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University of Southampton
Faculty of Health Sciences

An exploration of labour ward midwives
accessing and using information for practice

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Doctorate in Clinical Practice
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ABSTRACT

HEALTH SCIENCES

Nursing and Midwifery

Doctorate in Clinical Practice

An exploration of labour ward midwives accessing and using information for practice

Elinor Caroline JENKINS

Aims: This study explored how midwives access and use information whilst caring for women with high risk needs in the labour ward. The study focussed on identification of information needs, sources and types of information, use of information and what facilitates and inhibits information access.

Background: Social trends and advancing healthcare mean that the complexity of care for the minority of women who are recommended to birth in the labour ward is increasing. The immediacy and unpredictability of this suggests that midwives need to access information whilst with women in order to deliver excellent care.

Method and analysis: As midwives are a social group, the principles of ethnography were used. Between October 2011 and March 2012 twenty-one purposively sampled midwife participants were observed providing care to women with high risk needs on the labour ward. Ten of these observed midwives were purposively sampled for interview. The data were analysed with thematic analysis using open and focussed coding.

Findings: Midwives identify their information needs through their professional knowledge. Information sources used by midwives include maternity notes, guidelines, equipment, computers and the environment. Verbal information is transmitted through a network of women and colleagues via midwives. Midwives seek different types of information: woman specific, practice based, objective and organisational. Factors that facilitate and inhibit information access are related to the search time, usability, versatility and approachability of the source or channel rather than reliability. There are information proficient characteristics shown by some midwives.

Implications for practice and research: The verbal information network could be enhanced to include women in care collaborations. Information proficiency as a potentially learnable skill may be taught to midwives to improve information access. If reliable sources and channels are accessible, usable and approachable it may increase their use. Passive information, information need and information types as areas that may influence practice require further research.

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10 August 2009 to 2 September 2009

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Chapter One

Introduction and background

This thesis presents an exploration of how midwives access and use information when providing care for women with high risk needs in the labour ward. The information behaviour of midwives has not been studied before. This exciting and novel study has led to recommendations for improving the clinical practice of midwives and further raising standards of care for women.

This chapter introduces me as the researcher and discusses the practice and context background to the study.

1.1 Introduction

I have been a registered midwife since 1999. During my career I have worked as a staff midwife in a small isolated maternity unit, as a caseloading midwife in New Zealand and in the labour ward of a large tertiary unit on the south coast of England. I have experienced the need to access and use information during clinical care. However, it is my current post of midwife in a large, high risk labour ward in a trust accommodating the births of more than 6000 women per annum that has highlighted this issue most clearly. Within this particular labour ward environment the potential for continuity of care is low (National Perinatal Epidemiology Unit [NPEU] 2014) and the probability of providing care for women with complex or unusual conditions is high.

The initial premise for this study was my understanding of the difficulties of providing care for women with high risk needs. There is a likelihood that information will be needed to provide care as midwives are unlikely to know everything for the variety of conditions that women may present with. This would suggest that midwives are likely to access and use information during clinical practice. The quality of information accessed by midwives may be crucial to the care that midwives deliver. Equally the diversity and breadth of information that midwives could have access to is vast and their time is limited as they are also providing care.

The purpose of the following sections is to present the relevant background and rationale for this study based on current context, acknowledged information sources and external influences. Midwife, information behaviour and information are defined. There is a

discussion of who receives high risk care and why. This is followed by a discussion of evidence based practice and clinical guidelines and their relevance to this study. Finally there is consideration of the professional influence of the Nursing and Midwifery Council and Department of Health on midwives' knowledge and skills.

1.2 Midwives, information behaviour and information

The information behaviour of midwives is comprised of two disciplines: midwifery and information behaviour. It is essential to clarify the definitions of both so that meanings are clear. The International Confederation of Midwives [ICM] definition of a midwife is as follows:

A midwife is a person who has successfully completed a midwifery education programme that is recognised in the country where it is located and that is based on the ICM Essential Competencies for Basic Midwifery Practice and the framework of the ICM Global Standards for Midwifery Education; who has acquired the requisite qualifications to be registered and/or legally licensed to practice midwifery and use the title 'midwife'; and who demonstrates competency in the practice of midwifery (ICM 2014)

Information behaviour is an academic discipline developed and influenced by sociology (Hersberger 2005), information technology (Wilson 2000), information science (Davies 2007) and library science (McKnight 2006). It has diversified to many aspects of life and healthcare. One definition is:

the totality of human behaviour in relation to sources and channels of information, including both active and passive information seeking and information use (Wilson 2000:48).

It is valuable at this point to open the discussion of the definition of information. Wilson (2000), an information behaviour researcher, acknowledges that data are information providing the user understands the format of the data. Collins English Dictionary suggests it is 'the act of informing or the condition of being informed' (1990:783). Floridi (2010) discusses the difficulties of a single definition of information:

Information is notorious for coming in many forms and having many meanings. It can be associated with several explanations, depending on the perspective adopted and the requirements and desiderata one has in mind (Floridi 2010:1)

Providing a definition, as these three views show, is complex due to the polysemantic nature of information (Floridi 2011) and they are unable to account for the changing nature of meaning. The constructionist perspective would suggest that *information* as an entity will be understood by actors or participants. Arguably, for this study, it is the midwives' definition that is critical. Crotty (2013) suggests that the researcher needs to define things that have developed meaning amongst the actors, thus capturing the accepted view of the entity (Rodgers 1989). The entity¹ *information* has meaning for the midwives before the study begins and, from the point of view of the actors may change again. This means that the definition is unlikely to be sustainable but can be adopted for the time being (Crotty 2013). These material (dictionary definitions) and constructionist views of the definition of information uphold two requirements for this study: a working definition of information with which to conduct the study and gaining the actor's (participant's) view of information as part of the findings. To study information means that a definition is required at the outset otherwise the study focus is unclear. Equally, to define what information is for midwives requires understanding the midwives' views of what they consider to be information, to then gather and distil concepts for a collective definition relevant to this group of actors. Logically, midwives' views are only available on completion of data collection. Therefore for the purpose of the conduct of the study, information for midwives is that which contributes to the care of the woman. However, the definition is revisited in the Chapter Six Discussion in order to encompass the participant view.

1.3 High risk midwifery care

This section outlines high risk midwifery care. As the study context it is essential to identify what conditions require high risk care. Medical, surgical, pregnancy or emergency conditions existing or developing through pregnancy with the recommendation that care and/or birth takes place under direct obstetric care rather than midwifery led care is termed high risk. As shown in the 2011 Centre for Maternal and Child Enquiries [CMACE] report, despite being obstetric led, midwives, as members of the multidisciplinary team, have a key role in delivering care for women in the high risk category (Garrod et al 2011). A pregnant woman may present with any of a diverse range of conditions. From personal experience some, such as pre-eclampsia occur relatively frequently, others such as epilepsy or heart disease happen less often. As a broad

¹ One of two possible philosophical 'schools of thought' with the other being dispositional or the way that something is done (Rodgers 1989:331)

indicator of increasing severity of the types of conditions, data from Birmingham Women's Hospital records 2.67% admission to high dependency care in 1984 rising to 5.01% in 2003 (Saravanakumar et al 2008). An audit by the Royal College of Anaesthetists [RCA] state that 72% of women admitted to intensive care units² are admitted with obstetric reasons (RCA 2011). BirthChoiceUK (2011) report that over 55% of births have an intervention including induction of labour, local or general anaesthetic, instrumental delivery, caesarean section or episiotomy. With the exception of episiotomy all of these interventions will take place in the high risk labour ward. Equally, women with pre-existing conditions will deliver in the labour ward environment. This demonstrates the potential complexity of care required by women birthing in the labour ward. Furthermore, it means that information may be required by midwives to manage the conditions and/or interventions. Having knowledge of all the conditions, technologies, frequent healthcare advances and treatments used is unlikely as there are performance limitations to memory and experience (Davies 2007, Payne and Walker 2001).

Current influences on practice impact on how and why midwives access information. There has always be a background risk to childbirth. After the First World War this dropped considerably with the introduction of the NHS and the improving health of the nation (Oakley 1986). In more recent years however, the risks have changed and evolved to include not only the expected conditions of pregnancy but also the more complex. These include medical and surgical circumstances as a result of social change and healthcare advances. These changes are impacting on the numbers of women using maternity services categorised as high risk (National Audit Office [NAO] 2013, Royal College of Midwives [RCM] 2013a, Department of Health [DoH] 2009, King's Fund 2008). Recognised trends in women having babies in their late thirties and early forties (NAO 2013, Botting and Dunnell 2003) brings an increased susceptibility to obstetric conditions (Cooke et al 2010), putting women into a higher risk category. Rising maternal age correlates with decreasing fertility (Botting and Dunnell 2003) meaning in vitro fertilisation (IVF) is becoming more common and impacting on the number of multiple pregnancies (National Institute for Health and Clinical Excellence (NICE) 2012, King's Fund 2008). Older women are more likely to have developed conditions such as diabetes and raised blood pressure by virtue of their age and a greater likelihood of developing conditions such as placenta previa and breech presentation (Jolly et al 2000) which may complicate pregnancy and birth. The 2011 Centre for Maternal and Child Enquiries (CMACE) report (Lewis 2011) notes that the highest number of maternal deaths occurred

² Data from audit of intensive care units participating in Case Mix Program conducted by Intensive Care National Audit and Research Centre

in women over the age of 40. Obesity amongst childbearing women is also on the rise (NAO 2014, Lewis 2011, Kerrigan et al 2008) and evidence suggests this may complicate pregnancy through an increased likelihood of pre-eclampsia, anaesthetic risk and propensity for diabetes.

Healthcare knowledge is advancing continuously. Women who have lived beyond childhood and adolescence with previously terminal conditions such as congenital cardiac disease and cystic fibrosis are now becoming pregnant (Edmund et al 2010, King's Fund 2008). However, women who now live with these long term conditions may need treatment and/or a modification to obstetric care during the antenatal or intrapartum period (Stout 2005, Iserin 2001). The most recent confidential enquiry identified that twice as many women will die from existing conditions than those directly related to pregnancy (Knight et al 2014). The effect of this for the midwife is that s/he needs to know how to provide more complex effective care. If the midwife does not know about the condition, s/he needs to be able to locate information, if it exists, in order to continue providing clinical care. High risk care is a diverse area and midwives are likely to access information to provide care for women with these conditions. By extension, the quality of care for women with high risk conditions may be dependent on midwives' ability to access information.

1.4 Evidence based practice and policy

Evidence based practice (EBP) may be a method for midwives to access information and this is discussed further below. EBP is an explicit way that research evidence (information) is used in practice. Several agencies including the Nursing and Midwifery Council (2015), DoH (2009) and King's Fund (2008) suggest that evidence based practice (EBP) should be considered the best way to achieve clinical effectiveness (DoH 2003, HSC 1999) and improving care quality (Solomons and Spross 2010). EBP is a combination of quality research evidence, clinical expertise and women's values (Straus et al 2011, Gray 2009) for use in clinical care settings. It is a *method* for informing one's practice but also an *approach* to care. The approach – a recognition that best research evidence is considered and used – should, according to policy, be inherent in practice (Reynolds 2003). The method should comprise the systematic critiquing of research evidence, selection of best evidence according to set criteria and the integration of this research evidence with experience/expertise³ and the wishes/needs of the woman. This is

³ See Appendix 9.35 for discussion of expertise and experience

something that could happen in practice but often does not. The barriers to health professionals using EBP are well recognised. Gerrish (2010) suggests that nurses and, by extension, midwives may not have the skills to critically appraise both the source and the quality of evidence. Equally, there is a time cost of searching for and reading literature during clinical shifts (Solomons and Spross 2010, McKnight 2006) meaning that access to primary research by nurses (and midwives) is minimal during clinical practice (Spenceley et al 2008).

