward staff to engage in VRE. 2. Interaction between facilitation and the moderators – We have distinguished between the moderators that exert influence from both an outer context and an inner context. This is important to show the full spectrum of factors that facilitators may need to respond to for VRE to be successfully implemented, by utilising the positive moderators or overcoming the negative. 3. Irregular patterns of proximal outcomes – Core proximal and distal outcomes are those that emerged from VRE being successfully adapted to contextual moderators. Context-dependent proximal outcomes linked to delivery of VRE identify perceived improvements beyond the core remit of the project, in accordance with whether they target the outer or inner context. The dotted lines linking the Venn diagram to these contextual proximal outcomes reflect the peripheral nature of these outcomes. 4. Proximal outcomes influencing success - The double-headed arrows show that the emergence of contextual proximal outcomes can iteratively strengthen the work of the project.

6.3.2.1 The interaction between healthcare staff and facilitators

It was clear when considering the literature prior to the project that the role of the facilitator would be fundamental to the success of the VRE process, not just within the reflexive feedback sessions but also in terms of developing key relationships with staff participants to build trust and promote collaboration. The role of the facilitator was clearly key in the **development of a psychologically safe environment** throughout the research project where staff felt cared for and supported.

'I think, well, it felt really comfortable in those sessions. I think you were really clear in making sure we knew it was a really safe space. We generally all get on I think but it's still nervous, erm -wracking to raise ideas about change or even to be watching yourself with everyone else. I felt like, ermm, I was more open than I thought with my ideas.' [Obstetric registrar interview, OR2]

However this intersection between the role of the facilitator and the relationships with and between the staff team has not yet been considered in terms of how it underpinned the core outcomes outlined above. It was clear from the data that the relationships between facilitators and ward staff adapted over time to fit the motivation, necessity and capacity of ward staff to engage with the different aspects of VRE. The ability of the facilitator to **adapt their role to local context** was a particularly salient positive moderator in successful delivery of the VRE process. The facilitator demonstrating commitment to understanding of, and framing the project within, local contextual factors was clearly evident to the healthcare staff.

The data suggested that the staff were acutely aware of how the role of the facilitator at different points in the project linked to the overall success of VRE as an improvement approach. In particular, staff seemed to value the facilitator developing initial understanding of the local environment and specific contextual factors linked to the main focus of the project. This was not only posited to improve the facilitation of the feedback sessions due to understanding of the general culture on the unit, but also seemed to be amenable to staff in demonstrating researcher willingness to understand them and their working environment. This was viewed positively by staff as a key engagement mechanism.

“It was easier to talk in the feedback sessions because you had seen so many handovers so it wasn’t like we were having to explain simple processes to you. You knew what happened generally and you knew how we worked together on the delivery suite which, erm, well I think understanding how we worked as a team was important in knowing how to sort of run the feedback.” [Consultant Anaesthetist, CA1]

Each stage of the VRE process required different levels of engagement from staff, thus requiring different levels of interaction with the facilitator, but the whole process was collaborative regardless of the level of engagement at any one time.

‘It was as if you were part of the team. The whole way through being there, erm, yeah it made a difference because you involved us all the way through then. What we’re doing or what you’re doing when. Did we have any questions or suggestions. Erm, it wasn’t like normal

research. It was so flexible and based on our needs, team needs.'

[Anaesthetic registrar interview, AR1]

The role of the facilitator and the importance of this role in terms of the relationships built with, and between, staff participants was especially apparent during the reflexive feedback sessions. **Facilitator support** was important in allowing staff to extricate discoveries and solutions from the reflexive feedback sessions, whether via prompting or **creation of a safe and open space** for collaborative discussion. Allowing staff to understand what it is to be reflexive was an important part of the facilitation in each session, and it was important that the facilitator was able to flexibly adapt their level of engagement within the sessions. The process of exnovation, or foregrounding the elements of a daily practice that may be taken-as-given, is fundamental to the learning element of VRE, and it was key that the facilitator was able to flexibly support staff in developing both individual and collective learning about the handover from the footage.

'It was as if I was seeing it from a different perspective. The video obviously, it was like being outside looking in or birds eye, a birds eye view. I was in it but not, I think, well I was seeing how we needed to change things. But then thinking hang on maybe this is better than I thought in the environment. But you put us in the, explained the main focus should be that, should be structure or environment, the bigger things.' [ODP interview, ODP1]

It can be assumed that the core outcomes of the VRE process were therefore prompted not only due to the flexible and dynamic relationships between the facilitator and staff participants, but also the intersection of

these relationships with the four core principles of VRE (care, collaboration, reflexivity and exnovation).

'Reflecting on the interviews and the interview data it is much clearer how the four core principles of VRE that seem quite abstract in the literature are actually key to the staff, and to me and grounding my role properly, not just in the feedback sessions but throughout the project.' [Researcher field notes]

6.3.2.2 The influence of VRE on the core outcomes

The interactions between individual staff, and the staff team as a collective, with specific elements of VRE are important in understanding the core outcomes of VRE as an improvement approach. More specifically, it is important to understand the inter- and intra-individual engagement of staff members with the reflexive feedback sessions. It was evident that the video footage was particularly important not only in prompting the core outcomes relating particularly to structural and environmental change or improvement, but also those at a more social emotional level.

In order to understand the complexities of the dynamic healthcare systems in which they were working, meaning-making (Foley, 2006) was an important process for the staff groups involved in the reflexive feedback sessions. Where each staff member represents an individual component part of the complex system in which they work, the video footage allowed staff to identify structural and environmental patterns at a collective level. Not obvious at an individual behavioural level (e.g. where staff consider or reflect on their own individual handover performance), these more complex

structural patterns create meaning to the specific process under scrutiny (Fogel, 2006). In this case, staff were able to collectively reflect on the more complex systemic meaning of the handover as a vehicle for multi-disciplinary information transfer, and within the context of their daily routine. Collective meaning-making allowed staff to identify any structural patterns that did not align fully or successfully with the intended meaning of the handover itself, therefore prompting discussion of systemic change or improvement.

'You are just in it normally. So seeing the handover was a totally different experience. You suddenly think where does this fit in to the day? or what do we do just before or just after a handover? How might those things affect the handover or be affected by it? You just realise, umm, how important it is.' [Midwife Coordinator interview, MC1]

At a more individual level, successful discussion of change or improvement was contingent on staff members being able to (or being prompted to) engage in perspective-taking or to 'imagine other' (Lamm, Batson & Decety, 2007). The use of video footage allowed staff participants to explore the handover from a third-person perspective (other staff members) as well as at the level of the first-person (individual reflection).

'I was really expecting just to be focused on what I was doing during the handover and the effect of my actions on the handover as a whole. But actually the more of the video we watched, I found myself actually being drawn to watch others [SM: mmhmm] and I think especially the ones not really involved. Thinking about how they were

feeling, you know, were they ok with that or were they wanting to be more involved?’ [Consultant obstetrician interview, CO1]

It was clear in this project that perspective-taking was particularly important at an individual level to consequently drive the discussion of potential improvements from a more empathic collective level.

It can be assumed that the intersection between facilitation of the reflexive feedback sessions and staff engagement is essential in both intra- and inter-individual processes, but also the inextricable links with the four core elements that guide the delivery of VRE. Where the processes of exnovation and reflexivity prompt successful meaning-making, perspective-taking relies on the creation of a collaborative and psychologically safe environment in which staff feel their perspective will be valued.

6.3.2.3 The influence of contextual moderators on the VRE process

The dynamic interactions between facilitators and ward staff were fundamental to the development of the core outcomes of this project.

However, VRE is a complex tool where the need for flexible facilitation and staff engagement over time is contingent on adaptation to specific contextual factors. Moderators that exert influence from an inner, ground-level context and from an outer, organisational-level context have been identified from the data to formulate a more holistic understanding of factors that can particularly affect the intersection of the roles and relationships between staff and the facilitator, and the activity profile of VRE. This represents the full spectrum of moderators that facilitators must navigate for successful delivery

of VRE within an acute healthcare environment, either utilising the positive elements of each moderator or overcoming the negative elements.

6.3.2.3.1 Inner contextual moderators

The inner contextual moderators represent those contextual factors that facilitators must navigate on a more consistent basis during delivery of VRE in an acute healthcare environment. In this project it was clear that **positive culture between staff** of all levels on the unit was conducive to successful and spontaneous collaborative discussion during the reflexive feedback sessions.

'I think I had an idea about the feedback session being a bit like a formal meeting, but actually I came out of it feeling like I'd just been sat having a chat to my mates on the unit, you know, but about handover rather than anything more social. It was nice to feel so relaxed when we were talking about potential issues, erm, it was, well, it just shows how close we all are on this unit.' [Midwife coordinator interview, MC1]

Moreover, a number staff on the delivery suite were openly active in both the patient safety and quality improvement communities, leading to higher levels of engagement with VRE from the outset, thus requiring lower levels of facilitator input for successful delivery of the core mechanisms of VRE.

'The staff in the feedback session today were really clued up on the patient safety and quality improvement literature and research, so their discussions were much more high-level and complex not just about what needed to be improved but down to the whole purpose of the handover itself. I came out of the session and realised I hadn't

really had to interject or facilitate any of their discussion.' [Researcher field notes]

Positive culture was closely linked in this project with staff well-being. Where staff felt more confident that their involvement in the process of VRE would lead to outcomes they perceived to be positive, they were more assured in their willingness to engage in the project over time. It was also apparent that lower grade staff members were initially less motivated or willing to engage in VRE, and required more facilitator input to improve individual confidence in the importance of their engagement in the project.

'I just didn't...well, I didn't consent at first because I couldn't see how my opinion was relevant, but then when you explained that I wouldn't have to feed back in front of everyone and that the idea was to get opinion from staff at all levels, erm, I was persuaded. I think we don't, erm, we don't normally get the space to speak up about things we think aren't great [SM: ok] so this seemed too good to be true initially until I really spoke to you.' [ODP interview, ODP1]

In this project, **leadership** at departmental level was fundamental to bridging the dynamic relationships between the facilitator, the ward staff and the outcomes. Willingness of senior staff to be involved in the process of VRE, as well as their ability to engage staff across the unit in the design and implementation of the new handover process, was a positive moderator in the delivery of core outcomes.

6.3.2.3.2 Outer contextual moderators

The outer contextual moderators represent those contextual factors that facilitators of VRE must navigate at an organisational level. Thus, these

factors often showed more potent interaction with the roles and relationships of and between the facilitator and the ward staff at either end of the process of delivery of VRE. **Organisational support** was a positive moderator in the early stages of the VRE process, not only in the confirmation of capacity and resource for staff involvement in the project, but also in the development of a clear and specific strategy for the focus for improvement.

'The departmental lead was clear from the outset today that the issues she could see at handover were all linked to communication and, by extension, teamwork behaviours. She was really clear about the disjointed nature of the handover, and admitted that because it was generally a high performing unit, improvements were not always prioritised as they should be which she was keen to change.'

[Researcher field notes]

The departmental structure and environmental fit required significant navigation by the facilitator in the early mechanistic processes involved in successful delivery of VRE, specifically the filming of in situ clinical processes such as handover. **Positive structural factors** particularly related to the handover environment allowing all staff to be filmed without capturing footage of any patients on the unit, and provision of private rooms in which to conduct reflexive feedback sessions and interviews. Structural factors to be negotiated more carefully in this project related to the acute nature of the working environment changing rapidly in a short period of time, and the impact of staffing, shift patterns and access to rotas on the arrangement of in situ filming and feedback sessions (see Chapter 5 for more detailed discussion of environmental feasibility).

Finally, **leadership** was identified as an outer contextual moderator, particularly staff confidence in implementing the improvements collaboratively formulated from the reflexive feedback sessions. In addition to senior staff showing willingness to implement change as a ground-level moderator, organisational-level support for staff to show the autonomy required to deliver locally-appropriate improvement at a unit level was positively influential in the success of the VRE process in delivering improvement.

'[CA] is clearly confident that he has support from leadership higher up the organisation to make changes to a daily process without this having to be ratified through a number of channels first.' [Researcher field notes]

6.3.2.4 The influence of contextual outcomes

The core outcomes of VRE are those that will occur if the process is successfully adapted to context. However, there are additional context-dependent proximal outcomes that are linked to efforts to improve the receptiveness of the unit to the delivery of VRE at both an organisational-level and ground-level context. Although these outcomes are peripheral to the core outcomes of the project, the emergence of these contextual outcomes can strengthen the delivery of the project in an iterative manner. This represents a key feedback loop in the VRE process, where proximal outcomes occurring throughout the process of VRE positively affect the motivation and willingness of staff to engage (or indeed re-engage), and the relationship between the facilitator and participants.

6.3.2.4.1 Inner contextual outcomes

Heightened **staff engagement** was inextricably linked to an increased awareness of values related to teamwork and communication occurring over the duration of VRE delivery. As staff involved in the process became more aware of the key factors affecting successful teamwork and communication at the handover, they became more likely to engage in the improvement of these factors through the process of VRE.

'I think even just from speaking to you about it all really, I was more aware of how I was talking to people in handover or even just on the ward. I get on with everyone so it's not even that, just ummm talking about patients and clinical things. I felt like I was better, more aware'

[Obstetric Registrar interview, OR1]

Increasing engagement over time, linked to the dynamic nature of the relationship between the facilitator and ward staff, also led to enhancement of **self-efficacy** in staff members who may originally have lacked the confidence or motivation to engage in the initial stages of VRE. This in turn led to a flexible profile of ward staff engagement across the project.

'I was really nervous about being filmed at the start of the project, but the more I got to know you...while you were on the unit, and the more people talked, erm, talked about how nice you were, I knew I could trust you and wasn't worried you would judge what I was doing. That's why I came back to you after a few days to give my consent really.'

[ODP interview, ODP1]

In addition to the individual engagement profile of staff, **improvement in ward culture** over the duration of the VRE process in turn had a positive

effect on the willingness of staff to engage both individually and collaboratively.

'It became a bit of a talking point really. Not the filming really but nobody ever really asks us what we think about what we do or how we could do things better [SM: ok]. We were all talking about other things we could improve, and just having a bit of a laugh about it too you know, about the videos and the cake table and things' [Midwife Coordinator interview, MC1]

The improvement in ward culture was also linked to enhancement in both collective and individual **morale** on the delivery suite. Development of positive relationships between the facilitator and ward staff, and more notably between members of the ward staff team, not only helped to strengthen collaborative discussions leading to core outcomes, but also improved staff morale within the wider unit team by promoting discussion of the project and more widely discussion of the positive work being done by staff on a daily basis in a challenging environment.

'What was really clear about colleagues who were involved in the feedback sessions was that they were so much more positive about how we work [SM: Ok. In what way?]. I know there is always room for improvement but from talking to them they were shocked at how well handover happens on a daily basis, relatively, in such a poor environment.' [Consultant anaesthetist interview, CA2]

Wider involvement of the staff team prompted by open discussion about the project and the positive influence of highly engaged members of the leadership team helped to create stronger connections between members of

the multi-disciplinary team. This also resulted in better connection and collaboration between natural silos (i.e. the obstetric team and the theatre team) and equalising of perceived hierarchies between staff in leadership positions on the unit and the wider staff team.

'When [CA] came to us to ask about the ideas for restructuring the handover it definitely made us, or at least me, feel way more involved and as if our opinion counted just as much, even if we didn't have the power to change things. In my head I felt part of a team when he did that.' [Scrub nurse interview, SN3]

6.3.2.4.2 Outer contextual outcomes

At an organisational level, the core outcomes of the VRE process in this project led to clear engagement in department-level learning.

Organisational support in the initial stages of the project was a positive moderator in the successful delivery of VRE, improving both the resource and capacity for staff to engage. This support also minimised negative factors that the facilitator had to overcome for successful delivery of VRE, particularly staff concerns about video footage being used for any form of audit or professional judgement. But this initial commitment to developing learning about a specific departmental process signified a more iterative learning profile. Learning about teamwork and communication at the handover occurred at a departmental level during each stage of the VRE process, in turn promoting the importance of engagement and organisational support to prompt further learning.

'Now that staff are aware of the project and how the process of VRE works, I have had so many questions over the last week not just

about getting involved, but about what the salient points coming out of the initial feedback sessions are. Staff seem to understand that learning from this project isn't just for those who are able to participate in filming and feedback.' [Researcher field notes]

Learning also extended to the senior staff in the department who discovered **increased autonomy** for making change and improvement. Although more likely to be involved in collective decision making at a mid-level within the organisational structure of the unit, the team of consultants is extensive and as such operate at different levels of autonomous leadership. Discussion prompted by VRE, and the discussion space provided through the reflexive feedback sessions, resulted in an increasing feeling of empowerment among more senior staff to act on suggested changes almost immediately.

'The discussion just carried on out of the room and I just thought, why don't I just chalk something up? An idea for the change at least and then see where it goes. And I know how it feels as a junior [doctor] especially, you just wouldn't even think about it. I felt I had some power behind me because I already knew people agreed, you know?'
[Consultant Anaesthetist interview, CA2]

Markedly, the iterative nature of departmental learning about teamwork and communication practices between members of the multi-disciplinary team on the unit, and the positive engagement profile of staff of all levels through each mechanism of the complete VRE process, led to wider understanding of the importance of positive teamwork and communication practices. Assimilation of the complex connections between these factors, and a

willingness to implement improvements, manifested in more comprehensive improvements in **patient safety**.

'I was recently in a situation where three patients deteriorated rapidly almost at the same time. One woman was a known risk as she had placenta accreta, and it became clear that we needed to do an emergency c-section. Two of the midwives had also recorded foetal distress in the women they were looking after at that point. We managed to stabilise one of the women by reducing a drug dose, but I was still in a position where I was left with two women needing emergency delivery and only one theatre open. I rang theatre to ask if they would open second theatre but was told that there weren't enough staff so we'd have to deliver one after the other. I knew that would put both baby and mother at risk, so both women were wheeled to theatre on my discretion. The ODP in charge asked me what I was doing and I told him that we were doing both c-sections otherwise we would have a death on our hands so he better find the staff. I didn't think anything of it until later that day when both babies had been delivered safely through quite difficult c-sections. I went to find the ODP and asked how he had managed to open both theatres. He said that he knew me and I wouldn't have been short with him if it wasn't an emergency, so he rang the on call liver transplant theatre team to open the second theatre. I asked how he knew me because we don't really get a chance to interact with the theatre teams, and he said due to the new handover and being more involved in it, he got to know personalities better. Now I make sure I go and eat lunch with

the theatre team at least once a week. [Consultant obstetrician
unstructured discussion with researcher captured from field notes]

Although peripheral to the core outcomes of this project, understanding of these contextual outcomes in conjunction with contextual moderators is vital in informing the application of VRE to alternative contexts, in addition to how the receptiveness of VRE within particular contexts may be improved.

6.4 Discussion

The primary aims of this chapter were to explore whether VRE led to the perceived improvement of teamwork and communication at the multi-disciplinary handover, and if so, what the causal mechanisms of action were. Where the systematic review (Chapter 2) highlights poor reporting in the current VRE literature of the mechanisms through which the process works within different environments and the intersection between these causal mechanisms and successful reported outcomes, this chapter aims to provide a clear link between the core outcomes of the VRE process embedded within the contextual factors that affect these outcomes. The rationale was not only to show whether and where improvement had occurred, but also how improvements had occurred through the implementation of VRE.

To achieve these aims, the following research questions were posed:

- 1) Does VRE improve teamwork and communication at the handover in acute maternity services?
- 2) How does VRE lead to learning and improvement in an acute healthcare environment?
 - a) What is the role of the facilitator in the successful delivery of VRE?

- b) What are the additional mechanisms of action important in the successful delivery of VRE?

As anticipated, the survey data showed changes to the handover prompted by VRE led to clear and significant perceived improvement in elements of teamwork and communication, particularly the confidence to relate salient information during the handover, and the confidence that information received allowed staff of all levels to carry out their shift safely. In addition, qualitative data allowed both core and contextual factors leading to these improvements to be identified and subsequently mapped into a flexible and dynamic Type 4 logic model (*Figure 6.3*). The improvements prompted by VRE in this study, and the suggested mechanisms through which these improvements were made, will now be discussed in relation to the existing literature in order to address both research questions presented above.

6.4.1 Does VRE lead to the improvement of teamwork and communication at the inter-professional clinical handover

VRE led to perceived improvement in elements of communication and teamwork at the multi-disciplinary handover. Considering the quantitative data, communication of essential information was perceived to be better following the implementation of structural changes prompted by VRE. However, the survey used to capture this data was a weak before and after measure so it is impossible to conclude that it was VRE and not the researcher presence that explained the change in scores. As all staff on the unit were aware of the research project, social desirability bias might also have been a factor in scoring following the changes to handover.

Although difficult to draw conclusions from the quantitative data, the qualitative data from the reflexive feedback sessions and researcher field notes identified perceived improvement in the handover process following the implementation of solutions discussed. Data from the feedback sessions and interviews helps us to understand the effect of changes prompted by VRE on improved teamwork and communication during the handover and within the multi-disciplinary team across the delivery unit more generally. This is in line with the current literature that suggests VRE is successful in prompting learning and improvement in acute healthcare environments, not only focused on the handover (Carroll, Iedema & Kerridge, 2008; Iedema et al., 2012) but on a range of daily practices (Collier, Phillips & Iedema, 2015; Hor, Iedema & Manias, 2014).

In accordance with the literature, the reflexive feedback sessions allowed staff a safe space in which to explore and articulate the complexities of the handover and to discover potential issues. For example Carroll, Iedema & Kerridge (2008) suggested that the use of video footage allowed groups of intensivists to appreciate the nature of contributions to handover made by all staff in an intensive care unit (ICU). They also highlighted the way in which staff could attend to the complexities of their work within a fast-paced, multi-purpose and acute healthcare environment, evidenced by the ability of staff to articulate these complexities and the affect they have on their daily practice. Similarly Iedema et al. (2015) identified video feedback as supporting practitioners to realise how current ways of working exacerbated risk of infection. In particular, the holistic in situ view of how staff worked with patients and moved between rooms allowed participating staff to identify potential risk behaviours. The findings of the current study also suggest that

it was the video footage that was important in prompting discoveries, as well as effective facilitation. Interestingly, many of the more environmental discoveries were made quickly when watching the video footage or with reference to a still image of the footage on the screen. The more structural or process driven discoveries tended to be prompted by more protracted discussion about why the handover process happened in a certain way, which was often prompted by collective discussion of the environmental discoveries. It was also evident that spontaneous and collective discussion between staff participants in the VRE sessions also moved beyond what was visible on the screen to their understanding not just of the handover process, but of why the process is structured as it is, of the intentions of attending staff members, and of how this daily working practice can then affect staff and their subsequent working practice. There is little in the current published literature that makes reference to this distinction between the visual image and this more affective dimension of the video footage. Iedema et al. (2019) explore this by separating the concepts of vision and visibility. Where vision is the element of what staff see on the screen, visibility refers to what staff then make of what they see on screen. That is, how does this affect how they feel, think, remember and question the processes that are being made visible to them. The current literature explores a great deal about how staff negotiate vision and use this to understand specific practices and processes in context. The creation of extended narrative accounts of the feedback sessions in combination with interview data from participating staff helps to explore the gaps in the current literature by capturing not just the discoveries and solutions, but also the way in which staff navigated the footage in the feedback sessions and how this made them feel and think differently. The

results of the current study suggest that viewing in situ footage does not just involve seeing what is on screen, but allows staff to see beyond this to understand the consequences of their current work (discoveries) and the opportunities for change (solutions). This is in line with the idea that the video footage acts as a 'hologram', or multi-sensory and dynamic picture of activity situated within environmental, social, cultural and personal contexts (Iedema, Mesman & Carroll, 2013). The findings of the current study suggest that where the discovery of potential issues may be linked more to the visual (that is, what can be seen on screen), the discussion of solutions seemed to arise from the affective nature of the video footage where staff shared and collaboratively discussed more in depth feeling about how the handover could be improved underpinned by their understanding of the quality and safety of patient care and the importance of culture as a foundation for this (that is, staff moved from vision into visuality). In fact, the collective discussion of solutions did not often follow spontaneously from the discovery, but often occurred once all discoveries had been made, suggesting that once staff were aware of the issues they were able to abstract this process driven information to consider umbrella solutions.

The results of this study provide more detailed strength to the evidence base that outlines VRE as a successful in prompting improvement in applied healthcare. However, future work should attempt to provide further strength to this evidence base through implementation of stronger validated measures of improvement. Future work should also look to address the concept of the potential misses that were identified in the analysis of data in

this chapter. These are defined as potential issues that were not explored by staff participants within collective reflexive discussion of the video footage. Although they were not directly relevant within the context of the research questions outlined in this section of the study, it is important that future research explores the potential reasons that staff focus on particular issues at the expense of others, and whether this is a conscious process contingent on the level of importance assigned to each issue.

6.4.2 How does VRE lead to learning and improvement in an acute healthcare environment?

Several factors were identified from the data that were concomitant with the learning and improvement prompted by VRE. Although the current literature is clear in outlining specific individual and collaborative learning, change and improvement elicited by the VRE process, there is little focus on the mechanistic factors. VRE is clearly identified as a way in which the complexity of the acute healthcare environment is transformed from being something to be simplified, to being seen as something staff should acknowledge and engage with (Iedema et al., 2019). However, there is little exploration of how complexity is inherent not just in the environment, but also in the process of VRE and how it might work. Using the qualitative findings to develop a Type 4 logic model for VRE not only allows us to visualise this complexity in a more dynamic and flexible way, but also to represent the importance of context as the foundation of both the process of, and outcomes for VRE as an improvement method.

In accordance with the methodological literature, the current study suggested the four core elements of VRE are essential in the successful delivery of VRE. Iedema, Mesman and Carroll (2013) outline innovation, collaboration, reflexivity and care as the four guiding principles of VRE, and these four principles directed part of the deductive element of the thematic analysis (see Chapter 4 for full details). Data not only suggested that these factors underpinned the flexible role of the researcher throughout the process of VRE, but it also built on the current literature in suggesting that these four core factors were also important to staff. Although staff participants were unaware of these guiding principles, the interview data evidenced the importance of these four guiding principles in the successful engagement of participants in the delivery of VRE. Where these four guiding principles have been reported in the methodological literature to date as principles to guide researchers (Iedema et al., 2019), it is important to understand the role they played here in the intersection between the role of the researcher as facilitator and the willingness and motivation of staff to engage in the process of VRE. The level of facilitation at every stage of the VRE process was deemed important to consider in terms of the successful delivery of the improvement approach. In accordance with the literature, the personal characteristics of the facilitator were recognised as being crucial to the success of the process at all stages. Harvey & Lynch (2017) label the facilitator as the human agent of the implementation process, suggesting that common interpersonal attributes of a successful facilitator are enthusiasm, empathy, flexibility and authenticity. They are clear that interpersonal skills are equally as important in the successful facilitation of improvement or implementation in healthcare as more practical or technical

skills. Acting as the human agent in implementation, the facilitator must, by definition, bring a human element to the process. It is true that there is no one set of interpersonal skills that every facilitator must possess, but that the characteristics of the facilitator meet the demands of their role within context. Furthermore, the literature suggests that interpersonal relationships between the facilitator and participants in the field are key to the foundations of the method of facilitation itself (Carroll & Mesman, 2018), suggesting that the interpersonal characteristics of the facilitator will drive their chosen method of facilitation. Previous research has also highlighted the importance of establishing trust relationships between potential participants and the facilitator (Carroll, Iedema & Kerridge, 2008). The authors suggest that this initial trust building forms important relationships that can engender more rapid social as well as technical or clinical change. This initial trust building provides a platform on which the facilitator can address the affective elements of healthcare practice, giving meaning to and accessing feeling within collective discussions (Heron, 1993).

It is clear from previous research, and from the results of the systematic review in this thesis (Chapter 2), that one of the founding concepts of VRE is that it embraces the complexity of the healthcare environment rather than attempting to simplify it or strip it away (Iedema et al., 2019). Of the most pertinent factors related to the role of the facilitator in the delivery of VRE was the ability of the facilitator to work appropriately within local context. This is in line with the current literature (Carroll, Iedema & Kerridge, 2008; Iedema et al., 2019) which points to VRE as an approach in which both the

participants and the facilitator learn and co-create knowledge about the everyday complexity of care. The results of this study also suggest that understanding of appropriate ways of working within local context was developed primarily in the early stages of the project through meetings with key stakeholders and, predominantly, through periods of focused ethnography. By definition, the foundation of video ethnography methods is that the facilitator spends time within the local environment, interacting with potential participants, in order to know when, what and how to film (Carroll, 2009). Interestingly, the results of this study evidenced that facilitator willingness to understanding of the local contextual factors was also seen as important to staff participants with regard both the practical elements of VRE being delivered more effectively, but also with regard their acceptance of the facilitator as a co-creator within the research project. This suggests that the facilitator spending time within the local environment was assumed to reflect their capacity for empathic understanding of the environment in which healthcare staff are expected to provide care on a daily basis. Thus far, the published literature does not explore the role of the facilitator through either a practical or affective lens. There is no direct understanding of how staff view the role of the facilitator in the current literature. This seems particularly at odds with the literature that suggests the primary role of the facilitator within VRE, as an interventionist and participatory research method, as enabling reflexive and collaborative learning by providing guidance during group discussions, encouraging critical thinking and discussion between participants, and facilitating individuals and teams to scrutinise and challenge their current working practices (Harvey & Lynch, 2017). The co-creation of knowledge in VRE suggests that participants will be a critical

source of understanding about the successful delivery of the process, and specifically about how this can be facilitated both practically and empathically. Future research must take a more exploratory approach to reporting of the methodological aspects of VRE, with particular focus on the role of the facilitator in successful delivery of the process and outcomes.

Where the current study particularly builds upon the VRE literature is in the clear consideration and mapping of the full spectrum of contextual factors that impact on the successful implementation of the VRE process. Although the current literature acknowledges that VRE is a flexible and dynamic process that can be adapted to context (Iedema et al., 2019; Iedema, Mesman & Carroll, 2013), there is no clear reference to how these factors might affect the delivery of VRE or the successful implementation of any change. This chapter has focused on those moderators that could be universally relevant in the delivery of VRE; positive moderators being enablers of the VRE process, and negative moderators being those that may have to be overcome to allow for successful delivery. There is currently little to no exploration of how these moderators can affect the causal process that lead to the core project outcomes.

Although the data provided a clear understanding of the contextual moderators that influenced the delivery of VRE, it is important to consider the processes by which these critical elements allow changes to occur. Leadership was a clear contextual moderator, at both a management level and within the healthcare staff team, particularly in maintaining engagement

among the wider staff over time, and in the implementation of solutions. Positive leadership is linked to better capacity for perspective-taking (Grant, Studholme, Verma et al., 2017). This suggests that leaders who show willingness and capacity to understand the thoughts, feelings and intentions of the wider staff body are better able to support the implementation of change and improvement. Interestingly, although positive leadership is suggested to effect the successful delivery of VRE through the mechanism of perspective-taking, the successful delivery of VRE also seems to prompt better understanding of different perspectives, therefore creating a positive feedback loop through which individual capacity for perspective-taking is improved. This is also in line with the current literature which suggests that positive leadership underpins the elimination of perceived hierarchies within multi-disciplinary healthcare teams (Gordon et al., 2017; Sims, Hewitt & Harris, 2015), where increased capacity for perspective-taking is suggested to flatten hierarchies and dissipate silos. Future studies should explore the capacity for VRE to reduce the perception of hierarchies in inter-professional teams.

Other moderators elicited from the data are less evident in previous literature. Facilitator field notes were key in the elicitation of physical space as a fundamental contextual moderator, specifically linked to the practical delivery of the active elements of the VRE process. Considering social and human geography literature, the concept of 'space' from a theoretical perspective can be dynamically produced and reproduced in numerous ways, from both a practical and discursive perspective (Collier, Phillips &

ledema, 2015). This concept of the reproduction of 'space' suggests that there is an intersection between the practical considerations that ensure video footage captured represents the 'real' elements of practice and the discussion of 'space' as a concept within the reflexive feedback sessions. Specifically the placement of the camera to provide a holistic view of the handover environment as well as capturing the process itself was identified by staff as important in allowing them to abstract themselves from their individual understanding of the handover to explore the process at a more structural level. Practical decisions made in the context of the local environment are suggested to moderate the discovery of issues and collective discussion of solutions, intimating that the way in which the environment as a 'space' is reproduced on screen can moderate the juncture between what is seen and the concept of visibility (MacDougall, 2006).

Team culture was itself identified from the data as a positive moderator. Staff identified team culture as a positive discovery from the video footage, but importantly highlighted positive culture within the multi-disciplinary team as one of the principle factors in successful collaborative discussion of issues and solutions during the reflexive feedback sessions. Edmondson and Mogelof (2006) suggest that positive team culture is intrinsic in developing and maintaining psychological safety, or an environment which is safe for interpersonal risk-taking. This suggests that VRE might effect positive change through the development of, or space to articulate, a shared mental model within the inter-professional team. There are clear links in the literature between the concept of psychological safety and the development

and maintenance of a shared mental model (Edmondson, 1999; Edmondson, 2002; Edmondson & Mogelof, 2006). Moreover, the data suggests that the development of a shared mental model through collective discussion can also effect positive change in staff morale and well-being.

In mapping of these principle contextual moderators, this study has presented a preliminary exploration of the way in which the key processes of VRE affect the delivery of core outcomes. It is important that future research attempts to develop this understanding by exploring both positive and negative mediators of the implementation of VRE in order to create a more holistic understanding of the commonalities and divergent moderators across various healthcare environments.

Where the core outcomes of this project were linked specifically to the improvement of teamwork and communication, VRE as a collective learning process allowed for the delivery of contextual outcomes beyond the core remit of the project. These proximal contextual outcomes can also work to iteratively improve the process of delivery of VRE in some cases.

Organisational learning within the context of this study occurred at a departmental level through the implementation of structural changes to the handover, which cascaded to all multi-disciplinary team members, and management level feedback of the solutions of the reflexive sessions. The current literature suggests that feedback of solutions at an organisational level is a key proximal deliverable of VRE, and often occurs as a pre-cursor to the implementation of change (Iedema et al., 2012). Conversely in this

study, the initiative taken by members of the staff leadership team meant that solutions were implemented prior to feedback of solutions at a management level. In this context, change was prompted by the process of facilitating ownership among participating staff members. Interestingly, in this study, this seemed only to be effected in more senior staff members who are likely to already have an increased level of autonomy within the wider staff group. There is a growing consensus that traditional, top-down understanding of leadership is not sufficient to explain successful leadership within complex organisations (Gordon et al., 2017; Uhl-Bien & Ospina, 2012). In fact, current literature asserts that leadership should be distributed at all levels within a complex organisation to improve the quality of provision and staff morale (Gordon et al., 2017). Exploring healthcare leadership through a complexity lens suggests that leadership is not only boundaried to problem-solvers at an organisational level, but that distributed leadership can be created by the interaction between individual and collective working practice in complex systems (Gordon et al., 2017). Future research should explore whether increased level of autonomy and ownership can be facilitated in staff at all levels, particularly in the implementation of solutions, and how this could be influenced by the relationships between staff developed through collaborative reflexive feedback sessions.