The underlying rationale for evidence based practice and its introduction into clinical care is based on the premise of ensuring that appropriate and efficacious practice is adopted by midwives, rather than that which is found to be ineffective or harmful (Reynolds 2003). However, Rolfe et al (2008), in a survey of understanding of EBP using a small sample of nurses, midwives and health visitors from one NHS trust, point out that this premise is immediately undermined by the inclusion of clinical experience/expertise. Their study shows that nurses rate their experience as an influence on their practice considerably higher than randomised controlled trials (Rolfe et al 2008), suggesting unequal measures of two of the three tenets of EBP. However, the definition used is limited to 'own past experience' (Rolfe et al 2008:444), as opposed to the

'ability to use our clinical skills and past experience to rapidly identify each patient's unique health state and diagnosis, their individual risk and benefits of potential interventions and their personal values and expectations' (Straus et al 2011:1).

Regardless of this, clinical experience and expert opinion is rated low in evidence hierarchies (Straus et al 2011, Royal College of Obstetricians and Gynaecologists [RCOG] 2007a), implying that EBP has a potential flaw that may impact on the reliability of evidence sought. This also begins to indicate that *evidence* may not always be used as information although this link is tenuous.

Evidence in the EBP sense is also limited to research, although it may include research that has been processed such as Cochrane reviews or guidelines (see 1.5 Guidelines).

Information for practice, however, is arguably broader than evidence. Information about a woman such as her previous obstetric history is information that may be used for practice but it is not research evidence.

EBP is discussed here as it incorporates the use of information by midwives during practice, acknowledges some barriers to the use of evidence, considers the reliability of evidence and begins to suggest alternative sources of information.

1.5 Guidelines

Guidelines provide explicit evidence based information for midwives and are available in the labour ward for use in direct clinical practice. All NHS maternity units are required to have local guidelines, based on current and up to date research evidence and developed, written and updated by the staff within the unit. They form a critical part of midwifery, obstetric and multi-disciplinary practice and outline care pathways as recommended by current research evidence and local trust policy. The use of local guidelines in maternity units is promoted by the Clinical Negligence Scheme for Trusts [CNST] and trusts need to show evidence of their use (King's Fund 2012). In an attempt to create consensus and deliver cost effectiveness, the National Institute for Health and Clinical Excellence was created to produce national guidelines (NICE 2010). *Delivering the best: Midwives contribution to the NHS plan* (DoH 2007) suggests that evidence based guidelines be implemented to sustain excellence. The King's Fund refers to guidelines (Thomas and Dixon 2012, King's Fund 2008) but acknowledges that these may not always serve their purpose due to their size and accessibility.

The strategy for the production of local guidelines is based on rigorous literature searches and critique. Whilst trusts recognise that care needs to be supported with accessible information in the form of local or national guidelines, it is not possible to cover every eventuality or condition. The King's Fund inquiry *Improving Safety in Maternity Services* found that local and national guidelines were not 'available, used or followed' (Thomas and Dixon 2012:61) and midwives, when they were aware of the guidelines, felt there were too many with some being of questionable relevance. Despite this, guidelines appear to be recognised as a valuable tool (Thomas and Dixon 2012, DoH 2007) however, their production is a lengthy process which may be defeated by new research evidence becoming available.

In information terms local or national guidelines are synthesised and accessible information dedicated to specific care situations within the maternity services that can be used in practice although they may not be used by clinical staff.

1.6 Nursing and Midwifery Council

This section considers the influence of the Nursing and Midwifery Council and professional standards on midwifery practice. All practising and employed midwives in the UK are registered with the Nursing and Midwifery Council (NMC) whose role is the regulation of nurses and midwives and maintenance of professional standards. This is

partly achieved through the publication of the Code of Practice (NMC 2015) and Midwives Rules (NMC 2012). The Code of Practice constitutes the standards of practice for all midwives (and nurses). In this document the NMC maintains that midwives' knowledge and skills must be kept up to date. Whilst this is a clear and rational professional accountability the discussion of high risk conditions above could suggest that it is not possible for midwives to keep abreast of every possible individual care pathway or condition. Therefore, safe practice may rely on having information available to the midwife on which to base practice. The Code, however, states that midwives must

‘assess need and deliver or advise on treatment, or give help without too much delay and to the best of your abilities on the basis of the best evidence available and best practice’ (NMC 2015:7).

This suggests that to stay within their professional boundaries, midwives are legitimately required by the regulators to access information during care. Therefore study of how midwives access and use information is likely to increase understanding of this process and potentially lay the foundations for improving this during clinical care.

1.7 Department of Health and maternity quality standards

The Department of Health also has a role in setting standards for the NHS as a whole and is therefore an influence on the professional standards of midwives. This is achieved by publication of recommendations in response to changing health needs and increasing patient expectations (NHS England 2014, NPEU 2014, Healthcare Commission 2007, 2006, Kennedy 2001, HSC 1999). These standards have been steadily implemented with the overriding aim of improving the quality of care and patient safety (NHS England 2014, DoH 2009, 2008, 2007, 2003, 2001a, 2001b, 2000, 1997). The focus for midwives has long been the provision of care for normality but for the Department of Health this has moved to encompassing all women using maternity services (NAO 2013, DoH 2009) including those with high risk needs. The remit for midwives is that they are ‘knowledgeable and highly skilled’ (DoH 2009:11).

Despite this emphasis on the professional skills and knowledge of the midwife, more recent reports appear to focus on planning of services (NHS England 2014) and midwife numbers (NAO 2013, RCM 2013a). Reports and standards are now being delivered against a backdrop of a stringent financial plan for the NHS (NHS England 2014, NHS Institute for Innovation and Improvement 2012, DoH 2010) as a result of the global economic crisis. Regardless of the austerity measures, NHS England maintains that the

health service has been successful in responding to the population's health needs over the last five years (NHS England 2014). To continue this trend health service leaders are urging health professionals to continue to raise and maintain standards whilst keeping costs to a minimum. Whilst this is essential for the sustainability of the NHS it should not be done at the expense of quality. *Delivering High Quality Midwifery Care: the priorities, opportunities and challenges for midwives* (DoH 2009) acknowledges that 'midwives have complex and highly demanding roles' (DoH 2009:4) and a 'continuing need to improve the quality of midwifery care' (DoH 2009:7). The almost contradictory position of asking midwives to have knowledge and recognising the complexity of their roles suggests that there is a value in having information available to midwives and that midwives should use information in practice. Again, a study of information behaviour can illuminate what appears to be an integral part of midwifery practice.

1.8 Summary

The study focuses on how midwives access and use information when conducting midwifery practice in the labour ward. This premise is based on the diversity of conditions that women may present with and the breadth of knowledge required to provide high risk care. There is an implied importance of midwives accessing and using information through professional and quality standards set by the Nursing and Midwifery Council and the Department of Health. Guidelines and evidence based practice are presented here as they are recognised information sources for midwives acknowledged by current policy.

Arguably the quality of the information accessed will impact on the care that is delivered to women. There are recognised inhibitors to using research evidence and guidelines in practice. This may apply to other sources of information for midwives although other sources are not clearly identified. If midwives are inhibited from accessing reliable information there may be an effect on the quality of care. Equally, without knowing the range of sources and types of information that midwives use or the information needs that drive their information behaviour it is not possible to influence the use or quality of information sources.

The context and working environment may affect how midwives access and use information. If standards of care are to be maintained and improved by midwives, an understanding of how they use information at the point of care will give a foundation to enhancing and developing reliable information sources in a format that they readily use. As midwives work in a social group in the labour ward this would suggest an exploratory

study with the ability to observe how midwives access and use information during practice.

Having presented an introduction to the area of study, the following chapters present the research. Chapter Two is the relevant literature relating to healthcare professionals' information behaviour and specifies the research questions. Chapter Three details the methodology from the theoretical underpinnings to the research design and method of analysis. Chapter Four is the process of the analysis. Chapter Five is the findings which are presented as categorised themed data. Chapters Six and Seven discuss the findings and implications for practice. Finally Chapter Eight reflects on the study methodology, ethical issues and next steps.

Chapter Two

Literature Search and Review

This chapter details the search and critical review of the current literature relating to midwives' information behaviour. This identifies, synthesises and evaluates the current research evidence (Roe and Webb 1999) and ensures that this study does not repeat a previous study (Bryman 2004).

2.1 Literature search

The literature search (see Appendix 9.1) was conducted using Amed, CINAHL, EMBASE, Medline and the Cochrane databases using the search terms midwi*, nurs*, information behaviour, information need, information seek*, information, information access, information use, knowledge management, evidence based practice, decision making and primary care.

In recognition of midwifery's professional alliance with nursing, and lack of hits with midwi* the term nurs* was used. The search term *primary care* yielded studies that showed how primary care was not relevant to the study but also identified studies that ultimately remained in the review as there was hospital care input.

A search of unpublished healthcare theses from the University of Southampton and a request to an online midwifery forum for ethnographic midwifery studies yielded no grey literature for midwives' information behaviour. Health policies relating to midwifery care have been used as background rather than critiqued research due to their lack of applicability.

The inclusion criteria are in table 2.1.1.

Table 2.1.1 Initial criteria for inclusion in the literature search

<i>Inclusion Criteria</i>	<i>Exclusion Criteria</i>	<i>Desirable Criteria</i>
<ul style="list-style-type: none"> • Accessing of information by hospital based health professionals • English • 2004 onwards • Original research or systematic review • European, USA, Canada, Australia 	<ul style="list-style-type: none"> • Community based or primary care health professionals • Limited to electronic or single resources • Focus on development of information software • Focus on specific aspect of knowledge (ie: breastfeeding or smoking) • Interventions to improve access to information • Theatre work • Specific focus on decision making or evidence based practice 	<ul style="list-style-type: none"> • Primarily context based study (ie: hospital environment) • Primarily midwives or discrete group of hospital based health professionals • Similar aims and objectives to current study

The search was systematic using all search terms for each database. Eighty-seven research articles were identified from the initial search of titles and abstracts and the reference lists of each suitable study. At this point each study was scrutinised for citations using Web of Science database. After discarding non-relevant studies, twelve studies were selected (see Table 2.1.2).

Table 2.1.2 Research selected for literature review

No	Authors and Year	Title and journal
1	Bertulis (2008)	Barriers to accessing evidence-based information <i>Nursing Standard</i> 22 (36), 35-39
2	Bertulis and Cheeseborough (2008)	The Royal College of Nursing's information needs survey of nurses and health professionals <i>Health Information and Libraries Journal</i> 25, 186-197
3	Bonner and Lloyd (2011)	What counts at the moment of practice? Information practices of renal nurses <i>Journal of Advanced Nursing</i> , 67 (6), 1213-1221
4	Cranley, Doran, Tourangeau, Kushniruk and Nagle (2009)	Nurses' uncertainty in decision making: a literature review <i>World Views on Evidence Based Nursing</i> <i>First Quarter 2009</i> , 3-15
5	Davies (2007)	The information-seeking behaviour of doctors: a review of the evidence <i>Health Information and Libraries Journal</i> 24, 78-94
6	Estabrooks et al (2005a)	Sources of practice knowledge among nurses <i>Qualitative Health Research</i> 15, 460-476
7	Lappa (2005)	Undertaking and information needs analysis of the emergency care physician to inform the role of the clinical librarian: a Greek perspective <i>Health Information and Libraries Journal</i> 22, 124-132
8	McKnight (2007)	A grounded theory model of on-duty critical care nurses' information behaviour <i>Journal of Documentation</i> 63 (1), 57-73
9	McKnight (2006)	The information seeking of on-duty critical care nurses: evidence from participant observation and in-context interviews <i>Journal of the Medical Library Association</i> 94(2), 145-151
10	Sharit, Czaja, Augenstein, Balasubramanian and Schell (2006)	Assessing the information environment in intensive care units <i>Behaviour and Information Technology</i> , 25 (3), 207-220

11	Spenceley et al (2008)	Sources of information used by nurses to inform practice: an integrative review <i>International Journal of Nursing Studies</i> 45, 954-970
12	Thompson et al (2004)	Nurses, information use and clinical decision making – the real world potential for evidence-based decisions in nursing <i>Evidence Based Nursing</i> 7, p 68-72

As only one study (Bertulis and Cheeseborough 2008) included midwives, the selected studies focussed primarily on nurses and doctors. Each selected study was critiqued. To encompass the diversity of study types and layout, an adapted critiquing tool was used (Burnard and Morrison 2011) for each study (see Appendix 9.2). One study (Lappa 2005) was discarded after critique due to quality⁴. The critique summary based on the matrix method (Garrard 2007) and derived from the critiquing tool is in Appendix 9.3.