The clinical handover is clearly identified in the literature as a key factor in the development and maintenance of safe patient care (Jeffcott et al., 2009). However where previous VRE studies have reported improvement in communication at the handover (Carroll, Iedema & Kerridge, 2008; Iedema

et al., 2012), there has been no direct exploration of how this may have had a more general effect on safety. Conversely, it was clear from the reflexive feedback sessions that specific staff in this study had a fundamental understanding of patient safety, and these staff members were able to articulate specific examples of how structural changes to the handover had led to clear improvements in patient safety on the delivery suite. Notably, VRE studies which have focused on more discrete working practices link more clearly to the safety of healthcare such as infection control (Hor, Iedema & Manias, 2014) have been able to identify clear connections between improvement in working practice and improvement in patient safety. It is important that future research focused on teamwork and communication should implement measures to explore the links between specific change and improvement prompted by VRE and more general improvements in the quality and safety of care.

Inner contextual outcomes within this study provided more iterative feedback into the process of VRE throughout this study. Heightened awareness of the values related to teamwork and communication at the handover and within the wider multi-disciplinary team was clearly identified by staff as a continuous learning process. This suggested that the increased capacity for perspective-taking is not only limited to staff at a leadership level, but is an inherent mechanism of action of VRE for all members of the inter-professional team. This heightened awareness of the value of teamwork and communication, particularly during the reflexive feedback sessions, could also be linked to increasing involvement of the wider staff team, and an

increasing likelihood of new connections being made between members of the multi-disciplinary staff team through the collaborative nature of the group feedback sessions. Social learning theory (Bandura, 1977) postulates that individual behaviours within social systems are moderated not only by personal attitudes and beliefs, but by observation of the behaviour of others. Where staff were aware of positive attitudes of participants in the VRE process, they may be more likely to consent to participation than during the initial recruitment phase where they have no point of reference.

Staff also reported enhanced individual and collective morale. This was particularly linked to the articulation of positive discoveries during the reflexive feedback sessions which, although not linked to the core outcomes of the project, are important learning outcomes. Iedema et al. (2019) suggests that video footage is a way of allowing participants to view the confluence of context, systems factors and habitual processes. Staff were able to articulate the way in which the intersection of these factors allowed them to navigate the positive elements of their working practices as well as any potential issues. The video footage provides staff a completely agnostic piece of evidence for what actually happens during the handover, reflecting their work as done (WAD). In contrast to work-as-imagined (WAI) - an idealised view of what should be done which disregards how work is adapted to local context – WAD describes what actually happens and how processes occur over time, particularly within complexity (Hollnagel, Wears & Braithwaite, 2015). The concepts of interconnectedness and non-linearity associated with complexity theory represent the ‘normal operating

conditions' of modern day healthcare (Gordon et al., 2017; Pslek & Greenhalgh, 2001), and thus reflect the increasing levels of dynamism and flexibility required for healthcare staff to work successfully within their local environment. The increasingly intractable local environments in which healthcare professionals are expected to work mean that WAD differs significantly from WAI. Current approaches to healthcare improvement often attempt to strip away the complex and dynamic conditions in which staff are expected to provide high quality and safe healthcare in an attempt to create standardised protocols or guidance. The data in this study suggests that, although this might lead to clarity about the way in which work should be done, that staff morale and positive team culture are actually improved by a better understanding of how daily work is normally completed successfully within complexity. Rather than humans as the liability within a system, performance variability is often identified as reason things 'go right'. Hollnagel, Wears and Braithwaite (2015) suggest that to reflect the increasing complexity of modern day clinical work, research should consider that which is real, or WAD, as opposed to WAI. Furthermore, the literature shows clear links between staff well-being and improved quality and safety of care (Hall, Johnson, Watt et al., 2016) so interventions that have the capacity to improve individual and collective morale are important in the future of successful health services research.

6.5 Limitations

Limitations of this element of the study include the very weak survey measure used to capture perceptions of communication at the handover before and after VRE. Although there was a relatively large sample size

relative to the maximum population size, the survey measures were not validated which limits the conclusions that can be made. In addition, the self-report nature of the interviews meant that the factors discussed might be open to subjective interpretation by both the participants and the researcher.

6.6 Summary

This aspect of the study reported the core outcomes of VRE as an improvement approach, and modelled an initial process theory to guide future users of VRE in how to adapt the delivery of the improvement approach to context. The findings support the current literature in demonstrating the successful implementation of change and perceived improvement following the delivery of VRE in an acute healthcare environment. Furthermore, they provide a novel lens on understanding the contextual barriers and facilitators for the successful delivery of VRE, and how this process might be adapted to context. The findings of this aspect of the study emphasise the need for further exploration of the delivery of VRE within different contexts, focusing specifically on adding to the initial process evaluation modelled in this chapter.

6.7 The next chapter

The next chapter presents the general discussion of the research presented in this thesis. The final chapter presents a general summary of the research findings, and explores the implications of the work, the recommendations for future research and the limitations of the thesis.

Chapter 7

General Discussion

The primary aim of the research was to evaluate the use of video reflexive ethnography as an improvement approach targeting teamwork and communication at the acute inter-professional maternity handover.

Furthermore, understanding how relationships between the core VRE process, the context in which it is delivered and the observed outcomes was explored in this work.

In recent years the importance of improving the quality and safety of maternity care in the NHS has been placed at the forefront of both political and organisational agendas and public awareness. The research presented is particularly timely in light of the findings of the Kirkup Report (Kirkup, 2015) which has dominated much of the maternity improvement agenda for the last three years. The importance of this research is further illuminated by the subsequent NHS England National Maternity Review (Better Births, 2016) which recognised that the improvement of inter-professional communication and working across boundaries is imperative to promote higher quality and safer patient care. It also suggests that, in order to maximise quality and safety, organisations should promote a culture of learning and improvement.

The research took a mixed-methods approach in an attempt to generate a rich understanding of the observed improvements prompted by VRE and the underpinning mechanisms enabling change. This chapter first presents some more general reflections about undertaking applied health research in an acute NHS setting, followed by reflexive considerations, the key findings of each section of the research, and the implications of these findings with reference to potential future directions. Finally, the limitations of the research are outlined.

7.1 Reflexivity

Reflexivity is a concept that forms the foundations of this thesis. It is generally defined as the capacity to systematically attend to the context in which knowledge is created throughout the research process. As the majority of this study was framed within a qualitative methodology, reflexivity is fundamental in allowing researchers to question and justify their own research practices (Pillow, 2003). Although, by definition, reflexive considerations of elements of the VRE process, study method and measurement of outcomes have been embedded into the individual study chapters, there are some overarching concepts that warrant further discussion.

The nature of this project required me to position myself as both a researcher and a researcher-as-facilitator. Using VRE as an improvement approach meant that I became embedded in the local care environment as a researcher-as-facilitator, however the aim of the thesis being to evaluate this

process meant that at times in the project I had to remove myself from this role, and identify solely as a researcher. This creates the need to reflect on features that could have influenced the data produced.

I am not a clinician or healthcare professional nor do I have any experience in the provision or delivery of maternity services. Healthcare professionals may therefore have viewed me as independent and naïve, and consequently may have felt more comfortable opening up to me, particularly during the interview process, as well as being assured throughout the process that I could be trusted not to deliver any form of professional judgement or audit. I consciously aimed to frame myself as a student with no clinical experience from the beginning of the project to put staff members at ease, and to create a sense of psychological safety throughout the project. I hoped that, by framing myself in this manner, it would ensure that staff would be open and candid throughout the reflexive feedback sessions and interview process. Conversely, it is possible that my lack of clinical understanding may have resulted in specific 'blind spots' throughout the research process. However, guidance was sought from independent clinicians where necessary to reduce the likelihood of my lack of clinical understanding as a barrier to the successful delivery of the research project.

Although I was initially able to position myself as a naïve researcher within this environment, the period of familiarisation required as a precursor to filming when considering the delivery of VRE as an improvement approach meant that I became immersed within the team on the delivery suite.

Through my daily attendance at the handover, and more general presence on the delivery suite during this period, I built strong working relationships with the staff team, as well as developing a good understanding of the handover and its position within daily working practice. Inevitably, it is possible that this period of relationship building meant that I was invested in the successful delivery of VRE as an improvement approach due to my immersion within the healthcare team and environment in my role as researcher-as-facilitator. This sat as a juxtaposition to my role as an independent researcher evaluating VRE as an improvement approach within an acute healthcare environment. Although the success or otherwise of VRE as an improvement approach could not be affected in any way, it was important to continue to cast a critical evaluative eye on the process itself. The strong relationships built with staff during this time may also have conversely meant that staff were less likely to be honest about any issues with VRE at the interview phase. This made the multiple qualitative data sources even more important in the final evaluation of VRE as an improvement approach.

This positional juxtaposition meant it was important for me to understand my role at each stage of the project; whether that be researcher-as-facilitator or independent researcher. For clarity I delineated my own reflexive field notes in this way to ensure I was mindfully stepping back from my role as facilitator during the evaluation process. This personal delineation between the two roles became important towards the end of the study, conversely when relationships with staff were at their strongest. During the interview phase of

the study it was particularly important to remain objective when questioning staff on their opinion of VRE as an improvement approach. I consciously aimed to position myself as an objective researcher, independent of the improvement approach, during this process. This was also the case during the process of transcription and data analysis. Having facilitated the improvement approach, it was important to be able to objectively reflect on my role as facilitator and the effect this had, as well as the levels of engagement of the staff and any limitations or potential improvements that could have made VRE more feasible, acceptable or successful in this context.

In addition to my juxtaposed role as researcher and facilitator, it was also important to be mindful of a similar conflict of position for the clinical supervisor on the project. As a consultant obstetrician on the delivery suite, he was instrumental in the initial relationship building stage with the wider staff body, and in maintaining enthusiasm and engagement in the project throughout. However, his clinical role also meant that he was involved in the research as a participant. Having been involved from the early discussion stages of the PhD project, it was also important to consider his in depth understanding of VRE and the evaluation of the process as an improvement approach, particularly during the reflexive feedback sessions. Although it was not supposed that this understanding would bear any particular effect in this part of the project due to his keen focus on quality improvement, we decided against his involvement in the interview phase of the study to limit any bias in this data.

7.2 Summary of findings

There is a large body of work that acknowledges the importance of effective communication and teamwork both within and between professional silos in the delivery of high quality and safe patient care (e.g. Mills, Neily & Dunn, 2008; Rosenstein & O'Daniel, 2008). There is also evidence to suggest that VRE is a successful approach in the improvement of communication and teamwork in acute healthcare (e.g. Carroll, Iedema & Kerridge, 2008; Iedema et al., 2012). The current evidence assessing the success of VRE with acute hospital-based inter-professional teams appears to be of generally poor quality, therefore the initial review attempted to synthesise this evidence alongside evidence of alternative methods of prompting team reflexivity in a systematic manner.

7.2.1 Key findings of the systematic review

The review identified three key methods of team reflexivity: VRE, simulation training and reciprocal peer review. There was only one reviewed paper that reported on reciprocal peer review and so it was difficult to draw any conclusions about the general quality of published literature in this area.

Although video reflexivity was identified as one of the two key components of VRE (alongside video ethnography), reflexive discussion or debrief was generally an addition to simulation training programmes. The majority of the reviewed literature (53% of reviewed studies) focused on the improvement of specific clinical skills including rather than more general communication or teamwork practices or processes.

While the aims of team reflexivity across all reviewed studies was consistent, research was extremely variable in terms of measurement, design, methods of analysis and quality. Simulation training studies all employed quantitative outcome measures generally comparing the proficiency of inter-professional teams when performing specific clinical procedures before and after intervention. Specific measures of improvement in NTS such as teamwork and communication included the Oxford Non-Technical Skills (NOTECHS) (Robertson, Hadi, Morgan et al., 2014) system, and the Observational Teamwork Assessment for Surgery (OTAS) (Undre, Sevdalis, Darzi et al., 2009). The reviewed literature that focused on simulation training was generally of high quality. However, where team reflexivity was embedded within simulation training, outcomes relating to teamwork and communication tended to be secondary to the main study outcomes. The limitations of healthcare improvement approaches that attempt to reduce or strip away complexity are increasingly well recognised. Embedding NTS training into these approaches is suggested to address the increasing inter-disciplinarity of healthcare as a key element of complexity theory (Hull, Arora, Aggarwal et al., 2012), but they are still problematic as they simplify the complex environmental factors inherent in healthcare provision.

VRE studies all based conclusions about practice improvement on qualitative data. The data was generally gathered from researcher field notes and the reflexive feedback sessions that are a key component of the VRE process, although some studies employed additional interviews with staff participants (Collier, Phillips & Iedema, 2015; Hor, Iedema & Manias,

2014). However, the reviewed literature evaluating VRE was generally of poor quality due to poor reporting of the analytic methods employed, as well as poor reporting of the methodological components of VRE and how these were adapted to local context. The review concluded that, given the shift in focus to viewing healthcare through a complexity lens, improvement approaches that address more general improvements in contributory patient safety factors such as VRE are successful in generating more contextually appropriate solutions. However, the quality of reporting of the method of VRE (and how this is adapted to specific local contexts) and the methods of analysis specifically of data from reflexive feedback sessions requires improvement if such conclusions are to be accepted more widely beyond the scope of this review. The development of a novel framework for preparation and analysis of data from the reflexive feedback sessions, and the mapping of an initial process theory to provide guidance on the contextual factors that might influence the delivery of VRE with an acute healthcare setting, in this study present initial attempts to fill some of these reporting gaps.

As anticipated, the review found that limited research had explored the application of team reflexivity to prompt improvement of teamwork and communication in inter-professional hospital-based healthcare teams. Furthermore, there has been little focus on using team reflexivity to improve elements of teamwork and communication in inter-professional maternity teams, in spite of suggestions that improvement is required (Better Births, 2016; Kirkup, 2015). This resulted in the PhD research focusing on the potential influence of team reflexivity in maternity services – the only acute

healthcare environment where this improvement approach had not been explored – to address this knowledge gap.

The majority of the reviewed studies had been carried out in Australia and the USA. As healthcare provision and healthcare systems show extensive variation between Australia, the USA and the UK, this review reinforced the importance of exploring team reflexivity as an improvement approach in the UK. This is important to ensure that evidence-based recommendations are appropriate for implementation in a UK NHS setting.

A limitation of the review was that it was difficult to compare the effect of team reflexivity as an embedded concept with team reflexivity as a sole improvement approach. This was due to difficulty in being able to delineate the effect of team reflexivity on improvements in teamwork and communication from the effect of the general intervention where team reflexivity was embedded within a wider improvement approach. However, the relatively poor quality of the literature exploring team reflexivity as a sole improvement approach meant that it would have been difficult to draw conclusions about the effectiveness of team reflexivity based on this literature alone. This research study aims to improve the quality of reporting of the methods of delivery of VRE, the mechanisms of action within local contexts and the analysis of data gathered through exploration of the key contextual factors affecting the delivery of VRE within an acute maternity unit, and the exploration of a novel framework of analysis.

7.2.2 Key findings relating to feasibility and acceptability

Several factors were identified relating to the feasibility and acceptability of implementing VRE in an acute healthcare environment. These findings provide a novel lens on the delivery of VRE, as the systematic review highlighted that feasibility and acceptability had received no attention in the published VRE literature. This is despite the potential complexities of the process being delivered in situ within the complexities of modern healthcare. Factors relating to the feasibility of practically implementing the VRE process were; laying the groundwork, practicalities of an effective process of consent, agreement to be filmed, the reflexive feedback session and power to change. Factors relating to the acceptability of implementing VRE within an inter-professional maternity team were; staff feelings about VRE and changing perceptions.

Participants particularly discussed the importance of the researcher-as-facilitator becoming embedded into the healthcare environment and showing willingness to understand the locus of care. This notion of the researcher-as-facilitator becoming embroiled in the local complexities of care prompting sustained staff engagement through the development and maintenance of trust relationships supports the limited previous research exploring the process of delivery of VRE (Iedema et al., 2019).

One of the challenges of implementing this approach in the current NHS climate was the lack of availability of staff and the difficulties in getting multi-disciplinary teams together to engage in the reflexive feedback sessions.

This may have been exacerbated by a nervousness amongst staff to have these discussions in the presence of those people who they felt were more senior to themselves. A flexible approach to the delivery of VRE moderated this effect to some extent, although the difficulty in bringing larger inter-professional groups together in reflexive discussion might have had implications for the discoveries made, the solutions discussed and the choice of which solutions were implemented.

These findings add support to the previous literature which, although it has made no formal reference to measures of feasibility and acceptability, suggests that VRE can be successfully delivered within acute healthcare environments (Carroll, Iedema & Kerridge, 2008; Hor, Iedema & Manias, 2014; Iedema et al., 2012) and that staff are amenable to the process and the potential for change and improvement it provides (Iedema et al., 2019). Better reporting of the potential facilitators and challenges to the delivery of VRE within different applied healthcare settings in this study, and future studies, provides strength to the suggestion that VRE can be successfully delivered across healthcare settings. Reporting of feasibility and acceptability in the published literature also provides clearer guidance to potential researchers or facilitators about the issues they may need to consider when delivering the process in situ.