2.2 Literature review

This section reviews the selected studies to provide a background. The literature review was undertaken to evaluate and critique the literature pertaining to midwives' information behaviour. Its purpose was to furnish me with current knowledge and research of information behaviour to develop the research questions prior to commencing data collection. It also showed how the field could be organised (Burnard et al 2011). The layout of the review is based on the themes of information behaviour of healthcare staff defined in the reviewed studies. Initially an overview is presented followed by an in-depth consideration of the shared themes of information, context, information need, information seeking, information use and the format, types and sources of information and verbal information.

2.2.1 Overview of types and objectives of the studies

There is research in healthcare information behaviour stemming from *library science and services* primarily for the construction of information services for healthcare professionals. Three of the studies selected were authored by library scientists or those

⁴ As well as questionable and sometimes unrecorded data collection, sampling, unjustified study groups, analysis and no reported limitations the findings reflected the study aims too well suggesting lack of quality and bias

considering the information needs of clinicians during practice with a view to developing the service (Bertulis and Cheeseborough 2008, Davies 2006, McKnight 2006). The other eight were authored by nurses and nursing academics with varying purpose. Thompson et al (2004) and Bertulis (2008) conducted their studies to support evidence based practice. The objectives of Spenceley et al (2008), Sharit et al (2006) and Estabrooks et al (2005a) was the creation of a taxonomy of information sources that considered their usability and accessibility. Bonner and Lloyd (2011) and McKnight (2007) looked at the experience and description of nurses' use of information. Finally, Cranley et al (2009) wished to specifically explore nurses' uncertainty.

The range of the selected studies was broad. Three were literature reviews including barriers to evidence based information (Bertulis 2008), doctors' information seeking (Davies 2007) and uncertainty (Cranley et al 2009). One was an integrative review (Spenceley et al 2008). Bertulis (2008) reported very little method for the literature search and process of the review. Cranley et al (2009) and Davies (2007) both gave greater depth to the search but did not record the process of review. In contrast Spenceley et al (2008) detailed the search and the process of the review in great depth, demonstrating a rigorous process. One study used a questionnaire to analyse information needs of nurses with specific recognition of those working in the acute environment (Bertulis and Cheeseborough 2008). Whilst the sampling process was explicit and clear detailing the total number of respondents and their demographics, the questionnaire was not validated.

Two studies were secondary analysis of ethnographic data from previous research to establish sources of information (Estabrooks et al 2005a) and information use (Thompson et al 2004). It is notable that Estabrooks et al (2005a) did not report the sample size or the type of sampling and what was observed. The study reported a thorough analysis technique suggesting reasonable quality, however this was counterbalanced by the lack of detail regarding data collection and sampling. Thompson et al (2004) documented the sample size and quantity of data but did not identify sub groups within the 242 nurses sampled. Equally, the analysis of the vast quantity of data is not included in the study. Despite using data from two studies the methodology used to combine them was not made explicit (Whittemore and Knafl 2005).

This review included two studies by the same author using the same data. One was an ethnographic description of critical care nurses (McKnight 2006) and the other a model of critical care nurses' information behaviour (McKnight 2007). The final two studies were both primary research. One was a thematic analysis of qualitative interviews to consider information used in practice by renal nurses in a satellite renal unit (Bonner and Lloyd

2011). The other was a comprehensive study of the usability and accessibility of information for critical care nurses (Sharit et al 2006).

2.2.2 The context of information behaviour

Four studies were conducted in the acute clinical environment. Three in American critical care units, two looking at nurses (McKnight 2007, McKnight 2006) and one of the multi-disciplinary team (Sharit et al 2005). The fourth was Australian nurses providing life-saving renal care in rural renal units with minimal access to doctors (Bonner and Lloyd 2011). Critical care nursing is care of the critically ill patient (McKnight 2006), often on a one to one basis in an acute environment. There is a low patient/nurse ratio, high levels of care required and potential time limits (McKnight 2006, Sharit et al 2005). Nursing in a rural renal unit is probably a less well recognised healthcare service; the nature of the nursing and the level of care described in the study places it in the acute nursing environment. The qualifying factors for inclusion in the acute healthcare environment are, therefore, the low patient to nurse/doctor ratio, level of care and risk and the potential for time pressures. The labour ward in a tertiary hospital also matches these criteria.

The studies reviewed by Spenceley et al (2008), a Canadian research team, recognised the relationship between environment and resources⁵, and the priority of patient care.

McKnight (2007, 2006) clearly documented aspects of the environment that influenced information behaviour ‘...watching monitors, checking on patients, administering and verifying therapies and answering telephone calls’ (McKnight 2007:70). McKnight, an American library scientist, warned against the use of academic models of information behaviour, maintaining that the clinical environment needed to be acknowledged and that information models were failing to do this. Estabrooks et al (2005a) acknowledged in their taxonomy of nurses’ information sources the importance of work context, but did not expand further.

Davies (2007) a British information scientist, conducted a UK based literature review of doctors’ information needs. Davies asserted that much research is American and suggested that there are significant context differences in healthcare practice between the UK and America. Whilst this may be the case in terms of payment for services it may not be the case for the context of information behaviour. Despite this non-UK studies are included in her review.

⁵ This study is a review of information sources and not of information behaviour

2.2.3 What is information?

Of the eleven studies, four did not state what information was (Cranley et al 2009, Davies 2007, McKnight 2007, Bertulis and Cheeseborough 2008). The study by Cranley et al (2009) focussed on uncertainty. Despite being synonymous with information need, information need itself was not referred to therefore providing some justification for not defining information. However, the other three presumed shared understanding of the term. Four studies defined what information was used at the outset. Sharit et al (2006) focussed on information about the patient, whereas Bertulis (2008) and Thompson et al (2004) both implied that information for their studies was research evidence. However, Bonner and Lloyd (2011) provided the most inclusive definition stated before the study by acknowledging that it takes 'a number of forms' (Bonner and Lloyd 2011:1214) including the written word and practice experience. The final three studies alluded to information through the study findings. McKnight (2006) cited patient records and published information (that is not often used). Spenceley et al (2008) listed sources but did not specify what the information was. Similarly Estabrooks et al (2005a) listed sources. The inference for the latter three studies is that the source of information is a suitable definition. None of the studies defined explicitly how information affects the practitioner and what it did to their state of knowledge. There was some acknowledgement that information could be about the patient (such as observations).

2.2.4 Source, format and type of information

Three of the studies identified information sources that were consistent in terms of search strategy, information yield and quality. Cranley et al (2009) presented information as nursing colleagues, personal knowledge and published information such as local guidelines. Similarly Bertulis and Cheeseborough (2008) listed journal articles, own organisation publications, internet websites, nursing colleagues and electronic databases. Spenceley et al (2008) included nurse colleagues, journals, reference material, experience and the patient. McKnight (2007, 2006), on the other hand, clearly defined sources as *things* such as notes or report (handover) therefore giving greater explanatory power.

Several studies cited sources of information as social interactions, experiential knowledge, documentary sources, a priori knowledge (Estabrooks et al 2005a), paper based, computer based, interpersonal (Sharit et al 2006), print, electronic, communication, experiential (Spenceley et al 2008) and nursing knowledge, nursing identity and bodily (corporeal) (Bonner and Lloyd 2011). A description such as *paper based* or *documentary sources* or *print* could equally have been any one of a broad number of actual sources such as a book,

journal, notes or published information with, arguably, significant value differences in terms of search strategy, information yield and quality. Davies (2007) used a similar strategy, identifying five sources used by doctors: textbooks, journals, humans, computer searches and drug sources. Textbooks and journals were clear whereas humans could be doctors, nurses or patients and computer search could be the internet or medical databases; once again with very different information yields. These studies listed terms that could be considered to have been reduced to their primary configuration (ie: electronic or human). Arguably, these could be considered *formats* in that this was the initial presentation of the information rather than a description of the source itself, the relevance of which may become evident during analysis of my study.

McKnight (2006) also differentiated between sources and types of information (although not explicitly) in that a source is approached for information and type is what the information is used for. Davies (2007) identified clinical information needs (types of information) as diagnosis, drug information, epidemiology and treatment (Davies 2007). Davies' study established further types of information in terms of foreground – patient related, or background – general condition/disease information (Davies 2007). Despite some confusion between groups, the majority of the reviewed studies cited similar types and sources of information for the participants. However, Davies' (2007) identification of *diagnosis* information for doctors appeared to be a significant qualitative difference between nurses and doctors for type of information. In the studies evaluated in this review no others found diagnosis type information. McKnight (2007) affirmed that nurses do not diagnose. This suggests that health professionals may have different information requirements although how this may relate to midwives is unclear. Clarification of formats, sources and types of healthcare information may enable effective literature evaluation and consistency in further midwifery research.

2.2.4.1 Verbal information

One of the most consistently reported findings in healthcare information behaviour is the use of colleagues as a source of information (Bertulis 2008, Spenceley et al 2008, Davies 2007, McKnight 2006, Estabrooks et al 2005a, Thompson et al 2004). In the findings from these studies focus was on several areas including the value of using a colleague as an information source (Bonner and Lloyd 2011, Estabrooks et al 2005a), the likelihood of healthcare professionals using verbal information (Bertulis 2008, Spenceley et al 2008, McKnight 2006) and what other sources may be missed when healthcare professionals talk to colleagues (Cranley et al 2009). The level of analysis and importance afforded to

verbal information varied considerably with each study. Davies (2007) acknowledged verbal information but provided scant discussion. Equally she did not distinguish between ‘all those a doctor may contact’ (Davies 2007:87) which arguably may include nurses, midwives, other healthcare professionals and patients. Similarly Bertulis (2008) mentioned colleagues being a repeated finding but only cited one study. Cranley et al (2009) also provided only brief mention and described this as ‘the expertise of others’ (Cranley et al 2009:9) without discussion of who they are and what expertise may be.

Thompson et al (2004) suggested that accessibility is the underlying factor for using verbal information, a point echoed by Cranley et al (2009). However, accessible written sources of information were still used suggesting that other factors were at play. Davies (2007), on the other hand, established that doctors found asking a colleague quicker than using a text or electronic format. Bertulis and Cheeseborough (2008) identified colleagues but only when needing ‘how to do’ information (Bertulis and Cheeseborough 2008:194).

McKnight (2007, 2006) found that nurses request knowledge based information from each other rather than looking it up⁶. Knowledge based information is that for which there is an external or explicit body of knowledge such as research or published information (McKnight 2006). Bonner and Lloyd (2011) stated that, along with their existing knowledge and what they see and hear, nurses shared information verbally⁷. The authors suggested that this ‘social information’ had ‘critical importance’ (Bonner and Lloyd 2011:1217) for nurses using it. In decision making Cranley et al (2009) suggested that nurses’ uncertainty is eased by consulting a colleague with little or no recourse to other information sources. Estabrooks et al (2005a) unequivocally stated that *social interactions* were the overarching finding in their analysis of observational data from a previous study, followed by personal experience.

Sharit et al (2005), in their composite study of several methodological tools for modelling the perceived value of information sources for critical care staff, acknowledged that staff communicated verbally for information purposes⁸. Analysed separately, nine nurses and six doctors ranked the qualities of paper based formats first, then computer based meaning that interpersonal ranked lowest for all criteria⁹. This opposed the findings of Bonner and Lloyd (2011), Cranley et al (2009) and Estabrooks et al (2005a). This may be due to the inclusion of doctors as there were noted differences between nurses and doctors

⁶ The nurse being the *source* and the knowledge based information being the *type*

⁷ There is no confirmation whether this is knowledge or experientially based

⁸ Explicitly stated as healthcare providers not patients

⁹ Completeness, ambiguity, accuracy, non-redundancy, ease of access, organisation, non-distracting (Sharit et al 2006:215)

in this latter category with doctors ranking interpersonal formats lowest. Whilst there was an assumption in this review that there were enough similarities to extrapolate research from both nurses and doctors to support research for midwives, a finding such as this suggested that there may have been differences attributable to their different roles. It should be noted, however, that the study by Sharit et al (2006) began with a belief that there are fundamental differences between nurses and doctors and the data was therefore analysed separately. The study was based on simulated patient tasks and concurrent or post task interviews rather than interviews (Bonner and Lloyd 2011) or observation and interview (McKnight 2007, 2006).

McKnight (2006) found that patients were also used as a verbal information source. Although there appeared to be a division in the literature with some studies finding the same (Bertulis 2008, Spenceley et al 2008, Estabrooks et al 2005a), and others not (Bonner and Lloyd 2011, Cranley et al 2009, Bertulis and Cheeseborough 2008, Davies 2007, Sharit et al 2006). This may be a function of recognising *what information was*, as discussion with a patient may not be acknowledged as *information* by the researchers. Sharit et al (2006) and Davies (2007) explicitly mentioned *interpersonal* and *human* formats respectively but neither included patients. Spenceley et al (2008) ranked information sources in their literature search into those most frequently used and patients ranked fifth of twelve. Verbal communication, from both patients and colleagues, were identified in the majority of studies as an information source used by nurses and doctors however they were not recognised consistently in all studies. Verbal information was clearly used as an information source by nurses and doctors. How they used this information and how facilitated or inhibited they were by doing so was less clear.

2.2.5 Information behaviour

Information behaviour is a composite of several behaviours. Wilson (2000) suggested that information behaviour research is of value to scientists to enable effectiveness in seeking, searching and using information. In healthcare, information behaviour has been studied to guide and promote effective database searching techniques (McKnight 2006) and library searching (McKnight 2007).

2.2.5.1 Information need

The term *information need* (Davies 2007, Thompson et al 2004) referred to the recognition of a knowledge gap whilst giving patient care. It is also known as *uncertainty*

(Estabrooks et al 2005a, Cranley et al 2009). Cranley et al (2009) also alluded to it being a gap in knowledge or *inability to predict outcomes*. According to Cranley et al (2009) the level of need is a function of expertise, nurses with greater expertise have a 'greater cognitive repertoires' (Cranley et al 2009:5). Whereas Davies (2007), Estabrooks et al (2005a) and Thompson et al (2004) acknowledged that information need exists with little discussion of what had generated that need.

McKnight (2006) suggested that nurses' monitoring of patients highlighted information needs. She maintained that nurses constantly surveyed and monitored the clinical environment, and that this 'vigilant surveillance' (McKnight 2006:148) occasionally identified a specific information need. Cranley et al (2009) suggested that 'clinical uncertainty is a largely unarticulated aspect of nurses' practice and is therefore undertheorised' (Cranley et al 2009:12) thus indicating lack of research. By virtue of being the only researchers in this review to have commented explicitly on the generation or recognition of information need, they are credible commentators on this point.

Recognised information need preceded information seeking which was driven by wanting to 'reduce clinical uncertainty' (Thompson 2004:68). Cranley et al (2009) proposed that uncertainty was reduced by 'gaining a grasp of the clinical situation' (Cranley et al 2009:3) but did not specify how this was achieved. Findings from Estabrooks et al (2005a) described the triggering of action by nurses when they faced uncertainty in clinical practice and the need to solve a problem. The inference being that when a need is identified by the practitioner it will lead to the instigation of a search.

However, this implied that the need had to be recognised (Cranley et al 2009). This point was difficult to establish as it was a cognitive process (Thompson 2004). Davies (2007) suggested that information need may not be acted on because the individual had either not recognised their need or had chosen not to act but she did not expand on this point. Thompson et al (2004) regarded users choosing not to act on uncertainty as information behaviour. The evidence from these studies suggested that information seeking will only happen in the presence of information need, but only if the need is recognised and the individual chose to acknowledge it.

Unlike other researchers, Davies (2007) defined types of *information need* such as drug information and diagnosis. This may be what information actually was and the *type of information*. Frequency of need was also identified. This may be because Davies' literature review focussed on doctors rather than mixed health professionals. No other studies mentioned type or frequency of information need.

Information need and uncertainty exist as components of information behaviour, which, according to Cranley et al (2009) are based on lack of knowledge. Individuals may or may not be aware of information need, but seeking information shows that a need or uncertainty has been identified.

2.2.5.2 Information search and seeking

Information searching 'is the purposive seeking for information as a consequence of a need to satisfy some goal' (Wilson 2000:49). The reviewed studies presented information seeking as searching and critiquing research evidence according to the principles of evidence based practice (EBP) (Thompson 2004, Bertulis 2008) and also as seeking information from patient records (McKnight 2007, Sharit et al 2006), the patient themselves (Bonner and Lloyd 2011, McKnight 2007, Estabrooks et al 2005a) or fact such as drug dosage (Davies 2007). Davies (2007), whose review presented an overall picture consistent with information behaviour literature¹⁰, suggested that the search for information by doctors would be related to what is being searched for. These differences may be attributed to the differences between searching for *research evidence*, which required database searching and critique (the method), and *information* which is sought from a source and does not necessarily follow a method. Clarification of information seeking scenarios (evidence based or information) highlighted the level of complexity, skills required and time limits of the search. The type of search may be influenced by the clinical situation. McKnight (2006, 2007) acknowledged that there is minimal opportunity for healthcare professionals to conduct EBP searches during clinical practice.

Searching for information on computers presents a unique set of search skills required by healthcare practitioners. The study by McKnight (2006) suggested that nurses are proficient in the use of computers although some have difficulty with systems. Sharit et al (2006) acknowledged that computer information formats and sources required training and updating, a point echoed by Davies (2007). Bertulis (2008) suggested that nurses' information technology skills were lacking and their access to computers was minimal although the review on which this finding was based included acute, theatre and community nurses. Estabrooks et al (2005a) concurred with this finding but cited time constraints too. Bertulis and Cheeseborough (2008) found that 10.4% of nurses in NHS hospitals did not have access to a computer. Those that did often had to share with around six other members of staff. However, these studies, in information technology terms are quite old, and healthcare professional computer skills may have improved.

¹⁰ Davies defined the parts of the study as information need and information seeking

Davies (2007) estimated an average 13% computer use by doctors in all areas, rising to 53% for the most recent study (2005) in the hospital environment suggesting that this may be the case.

Information seeking may involve patient records. Sharit et al (2006) described critical care staff going through pages of patient data in a bid to establish fluid balance and being unable to limit the amount of patient data meaning they needed to search in order to find the specific data required. The researchers observed that critical care staff were required to 'integrate information from different media sources' ('observations from 24 hour flowsheets and kardex' (Sharit et al 2006:212). Whether these are search skills is unclear. McKnight (2007, 2006) recorded the nurse interaction with patient charts (notes) as part of practice and not a search.

Bertulis and Cheeseborough (2008) maintained that participants were questioned about time for seeking information during practice but the tabled results were not interpreted by the authors. The majority of respondents appeared to be in the 'sometimes' or 'never' categories (Bertulis and Cheeseborough 2008:192) suggesting that they did not have time to search for evidence during practice. Davies' (2007) literature review of doctors seeking information suggested that 'if the search takes more than two minutes it will not produce information suitable for that patient consultation' (Davies 2007:85). It is not clear whether this was because of the time taken or the information yield of the search.

Thompson et al (2004) asserted that the limited time in which a decision is able to be made or 'implied response time' (Thompson et al 2004:69) influenced information behaviour as it directed the time available for information searching. They did not elaborate on how implied response times are derived. McKnight (2006) asserted that nurses do not have time to read on duty (searching a document). Bertulis (2008) stated that lack of time is strongly linked with nurses not searching for research evidence in the clinical area. McKnight (2006) asserted that minimal knowledge based information¹¹ is used by critical care nurses with the inference being that this is linked to search times.

The implication from the review of the literature in the preceding section (2.2.5.1 Information need) suggested that seeking follows need. However, this was put into question by two studies. McKnight (2006) whose suggestion of 'vigilant surveillance' (McKnight 2006:148) implied that the search may precede need and the need followed the search. Equally Thompson et al (2004) suggested that information seeking may take place to confirm a course of action rather than as a result of information need.

¹¹ Medical knowledge generalizable to any patient cited in Gorman (1995)

The success of the search may be linked to the search process and how success is measured. The search was critical to information behaviour but, from the evidence, appeared to be the point at which information behaviour broke down due to inhibitors such as computer access and skills and time constraints. The role of these inhibitors in information behaviour may be a key to establishing effective information behaviour of midwives.

2.2.5.3 Information use

Thompson et al (2004) mentioned the stages of decision making within the context of information behaviour. Integration of new information is termed 'incorporating the evidence into a strategy for action' (Thompson et al 2004:68). They clarified further by commenting on how new information may be used to support what nurses already know. The lack of evidence in this area of information behaviour is acknowledged by Thompson et al (2004). To this end they justified the use of decision making as a context for research in information behaviour. McKnight (2006) made a short reference to the use of information but did not expand beyond simply recording that it had happened. Estabrooks et al (2005a) provided inferential support for the use of information. However, information use was not explicit and did not appear to have been robustly covered in the study. The study then went on to discuss the validity of social interactional information sources and the heuristics that may be used to evaluate them, without pausing to establish whether the information was actually used. Spenceley et al (2008) talked of nurses' reliance on information sources, but again did not elaborate on the use of information for immediate clinical practice. They did, however, state that information behaviour research has consistently failed to examine outcomes. Thompson et al (2004) observed that research evidence, presumably in journal format, was not accessed during clinical practice in the acute environment, which therefore precluded the possibility of using that type of information during immediate care. They contributed further in that they recognised that information sought may not always be used for clinical practice. The expectation with EBP searched information (research evidence) is that it will be reliable. However, this review so far demonstrates that *information* may be diverse and therefore its reliability may be difficult to establish. Sharit et al (2006) acknowledged the importance of information use for the development of information systems. The evidence for information use in the selected research papers appeared inconsistent. It is not clear whether this was because it has not been researched or because there was an assumption that information will always be used.

2.2.6 Summary

The literature reviewed included studies that focussed on the information behaviours of disciplines such as nursing and medicine. These studies revealed interesting findings relating to effectiveness, quality of care and information services. It is anticipated that a study focussing on the information behaviour of midwives within the Labour Ward setting will add to these findings.