7.2.3 Key findings relating to the improvement approach

Survey findings provide evidence of improvement in specific elements of handover communication - namely confidence in being able to share

appropriate clinical information and confidence in the receipt of an appropriate level of clinical information to enable safe working – although it is acknowledged that the survey is a weak before and after measure. However, the quantitative measures were supported by positive perception of change captured within staff interviews. These findings add support to the previous literature suggesting that VRE can be a successful improvement approach in acute healthcare environments, and are foundations on which to address the knowledge gap regarding successful implementation of VRE in acute maternity services.

Although the current literature suggests that VRE can lead to change and improvement, there is a particular gap in the knowledge of how this approach works and can be applied in context (outlined in Chapter 2) that is not answered by a simple outcomes based approach. The current research study addressed this gap in the literature through the mapping of an initial process theory which identified the key contextual factors identified as potential barriers or facilitators to successful implementation. This provides guidance to researchers on the factors that may need to be adapted for successful delivery in different healthcare settings.

Some of the more novel contributions to the literature that arose from this study related to the direct effect of contextual moderators on the successful delivery of the core processes and outcomes. The continued engagement of staff participants over time was found to be contingent on the concept of distributed leadership. Leadership is important for supporting the initiative

and getting it off the ground, but a more distributive leadership where everyone feels that they have a role to play is important in supporting continued engagement and willingness to adopt the improvement strategies. In addition, the effectiveness of distributed leadership throughout the staff body was contingent on a supportive culture that was conducive to both research and quality improvement at an organisational and unit level. Although this is in line with the wider quality improvement literature that posits the importance of positive safety culture in the implementation of change (Morello, Lowthian, Barker et al., 2013), this is an important contribution to the VRE literature as it provides evidence-based information to detail the importance of the more general concept of context in the successful delivery of VRE.

Consistent with the aim of understanding the mechanisms of action of VRE to effect change and improvement, differentiation between core proximal and context-dependent distal outcomes of VRE in this study represent a novel contribution to the literature. The systematic review of the current literature (Chapter 2) highlights poor reporting of the process and analytic methods of VRE, which is reflected in a varied approach to the reporting of core outcomes. Interestingly, there is little reference to more distal outcomes in the current literature, and no clear distinction between core and contextual outcomes. These findings are particularly salient within the wider context of health services research, as contextual outcomes highlighted in this study include improved staff morale, improved ward culture and improvement in

patient safety resulting from the process of VRE and the changes made to the handover.

7.3 Implications and recommendations

There are substantial implications arising from this research relating to the generation of new knowledge, the development of theory, and the implications for research, practice, theory and policy.

7.3.1 Implications for research

In terms of implications for research, broadly speaking, the findings highlight some key areas where it may be beneficial to focus efforts in an attempt to develop the process theory proposed here. Much of the current literature suggests that VRE, with its' often dual purpose as an improvement approach embedded within a wider research study, is well placed to prompt locally-appropriate solutions to potential issues through embracing the complexities of the local environment (Iedema et al., 2019; Iedema, Mesman & Carroll, 2013). Although healthcare is widely accepted as a complex adaptive system (Hollnagel, Wears & Braithwaite, 2015), many current improvement methods don't fit with or recognise complexity. Rather than embrace the complexity of what is actually done (WAD), the focus within the improvement literature still relies on methods based on what people think they do - or work as imagined (WAI). Approaches to improvement that attempt to impose structure on the system include simulation training. Although the literature collated in the review (Chapter 2) suggests that simulation training can be effective in improving specific clinical processes, the wider body of literature suggests that removing the inherent complexities under which staff work

daily is not representative of the conditions under which these processes would be applied in situ (Iedema et al., 2019). It is acknowledged that although there is a place in health services research for the implementation of a Safety I approach to improvement, there must be increased focus on a Safety II approach, or in the case of this research, an increased focus on improvement tools that embrace and reflect the complexities of care.

The modelling of an initial process theory within this project makes an important and meaningful contribution to the VRE literature. Although there is clear understanding of the fundamental principles that guide VRE (Iedema et al., 2019), there is a need for better understanding of the mechanisms of action by which VRE is successfully delivered in context, including perspective-taking and increased ownership and autonomy. Where most health services research focuses on the outcomes of improvement methods, implementation science suggests that we also need to adopt process evaluations to help us understand how specific effects or outcomes occur (Mills, Lawton & Sheard, 2019). In establishing potential facilitators and barriers to the successful delivery of VRE at both a unit and organisational level, this research begins to address some of the mechanisms of action by which VRE works in situ.

7.3.2 Implications for theory

The research adds to theory by identifying and recognising the specific role of context as a contributor to the core processes and outcomes of VRE.

Furthermore, when considered in relation to the resilient healthcare approach (Braithwaite, Wears & Hollnagel, 2015), the research

demonstrates that by providing a completely agnostic piece of evidence for what actually happens, VRE captures work-as-done in its true, unfiltered sense. In addition, complexity theory and the resilient healthcare literature suggests that safe and high quality care occurs when healthcare staff use their tacit knowledge and understanding of the local ecology of care to adapt to specific problems (Hollnagel, Wears & Braithwaite, 2015). At the core of VRE is reflexive scrutiny of this agnostic evidence of working practice, meaning VRE is well placed as an effective improvement method to target the quality and safety of patient care.

The research findings clearly demonstrate the importance of the roles and relationships of the researcher-as-facilitator and the healthcare staff participants as co-creators of knowledge throughout the VRE process. Although it is acknowledged that there has been a general shift towards a 'participatory zeitgeist' in health services research (Palmer, 2020), there are still inherent weaknesses in the level of participation or engagement of stakeholders within methods posited as participatory. For example, experience based co-design (EBCD) is a popular participatory method in healthcare improvement, drawing upon design theory in order to bring together key stakeholders (for example healthcare staff, carers and patients) to improve the quality of healthcare provision (Donetto, Pierri, Taianakas et al., 2015). The process is characterised by a period of interviews or focus groups intended to gather staff and patient experiences, followed by a co-design meeting and small co-design teams within which ideas for improvement are discussed. There are relative similarities with VRE, in that

stakeholders within an EBCD project work together to identify priorities for improvement, and subsequently design and implement changes. The use of 'trigger' films (often reflecting patient narratives) to prompt discussion between stakeholders is also key in the EBCD process. Challenges associated with this method include the perceived and actual distribution of power between different participating groups in the implementation of change or improvement, particularly between patients as service users and healthcare staff as service providers (Donetto et al., 2015). There is also particular challenge in designing improvements based on individual or group narratives, which aligns more with the WAI paradigm than WAD. The participatory research literature suggests that, within a complex adaptive system such as healthcare, research should aim to mobilise the tacit knowledge of agents of the system. In short, any improvement approach must be done 'with' people rather than 'to' people (Iedema et al., 2019). Although EBCD falls into the category of a participatory method, there is little attempt to capture the complexity of the healthcare environment within the engagement profile. As with other more traditional approaches to quality improvement in healthcare, EBCD could be argued to strip the complexity of the care environment away during the improvement process (Iedema et al., 2019).

Conversely, in the capture of in situ practice, VRE is positioned as a progressive participatory approach, embracing and reflecting the daily complexities of healthcare provision through the use of in situ video footage (Iedema et al., 2019). As opposed to the time-intensive collection of

qualitative data to explore staff and patient experiences in the initial stages of EBCD, the familiarisation process and video recording characteristic of the early stages of VRE are relatively efficient. Accelerated EBCD (AEBCD) – which relies on the use of archived footage of patient experiences - addresses this to a certain extent (Locock et al., 2014), and the use of national films rather than those pertaining to the local NHS Trust has been argued to have the potential to make the process less threatening. However, this once again moves EBCD towards a WAI paradigm, rather than considering WAD as a basis on which to develop ideas for quality improvement. The participatory element of VRE comes in mobilising the tacit knowledge and understanding of stakeholders who occupy the immediate locus of care (Iedema, Mesman & Carroll, 2013) to explore ideas for change and improvement. However, as with EBCD, the distribution of power between different participating individuals or groups must be managed, not only between patients and healthcare staff, but also within healthcare staff teams in line with the literature identifying the influence of professional silos and hierarchies as potential barriers to effective communication (Flin & Patey, 2009; McComb & Simpson, 2014).

Both participatory approaches to healthcare improvement rely on foregrounding of experiences to prompt meaning-making (Bate and Robert, 2007a), and assigning primacy to the experiences of individuals and groups in shaping the environments they inhabit (Robertson and Simonsen, 2013). Where the focus of EBCD tends to be on re-design of specific practical concerns, VRE allows participants to consider WAD more holistically, the

video footage not only allowing exploration of areas of potential improvement, but prompting awareness of why healthcare provision most often 'goes right'. EBCD therefore facilitates collaborative re-design of practical elements of healthcare provision, whereas VRE focuses on creating a space for spontaneous discussion of healthcare provision prompted more by the visual representation of work as done. VRE can arguably then arguably be considered as a more progressive and truly participatory approach to health services improvement, opening up a black box of potential on which other participatory methods can build.

7.3.3 Implications for policy

In the context of the Kirkup Report (Kirkup, 2015), and the resultant *Better Births* report (2016), the findings of this research have addressed some of the key recommendations of the reports. Both reports called for improvement in communication within inter-professional maternity teams (Better Births, 2016; Kirkup, 2015) and the Kirkup Report (Kirkup, 2015) suggested the introduction of measures to improve inter-professional working in maternity services to improve the quality and safety of care. Perceived improvement in the quality of inter-professional clinical communication prompted by VRE was a key outcome of this research. Furthermore, VRE was identified as an improvement approach with the potential to prompt inter-professional collaboration, leading to unexpected contextual outcomes which included perceived improvement in the collective morale and culture on the unit.

A key focus of the NHS Patient Safety Strategy (2019) is to maximise things that go right within healthcare systems and organisations. It is here where the present research contributes greatly, by suggesting a potential methodological lens through which healthcare professionals can access an un-filtered account of how things go right, and learn from it. With respect to the understanding that knowledge co-creation is central to VRE, there are some key take home messages arising from this thesis. Given the dominance of the Safety I approach to safety management within the NHS, is it time to embrace more progressive, participatory methods of improvement as a way to develop understanding of the mechanisms of mobilising tacit knowledge to understand and learn from how work is done well (Safety II).

Nevertheless, at an organisational level, it is important that re-focusing on progressive participatory methods of improvement is considered fully. There is widespread acknowledgement that understaffing and increasing complexity has led to an increase in pressure at all levels within the NHS. It is imperative that any improvement approach that requires staff participation, to any degree, is sensitive to such pressures. The potential benefit of any participatory improvement approach should be offset against the potential risks it may cause.

7.3.4 Implications for practice

The reported success of VRE as a participatory approach to healthcare quality improvement requires consideration of the implications for implementation, and under what conditions VRE would be recommended.

In the context of this study, VRE was framed as an improvement approach to address a specific issue (namely teamwork and communication at the multi-disciplinary handover) identified by senior clinicians on the unit. This is in line with the wider body of literature, in which VRE has been implemented to improve specific concerns identified prior to the process itself (Carroll, Iedema & Kerridge, 2008; Hor, Iedema & Manias, 2014; Iedema et al., 2012). However, the literature also suggests that VRE could be delivered successfully at an earlier point in the improvement pathway, not only in the identification of specific improvements to pre-defined issues, but to the identification of such issues as a preliminary stage in the process (Collier & Wyer, 2016; Iedema, Mesman & Carroll, 2008). In fact, considering VRE as a progressive participatory improvement approach, and with the understanding that the premise of VRE is to mobilise the tacit understanding of those who occupy the most central locus of care (patients or healthcare staff), the application of VRE could be best placed as a more holistic approach, capturing WAD through video footage, and allowing staff and patient participants to identify key areas for improvement without any primary guidance at an organisational level. That said, it must be noted that, when working within large healthcare organisations, any changes to policy, working practice or working environment will always involve a certain level of organisational input or sign-off.

Considering this study alongside the wider body of literature, the potential for delivering VRE is widespread across numerous facets of healthcare. Many

of the seminal VRE studies have been delivered within acute healthcare environments (Carroll, Iedema & Kerridge, 2008; Iedema et al., 2012; Iedema et al., 2019), often the most complex and demanding of environments in which to deliver improvement or research interventions. However, as outlined in Chapter 2, review findings suggest that the literature does not adequately explore any limitations to the delivery of VRE in such acute environments. Findings from this study show that, although VRE is generally acceptable to staff, the successful delivery seemed to be conditional on continued staff engagement, considerable engagement on the part of the facilitator in the early stages, and the involvement of well-liked often senior staff members to prompt and maintain engagement over time. The growing focus on VRE as an improvement approach and research method has also seen successful delivery within palliative care (Collier, Sorensen & Iedema, 2016), theatre teams (Hor, Hooker, Iedema et al., 2017) and general medicine (Iedema & Carroll, 2011; Wyer, Iedema, Hor et al., 2017) although there is still little understood about the practicalities and feasibility of delivery in these environments, especially when considering the involvement of patients.

Implications for practice must also take into account the cost-benefit of any improvement approach and, especially within complex healthcare environments, the time requirements of such an approach at both an organisational and individual level. Where VRE is used primarily as an improvement approach, the monetary and time costs are relatively low. The main monetary costs would cover the video recording equipment and the

video editing software, although the increasing prevalence of often high-fidelity simulation training within healthcare teams means that many healthcare organisations will already be equipped with video recording capabilities. However, the consideration of time cost must take into account the longevity and purpose of the delivery of VRE as a quality improvement approach. As in this study, in which the improvement approach was delivered to address a specific pre-defined issue with the aid of an independent facilitator, the time cost for staff was low; staff were only required to participate in one reflexive feedback session lasting approximately one hour. The presence of an independent facilitator also meant that there were no extraneous time costs to the organisation involving video editing, running of reflexive feedback sessions, and dissemination of potential ideas for improvement. That said, VRE has also successfully been implemented as a long-term, continuous quality improvement approach in a large teaching hospital in the Netherlands (Mesman, 2016). Initial time costs were considerably higher here, where staff were trained in effective filming, editing and reflexive facilitation techniques. However, regular quality improvement cycles resulted in locally-appropriate improvement in the quality and safety of care, linked to cost saving within healthcare organisations.

Although the cost-benefit ratio would differ particularly based on the target of improvement, VRE has been identified as a successful and acceptable participatory quality improvement approach which addresses WAD to mobilise the knowledge of those working and using services on the front line

to effect change. It could then be cautiously posited that any initial costs of setting up VRE would be offset by successful, locally-appropriate and potentially continuous improvement cycles responsive to the complex and rapidly changing caregiving environment. However, future studies must continue to critically explore the methodological considerations of VRE within different healthcare environments before any strong conclusions can be made about how this process can best be implemented.

7.3.5 Recommendations

Although the delivery of VRE, as a complex intervention, is expected to be flexible, the development of an initial process theory allows for a set of general recommendations to guide the way in which future users of VRE adapt it to context:

1. *Flexible facilitation* – The facilitator is the key agent in ensuring the delivery of VRE as an improvement approach is adapted to context. The facilitator must have a basic understanding of the local context in order to enable this flexibility, preferably developed through a period of focused ethnographic observation.
2. *Practical flexibility* – Decisions about the practical nature of VRE delivery within context (camera selection, camera placement, filming process, reflexive feedback sessions) can only be made following the period of focused ethnography. These decisions should also be made in collaboration with key stakeholders and staff participants.
3. *Engagement* – The development and implementation of any change or improvement is contingent on the development and maintenance of relationships with staff participants. The relationships must be

adapted over time to respond to the changing demands of the VRE process and the dynamic and flexible nature of healthcare provision.

4. *Adaptation to context* – The facilitator must be able and willing to adapt the delivery of the VRE process to context. Understanding of facilitators and barriers to the delivery of each element of the core process should be considered prior to the delivery of the improvement approach through the process of focused ethnography and discussions with key stakeholders.
5. *Implementation* – The facilitator must develop a strategic process for the implementation of change or improvement in collaboration with key stakeholders and staff participants.
6. *Flexible outcomes* – In addition to the core outcomes of successful delivery of VRE, the facilitator should be aware of the potential for context-dependent outcomes.

7.4 Future directions

Some more specific suggestions for future research will now be considered.

First, further studies focused on VRE as an improvement approach with inter-professional teams are advocated, as the provision of healthcare across all sectors is becoming increasingly inter-disciplinary. It is important to continue to develop understanding of the ways in which the delivery of VRE might be adapted to context. Therefore, future research ought to continue to explore the delivery of VRE across healthcare contexts and teams to provide support, and add to, the general process theory that has been modelled in this thesis.

Future research should also endeavour to monitor the implementation of any change associated with the delivery of VRE to enable the sustainability of change and improvement to be examined. Efforts should be made to better link change and improvement to patient safety and the quality of care provision, to provide a clearer evidence-base on which to base reported success in a healthcare context. Furthermore, there is argument that more robust evaluation of the application of VRE across healthcare environments is required to provide strength to the current literature positioning this as a successful way of implementing change and improvement. Following the recent MRC guidelines for the evaluation of complex interventions, this research study is clearly a Phase I study focused on modelling of specific components of VRE and the underlying mechanisms by which VRE effects outcomes. Suggestions within the MRC guidance suggest that this is only the first stage in a full evaluation of VRE as a complex intervention in healthcare. Future evaluation studies should not only aim to build on the modelling phase as proposed here, but should move to the process of exploratory trials and larger scale randomised controlled trials to allow comparison of VRE as a complex participatory approach to healthcare improvement versus alternative approaches (for example, experience based co-design).