This review suggests several key areas of focus for my study. Information searching, or moving successfully from *information need* to *finding information*, is the point at which inhibitors in the process may impede successfully finding information. As a key component to successfully finding information and as part of the overall aim it is therefore incumbent on this study to address both inhibitors and facilitators to information. The sources and types of information used by midwives may also contribute to what inhibits or facilitates information. The prevalent finding of the use of colleagues as an information source for nurses and medics is further support for studying sources and types. Likewise, information sources and types may be driven by the context and environment of the labour ward. Conversely, the use of information is the aspect of information behaviour least supported by research evidence. Focus on the use of information will contribute to understanding midwives' information behaviour but may also contribute to the broader discipline of information behaviour. Finally, information need is a key area for study as it is the first stage of information behaviour and one of the reviewed studies (Cranley et al 2009) suggested that it is undertheorised.

The reviewed studies highlighted some possible methodological considerations for my study. There is minimal research into midwives' information behaviour, therefore an exploratory study may be suitable as there is little evidence on which to base focussed research. Formats, sources and types do not have a consistent presentation in the literature. The reasons for this are varied, however Spenceley et al (2008) attribute this to participant reporting. To avoid the inconsistent presentation of sources and types in my study there may be value in using observational methods, thus not relying on participant reporting. Likewise the reviewed studies demonstrated that study of healthcare professionals in the workplace gives important contextual data, which is not reliant on self-report. The practice and context presented in the first chapter, and my professional view suggest that this may be more likely during the care of women with high risk needs due to their complexity. The labour ward is where women with complex high risk care are recommended to birth. The review inclusion criteria also focus on the acute environment with low patient (woman) to healthcare professional ratio. These points will be considered further in the following chapter.

Therefore, the aim of this study, is to explore the information behaviour of midwives with particular attention to midwives' understanding of their information needs, the sources and types of information that they use whilst giving care in the labour ward and their use of information, and facilitators and inhibitors to the access and use of information.

To this end the following research objectives and questions have been developed.

2.3 Research objectives

1. To explore the information behaviour of midwives working in the labour ward.
2. To understand and explore how midwives identify their information needs during practice.
3. To look at the types and sources of information that midwives use whilst in practice on the Labour Ward.
4. To explore how midwives use information.
5. To explore factors that facilitate and/or inhibit information access and use.

2.4 Research questions

The study has been designed to illuminate the following questions:

1. How do midwives identify their information needs whilst in practice on the Labour Ward?
2. What sources and types of information are accessed by midwives whilst in practice on the Labour Ward?
3. How is the information that is accessed utilised by midwives?
4. What are the factors that facilitate or inhibit the access and use of information?

The next chapter details the methodology used with philosophical underpinnings and the research design.

Chapter Three

Methodology, research design and methods

The methodology for this study, based on the rationale, background and context, literature and research questions in the preceding chapters is presented in this chapter. The chapter spans the study foundations and philosophical background, the research design, quality assurance, ethics and funding.

3.1 Study foundations

The discussion of theory underpinning the study methodology enables the reader to understand the foundations upon which the study is based (Sachs 2005), ultimately contributing to the type of analysis and what the study can rightfully claim (Braun and Clarke 2006). Selecting an appropriate methodology and method of data collection is dependent on the nature of the empirical world under study, the participants within and the study aims but also whether there is a hypothesis for testing. The background to the study, the literature review and personal experience would suggest that midwives do use information and, arguably, this could function as the hypothesis for the study. However, to determine whether midwives use information alone will not fully address the exploratory nature of my research aims: the *how* rather than the *what*. The difference between these is the difference between *understanding* and *explanation*. The latter (*what* and *explanation*) is suggestive of the positivist paradigm wherein the premise is based on the single truth, the experimental method, deductive reasoning and testable hypotheses to produce scientific laws for prediction (Bryman 2004). Instead, the genus of this study is to understand midwives' information behaviour that is informed by background literature (and experience) rather than a testable theory. Therefore, with no requirement to test theory, it is aligned with a more inductive or qualitative methodology, understanding and the potential for theory to be developed from the outcome and findings of the study (Crotty 2013, Haralambos 2013, Bryman 2004).

However, the testing of hypotheses is not the only consideration with regard to positivist or naturalist methods. There is a difference between the social world of people and the objects of the natural sciences such as gas and matter (Bryman 1992). There is acknowledgement that 'human beings are best regarded as acting out of an awareness of the meaning of the situation they are in rather than causal variables' (Ashworth

2000:139), as, unlike materials such as gas or matter, individuals can attribute meaning to objects and situations. The underlying rationale for these theoretical perspectives and considerations of methodology was firstly a realisation that the objectivist/positivist stance was untenable for social research as 'human values intruded upon the process of scientific enquiry' (Burrell and Morgan 1994:228). Secondly, the wish to determine scientific laws could not be applicable to an individual or individuals because they are 'free' (Burrell and Morgan 1994: 228). Midwives in a social group in the labour ward have values and can act or behave without adhering to *laws*. However, the nature of the environment for study (the labour ward) needs to be considered in terms of a representative theoretical perspective. My understanding of midwives working in the labour ward is that it is a constantly changing social environment as midwives, women and other staff groups enter and leave depending on the times of day (shift changes) and clinical needs (transferring to or from a different area). Based on the many possible perceptions of labour ward working this becomes a debatable point, but the social nature of the labour ward and the potential for individual meaning to be applied to information further supports naturalist enquiry for this study. The naturalist epistemology and theoretical perspective supports the choice of methodology. This is presented in the next section.

3.2 Ethnography and symbolic interactionism

The methodology is the channel through which the realities are delivered and it must facilitate the social world to reveal itself (Hammersley and Atkinson 1993). Naturalism is the consideration of the methods for the scientific investigation of the social world, one premise of which is the importance of 'the philosophical view that strives to remain true to the nature of the phenomenon under study' (Matza 1969 in Bryman 1992:58) - in this study the midwife is part of the social group in the labour ward. The purpose of method selection is not about the best method¹², it is about the method that is best to address the particular research aims. This study draws upon the principles of ethnography as its methodology. The justification for this is presented here in the light of the underlying theoretical perspective and consideration of other naturalist methods and why they are less suitable for this study.

Drawing on principles of ethnography enables the *context* and the people within it, or social group, interacting together - midwives, women, obstetricians, maternity support

¹² In healthcare the randomised controlled trial has been considered one of the best forms of evidence (Rees et al 2010)

workers and to an extent, managers, researchers and others sited outside the labour ward¹³ to be studied. The theoretical perspective of symbolic interactionism that has shaped present day ethnography (Crotty 2013) works on a dynamic set of often quoted premises about the way individuals assign meaning to objects and co-construct the cultural rules of their environment:

- Human beings act towards things on the basis of the meanings that the things have for them
- The meaning of such things is derived from, or arises out of, the social interaction that one has with one's fellows
- These meanings are handled in, and modified through, an interpretative process used by the person in dealing with the things he encounters (Blumer 1969:2)

Bloor (2001) suggests that, in healthcare, the patient's (or woman's) body 'is the object of all professional clinical work' (Bloor 2001:182), hence one of the *objects* or things. Midwives in the labour ward are a social group (one's fellows) in a specific context (labour ward). They share a system of meanings and develop the organisational or cultural rules of information behaviour through social interaction (Chatman 1996, Spradley 1980, Blumer 1969) thus showing the applicability of Blumer's second premise. A similar interpretation is offered by Pendleton and Chatman (1998) when drawing on Elfreda Chatman's theory of information behaviour which is based on social rules developed in the 'small world¹⁴' (Pendleton and Chatman 1998:733). 'The act of seeking information occurs because an individual's concerns reflect problematic situations that are shared by members of a homogeneous social milieu' (Pendleton and Chatman 1998:735). Therefore, the context formed by the social group and place (small world or labour ward) is crucial to how midwives identify their own and shared meanings and thus determine an information need.

The final premise is that a situation is understood by the individuals within it according to the cultural rules but the cultural rules are dynamic and changing (Baker et al 1992). They are not complete or prescriptive but are transferable, therefore enabling midwives to deal with new situations (Spradley 1980). The constant interaction of midwives within the labour ward environment, revises and reinforces shared meanings but also enables midwives to address new information behaviour situations. The premises of symbolic

¹³ People sited outside the labour ward could also be politicians and the national influences on the maternity services

¹⁴ The small world is an environment inhabited by those sharing 'cultural meanings' (Chatman 2000:3) and wherein events happening have a 'degree of predictability' (Chatman 2000:3)

interactionism are commensurate with the midwife working in the labour ward based on her ability to negotiate, interact and interpret the world around her, rather than being a passive recipient of external stimuli or an external reality. However, the theory acknowledges how the context helps the construction of meaning (Fulton 2005, Sonnenwald 2005). This aligns the theoretical perspective of symbolic interactionism with the individual as part of the social group in this study. The justification for drawing on ethnographic methodology as compared with other methodologies is presented in the next section.

3.2.1 Justification for using the principles of the ethnographic method

Symbolic interactionism has an accepted association with the methodologies of ethnography (Bloor 2001), phenomenology (Crotty 2013) and grounded theory (Baker et al 1992). Phenomenological methodology acknowledges the individual's 'lived experience' (Todres and Holloway 2010:179) and the meanings that objects (things) have for them. However, it is suggested that culture is a key obscuring factor for meanings (Crotty 2013) which the researcher then brackets away so as to return to the true meaning of the object for the individual. Therefore, if the phenomenological approach was adopted for this study, the changing, developing and informing culture that symbolic interactionism describes, which is a key feature of this study, will be lost along with the value of context for the study. Equally, grounded theory may be suitable for the research aims. It is inductive and there is little theory at this point for this area of study. Its affinity with symbolic interactionism means it can accommodate study context via the fieldwork data collection methods of participant observation and interviews. Both ethnography and grounded theory acknowledge the contributing social role of the researcher as research instrument and there is concomitant acceptance of the multitude of possible sources of data (Baker et al 1992). The difference between these two methods is the way that theory is generated from the data (Bluff 2006a). Grounded theory generates theory from the data being collected and continually tests the incoming data using the theory generated (Baker et al 1992) until saturation is reached. The ethnographic stance is that of looking at data, once collection is complete, and testing data, by to-ing and fro-ing between the 'inductive and deductive like someone who is simultaneously creating and solving a puzzle' (Emerson et al 1995:144).

The focus of ethnography is description and explanation of the actors' construction of the meaning of their actions (Grbich 1999). Culture may also become apparent (Holland 1993) in the writing of the actual ethnography. The writing is thick description that looks

at the meaning of actions rather than a description of the actions alone (Geertz 1973) which enables the reader to have the reality of the participant presented to them. It aims to 'give the reader a greater depth of understanding by fully contextualising what the research has observed or experienced' (Scott Jones and Watt 2010:177). Theory may be developed from thick description. The presentation of the findings will contribute to understanding without necessarily generating theory (Holloway and Todres 2003), although this remains an option once the findings are complete. Previous researchers of information behaviour have also used variations of the ethnographic approach (McKnight 2006, Estabrooks et al 2005a, MacIntosh-Murray and Choo 2005, Thompson et al 2004). Thus the theoretical and methodological premises are in place to support the use of principles of ethnography. However, there is a personal side to this. The traditional and historical fieldwork aspect of immersion in a culture (consistent with the principles of ethnography) resonates with me as there is no artificial environment created for research purposes, it is the field in view to be recorded by the researcher. This subsequently contributes to its ecological validity (Hammersley and Atkinson 1993), the alternative to which is the creation of an artificial environment which may affect the behaviour of participants. The principles of ethnography presents as a suitable methodology for this study by its propensity for acknowledging context, observing culture, the *understanding* that may be afforded by it and its ecological validity.