The current literature, and the results of this research study, suggest that VRE is feasible, acceptable and successful in prompting change and improvement in small studies (involving one or two main wards or

departments), but there is need for continued evaluation of whether VRE could be implemented more widely within healthcare as an improvement approach. Seminal work by Mesman (2016) suggests that VRE can be implemented more widely within a single organisation as a continued improvement method. Nonetheless, it is important to consider the high level of individual and collective staff engagement required to successfully implement VRE throughout an organisation, and the different demands of the UK health service compared to that of the Netherlands in the current climate.

7.5 Limitations

The specific limitations of individual parts of the study have been discussed in previous chapters. This section of the thesis will explore the broader limitations of the research.

With the research project focusing only on a single maternity unit within a single NHS site, the findings can only be generalised to this population and not across all units or healthcare organisations. Additionally, within this single unit, not all staff members involved in the clinical handover were involved in the study. Staff participants therefore provided assessment of elements of teamwork and communication which also related to staff who were not involved in the project. That is, this study only captured the perception of teamwork and communication within the inter-professional handover team for the group of staff involved in the project, and not the

overall unit team. Changes to the handover were also based only on the perception and input of the small group of staff participating in the reflexive feedback sessions. There is evidence to suggest that issues with inter-professional communication and teamwork may arise from differences in the way healthcare professionals are trained to communicate (Foronda, MacWilliams & McArthur, 2016) and professional hierarchies or silos. Therefore the quality and level of the communication or teamwork may not be the issue, but it may be a difference in how staff expect inter-professional communication and teamwork to happen. This is particularly important to consider to ensure that any changes implemented are appropriate within the wider healthcare team. This reinforces the rationale for a continued focus on how VRE can best be delivered with inter-professional teams of healthcare professionals within different healthcare contexts.

Finally, the delivery of VRE required the researcher-as-facilitator to become embroiled within the local care environment. This was to allow the co-creation of knowledge for the researcher and participants to occur in parallel throughout the study through the development of trusting professional relationships with staff participants. The researcher-as-facilitator thus becomes invested within the local care environment over time, and as such develops their own ideas about what might need to be changed or improved. Where only a single researcher is embedded in situ as in this project, facilitation of the core outcomes could be subject to researcher bias (Mays & Pope, 1995). This is particularly important to consider to ensure that any fundamental decisions about the process of VRE or the implementation of

change are not built on the subjective interpretation of a single researcher. Within this study, we aimed to mitigate potential researcher bias through regular discussions about the process of data analysis with the wider supervisory team (RL, JOH, LS). In addition, discussions about salient contextual factors affecting the process of delivery of VRE were discussed within the wider supervisory team and with the clinical supervisor on the project (DW).

7.6 Conclusions

In conclusion, the research was successful in accomplishing the main aim; to evaluate video reflexive ethnography to prompt improvements in teamwork and communication at the inter-professional handover on an acute maternity unit. Specifically, there are four key take home messages from this work:

1. VRE is both feasible and acceptable as an improvement approach in acute healthcare.
2. The successful delivery of outcomes is contingent on adapting the delivery of VRE to local context.
3. The role of the facilitator in being able to adapt the process to context is key in the successful delivery of VRE.
4. Future work should attempt to explore further evidence-based evaluation of VRE.

Most importantly, the research has added to our understanding of video reflexive ethnography as an improvement approach, and our understanding of the potential mechanisms of action through which VRE might work. This

research study has also led to the development of a logic model which provides guidance about the different ways in which the process might have to be adapted to context when delivered in future.

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NB: * denotes article included in the systematic review

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Appendix A: Full search strategy for the systematic review

Database: Ovid MEDLINE(R) <1996 to 2016>

Search strategy:	
1	reflexiv* (3174)
2	video ADJ1 feedback (247)
3	ethnograph* (6438)
4	critical reflect* (705)
5	peer assessment* (MeSH 'peer review, healthcare') (1210)
6	simulation* (MeSH 'simulation training/mt, og) (448)
7	1 OR 2 OR 3 OR 4 OR 5 OR 6 or 7 (11853)
8	hospital ADJ1 team* (213)
9	multi-disciplinary team* (1734)
10	ward* (MeSH 'health personnel/ed, og, px, st, td') (11497)
11	hospital ADJ1 unit* (7209)
12	hospital ADJ1 department* (16213)
13	hospital* (MeSH 'Hospital-patient relations/ or Medical staff, Hospital/ or Hospital-physician relations/ or Nursing staff, Hospital/ or Personnel, Hospital/ or Hospital Communication Systems (43215)
14	9 OR 10 OR 11 OR 12 OR 13 OR 14 (77664)
15	8 AND 15 (585)

Database: PsychINFO <2002 to 2016>

Search strategy:	
1	reflexiv* (6327)
2	video ADJ1 feedback (356)
3	ethnograph* (19449)
4	critical reflect* (1699)
5	peer assessment* (MeSH 'exp Medical Education/ and exp Peer Evaluation/) (47)
6	simulation* (186)
7	1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7 (27057)
8	hospital ADJ1 team* (38)
9	multi-disciplinary team* (258)
10	ward* (MeSH 'exp Hospitals/) (13153)
11	hospital ADJ1 unit* (372)
12	hospital ADJ1 department* (220)
13	hospital* (MeSH medical personnel/ or health personnel/) (14480)
14	9 OR 10 OR 11 OR 12 OR 13 OR 14 (27498)
15	8 AND 15 (473)

Database: CINAHL <1990 to 2016>

Search strategy:	
1	reflexiv* (MeSH 'Reflexivity (Research)) (145)
2	video feedback (373)
3	ethnograph* (MeSH 'Ethnographic Research/AE/ED/EV/MT/OG/ST') (54)
4	critical reflection (473)
5	peer assessment (105)
6	simulation training (370)
7	1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7 (1160)
8	hospital team* (26)
9	multi-disciplinary team* (201)
10	ward* (MeSH 'MH "Hospital Units") (4837)
11	hospital ADJ1 unit* (27)
12	hospital ADJ1 department* (27)
13	hospital* (259400)
14	9 OR 10 OR 11 OR 12 OR 13 OR 14 (259731)
15	8 AND 15 (132)

Database: Cochrane Library <1990 to 2016>

Search strategy:	
1	reflexive (136)
2	video ADJ1 feedback (30)
3	ethnograph* (170)
4	critical reflection (325)
5	peer assess* (6093)
6	simulation (7408)
7	1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7 (13849)
8	hospital ADJ1 team* (148)
9	multi-disciplinary team* (389)
10	hospital ward* (6482)
11	hospital ADJ1 unit* (319)
12	hospital ADJ1 department* (244)
13	9 OR 10 OR 11 OR 12 OR 13 (7119)
14	8 AND 14 (636)

Database: ISI Web of Science <1990 to 2016>

Search strategy:	
1	reflexiv* (22412)
2	video*feedback (8723)
3	ethnograph* (44150)
4	critical reflect* (4603)
5	peer assessment* (1758)
6	simulation training (2850)
7	1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7 (74396)
8	hospital team* (308)
9	multi-disciplinary team* (5859)
10	hospital ward* (3388)
11	hospital unit* (8072)
12	hospital department* (6683)
13	9 OR 10 OR 11 OR 12 OR 13 (23947)
14	8 AND 14 (141)

Database: PubMed

Search strategy:	
1	reflexiv*
2	video feedback
3	ethnograph*
4	critical reflect*
5	peer assessment* (MeSH terms - exploded)
6	patient simulation* (MeSH terms - exploded)
7	1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7 (18147)
8	hospital team*
9	multi-disciplinary communication* (MeSH terms - exploded)
10	hospital ADJ1 ward*
11	hospital ADJ1 unit*
12	hospital ADJ1 department*
13	hospital (MeSH terms - exploded)
14	9 OR 10 OR 11 OR 12 OR 13 OR 14 (477734)
15	8 AND 15 (1085)

Appendix B: Systematic review data extraction information

General Information:

- Bibliographic details
- Publication type
- Location of research
- Quality assessment score

Overall study information:

- Study aims
- Care setting
- Rationale
- Time period for study
- Inclusion criteria
- Exclusion criteria
- Sample selection
- Sample size
- Appropriateness of sample
- Data collection methods
- Role of researcher
- Data analysis methods
- Researcher bias
- Limitations
- Outcomes
- Themes
- Conclusions
- Generalisability
- Implications
- Future research

Reflexive component of the study:

- Sample size undergoing reflexive component
- Aim of reflexive feedback session
- Reflexive method used
- Form of facilitation
- Main outcomes of reflexive component of method

Appendix C: Key points of all articles included in the systematic review

Author and year	Study setting	Team type	Reflexive method used	Main data collection methods	Main outcomes (Hard and soft outcomes differentiated)	Aim of reflexive feedback session	Facilitation of discussion	Main outcomes of reflexive feedback session
Allan, Thiagarajan, Beke et al. (2010)	24-bed dedicated paediatric cardiac intensive care unit (ICU). USA	Paediatric cardiac intensive care teams; Nurses (n = 127) Cardiology, cardiac surgery & cardiac critical care fellows (n = 44) pCICU attending physicians (n = 6) Respiratory therapists (n = 2) Nurse practitioners (n = 3)	Simulation based crew resource management (CRM) training	Quant. pre- and post-course evaluation questionnaires	Hard outcomes Course scored highly on usefulness and realism. After the course participants reported higher confidence and lower anxiety about involvement in future code events. Participants reported increased likelihood of reporting inappropriate management of code events.	Exploration of efficacy of teamwork and adherence to CRM during the simulated resuscitations. Discussions of medical management.	Video-based debriefing facilitated by nurses and physicians trained in facilitation.	Participants reported feeling more confident in participating in or leading future resuscitation events following exploration of issues raised in debriefing.

					Soft outcomes			
					None reported.			
Aveling, Martin, Garcia et al. (2012)	Lung cancer teams in 30 NHS hospitals. UK	Lung cancer teams with a minimum requirement of; A clinical lead (physician) A clinical nurse specialist An MDT coordinator	Reciprocal peer review	<i>Qual:</i> ethnographic methods (observations, interviews)	Hard outcomes Five key features to optimise reciprocal peer review identified; peers & pairing method, minimising logistic burden, structure of visits, independent facilitation and credibility.	Peer-supported generation of locally-appropriate solutions to issues.	Soft outcomes Discussion structured to include direct peer-to-peer discussion, then discussion within teams, then feedback to/from the paired team, steered by an independent facilitator.	Health care practitioners (HCPs) involved could discuss strategies for improvement with peers and identify ways in which improvements could be made.
					Soft outcomes Reciprocal peer review generally a positive experience for participants. Implementing improvement plans challenging and requires			

substantial support.

<p>Carroll, Iedema & Kerridge (2008)</p>	<p>ICU in a tertiary referral and teaching hospital. Australia</p>	<p>ICU teams including trainee specialists, specialist intensivists, nurses and allied health professionals (AHPs).</p>	<p>VRE</p>	<p><i>Qual:</i> ethnographic methods (video footage, observations)</p>	<p>Hard outcomes Changes to the ward rounds and planning meetings within 2 weeks of the reflexive feedback session. The ward round was split in two to reduce the burden of communication which raised the medical presence on the ground and enhanced interprofessional communication. The daily planning meeting was moved from immediately after the ward round, freeing time for staff to discuss clinical priorities for the</p>	<p>Visualise the purpose, length and complexity of clinical meetings, and to allow clinicians to articulate the complexities of the clinical communications, and identify solutions to such challenges.</p>	<p>Facilitation was via the primary researcher, who asked questions developed through coding of the original video footage.</p>	<p>Ward round and daily planning meetings were restructured and new documentation system was implemented.</p>
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					morning.			
					A daily worksheet enabling organised review of each patient was finalised and distributed.			
					Soft outcomes			
					Watching footage of own practice had dramatic effect on how own practice is experienced.			
Falcone, Daugherty, Schweer et al. (2008)	Paediatric trauma unit in Level 1 paediatric trauma centre. USA	Paediatric trauma teams including; Paediatric surgeons (n = 11) Emergency medics (n = 7) Surgical residents (n = 72) Nurses (n = 60) Critical care fellows (n = 4)	Simulation training	Quant; pre- and post-training scoring of trauma simulations by independent reviewers on specific	Hard outcomes Significant improvement in overall performance as determined by the percentage of possible appropriate and timely care measures achieved. Evidence of improvement in airway	Formal debriefing following video review of trauma simulation. Emphasis on team performance and	There is no discussion about the level of facilitation.	Immediate improvement as a result of feedback during debriefing in all groups between first and second scenario scores.

		Paramedics (n = 2)		scoring scale.	management, initial	communication.		
		Respiratory therapists (n = 4)			trauma assessment,			
		Average team of around 6 members.			cervical spine			
					precautions and pelvic			
					fracture recognition and			
					management as scored			
					by two blind reviewers.			
					Improvement was			
					shown for teams			
					progressing from their			
					first to second simulated			
					scenario after debrief.			
					Soft outcomes			
					Teams in the later			
					groups scored			
					significantly higher than			
					early teams due to			
					improvement in culture			
					over time.			
Fransen, Ven,	Obstetric unit	Multi-professional obstetric	Simulation	<i>Mixed:</i> video	Hard outcomes	Feedback on	There is no	Team training
Schuit et al.		teams including	training	footage,	The composite outcome	teamwork and	discussion about	associated with

(2012)	Netherlands	gynaecologists/obstetricians, secondary care midwives and/or resident nurses.	VRE	feedback sessions, Clinical Teamwork Scale (CTS).	of obstetric complications didn't differ between study groups. Team training reduced trauma due to shoulder dystocia and increased invasive treatment for severe postpartum haemorrhage.	the application of medical technical skills.	the level of facilitation.	higher Clinical Teamwork Scale score.
Hor, Iedema & Manias (2014)	Two general ICUs in a major metropolitan teaching hospital.	ICU staff including senior and junior doctors, senior and junior nurses, medical and nurse managers, ward clerks, receptionists and AHPs.	VRE	<i>Qual:</i> ethnographic methods (interviews, video footage, observations)	Hard outcomes Two solutions were developed targeting two open spaces where activities were often interrupted unsafely. Nurses created a new policy restricting interruptions whilst	To think about how the spaces in their unit impacted on their communication practices with one another, and identify	Facilitated by the researcher, who primed the participants, showed them video clips, and directed discussion using pre-defined open-	Staff adopted two spatial solutions after devising them in focus groups.

					working at the controlled drug cupboard. Doctors moved their X-ray rounds into a new protected space to limit noise and interruptions.	solutions.	ended questions.	
					Soft outcomes			
					Clinicians use space to manage the complexity and safety of their work.			
					The manipulation of space is a case of creating spaces for use through policies, temporary barriers and behaviours.			
Iedema, Ball, Daly et al. (2012)	Emergency departments (ED) of two large teaching hospitals (one	Paramedics and emergency department medics and nursing clinicians.	VRE	<i>Qual:</i> ethnographic methods (focus groups, video footage,	Hard outcomes Uptake of new IMIST-AMBO protocol for non-trauma and trauma handovers. This led to a	To form and articulate views about what is essential information	There is no discussion about the level of facilitation.	What essential information needs to be communicated during ambulance

	metropolitan, one regional).			observations)	greater volume of information per handover that was more consistently ordered, fewer questions from ED staff, reduction in handover duration, and fewer repetitions by paramedics and ED clinicians.	needing to be communicated, critical process steps to be included in handover, and context characteristics to be maintained.		to ED handover, what critical process steps should be included in a new protocol, and what context characteristics should be maintained.
	Australia				Soft outcomes There was an overall increase on agreement in perceived handover improvement post- intervention.			
Iedema & Carroll (2011)	Acute outpatient spinal clinic in a local metropolitan teaching	Multi-disciplinary care team including doctors, nurses, occupational therapists, physiotherapists, dieticians, social workers and peer	VRE	<i>Qual:</i> ethnographic methods (interviews, video footage,	Hard outcomes Systems redesigned following viewing of project footage. Delays or cancellations in	To enable clinicians to develop a discourse about existing	There is no discussion about the level of facilitation.	Staff-led redesign of existing ways of working within the unit.

hospital.

support workers.

observations)

surgery targeted by

practices and

putting in place an

processes, and

alternative pathway

enabling staff to

Australia

involving an agreement

rethink and

to move patients to a

redesign existing

neighbouring hospital.

ways of working.

Detours in infection

control were pre-empted

by involving the infection

control nurse more

closely in scrutinising

infection control

practices.

Soft outcomes

Clinicians were able to

articulate problems that

had thus far not been

articulated, and through

that, identified ways of

tackling problems.

<p>Iedema, Hor, Wyer et al. (2015)</p>	<p>ICU and mixed surgical wards in two metropolitan teaching hospitals. Australia</p>	<p>107 nurses, 44 doctors, 9 AHPs and 17 administration and cleaning staff.</p>	<p>VRE</p>	<p><i>Qual:</i> ethnographic methods (interviews, video footage, observations)</p>	<p>Hard outcomes Design of site-specific solutions for future transfer of MRSA-colonised ICU patients through the ward. Soft outcomes Individuals became more aware of theirs and others' care practices.</p>	<p>Allow clinicians to consider infection control practices from different perspective, and articulate solutions to potential issues.</p>	<p>Facilitation of feedback session by researcher using open ended questions and prompts.</p>	<p>Identified previously unrecognized risk in own practice. Formulated safer ways of dealing with infection risks.</p>
<p>Iedema, Long, Forsyth & Lee (2006)</p>	<p>Acute outpatient spinal pressure area clinic in a local metropolitan teaching hospital.</p>	<p>Medical, nursing and allied health staff working in the outpatients unit.</p>	<p>VRE</p>	<p><i>Qual:</i> ethnographic methods (video footage, observations)</p>	<p>Hard outcomes A decrease per patient admission from \$198,000 to \$42,000. An overall reduction in spending of \$600,000 over three years, despite almost double the</p>	<p>To allow clinicians to identify previously unrecognized environmental risk factors.</p>	<p>There is no discussion about the level of facilitation.</p>	<p>Redesigning of practices and processes following production and discussion of process map.</p>

	Australia					number of patients treated.		
						Soft outcomes		
						Video data allowed the infection control clinician to identify previously unrecognised environmental risk factors. Production of a process map allowed staff to pinpoint the most common sources of team tensions.		
Iedema, Merrick, Rajbhandari et al. (2009)	ICU Australia	Multi-disciplinary teams of healthcare practitioners. Make-up of the teams unspecified.	VRE	<i>Qual:</i> ethnographic methods (video footage, observations)	Hard outcomes New staff to be oriented to the use of electronic resources used during handover to record and organise patient information.	To address the strengths and weaknesses of ICU handover practices.	A researcher was present at the meetings to facilitate the discussion, answer questions and point to issues identified through	Articulation of insights about improving handover practices, at both a specific and systemic level.

					Soft outcomes		non-participant observation.	
					Staff in the unit have developed an interest in and an ability to discuss handover in meta-discursive terms; abstracting the discussion away from the here and now and creating new common ground.			
Lehner, Heimberg, Hoffmann et al. (2017)	Paediatric trauma unit Germany	14 physicians including paediatric surgeons, paediatric intensivists, emergency medics and anaesthetists. 4 paediatric nurses.	Simulation training	<i>Mixed:</i> Video footage, debriefing, pre- and post-course evaluation surveys.	Hard outcomes Overall the simulation course received a very positive evaluation. The detailed debriefings were also positively rated. Feedback within the debriefing was found to be important and applicable to the clinical	Discussion of key factors relating to CRM learning objectives following simulated scenario.	Facilitated by two-person, interdisciplinary and multi-professional instructor team.	Feedback within the debriefings important and applicable to the clinical routine.

routine.

Soft outcomes

Feeling of individual improvement was reported across almost all categories of medical problems. Perceived improvements were also reported in non-technical skills.

Patterson, Geis, Falcone et al. (2013)	Paediatric emergency department USA	All personnel who respond to medical or trauma team activations in emergency department resuscitation bay including; Physicians 51% Nurses 32% Paramedics 4% Respiratory therapists 3%	Simulation training	<i>Mixed:</i> observation and video recording to score NTS, online survey.	Hard outcomes Rate of LST identification improved post-simulation training from 1 in every 7 simulations, to 1 in every 1.2. No visible improvement in scores on the ANTS behavioural scale over	Self-assessment and group assessment of performance. Identification, evaluation of and solutions to challenges. Identification of LSTs by	Facilitated debriefing.	Primary outcome measure was the number and types of LSTs identified during the in situ simulations identified during feedback.
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		Patient care assistant 4%			time.	facilitator and/or		
		Other 7%			Soft outcomes	team members.		
					78% of staff reported the training as valuable, although 77% reported little or no clinical impact.			
Patterson, Geis, LeMaster et al. (2013)	Level 1 paediatric trauma centre. USA	All healthcare providers in emergency department including; Faculty and staff physicians Nurses Respiratory therapists Paramedics Patient care assistants Medical residents	Simulation training	<i>Mixed:</i> patient safety knowledge assessments, SAQ Teamwork and Safety Climate version, a modification of the Behavioural Markers for Neonatal Resuscitation	Hard outcomes A sustained improvement in knowledge scores over baseline, with scores immediately post-intervention significantly higher than those at the 10-month retest period. There was a significant improvement in attitudes and culture post-intervention. The number of PSEs on the	Group assessment of team performance as well as identification and suggestion of solutions to any challenges encountered.	Debriefing was facilitated by one of the researchers, and included group assessment of team performance as well as guided review of the simulation video.	Healthcare practitioners develop teamwork and communication skills, and develop the confidence in those skills.

				Scale, filming of simulations and ED resuscitations.	unit reduced from 12 in 5 years to 2 in the 7 years since the beginning of the project.			
					Soft outcomes			
					Participants ranked the value of the training highly.			
Ross, Anderson, Kodate et al. (2013)	Tertiary hospital trust providing a range of specialist older persons services. UK	HCA, nurses, physiotherapists and medical staff involved in the provision of elderly care.	Simulation training	<i>Mixed:</i> observations of the programme, confidence rating scales and follow-up interviews with staff.	Hard outcomes Staff self-confidence scores improved significantly after human-patient simulation and ward-based exercises. Soft outcomes Observations showed enjoyment of the course but some apprehension about the simulation	Aim was to focus reflexively on NTS in clinical practice.	Facilitated by clinicians and trained professionals. 45-minute debrief for every 15-minute scenario, structured around descriptive, analysis and application phases.	HCPs involved benefited from increased self-confidence following simulation training, as well as learning about teamwork and patient care.

environment. Interview
data showed perceived
learning about teamwork
and patient care.

Appendix D: Quality assessment scores for all articles included in the systematic review

Appendix E. Quality Assessment Tool (QATSDD) scores for all reviewed papers (scores range from 0 – 3)

Citation Number	Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7	Item 8	Item 9	Item 10	Item 11	Item 12	Item 13	Item 14	Item 15	Item 16	Score	%
46	3	3	3	3	3	3	3	1	0	3	N/A	3	3	N/A	1	3	35/42	83%
39	3	3	1	2	3	3	2	2	N/A	N/A	3	3	2	2	0	3	32/42	76%
25	3	2	3	0	0	3	3	0	N/A	N/A	3	0	0	0	0	2	19/42	45%
40	2	3	1	0	3	3	2	1	3	3	N/A	3	3	N/A	1	3	31/42	74%
47	3	3	2	3	3	3	1	2	1	3	N/A	3	3	N/A	0	3	33/42	79%
36	3	3	1	0	1	3	3	0	N/A	N/A	3	0	0	0	2	3	22/42	52%
37	3	3	1	0	2	3	1	3	0	3	3	2	1	0	3	3	31/48	65%
41	3	2	3	0	0	3	2	0	N/A	N/A	1	0	0	0	1	2	17/42	40%
38	2	2	0	0	2	2	3	1	N/A	N/A	2	1	0	0	2	3	20/42	48%
42	2	2	3	0	0	3	3	0	N/A	N/A	2	1	0	0	1	2	19/42	45%
43	3	2	0	0	0	3	3	0	N/A	N/A	3	1	0	0	2	2	19/42	45%
44	2	3	0	0	1	2	0	0	0	3	N/A	3	1	N/A	0	3	18/42	43%
45	3	3	3	0	2	3	3	2	2	3	2	3	2	0	0	3	34/48	71%
48	1	3	2	0	2	3	3	1	3	3	N/A	3	1	N/A	2	3	30/42	71%
49	3	3	1	0	2	2	2	1	2	3	3	3	1	1	0	2	29/48	60%

- Item 1: Explicit theoretical framework
- Item 2: Statement of aims/objectives in main report
- Item 3: Clear description of research setting
- Item 4: Evidence of sample size considered in terms of analysis
- Item 5: Representative sample of target group of a reasonable size
- Item 6: Description of procedure for data collection
- Item 7: Rationale for choice of data collection tool(s)
- Item 8: Detailed recruitment data
- Item 9: Statistical assessment of reliability and validity of measurement tool(s) (Quantitative studies only)
- Item 10: Fit between research question and method of data collection (Quantitative studies only)
- Item 11: Fit between research question and format and content of data collection tool e.g. interview schedule (Qualitative studies only)
- Item 12: Fit between research question and method of analysis (Quantitative studies only)
- Item 13: Good justification for analytic method selected
- Item 14: Assessment of reliability of analytic process (Qualitative studies only)
- Item 15: Evidence of user involvement in design
- Item 16: Strengths and limitations critically discussed

Appendix E: Full interview schedule for all staff participants

Interview Schedule for Staff Interviews – Involved in VRE

To start off, what drew you to be involved in the VRE project?

- Why did you want to be involved?

What were your initial thoughts/feelings about VRE when you were recruited?

- Was there any element you were particularly concerned about?
- Was there anything that particularly interested you initially?

Could you tell me about the VRE process from your perspective?

- Which elements of the process were you involved in?
- Were there any elements you particularly enjoyed?
- Were there any elements that you did not enjoy?

Could you tell me how you felt about the process of being filmed?

Could you tell me more about the reflexive feedback session from your perspective?

- Was there anything that could have been done differently?

Have your feelings about VRE changed?

Could you tell me about the process of implementing changes following the reflexive feedback sessions?

- Were you involved in the process of implementing change?
- How did you feel about your involvement/lack of involvement?

Finally, do you have any specific comments about the VRE process that you feel you would like to offer before we finish?

Interview Schedule for Staff Interviews – Not Involved in VRE

To start, were there any specific reasons you would like to talk about that meant you were not initially involved in the VRE process?

- Why did you not want to be involved?
- How did you feel about not being involved?

Could you tell me more about your initial thoughts/feelings about VRE?

- When did you first hear about the project?
- Did you have any initial concerns?
- Was there anything that particularly drew you to the project?

How have your feelings about VRE changed?

Could you tell me about the changes that have been implemented to the handover?

- Were you aware of any of the issues raised or the solutions discussed in the reflexive feedback sessions?
- Were you consulted on any of the changes implemented?
- Did you discuss the reflexive feedback sessions with any staff who were involved?

Finally, do you have any specific comments about the VRE process that you feel you would like to offer before we finish?

Appendix F: Participant information sheet



UNIVERSITY OF LEEDS

Using video-reflexivity to improve multi-disciplinary handovers in teams of acute healthcare professionals.

You are being invited to take part in the above research project. Before you decide whether

or not to take part, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask me if there is anything that is not clear or if you would like more information. You are able to take time before you decide whether to participate in this research project.

The purpose of the project

Video-reflexivity is a method that involves video-recording daily practices in situ, followed by a feedback session in which participants are encouraged to engage in group discussion about the values, behaviours and attitudes that underpin these practices. Video-reflexivity has been acknowledged in the currently literature as a promising method in staff-led improvement of daily healthcare processes involving teamwork and communication, particularly clinical handovers (Carroll, Iedema & Kerridge, 2008; Iedema, Mesman & Carroll, 2013). There is a clear link between successful teamwork and communication, and improved quality of patient care (McCulloch, Rathbone & Catchpole, 2011). This highlights the importance of developing interventions that target aspects of teamwork and communication.

The aim of this project will be to evaluate the use of video-reflexivity as an improvement tool targeting teamwork and communication within acute NHS maternity services. The project will focus on the acceptability and feasibility of the process, as well as staff engagement and sustainability of any improvements.

The project is part of a PhD study that will run over the next two years. The data collection is expected to last up to 1 year, although participant involvement will be for a limited time within that year.

Why have I been chosen?

You have been selected as a potential participant due to your role as a healthcare professional on the labour ward, and your involvement in the daily multi-disciplinary team handover.

All potential participants that meet the above criteria will be approached to provide informed consent to participate in the process of video-reflexivity and evaluation of the impact of video-reflexivity on teamwork and communication during the handover. The project will run across two sites in the Leeds Teaching Hospitals

Trust, and it is expected that the number of participants across both sites will be between 48 and 60 participants.

If you do decide to participate in the process of video-reflexivity, you will also be asked if you would provide informed consent to being interviewed about your participation, and about the process of video-reflexivity. If you participate in the video-reflexivity, you do not then have to consent to being interviewed. It is expected that the number of participants interviewed across both sites will be between 15 and 18.

What will be expected of me if I take part?

If you decide to participate in this project, you will be asked to give up to 60 minutes of your time outside of your normal working practice for the feedback element of the video-reflexivity process. There will be no further time demands involved in this project. The video data will be collected during the daily handover, and you will be expected to hand over as normal during these sessions. After each handover you will be asked to **anonymously** answer two very short questionnaire-style statements about your perceptions of the handover, but this should not impact at all on your working time.

During the project, the clinical handover will be recorded using a remotely operated video camera placed beneath the patient information boards around which the handover takes place. For each handover team, the researcher will aim to film between three and five handovers. The researcher will then edit this video footage to a reel of footage lasting no longer than 10 minutes. The staff team involved in the specific handovers in the footage will gather in a private room near the labour ward, and this footage will be played back. Following the video playback, the primary researcher will facilitate discussion between all participants about the systems and processes underpinning the handover. **There will be no discussion of individual or team performance.** The feedback session is expected to last no longer than 60 minutes. This feedback session will also be video recorded to allow the researcher to transcribe the audio data. The transcribed data will be used by the researcher to identify themes relating to staff engagement in the process of feedback, areas for improvement identified by staff during the discussion, and the role of the facilitator in the discussion. These themes will allow us to evaluate using the process of video-reflexivity in a multi-disciplinary team working within an acute healthcare environment. Following the feedback session, the primary researcher will observe further handovers at 2 months and 6 months post-feedback. Following these observations you will again be asked to answer two very brief questions about your perceptions of the handover. The calculation of scores before and after video-reflexive feedback will allow us to assess the impact of video-reflexivity on teamwork and communication in multi-disciplinary teams from a staff perspective.

If you provide informed consent to be interviewed following the video-reflexivity process, you will be asked to give up to 40 minutes of your time for each individual interview. You will be asked to participate in the interview process three times; once within a week of the feedback session, once around two months after the feedback session, and once four months after the feedback session. All interviews will be carried out at a time and place most convenient for you. All interviews will be individual, and will take place in a private room.

Prior to each interview, your continued consent will be checked. If you are happy to proceed, the primary researcher will begin to audio-record the interview. During the interview you will be asked a number of open ended questions relating to your

experience of the video- reflexive process, how engaged you felt in the process, and whether you feel any improvements have been made to any elements of teamwork and communication on the labour ward, and during the handover, following the reflexive feedback session. These questions will be designed to allow you to discuss your experience of the process subjectively.

The audio-recording will be transcribed into an anonymised electronic document by the primary researcher. The transcribed data will be used by the researcher to identify themes relating to staff engagement throughout the process of video-reflexivity, how acceptable and

feasible staff believe the process to be, and whether improvements can be made following this feedback process. These themes will allow us to evaluate the use of video-reflexivity in a multi-disciplinary team working within an acute healthcare environment.

How will the recorded media be used?

The audio and video recordings of your activities made during this research will be used only for analysis. Where your informed consent is provided, anonymised video clips or stills may be used for illustration purposes in conference presentations or journal articles. No other use will be made of them, and no one outside the project will be allowed access to the original recordings. If there is anything captured on film that you do not want to be included in the feedback session reel, you can ask the primary researcher to remove this during the editing process. You will not have to give a reason.

All audio and video recordings will be stored on the secure network of an encrypted University of Leeds computer in a password protected file. Only the primary researcher and main academic supervisor will have access to this file. As this project forms the main body of a PhD research project, all audio and video recordings will have to be stored for the duration of the project. This will be up to 3 years following data collection. Following this period, all video and audio data will be destroyed using appropriate data destruction software.

What are the possible disadvantages and risks of taking part?

There are no apparent risks of taking part in this project. There is some potential for participants to feel an element of discomfort when watching themselves during the presentation of the video clip. In order to reduce any chance of discomfort, only the team on the recording will be present in the feedback session. The facilitator will also be present to direct the conversation to the processes and systems involved in the handover, and away from any comment on individual or team performance.

During the interview process there is some potential for participants to feel uncomfortable or upset when discussing their participation in the process of video-reflexivity if they felt that the experience had been negative. In order to reduce any chance of distress or upset, the primary researcher will ask open ended questions allowing any participant to talk as much or as little as they feel is appropriate. Participants are able to ask for the interview to be terminated at any point with no negative consequences. In the event that you do feel upset or distressed by your participation in the interview process, the contact details of the Staff Counselling Service at Leeds Teaching Hospitals Trust is included below:

Contact Name: Hannah Leahy (LGI), Kate Midgley (St. James's), Sue Lofthouse (St. James's)

Contact Number: (0113) 3923307 (LGI), (0113) 2065897 (St. James's)

What are the possible benefits of taking part?

Whilst there may be no immediate benefits for those people participating in the project, it is hoped that this work will lead to positive changes to the handover process as driven by the staff involved. It is also hoped that the process of video-reflexivity will improve elements of teamwork and communication in the wider labour ward team. It is also hoped that this work will lead to full evaluation of the process of video-reflexivity. It is particularly important for any improvement tool to consider staff feedback and opinion, and it is hoped these interviews will lead to a better understanding of how acceptable and feasible the process is within an acute maternity environment.

In lieu of the time you will provide if you provide consent to participate in the interviews following the video-reflexive feedback session, you will also be provided with £15 of Love-to- Shop vouchers for every interview.

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) and you can still withdraw at any time up until _____ . You do not have to give a reason for withdrawal.

Will my taking part in this research project be kept confidential?

Your taking part in this research project will be kept confidential, although your participation in the filming process may be visible to other staff due to the placement of the handover within the labour ward. Only the primary researcher will have access to the names of staff members who consent to take part.