3.3 Methodology

Ethnography has its roots in cultural anthropology and, despite its lack of dominance as a research methodology, it is one of the methods with the oldest history (Scott Jones and Watt 2010, Holloway and Wheeler 1996, Van Maanen 1988). Early accounts of ethnography/social anthropology describe the researcher shipping out to a foreign culture and remaining immersed within it for an extended period of time, usually several years (Roper and Shapira 2000, Van Maanen 1988). The product of their work was the *description* of the culture rather than an unbiased scientific account (Scott Jones and Watt 2010). This began to change when Malinowski's analysis of his findings in the Trobriand Islands took on a more systematic analytical direction (Roper and Shapira 2000). Soon however, the recognition of cultures being available on one's doorstep precipitated a change to immersion in a less foreign culture and ultimately one in which the researcher remained immersed. William Foote Whyte's *Street Corner Society* (Whyte 1943) is an example of this. Ethnography then became cemented as a methodology in its own right (Scott Jones and Watt 2010). This may have partly been in response to the changing dominance of positivism (see 3.1 Study foundations) and the more systematic approach to

methodology. Bloor (2001) asserts that the ethnographic method has evolved in sympathy with its constructionist foundation to encompass the emic view of the participant or their subjective meaning rather than observation alone. With the complementary support of epistemology and its increasing credibility as a result, ethnography became more accepted and used.

Ethnography is now well established as a methodology and method. Its value for healthcare research is well documented in terms of understanding the behaviour of both patients and staff and also the potential disparity between what participants do and what they believe and report that they do (Savage 2000). Mulhall (2003) acknowledges the ability of ethnography to describe and account for the healthcare environment during the conduct of clinical care. For my study, drawing on the principles of ethnography enabled rich data to be collected by both observation and interview of participants.

3.4 Research design

This section details the research design. There is a justification for the use of focussed ethnographic methods. Access to the field and field work roles are described. The setting and sample are considered followed by discussion of the data collection methods of observation and interview.

3.4.1 Ethnographic principles rather than ethnography

This study presents several challenges to the traditional ethnographic method. I am a midwife wishing to explore the labour ward for a comparatively short period of time, an environment that, through my work, I know and understand. Equally, there are assumptions made at the outset of the study regarding midwives' information behaviour. However, the underlying principles of the emic and etic perspective remain true to ethnography. My role as a native researcher, the implications of assumptions and the emic and etic perspective and their rationalisation with the research methodology are considered in this section.

3.4.1.1 Native researcher

Emerson et al (1995) suggest that ethnographers are usually unfamiliar (alien) with the environment to be studied. However, the evolution of the ethnographic method clearly

allows for this and it is now common practice for natives to conduct an ethnographic study (Fetterman 2010, Roper and Shapira 2000, Burden 1998, Hunt and Symonds 1995, Kirkham 1992). I share language, culture and profession with the participants in my study. In contrast, Malinowski writing after his travels to the Trobriand Islands, asked his reader to

imagine yourself suddenly set down surrounded by all your gear, alone on a tropical beach close to a native village, while the launch or dingy which has brought you sails away out of sight (Malinowski 1922:8).

Malinowski was not only in an alien culture but he was a long way from home. William Foote Whyte, a Harvard student, studying a slum in pre-war America, lived there for several years. He said

I could walk freely up and down its streets, and I had even made my way into some of the flats, and yet I was still in a strange in a world completely unknown to me (Whyte 1943:289)

Goffman (1961), an academic, studied the life of inmates within a total institution, again a culture away from his own¹⁵. My study will not be the overarching description of an entire culture such as those produced by *non-native* researchers Malinowski (1922) or Whyte (1943), or the culture of an institution produced by Goffman (1961). Instead I am a native researching an aspect of my own culture for a comparatively short period of time.

However a researcher researching their native environment has a potential for bias as there are things that may be taken for granted (Mulhall 2003). Whilst this is problematic from an objective viewpoint, arguably it is mitigated by two positions. The first being that the researcher's view, however, biased, is still a 'constructed reality' (Borbasi et al 2005:495) and therefore valid in its own right. The second, is the open admission of possible conflict of the native's role (midwife) and that of researcher. The reflexivity required to deal with this is discussed in 3.6 Quality Assurance.

3.4.1.2 Focussed ethnography

The prior assumptions also present a challenge to a traditional ethnography. As with most qualitative studies, there is no hypothesis based on previous knowledge, however, there is an underlying assumption that midwives will enact information behaviour. This assumption goes against the grain of ethnographic study (Holloway and Todres 2003,

¹⁵ Goffman's field relations were not clearly identified

Ashworth 2000). The focus provided by this assumption brings the study into the domain of a *focussed* ethnographic approach which uses ethnographic methods with a clear area of enquiry (Fetterman 2010, Roper and Shapira 2000) based on the assumptions about midwives' information behaviour. Hammersley and Atkinson (1993) use the term 'micro-substantive research' (Hammersley and Atkinson 1993:205) wherein an aspect of a social organisation is studied rather than the entire field in view.

3.4.1.3 *Emic and etic*

Observation and interview data collection methods are used. These are intrinsically associated with ethnography and, to this end, follow the ethnographic methodology except that I am an insider and time in the field is focussed rather than prolonged.

The etic perspective is the researcher's view of the midwives' behaviour (Fetterman 2010, Roper and Shapira 2000). Fetterman (2010) sees the emic perspective, the participants' view gained through interview, as the stronghold of ethnography, the part that gives depth to the etic view. However, Agar (2008) does not ascribe to the perceived differences of the emic and etic, choosing instead to see a 'blending' of the two (Agar 2008:239). Emerson et al (1995) however, remind the ethnographer that there is much to be seen in behaviour and inferences that the researcher may draw from this. Even when participants are asked for their views, the emic, it is still only a view and may not uncover meaning. Regardless of how the perspectives are labelled or used, it is clear that the types of data from observation and interview potentially offer different perspectives on something very similar. What this means for this study is that despite some departures from traditional ethnographic principles the features of emic and etic data remain consistent with ethnography.

3.4.2 Access to the field

As a midwife collecting data in my current field, there is a possibility of bias (see 3.5.1.1 Native researcher). Collecting data in my current workplace may amplify this bias and also present potential interruptions to data collection (Mulhall 2003). Therefore I sought permission to collect data in a similar maternity unit in England. Access was relatively straightforward. The consultant midwife requested that I informed the staff via meetings and posters and also negotiated permission from the Research and Development (R&D)

department which, although time consuming, was a process with which I was familiar¹⁶. I also gained occupational health clearance after a full raft of vaccinations and a Criminal Records Bureau (CRB) check.

Initially I entered the labour ward with one of two possible contacts: the consultant midwife or the research midwife. I quickly learned how to gain entry alone in order to reduce the possibility of not being able to gain access because the contacts were unavailable. This involved introducing myself and my study to the labour ward coordinator for access to the midwife and labour room (see 3.7.1.2 Consent). The labour ward was used to having research conducted there and on the whole I felt welcome and that there was interest in my study. The midwives appeared to be comfortable being observed as there was little resistance. Occasionally there was an apparent feeling of resignation to being observed.

There were several potential gatekeepers, from the initial consultant midwife through to the coordinators and the midwives themselves. Burgess (1984) acknowledges that these are the people that enable or halt access to the field. I had assumed there would be only one and it would be an individual. However, in practice it was the administrative and red tape gatekeepers of occupational health and human resources (see 3.3.4 Professional Issues) that proved to be the most challenging.

3.4.3 Researcher as observer

Conducting fieldwork creates an identity for the researcher to the participants in the field -

every field work role is at once a social interaction device for securing information for scientific purposes and a set of behaviours in which an observer's self is involved (Gold 1958:218)

The relationship with the participants, or 'field relations' (Hammersley and Atkinson 1983:88) during fieldwork was made explicit to the participants, whether directly involved in the study by their consent or indirectly because they were in the labour ward during data collection.

I chose to be an observer-as-participant (Gold 1958) or 'moderate' (Spradley 1980:60), known to the participants as an observer but taking no part in the activity of those being observed. Burgess (1997) suggests that as the contact with participants is brief (rather

¹⁶ One of my midwifery roles at the time was research midwife therefore the process of setting up a study with the R&D department was a familiar one

than prolonged in-the-field type), there is a restriction on how much the observer can truly understand about the participant's meanings for behaviour. The counter argument is that as a native (midwife) meanings may be more accessible to me as a researcher (see 3.6 Quality assurance).

There are advantages for the depth of data collection with the observer-as-participant role. One of the alternative stances of operating covertly or as a participant-as-observer (Gold 1958), whilst less favoured by ethics committees for research conducted in the healthcare environment, is that it would not give the legitimacy to ask questions and enquiry of those who are participating. Equally, as a complete participant I would need to provide clinical care and this is time consuming, likely to impede data collection or, of more concern, I would be 'implicated in existing social practices and expectations in a far more rigid manner than the known researcher' (Hammersley and Atkinson 1983:94) which could influence data collection. However, it is probable that covert field relations may provide valuable data that may not be obtainable by known researchers. Proponents of these roles advocate their use to counteract the Hawthorne Effect in which the process of scientific investigation influences outcomes (Pope and Mays 2006a). As an overt observer, I accepted the possibility that I may affect what is happening in the field and that, equally, some behaviour may be suppressed by participants.

As observer-as-participant I gained 'professional distance that allows adequate observation and recording of data' (Fetterman 2010:37). However, I did pass vomit bowls or swabs when specifically asked and, on one occasion, opened the delivery pack

Excerpt from observation with midwife Yolanda

'I just want to push' 'Wait a second I'll put my gloves on' (says Yolanda). I (researcher) open the delivery pack and instruments, Yolanda (says) 'Little pushes, head comes nice and slowly', 'Can't do', 'You can ... contraction yeah?', Yolanda has hands on head, gentle push (name), Yolanda has hands on head, woman breathing strongly, CTG no longer recording, 'Contraction there or not? Next contraction baby will be born, little push, that's it, little push, little push, breathe, baby's head.' Baby born, put between woman's legs, woman takes (baby), I get towel, give them a towel, baby now on bed, called for 2nd midwife, Yolanda clamps cord someone cuts it *Yolanda Obs Y76*

As a professional I could not ignore the immediate need of the situation but also recognised that my action was unlikely to disadvantage the observation and may have

improved my acceptability to the midwives and women in the labour ward. The position of being a *midwife* using participant observation to research midwives presents a field relation that is based on Gold's (1958) and Spradley's (1980) definitions but has a fundamental difference of being an outsider who may move inside at any point dependent on the clinical situation.

3.4.4 Setting

Sited within a hospital, the labour ward is an environment designed for women with high risk needs. Obstetricians and anaesthetists are on-site and it houses a dedicated theatre. Midwives, usually led by a midwifery coordinator, are the predominant staff group providing direct clinical care to women who are antenatal inpatients or in labour. Women attending the labour ward have been assessed as high risk due to conditions related to pregnancy or those which may impact on their labour. Due to the broad spectrum of medical and surgical conditions, midwives may be required to provide care for women with conditions of which they have minimal knowledge or experience.

3.4.5 Sample

The sample are the group of midwives selected from this target population and who subsequently consented to participate (Parahoo 2006). The target population were midwives providing care for women in the labour ward who have high risk needs.

3.4.5.1 Defining the sample

The two key inclusion criteria therefore, were the status of midwife and the provision of high risk care to a woman in the labour ward.