At the point of transcription, all audio and audio-visual files will be completely anonymised. Names will be removed from all discussions during transcription so that individual participants cannot be identified from the final typed transcriptions. It is likely that direct quotes from audio-visual recording of the feedback session will be used in the final PhD thesis. Where any direct quotes are used, these will be fully anonymised so as individual participants cannot be identified.

All paper consent forms will be stored in a locked filing cabinet in a locked room in the School of Psychology, University of Leeds. All paper staff questionnaire scores will be stored in a locked filing cabinet in a locked room in the School of Psychology, University of Leeds. All audio-visual recordings will be stored as detailed above, on the secure server of an encrypted University of Leeds computer, in a password protected file. Transcriptions will be typed and stored in a separate password protected file on the secure server of the same encrypted University of Leeds computer. Both paper and electronic data will be accessible only by the primary researcher and the main supervisor. All data will be stored in accordance with the Data Protection Act (1998), the Human Rights Act, and the University of Leeds Code of Practice on Data Protection.

As this project involves staff teams as participants, we can guarantee that the researcher will maintain confidentiality, but we cannot promise this on behalf of other participants, although it will be requested.

What will happen to the results of the research project?

The results of this research project will form the main body of a PhD thesis written by the primary researcher. In accordance with University of Leeds guidelines, this thesis will be made available on a prescribed online repository as an eThesis. These results may also be disseminated to the wider research community in the form of peer-reviewed journal articles and conference presentations.

Withdrawal from the research project

You are able to withdraw from this research project at any time up until _____ . In order to withdraw, please contact the primary researcher or the main supervisor. All contact details are provided below. You do not have to give a reason for withdrawal.

Who is funding the research?

NIHR CLARHC Yorkshire & Humber are funding this research project. The project is part of a PhD carried out in conjunction with the School of Psychology, University of Leeds, and the Bradford Institute of Health Research.

Contact details for further information

Name: Siobhan McHugh

E-mail: ed13skm@leeds.ac.uk

Telephone number: 0113 343 5715

Supervisor name: Professor Rebecca Lawton E-mail: r.j.lawton@leeds.ac.uk

Telephone number: 0113 343 5715

Ethics Reference: PSY-170

Thank you for taking the time to read through this information sheet. If you have any further questions please feel free to contact me on the details provided above.

Appendix G: Participant consent form for VRE

<p>Using video-reflexivity to improve multi-disciplinary handovers in teams of acute healthcare professionals</p>	<p>Add your initials next to the statement if you agree</p>
<p>I confirm that I have read and understand the participant information sheet dated 30/11/17 explaining the above research project and I have had the opportunity to ask questions about the project.</p>	
<p>I understand that my participation is voluntary and that I am free to withdraw up until 30/09/2019 without giving any reason and without there being any negative consequences.</p> <p>Principal Investigator: Miss Siobhan McHugh PI Contact Email: ed13skm@leeds.ac.uk</p> <p>If data has already been collected at the time of your withdrawal, this data will not be used in any analyses for this project. Due to the project being part of a wider PhD study, the data collected may have to be stored in accordance with the University of Leeds Code of Data Protection for up to 3 years. This data will be stored in a separate password protected file on a secure server to ensure it is separate from the useable data set. Following this period of time, all identifiable data will be destroyed using specific data destruction software.</p>	
<p>I give permission for members of the research team to have access to audio recordings of the handover and reflexive feedback sessions. I give permission for this audio visual data from reflexive feedback sessions to be transcribed, and for members of the research team to have access to my anonymised data.</p> <p>I understand that my name will not be linked with the research materials, and I will not be identified or identifiable in the report or reports that result from the research.</p> <p>I understand that my participation will be kept strictly confidential.</p>	
<p>I agree for the data collected from me to be stored and used in relevant future research in an anonymised form and I agree for the data I provide to be archived at University of Leeds Data Repository.</p>	
<p>I understand that relevant sections of the data collected during the study may be looked at by auditors from the University of Leeds where it is relevant to my taking part in this research. I give permission for these individuals to have access to my records.</p>	
<p>I agree to take part in the above research project and will inform the lead researcher should my contact details change during the project and, if necessary, afterwards.</p>	

Name of participant	
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Participant's signature	
Date	
Name of lead researcher	
Signature	
Date	

This study has been reviewed and given a favourable opinion by the School of Psychology Research Ethics Committee at the University of Leeds on 29th November 2017.

Ethics reference: PSC-170

<i>Project title</i>	<i>Document type</i>	<i>Version #</i>	<i>Date</i>
Using VR to improve multi-disciplinary handovers	Consent form for VRE	2	301117

Appendix H: Participant consent form for interviews

<p>Using video-reflexivity to improve multi-disciplinary handovers in teams of acute healthcare professionals</p>	<p>Add your initials next to the statement if you agree</p>
<p>I confirm that I have read and understand the participant information sheet dated 30/11/17 explaining the above research project and I have had the opportunity to ask questions about the project.</p>	
<p>I understand that my participation is voluntary and that I am free to withdraw up until 30/09/2019 without giving any reason and without there being any negative consequences.</p> <p>Principal Investigator: Miss Siobhan McHugh PI Contact Email: ed13skm@leeds.ac.uk</p> <p>If data has already been collected at the time of your withdrawal, this data will not be used in any analyses for this project. Due to the project being part of a wider PhD study, the data collected may have to be stored in accordance with the University of Leeds Code of Data Protection for up to 3 years. This data will be stored in a separate password protected file on a secure server to ensure it is separate from the useable data set. Following this period of time, all identifiable data will be destroyed using specific data destruction software.</p>	
<p>I give permission for members of the research team to have access to audio recordings of my interviews. I give permission for this audio data to be transcribed, and for members of the research team to have access to my anonymised data.</p> <p>I understand that my name will not be linked with the research materials, and I will not be identified or identifiable in the report or reports that result from the research.</p> <p>I understand that my responses will be kept strictly confidential.</p>	
<p>I agree for the data collected from me to be stored and used in relevant future research in an anonymised form and I agree for the data I provide to be archived at University of Leeds Data Repository.</p>	
<p>I understand that relevant sections of the data collected during the study may be looked at by auditors from the University of Leeds where it is relevant to my taking part in this research. I give permission for these individuals to have access to my records.</p>	
<p>I agree to take part in the above research project and will inform the lead researcher should my contact details change during the project and, if necessary, afterwards.</p>	

Name of participant	
---------------------	--

Participant's signature	
Date	
Name of lead researcher	
Signature	
Date	

This study has been reviewed and given a favourable opinion by the School of Psychology Research Ethics Committee at the University of Leeds on 29th November 2017.

Ethics reference: PSC-170

<i>Project title</i>	<i>Document type</i>	<i>Version #</i>	<i>Date</i>
Using VR to improve multi-disciplinary handovers	Consent form for interview	2	301117

Appendix I: Detailed transcript for reflexive feedback session one

Clip 2a: Feedback Session

(0:00 – 0:24) The feedback session takes place in the room used as theatre recovery on labour ward. Present at the feedback session initially are the facilitator (PI), a consultant anaesthetist (CA) and a consultant obstetrician (CO). The laptop that will be used to show the edited handover footage is on a desk in front of the CA and CO. The PI sits to the side of the desk. The PI begins the feedback session by explaining that the film will be played and staff can begin to discuss observations themselves, or the PI will prompt if necessary. As the PI goes to start the footage, the CA asks whether they should talk over the footage or wait until the clip has played through. The PI explains that staff can talk over the footage if they wish, and that they can also pause and rewind the footage as they wish. The PI then starts the handover footage.

(0:25 – 5:18) The CA and CO lean in to watch the footage as the clip begins. 25 seconds into the recording the CO begins to laugh. At this point the CA turns to the CO and identifies that there has already been an interruption before the handover has even started. The CO acknowledges this. Both are laughing at this point. They then move back into watching the footage intently and quietly. At 1:42 minutes into the footage, the CA points to the screen stating *“There’s no way they can hear at the back is there?”*. The CO again acknowledges this. Both continue to watch the footage quietly. At 2:17 into the footage, a bleep goes off. The CA momentarily checks his phone but then moves back to the footage. At 3:00 into the footage, the CA turns to the CO and jokes *“My posture’s awful isn’t it?”* and both laugh. At 3:16 into the footage, the CA continues *“You’ve got a nice straight back there”* to the CO, both still laughing. Both attend again to the footage. At 4:35 into the footage, the CO checks with the PI whether he should wait until the end to start discussion. The PI reiterates that participants can talk over the footage if they want to. Both the CO and CA continue to watch the footage quietly.

(5:19 – 7:45) As the footage ends, the CO immediately states *“It’s just really obvious how disjointed it is”*. The CA agrees. He then points out the two non-attending midwives at the computer as having nothing to do with the handover. He notes that the registrar is giving a detailed description of the elective patient to himself and CA in the clip. The CA points to the theatre staff at the back of the handover and suggests they have *“switched off”*. The CO agrees and suggests that although the information is relevant to CO and CA, it is the theatre staff that will be listing the elective. *The PI asks whether it is normal practice for people to sit in the handover area when they are not involved in the handover.* The CO and CA both agree that it is normal. The CA goes on to explain that staff use that area to do their paperwork. The CO expands suggesting the staff will be completing delivery notes, but then also, laughing, states that staff may be checking emails and booking holidays. The CO goes on to say that there is the hope, or the knowledge, that the CA will brief the theatre team but that *“at the very least it’s a duplication of work”*. The CO points out that the registrar has clearly prepared a lot of detailed

information, and then reiterates that he doesn't think any of the staff members at the back of the handover will be able to hear. He goes on to state that it is *"quite an intimate little talk"* between the registrar, coordinator, CO and CA at the front of the handover. *The PI points out that at the beginning of the clip you can see one of the theatre staff putting hands to ears. The PI then prompts the CO and CA to think about whether there is any way this issue could be improved*, although does note that this is an environmental issue and that the space makes it difficult. The CA immediately suggests that when running the handover *"you could easily get rid of people who aren't included in handover"*. The CO nods in agreement. The CA continues *"I often think, like even this morning, both computers were in use and it gets a bit busy. You can see how many people are there, and they're just spilling round the corner and I was like well they don't need to be this close to the information that's happening."* The CO shakes his head in agreement. The CA points out that there are computers *"round the other side"* that staff can use. **[At this point, one of the registrars arrives to the feedback session after having been on shift.]** The CA continues discussing solutions, suggesting that *"you could definitely get rid of the people that don't need to be there"*.

(7:46 – 8:16) The PI asks the registrar to pull up a chair and join the conversation. As he is doing so, the PI asks whether Clip 1a is reflective of a normal handover. The CA and CO both agree that it is generally indicative of a normal day. The CO goes on to suggest that people may sit in different places, and points out that the CAs might occasionally sit in the middle of the handover. The CO suggests that in these instances there may be a bit more interaction with the people stood at the back of the handover.

(8:17 – 10:54) The PI plays the second part of Clip 1a to the group with the registrar present. As the PI prepares the clip, the CO asks the CA if he sees a problem in the way handover is structured (looking at the still of the footage on the screen). The CO asks if the CA also does on-calls at another hospital within the trust. The CA replies that he doesn't. The CO goes on to explain that in the other hospital, handover happens in a big room where everyone is sitting in a circle. The CO asks *"Would you perceive that, is that an issue?"*. The CA responds that it is done there because of the boards. **At 8:53 the PI plays the footage.** All three watch the footage intently. At 1:00 into the footage, the CA laughs and points out that the same non-attending midwife is sat at the computer in the handover area. The CO nods, laughing. The CA notes that she is in and out. At 1:15 into the footage, the registrar turns to the CO smiling and asks *"Do I really speak that quietly?"*. The registrar laughs, and the CO smiles in return but continues to watch the footage. He then adds *"You're a gentleman, that's why"*. The registrar laughs. The CO glances towards the CA, but he is watching the footage. The group continue to watch the rest of the footage.

(10:55 – 12:32) The CO notes that there is a difference between the two clips. He addresses the CA saying *"You were obviously taking the lead in the last one weren't you? Whereas this one, [midwife] and [CO] have sat themselves..."*. The CA interrupts suggesting that the discussion is focused on the board, pointing at the patient information screen. After a few seconds continuing to watch the footage

the CA points out that he still has the book in the clip. At 41 seconds into the footage the CO turns to the registrar laughing about his posture, and then turns to the facilitator stating *“His body language is really defensive”* (still laughing at this point). The CA, also laughing, says *“Elf on the shelf”* and the registrar laughs gently although still sitting forward with his hand over his mouth. After a few seconds the registrar points out jokingly that this is probably because he would *“rather be horizontal”*, and the CO laughs in approval. The registrar and CO laugh, and immediately the CA states *“It’s strange isn’t it because like, that’s quite, that’s very typical isn’t it, that there’s usually lots of obstetric discussions that go on and like, I’m quite interested in hearing about it because it’s like I’m trying to predict what’s going to happen so I’m obviously taking quite in depth...I’m asking about platelets and [name] as well, my reg, he started off over there and then as this conversation started [midwife name] moved and he drifted in, and he started off doing some paperwork but then as soon as [name] started talking he turned round so he wants to, he wants to listen in as well”*. As he is saying this both the CO and registrar verbally agree. The CA continues *“But, for these guys [points to theatre staff on screen] I bet they were all literally going...”* The registrar whistles. The CA continues *“...just being there for the sake of it”*.

(12.33 – 17.04) At this point the facilitator joins the discussion asking *“Is the purpose of the handover the same for everybody? Is there a clear purpose of it? Does everybody know why they’re there?”*. Both the CO and CA are looking at the still on the screen at this point, but the registrar immediately begins to speak, putting his head in his hands and rubbing his eyes; *“I find it a weird split because essentially you know it’s kind of half a theatre safety brief list [looking at the CA and laughing nervously as he says this and the CA nods] half an obstetric handover [looking at the CO with more confidence as he says this, and the CO nods but doesn’t look round at the registrar] and they’re both important and when we try and, I think often actually it depends who leads it, as to the dominant one so sometimes it’s run more like essentially a pre-op safety brief and the obstetrics I sometimes feel like are made to feel a little bit like these little obstetric details when, you know, we’ve got **the list** [emphasising with his hands when talking about the list], have your little obstetric discussions later. But then sometimes it’s all obstetric and we get mired in this and as has already been said the theatre team are thinking why am I here so... [putting his head in his hands and sighing]...I haven’t really got any bright ideas”*. At this point the CO says *“It’s a really important question though isn’t it? What is the, what is the purpose of it and who’s it for isn’t it? Because from your systems point of view [pointing at the facilitator] you say that when you’re dealing with this level of complex information as many people as feasible should know about it. Because it’s not possible for, you know, [name] or [name] in this situation to assimilate every bit of information. But if you [directing comments to CA] and the reg has heard it, and if you [directing comments to reg] and the SHO has heard it, you know, it’s unlikely that one of the details is going to get missed isn’t it? I wonder if that then applies to the team as a whole because they...”* The CO pauses. The facilitator interjects here raising the question of whether everyone is engaged throughout the handover and whether this could then have an impact on who is taking in information. The CA adds *“No, I think most of the theatre team are thinking right, erm, what have we got for the*

whole day? You're trying to get a plan for the whole day and like, from, certainly from my perspective I'm like ok, where do I need to be today? So we've got the elective patients, we've got some sick patients, we've got some ones do I need to come and join on a ward round [looks to CO who is nodding but not looking at CA] is there someone I need to go and help out from an anaesthetics point of view, or can I just get cracked on doing the elective sections or do we need to hold off, or can we get one done as fast as possible just in case Room 4 suddenly goes off. And you're kind of trying to err...plan, a little bit, in probably the most unplannable specialty [CO laughs, reg smiles] we've got. The problem comes because we don't have a separate elective and erm acutes list every day [CO and reg both verbally agree]. So, if you were to film on a day of the electives, it's very different because the elective team do their brief down in theatre [CO verbally agrees] and I don't know [addressing CO and registrar] what really happens really at round here [pointing to still of handover on screen]. Because you won't talk about the electives will you?" Registrar: "No. It's just a handover." CO: "We just go through the board." [Both talking over each other]. The CA continues "So it's just, it's just the handover. So that's very different, and whether or not we need to split it [CO verbally agrees] into right, let's just talk about the electives [CO verbally agrees] and then theatre team can, but again it's tricky because they can't go off and get ready [CO agrees] in case there's someone in the [points between CO and registrar]...". The CO continues "Whereas these guys [points to scrub nurses and ODPs on screen] actually don't need to hear the board handover though, do they really? Like the..." The CA interjects "No, but they do get a bit annoyed if they suddenly spring on them, ohhh we're not doing that elective now we've got an exam to do. So it's kind of whether or not there's a place for doing obstetric handover first..." The registrar, who has been sat with his head in his hand while the CA has been speaking, sits up and says "I was just going to suggest that actually. Could we...". The CA continues over him "The team then come in [CO agrees verbally] then the questions are pretty relevant so this is the elective list, right, do we need to make any changes [The registrar speaks over the CA here saying a similar thing], yes because [hypothetical situation]." The registrar continues, speaking carefully to the CA "Because the way we do it at the moment I feel somewhat negatively frames the board as an annoyance from the list point of view." The CA responds in agreement as the registrar continues "We go through the list then is there anything that's going to affect the list, oh right, I suppose we better do the obstetric handover now. Well, those things are going to affect the list. It's slightly the wrong frame for a labour ward and then we're back into the brief, whereas I think it would be great yeah if we could do proper obstetric handover, you will know how that's going to impact on the list, and then we can bring in and go through the list saying yes, we know about what's going to affect the list because we've discussed it already. So we can actually run through it a bit quicker and...". All three pause and look at one another.

(17.05 – 20.14) The CA interrupts the pause and continues "And I guess we could, we could have seen, I mean we usually have seen all the electives anyway around the time we come to this. But we can bring that to the table so you can bring what's going on there [points in direction of labour ward] to the table you know, and we can bring the electives to the table, do it like that." There is a short pause before

the CO replies *"I think the, you know like when they look at the learning from, erm, never events and things like that they say that the...there's always somebody in the team who has been aware that something was not going right, either they've had some kind of inkling or they knew that the wrong form of anaesthesia was given or that [another hypothetical situation] and that person didn't feel empowered to speak up. Do you think that is in any way relevant to the way that we're trying to share this information here? In the sense that do we want as many people to know what's going on on labour ward as possible so that if something is happening we know that as many people are part of that happening as possible."* The CO is looking towards the registrar at this point. The registrar does begin to talk but the CO moves forward to the screen and says *"Is it necessary that all the people who are here, like it's the ward SHO isn't it, and this is [name] who's our assistant and he's aware of everything isn't he, and this is the night SHO but they, do they, they probably won't be party to the discussion that's going on down here won't they."* The CA continues *"Yeah, and like the night team don't really, they, they don't really give a damn about the electives."* The registrar laughs at this point, and there is a pause in discussion. The CO continues *"So I guess it is whether you have the night team, say is there anything you need to hand over, do the ward round then... [makes shooing motion with hands]. Send them home. And then we have a...a proper..."*. The CA interjects *"A proper brief talking about the electives and what impact we've got possibly there [pointing to labour ward]"*. The CA strokes his face in thought here. The CO continues *"And actually then the space will be much less of an issue wouldn't it because the night team go"*. The registrar takes over; *"And then if you do get into any sort of slight wrangles about well do we do this one first or, then the night team aren't there losing the will to live [laughing]."* The CO and CA both agree (although neither laugh) and the CO says *"Yeah, it's the kinder thing to do isn't it?"*. Again, all three pause and the CA is looking at the still image in thought. The CO continues *"Purely from a well-being point of view you would feel like it had been structured in a way that prioritised you as well"*. He is talking directly to the registrar here. The registrar continues *"I certainly feel like, and this is maybe a slight tangent, I certainly feel having the coordinator leading the board round is the best way to do it because I've been to units and maybe a bit the consultants here would perhaps expect it to be the registrar that leads it. But you could have been in theatre for the last three hours with three different cases on the trot and have no idea who's come into the unit. She's got that helicopter view"*. The CA interjects *"Most times I've done it it's been the coordinator that's..."*. The registrar interjects *"Yes, I just sit there feeling a little bit bad thinking it should be me..."*. The CO turns to the registrar saying *"I mean place yourself, you falsely assimilate the information as if you've been trying to keep hold of all that information, you haven't. Just wouldn't want you to hold it"*. The CA agrees. The registrar continues *"I mean that's, that's dangerous really then you're going to miss out stuff if you do that"*. There is another pause as all three look at the still image.

(20.15 – 24.50) The facilitator breaks the pause asking whether in terms of splitting the handover it would be a feasible change that could be made to improve the level of communication or how information is transferred. The CO nods immediately, and the CA agrees verbally. The CA continues after a pause *"Yeah*

because each, each bit, the actual handover process will probably still take the same length of time." He looks to the CO at this point who nods and says *"But it will be a bit more structured"*. The CA continues *"It'll be more structured. Whether or not you guys started I mean, there's always been that debate for a long time about why's it half past eight when we're all here at eight [laughing; all three smile]. The, half eight for us is good because we do our anaesthetic handover here [points to office next to recovery] at eight o'clock. The night reg goes and then we see the elective patients and then we turn up at half eight ready with the, the information. Then there's no reason why that part, of where we can do our anaesthetics handover, you can do your obstetrics handover there, then we can all meet at half eight"*. The registrar continues *"That would slightly take the pressure off you to see the electives because occasionally we say...not, not very often, but occasions where the theatre team sort of troop round not really on the dot so I think it would work if we..."* The CO interjects and the registrar stops talking. *"So does the consultant anaesthetist come in at eight?"* The CA replies *"We're always here at eight, yeah."* The CO continues *"And then you take handover from the night reg? Along with the day reg?"* The CA replies *"Yes, so we have a safe...handover thing [goes to the office to get one]."* When the CA leaves, the registrar turns to the CO and jokes *"I fear this is straying into dangerous territory of handover at quarter past eight or something"* [laughing]. The CO doesn't laugh, but replies *"Well I think it depends what we're contracted for doesn't it, I don't know if the consultants are contracted to start at eight or half eight"*. Both are then silent as the CA re-enters the room with a piece of paper. The CA sits down showing the paper and explains it to the CO and registrar. The CA then explains what each member of theatre staff will do after the morning briefing. The CO turns to the registrar and asks *"Obstetrically could you do, could you like have, I mean if you handed over at eight in the morning and then did the same at eight at night... [pause]... So like if you were the day team, and then the night team came at eight to handover from you, and then you could handover to the midwife and the anaesthetist at 8.30. There's no precedent for it really is there?"* The registrar grimaces and shakes his head. The CA remarks *"You're always here at eight aren't you?"* The registrar looks incredulous and laughs; *"No, no, we're not!"*. The CO concurs saying that the obstetric team arrive around quarter past or twenty past eight due to shifts being half past to half past. The team discuss whether this is because the handover is supposed to be half an hour. The registrar asks the CA *"Is there any reason we can't keep that, sort of, quarter of an hour?"* The CA replies a little reluctantly *"Yeah, and we just come in about quarter to"*. The CO clarifies *"I guess the volume of stuff you guys handover is proportionately less isn't it?"*. They go on to talk about the obstetric handover and the amount of information that needs to be handed over, and time required to allow the day team to question the night team.

(24.51 – 29.38) The CO leans into the screen, pointing at the theatre staff and says *"It would be very interesting to hear from these guys wouldn't it? In a session like this [looks to facilitator]. To know like, what are you actually thinking when you're stood down that end?"*. The facilitator agrees, discussing the quality of teamwork and how it is linked to good communication. The CO goes on to talk about one of the senior scrub nurses who will always tell clinical colleagues if he

thinks they aren't doing the right thing or doing something in the right way in theatre. The CO goes on to identify having a member of staff like that, who will purely be thinking about the elective list and the wider picture is of benefit. When **asked by the facilitator if someone like that would always be present in the handover**, the CO says no. The CO does qualify this by saying that all of the scrub nurses are very valuable sources of information and guidance, and those extra minds on complex patients is important in the handover. This is related back to the discussion about the space and how to bring those staff into the handover. **The facilitator asks if the theatre staff could always feel able to input into a handover**. The registrar answers saying *"I'm not sure they could now, but I'm sure that if we did it so that we tried to run it so that, divide it so that the obstetric stuff had been discussed, it's almost the day team then have a precis of the at risk and the problems to feed it, to feed in to kind of the theatre checklist. I think a shorter, snappier theatre checklist people might feel more able to take ownership or be a part of... Erm, it's the slight sort of.....who's this for, whos job is this, tension that erm.. [smiling, but pausing a lot]."* The CO suggests that a brief in theatre will get very active participation from the team lead, to which the CA agrees saying *"That's their home"*. The CO thinks there wouldn't be the same input in the handover unless it was a major equipment issue. The CA points out that the theatre staff are engaged when questions about theatre equipment checks are directed to them; *"That's their time to speak"*. Apart from that point, the CA doesn't think the theatre staff would step in at any other point unless they were asked about equipment for specific cases. The CO compares this to gynae theatre, where the theatre staff have a lot more input. The CO adds *"And there's the whole thing about making them feel like they're part of it, because the actual, the actual interaction in the handover and everyone kind of interacting with each other is as important as the information sharing isn't it?"*. The discussion then revisits sending the night team and ward SHO home to create more space, as well as the people sat at the computers.

(29.39 – End) The CA then revisits the inclusion of the theatre team, saying *"I'm all for being inclusive and being part of the team, but essentially most of their role is the elective work or just work in general [pointing at the theatres], so it's what works can they plan. Which is why I think it would work quite well if you, kind of, go right well these are the issues....we've got three people in labour, and the chances are errrrm room 5 might need to come to theatre. So, we're going to reassess them at this time, so then you go right, let's get that elective done before that time, and then we have a pause where we do that reassessment. But you only find that out at this [motions to screen] currently"*. The CO and registrar then talk about the geographical nature of the relationship between the two teams, with the registrar pointing out that when the theatre team come onto labour ward, or labour ward staff go into theatres, you would always feel a little out of place. However, this isn't framed as a negative point in these discussions. The discussion then moves back to the cross-purpose of the current handover with the registrar again leading this discussion. The discussion finishes with the CO discussing the labour ward vs theatre staff line and saying *"because it's so obvious"* pointing at the screen.

Appendix J: Condensed narrative transcript for reflexive feedback session one

Complete descriptive (2a)

Clip 1 Part 1: All attending staff are present in the handover area at the time handover is due to start, but there is an immediate non-urgent interruption directed towards the consultants which delays the handover. There are 12 attending members of staff in the handover area, all sitting in distinct groups based on clinical expertise and staff grade. There are also 2 non-attending staff members sat at the computer stations in the middle of the handover area. The focus of all staff is on the patient information screens. The consultant anaesthetist leads the handover. As he begins the introductions, there are numerous non-urgent interruptions; the junior doctors move to switch off the radio, a non-attending midwife leans over attending staff members to get paperwork signed off by the coordinator, and one of the non-attending members of staff moves out of the handover area for a short amount of time before coming back in and moving an attending staff member. Following staff introductions the environment settles and the consultant anaesthetist directs questions about the elective list to the coordinator. Following this the day registrar enters into a long conversation with the two consultants about a second elective patient from the ward, including details of previous caesarian sections and where to put the patient on the elective list. During these conversations members of the theatre team actively lean forward, and one puts her hands to her ears to try and make it easier for her to hear. The handover is only opened up from the core team when the consultant anaesthetist moves on to the adapted WHO checklist. When a theatre equipment issue is raised by one of the theatre team, this is laughed at and queried by the day registrar before the theatre team defend their position on raising the issue and the consultant checks that a solution to the issue is in hand.

Clip 1 Part 2: The handover takes a while to start; the obstetric staff are all present in the handover area but the theatre staff take longer to arrive. As handover is due to start the neonatal team arrive to check whether there are any potential cases for them during the day, and to let obstetric staff know how many cots are available. This discussion takes place only between the consultant obstetrician, the coordinator and the neonatal sister. During this sub-handover all other staff sit quietly waiting for handover to begin. There are 19 attending members of staff in the handover area, all sitting in distinct groups; the core obstetric team sit closest to the patient information screens, with the theatre team at the back of the handover space. There is one non-attending member of staff sat at the computer in the middle of the handover area. As the neonatal sister finishes, the consultant anaesthetist immediately begins the main handover, noting the large number of attending staff, and asking staff to introduce themselves by name and level. Following staff introductions and a brief discussion of the short elective list, the focus moves to the patient information screens. The consultant obstetrician and registrars take over here, and enter into discussions, alongside the coordinator, about the patients in each room. During these discussions, staff members towards the back of the handover start to move around subtly, enter into conversations with one another, and can be seen looking at and writing up notes. The consultant anaesthetist joins the obstetric discussions, asking specific questions about medications, but no other staff seem actively involved in the obstetric handover of the board. The anaesthetic registrar looks up from his notes at one point when there is a more protracted discussion about a specific patient, but he listens more intently rather than joining the conversation. As the obstetric discussion finishes, most staff are quick to disperse, apart from those staff who will proceed to the ward round. These staff continue to have smaller, more in-depth handovers with one another as the theatre staff leave the handover.

Clip 2a: The consultant anaesthetist, consultant obstetrician and facilitator are present at the beginning of the feedback session. Almost immediately as the footage (Clip 1 Part 1) starts to play the consultants laugh to one another and acknowledge the interruption. *Further into the footage the consultant anaesthetist suggests that people at the back of the handover can't hear what is being said at the front of the handover.* The two also share a joke over their posture while watching the footage. *Discussion is spontaneous following the end of the footage, and the main point of immediate discussion between the two consultants is the disjointed nature of the handover.* Discussion about the obstetric vs theatre staff split in the handover leads to *some discussion of non-attending members of staff and their effect on the handover environment.* This is raised as having a knock-on effect to communication as staff cannot hear because they are further away, although it is also acknowledged that the discussion at the front of the handover is quiet. When asked about potential solutions to this issue, consultants suggest non-attending members of staff should be moved. The consultant anaesthetist goes so far as to say he has thought this in the past. At this point a registrar arrives to the feedback session after finishing his shift. As the facilitator is setting up the next section of the clip for discussion (Clip 1 Part 2) the consultants continue to discuss the structure of the handover between them and how it differs from the other delivery suite in the same trust. The facilitator plays the footage to all three participants. The consultant anaesthetist picks up on the fact that the same non-attending midwife is sat at the computer in the second part of the clip. The registrar makes some quiet observations during the footage about how quietly he is speaking during handover, and the consultants joke with him about his 'defensive' body language, to which he replies that he'd rather be horizontal. Discussion is again spontaneous after the video clip, with *the anaesthetist identifying the protracted obstetric discussions as something he and his anaesthetic team are interested in, but as a point in the handover where the theatre team seem to switch off. The facilitator asks here whether the purpose of the handover is the same for everybody.* The registrar takes the opportunity to speak first as the consultants are considering the picture on the screen, stating that he feels the handover is a weird split and the primary focus depends on who is leading that day; whether it becomes more of a pre-operative safety brief or a more protracted obstetric discussion. The consultant obstetrician takes over and introduces the idea that complex information such as that passed over at handover should be heard by as many people as possible to prevent detail being missed. After the facilitator questions whether this is still the case if some staff members aren't engaged throughout, the consultant anaesthetist suggests that this is less lack of engagement and more that the theatre team are trying to plan their day in one of the most unplannable specialities. He identifies the problem being that there is not a separate elective and acute list most days on delivery suite. The three members of staff then enter into a discussion about whether the handover could be split, initially suggesting the theatre team could leave after the elective handover because they don't need to hear the obstetric handover, but the consultant anaesthetist suggests the theatre team might feel annoyed if they missed out on an obstetric handover. The consultant anaesthetist is the first to suggest that the order of handover could be changed so that the obstetric handover happened first. The registrar agrees and goes on to say that the way it is done at the moment, he feels, negatively frames the obstetric handover. He suggests that doing the obstetric handover first makes more sense as the obstetric discussions will affect the list. The three staff enter into unprompted discussion of the reasons for handing over information to so many people, and then move on to discussion of the potential ways in which handover could be restructured; these suggestions include allowing the night staff to leave once they have handed over information in the obstetric handover, theatre staff coming to handover later having seen the elective cases, and the coordinator leading the handover. The facilitator asks if these changes would be feasible, which all staff agree they would be. Staff also suggest the handover would be more structured with the suggested changes.

The facilitator asks whether theatre staff would feel able to contribute throughout handover as it is at the moment. The registrar suggests that they probably couldn't at the moment, but that if the handover was restructured so that it was shorter and snappier, it would be easier for people to take ownership of certain sections. The consultant anaesthetist suggests that the theatre team get involved in the handover when it is their time to, during discussions about theatre equipment. The consultant obstetrician summarises the discussion suggesting that it is all about the interaction between staff members, and all staff feeling part of the handover. The three staff then enter into a longer discussion about how improving these interactions would improve more general interactions between theatre staff and obstetric staff, and the discussion ends with the consultant obstetrician pointing out how obvious the divide is from the still image on the screen.

Discoveries:

1. **Staff at the back of the handover can't hear the discussions at the front of the handover:** discovered by the consultant anaesthetist, unprompted, while watching footage.
2. **Disjointed nature of handover:** discovered by consultant obstetrician, unprompted, directly following the footage.
3. **Non-attending staff sitting in the handover space:** discovered by CA, unprompted, immediately following the footage, although there is subsequent prompted discussion of this.
4. **Different purpose to handover for obstetric and theatre teams:** discovered by CA, unprompted, following second clip.
5. **Not all staff feel able to contribute to handover:** discovered by registrar, prompted by question from facilitator following discussion of theatre staff involvement in handover.

There are distinct discussions of each of the five discoveries throughout the feedback session, although all five discoveries can be linked under the umbrella of **handover structure**.

Solutions:

1. **Discovery 3:** Discussion of a solution to D3 is unprompted, although moves on directly from prompted exploration of D1. Staff agree that non-attending staff should be moved from the computers. This solution occurs and is discussed without input from the facilitator.
2. **Discovery 2/Discovery 4:** Protracted discussion of these potential issues finally leads staff, unprompted, to develop a suggestion for improvement involving restructuring of the handover to allow night staff to leave, and to allow the obstetric and theatre teams to handover individually first to allow for shorter, more focused discussion at the full multi-disciplinary team handover.

Although the two main solutions seem to be more directly linked to D2/D3/D4, these solutions will also impact on D1 (allowing staff to get closer to the main handover discussion) and D5 (allowing staff more opportunity to take ownership of sections of the handover if the environment and structure are better).

Implementation:

1. **Solution 2:** The CO and CA immediately implement the solution to D2/D4. Handover is restructured under their leadership, and that of one other CA, so theatre and obstetric staff hand over individually first. Night staff are then able to go home following the obstetric handover, and the theatre team come in at this point for the full multi-disciplinary handover.