Midwives giving midwifery care in the Labour Ward environment have the following attributes:

- Registered on part 2 of the Nursing and Midwifery register (NMC 2004)
- Usually aged between 20 and 65 years of age
- Employed in the NHS
- A recognised standard of English speaking

High risk care is a difficult concept to describe and is perhaps more easily defined as women who are not considered to be following a normal physiological labour and/or those women who have underlying conditions or disease during their labour ward stay. Whilst there is an accepted understanding between midwives and obstetricians as to what high risk is (Appendix 9.4) there is no recorded or absolute criteria. Equally, high risk cases have varying *weight* in terms of the level of risk, some, such as induction of labour or epidural and syntocinon, are often managed by the midwife whereas others, such as heart conditions, have greater involvement from obstetricians. The Nursing and Midwifery Council state

in an emergency or where a deviation from the norm which is outside her (midwife's) current sphere of practice becomes apparent ... a practising midwife shall call such qualified health professional as may reasonably be expected to have the necessary skills and experience to assist her in the provision of care (NMC 2004:16)

Therefore, there are two premises for the definition of high risk care: that which is considered high risk (Appendix 9.4) and/or the involvement of obstetricians or other medics as per the Midwives Rules (NMC 2004)¹⁷.

3.4.5.2 Number of participants

Stating the sample size was a requirement from the ethics committee. It was determined by several factors detailed here. Quantifying the number of participants was difficult as qualitative studies do not rely on specific sample sizes and testing of populations in the way that quantitative research does (Proctor et al 2010), looking more to the depth and richness of data (Kingdon 2004). The concern this raises with critics of qualitative research is how representative the sample is (Horsburgh 2003) and its generalisability to similar populations (Hammersley and Atkinson 1983). Burgess (1984) rightly acknowledges that non-probability sampling will not be able to net all data that are available from a participant sample. This places responsibility onto the researcher to ensure that 'sufficient data is captured' (Pope and Mays 2006a:40). It may also be reasoned that the observations are likely to become saturated at some point. Saturation, a concept developed by Glaser and Strauss (1999), is usually associated with theoretical saturation that occurs during the cumulative grouping of concepts during data collection when using the grounded theory method (Strauss and Corbin 1990). These points were all

¹⁷ Midwives rules at the time of writing

considered by me when stating the sample size to the ethics committee prior to data collection.

3.4.5.3 The process of sampling

On my arrival at the labour ward I greeted and introduced myself to the labour ward coordinator, stating what the study was about and the objective of observing midwives providing high risk care. The Participant Information Leaflet for midwives (PIL) (see Appendix 9.5) was given and any questions were answered. Women whose care was in the high risk category were identified by looking at the whiteboard¹⁸, as this lists their conditions or treatments. From this a discussion was opened up with the coordinator about the possibility of approaching the midwife regarding her willingness to take part in the study and, should she consent, the subsequent need for her to gain verbal consent from the woman in her care.

To this end, 21 individual midwives were purposively sampled for observation by virtue of the care they were providing. One midwife was observed on four different occasions. One midwife self-nominated for observation. The protocol (see Appendix 9.6) stated that those midwives to be interviewed needed to have been observed. This was to ensure that the observed scenario could be used as a focus for discussion during the interview.

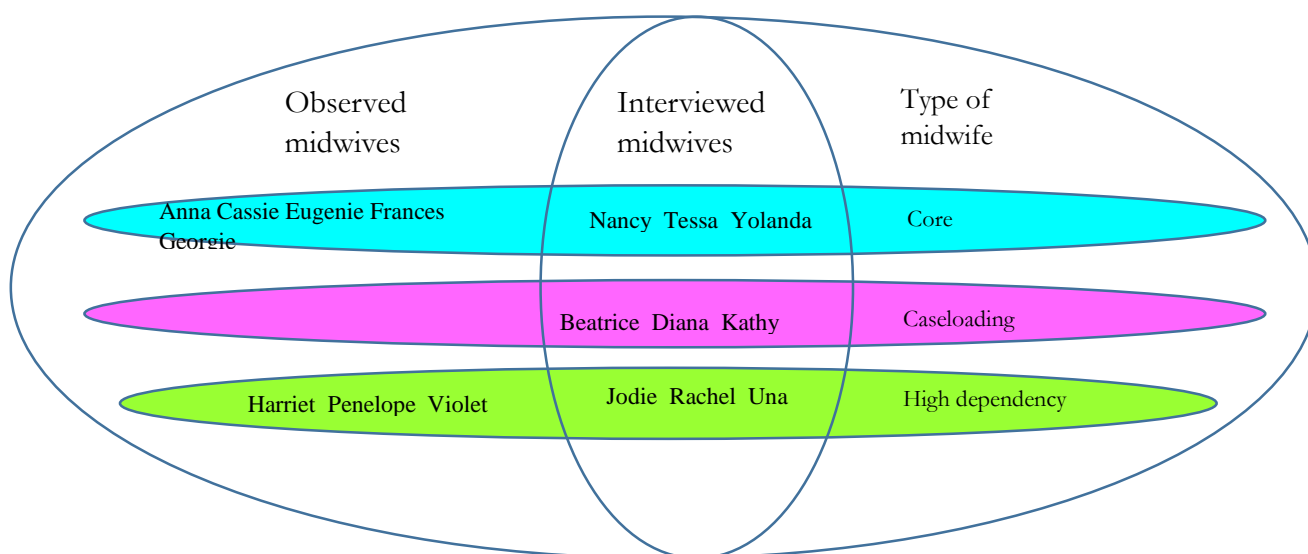
During observation every midwife was asked if they would be willing to be interviewed for the study; only one declined and those that said yes were asked for their mobile number in order to contact them at a later date to arrange interview. Another midwife was reluctant which I interpreted as declining to be interviewed, and another was not contactable. To contribute to the richness of the data midwives were purposefully sampled (Parahoo 2006) for interview. This sampling was based on a superficial review of the observed data, midwives' roles and their willingness to take part in an interview. In selecting participants for interview I was not seeking to prove or disprove anything but to enhance the dataset according to the data collection methods. Ten of the observed midwives were subsequently interviewed.

The entire sample consisted of eleven core midwives, six high dependency midwives and four caseloading midwives. Core midwives were based in the maternity unit, rotating between the antenatal, postnatal, birth centres and the labour ward. Caseloading midwives provided continuous care to women on their caseload including birth care in the

¹⁸ List of all women currently resident on the labour ward

labour ward when required. High dependency midwives had extra training for the provision of care to women with high risk needs¹⁹. As sampling was based on the level of risk this suggested that core and high dependency midwives may be more likely to provide high risk care than caseloading midwives. However, there is a more equal sampling of the three types of midwife for interviews due to the purposive sampling strategy used. These are represented in diagram 3.4.5.3.1

Diagram 3.4.5.3.1 Participant midwives, data collection methods and their roles



3.4.6 Data collection

Data were collected through observation and interview. The former through touch typing onto a netbook computer, the latter recorded and transcribed using a mobile phone. Additional data recordings from the field were also made to support the analysis (see Appendix 9.7 Data recordings from the field).

3.4.6.1 Observations

The layout of the labour ward was recorded and discussion with staff was initiated to introduce the study. Group activities such as all labour ward handover and the consultant's round were observed.

¹⁹ Usually the highest risk

On entering the labour room, after receiving appropriate consents, a page was set up on the netbook computer with the midwife's pseudonym, time, date and a brief description of the woman's obstetric or other conditions. What was discussed between the midwife and the woman, and the midwife and me was recorded verbatim as far as possible. Thus enabling the midwife's descriptions or native terms and possibly some of the meaning attached to events and things in the labour ward (Emerson et al 1995) to be recorded. What the midwife and the woman were doing was recorded rather than what may have been relevant to the study. If the opportunity arose the midwife was asked about her experience, how long she had worked at the trust and about accessing and using information. These data were recorded within the observation. I used my professional judgement to ensure that there was no compromise to the care being given. Questions were asked about things that are in the room such as the information files kept in a holder on the wall. The midwife was followed if she left the room although on a couple of occasions it was deemed intrusive to follow. The intention was to be as inconspicuous as possible during observation, so as not to inhibit midwives' behaviour or disturb clinical care. To this end questions were kept to a minimum.

As a practising midwife I am less familiar with *information behaviour* than with other aspects of care such as the relationship with the woman or communicating with obstetricians. By having broad criteria to record observational data, the possibility of disregarding observations that may be relevant but which were not recognised as relevant whilst in the field was reduced. The importance of this to the study cannot be underestimated. The findings showed information behaviour of midwives that I would not have conceived of prior to my analysis. By using a netbook, not only was it possible to record a lot of what was happening, but much of it was verbatim. In healthcare ethnography Mulhall (2003) describes observation as unstructured, meaning that it is open to receiving all that the field in view has to offer. It is a mix of the observed, the discussed and the interpretation of both through the eyes and pen, or in this case netbook, of the researcher (Agar 1986).

However, despite the intention to record all that was observed there are occasional gaps such as not stating *who* has knocked on the door and *why*, or what equipment was retrieved by the midwife, that I attribute to my familiarity with the field.

3.4.6.2 Interviews

Ten interviews were conducted in the maternity unit between three and twelve weeks after the last observation. This afforded time to contact and arrange interviews after

observations were complete. Ethical approval was given for up to 90 minutes for each interview, in practice each took an average of 40 to 45 minutes, the shortest being 23 minutes and the longest 56 minutes²⁰. Participants were informed about the purpose of the study, how long the interview was likely to take and that it could stop at any time. Interviews were recorded on a netbook and mobile phone – both of which are password protected. The midwife was asked for permission to record the interview. Some fieldworkers conduct informal interviews during, or as part of, their observation (Fetterman 2010, Agar 2008, Whyte 1943). Whilst this was an option that I took during observation, it was limited to brief comments as midwives were providing clinical care and their focus was to the woman.

The interviews followed a semi-structured format using general pre-set questions about how information is accessed and used which were developed from my research aims (see Appendix 9.8). The observed scenario was used to focus the questions. I recognise that using the observation to focus questions presents a degree of superficial analysis, however, my intention was to enhance the dataset by conducting interviews and then to conduct analysis of observation and interviews together. The intention with the interviews was that they would illuminate the unarticulated parts of the observation, providing the emic perspective, thus providing a complementary but nonetheless alternative source of data (Hammersley and Atkinson 1983). At the start of each interview each midwife was orientated back to the observed scenario. Initially some midwives were unable to recall the events. In one case the midwife, Tessa, had since provided care for the same woman again in what turned out to be very powerful account (data) of the woman's high risk care. The influence of this interaction between midwife and woman subsequently dominated the interview.

The pre-set questions (see Appendix 9.8) were listed on an aide memoire (Burgess 1984). Each midwife was informed at the start of the interview that it would be referred to throughout. In line with the tenets of the qualitative paradigm, absolute consistency was not the priority but each midwife was offered similar opportunities whilst enabling the natural course of the conversation to avoid impeding any data. As the interviews progressed I became more practised at conducting them and built on concepts from previous interviews.

During interviews several of the midwives stated that they had not thought about their information behaviour prior to the study and this was evident from the differences between them during the interviews. Yolanda, who had been qualified as a midwife for a

²⁰ This included a 10 minute gap when the midwife had to leave the room to answer a query

year, spoke with a lucidity that I attributed to lack of experience rather than understanding of information behaviour. At the time, I recall thinking I was getting the *first press*. Others, such as Una, were clear and appeared to have a grasp of their information behaviour. As I interviewed Una I was aware that she delivered what appeared to be an informed view. I made a mental note to ensure that she was represented. However, in practice I found that I needed to work to weave her into the analysis. These differences are resonant with the 'well trained informant' (Hammersley and Atkinson 1993:188) who selects and presents their data to the researcher with clarity and effectiveness. The possible downside is that the data they deliver is no longer 'description but analysis' (Hammersley and Atkinson 1983:189). Yolanda, on the other hand, was possibly constructing her meanings of information during the interview.

Burgess (1984) considers that pre-set questions reflect an imbalance in power between the interviewer, and the participant or interviewee, as the participant has minimal time to contemplate their answer. My justification was my potential lack of skill at developing questions during interviews to ensure that I covered the features I wanted to discuss with the midwives. The pre-set questions were essential for this. However, I do not believe they represented a power imbalance. The lack of contentiousness of information behaviour, as opposed to say breastfeeding or homebirth, meant that the first press/possible attribution of meaning that was seen with many of the midwives delivered valuable data that was unfettered by midwives' emotions.

On reflection, the formal interview structure may have benefited from a broad informative opening question such as *tell me about your midwifery role*. This may have given the participant a platform and direction in which to start talking and a good warm up in an area that they know and understand prior to questions that are conceptually more abstract. A question such as this, as well as familiarising the midwife with the topic, is also likely to yield valuable unstructured data which may not be accessible by my set questions.

As a final gesture of appreciation a small box of chocolates was given to each of the midwives interviewed.

3.5 Quality Assurance

Due to their epistemological foundations and methodology, the quality of naturalistic scientific enquiry and ethnographic study require alternative quality criteria to that of positivist research. However, despite the material differences between the two paradigms naturalist study may be criticised because it fails to reach the quality criteria of the

experimental study (Denzin and Lincoln 2008, Tobin and Begley 2004). There are key differences that influence the qualitative methodology that, by definition, will fail to meet the positivist quality criteria. The representativeness of the study sample is one of these concepts (see 3.5.5.2 Number of participants). Another is naturalism's presupposition of the intrinsic role of the researcher during data collection (Horsburgh 2003). Both of these points are compatible and applicable with naturalist enquiry but not positivist. There is also a longitudinal element to research quality too that purports flexible methodology to ensure that the fit between the research aims, the methodology and the knowledge generated by the study is consistent (Vaismoradi et al 2013, Holloway and Todres 2003).

3.5.1 Reflexivity

Ethnography uses the researcher as the instrument (Richardson and St Pierre 2008) through which all data, observation and interview, are interpreted (Kingdon 2004, Hammersley and Atkinson 1983). The researcher must test and consider how they arrived at the interpretations (Finlay 2002). For positivists this presents an alarming threat to objectivity, whereas the naturalist recognises the intrinsic nature of the researcher as research instrument and the need to 'recognise that we are part of the social world that we study' (Hammersley and Atkinson 1983:14). Ethnographers suggest that

particular consideration of the situation enables the 'weakness' to become a strength, enhancing rather than contaminating knowledge development (Stevens 2003:48)

However, this must be tempered with self-awareness of a closeness to the study that could be a source of bias (Finlay 2002). Equally, rather than just using this relationship for analysis and findings, it should be for all aspects of the study which must be continually assessed for assumptions and/or bias that may inadvertently arise. It is therefore incumbent upon me to consider and look for these biases to either account for or to remove them and to present my study in such a way that the potential for bias is explicit.

This reflexivity is central to ethnographic enquiry and equates to my being aware of my position of researcher (Mulhall 2003) by ensuring that I do not impose my own judgements on the study and that representation in the findings is that of my participants and my observation rather than my experience as a midwife myself (Horsburgh 2003). However the counter argument is that, as researcher, I need to use my experience alongside analytical methods to interpret the data (Borbasi et al 2005). This is something that relies on my ability to see myself (Finlay 2002) which is difficult to enact. Personally

I am familiar with this. I lived in New Zealand for three years, after several months I became very aware of my British culture which had not been evident to me whilst living in Britain. I understand the difficulty of seeing one's own culture.

Transparency may be conferred to the reader by recording of the research process. Construction of a thesis presents a comprehensive²¹ and auditable trail of work and processes which is open for critique. Other reflexive and credibility tools are the field note diary (Silverman 2006) and the production of a parallel methodological account such as that published by Whyte in 1943 (Hammersley and Atkinson 1983, Whyte 1943). These are *my* narratives although the field note diary is not available to read. Cortazzi (2001) alludes to the narrative being the domain of the participant and their contents

...share the meaning of experience. That is, in recounting events in narratives, tellers also directly or indirectly give their own interpretations and explanation of those events (Cortazzi 2001:385)

However, for reflexive purposes, a narrative provided by me (the researcher) equips the reader with my representation and thus a tool with which to consider me as part of the quality framework for my study. Arguably, my narrative/s show the rigour with which the study is conducted as they are 'a way of demonstrating the legitimacy of the research process' (Tobin and Begley 2004:390) and it is this that determines the value to scientific knowledge (Tobin and Begley 2004)²². As a point of note, it is currently accepted that the field note diary exists for ethnographic researchers but they are not compelled to reveal it. The publication of Malinowski's diaries in the 1960's show misogynistic and racist tendencies towards the Trobriand Islanders and an alternative view of a man who is heralded as the founder of ethnography (Scott Jones and Watt 2010). As it is not *required* to be revealed I believe it to be the final bastion of fieldwork credibility. Ultimately, through the production of written accounts my approach to this study should be made transparent, thus enabling the reader to draw their own conclusions.

Despite describing field relationships (see 3.5.3 Researcher as observer) I cannot offer a guarantee that I did not influence and interact with the participants during data collection. I recall being very comfortable and able to envisage what the midwives were doing and saying. One midwife, Frances, coincidentally had worked at the same hospital as me. Whilst we talked I felt uncomfortable from a research view as I was diverting her time and attention from the woman, not to mention halting data collection. As a midwife this type

²¹ Horsburgh (2003) acknowledges the limitations to recording of methodology for publication in journals

²² The premise of rigour in naturalist enquiry is contested as it appears to equate naturalist with positivist enquiry (Tobin and Begley 2004). However, in terms of scientific value which is the overarching discipline I would argue that both require rigour to support their claims of being scientific enquiry at all.

of talk was normal for me. However, I stopped the conversation as soon as politely possible despite a strong urge to continue. Had my participants been prison guards, abattoir workers or even women receiving care from midwives in the labour ward (rather than the midwives giving care) I suspect that my level of comfort and understanding and propensity to talk would have been very different. I believe that I had more empathy with midwives than I could have had with any other group of workers. Sheila Hunt, in her ethnography of labour ward care recognised the ‘validity of the research was threatened by my own occupation’ (Hunt and Symonds 1995: 49) as she knew many of the midwives. Whilst I did not know them personally, I knew their profession and I recognised that I had to continuously manage myself in order not to fall into the trap of being *one of the girls*. If I talked and chatted with the midwives I would become part of the midwifery culture, rather than standing back as a researcher and observing the field in view.

For data collection, a central theme of ethnography is seeing the researched environment initially as strange, but increasingly more familiar (Van Maanen 1988) and ‘without strong prior assumptions’ (Holloway and Todres 2003:354). However, as the following quote from my field note diary shows the only strangeness I felt was that I was not in a clinical role

It was strange entering the room. I knew that I had no clinical role there and in some ways it was difficult not to engage in the midwifery that was going on – it was tempting to join in the discussion. Field note diary 03/01/01

As I have developed and considered what it means to be a midwife researching midwives, reading through my field note diary has been a revealing forum and tool for the development of my own reflexivity (see Appendix 9.7 Data recordings from the field).

3.5.2 Quality measures for qualitative inquiry

The reflexive measures put in place by the researcher contributes to quality but alone is insufficient (Silverman 2006). Credibility, the naturalist version of internal validity (Lincoln 1995), asks whether the participants accept the researcher’s view (Smith 2004, Bryman 2004). Every midwife was offered their interview transcript to read, only six took up the offer and even with invitation, none commented on the data. However, I did not see the same level of validation being required for observational data as it is my representation of the observed scene, transcribed by me at the point of collection. Observation in ethnographic research presents the etic perspective – the outsider or

researcher view not seen by those acting within the environment (Fetterman 2010). As research instrument the only possible validator is me. Having said this, one observed participant asked to read the data from her observation. She was happy with the transcript and expressed surprise at how verbatim parts of it were. Interestingly, she was the only midwife to self-nominate as a participant for observation.

However, respondent validation has drawbacks that reduce its value as a quality tool and to this end I did not use it for the remaining data and analysis. What is presented to the participants for validation may be raw data through to completed and published research findings. I would argue that asking midwife participants to validate findings after analysis is problematic as it is necessarily my interpretation and may, therefore, be different to the participants' interpretation. Equally, as my analysis is my interpretation of all participants this may further remove it from the individual participant (Horsburgh 2003). Bryman (2004) highlights other issues such as the nature of the relationship between researcher and participant influencing the level of critique. There may also be a discrepancy identified by participants if there is a disparity between data and the participants' view of themselves (Silverman 2006). There are equally some data that I will not have received during data collection that my participants have (Hammersley and Atkinson 1993) and this may alter their view of the findings. My concern for respondent validation is that if the participants maintain that my findings are inaccurate, it may indicate that I should abandon the study. Thus the potential threats of participant validation may raise questions for its value. For the respondent validation requested from participants for the interviews, the concern is primarily with ensuring the transcription is correct as this is the point at which I have processed the data and it may become my interpretation of the midwife's view (Cortazzi 2001) or there may be errors in transcription²³.

Some external credibility has, to an extent, been afforded by one of my doctoral supervisors (a midwife) looking at my data *cold* ie: with no analytical input, simply reading parts of my data and looking at my codes. My other supervisor spent several hours looking at my data from a more analytical perspective. Both supervisors read and questioned the many iterations of the findings.

The concept of transferability equates to the quantitative external validity (Lincoln 1995) and as the term suggests, represents how well the findings transfer to other settings. The design of experimental studies has suitable power calculations embedded into the rigour to ensure external reliability. It is immediately apparent that, in the naturalist paradigm,

²³ One midwife mumbled during her interview and another was interviewed in a room with noisy air conditioning which made transcription difficult

transferability is tricky. The experimental methodology itself explicitly acknowledges the need for a statistically representative sample, whereas for naturalist studies the researcher *endeavours* to obtain representation whilst acknowledging that this is unlikely (Burgess 1984). However, the sampled participants are acting (or being studied) within their social environment. The implication here is that ‘situational, rather than demographic, representativeness is what is sought’ (Horsburgh 2003:311). The final position appears to be that in the thorough writing up of studies the responsibility for transferability is conferred to the reader (Bryman 2004) and that gaps in representation are to be expected rather than overcome.

Qualitative researchers have evolved the concept of trustworthiness to credibility, transferability, dependability and confirmability (Bryman 2004, Tobin and Begley 2004) although this list is not exhaustive. ‘Goodness’ is another overarching term, but this needs to permeate every aspect of the study (Tobin and Begley 2004). Quality measures take a stance similar to positivist enquiry but one which is methodologically sound (Denzin and Lincoln 2008, Lincoln 1995). There is no question that quality assurance is required by naturalist enquiry. However, it is evident that this is bound by its methodological parameters, most notably the recognition of no universal truth and an acceptance of the flexibility of the naturalistic method. To this end writing the study places the emphasis of quality back to the reader and acceptance of certain features in qualitative enquiry, providing that the transparency in process is there (Horsburgh 2003). In the pursuit of quality it is sensible, if not essential, for myself as researcher to ensure that I have covered all bases. Ultimately the quality and integrity of my study rests with me.

3.6 Ethics

Ethics is primarily concerned with the wellbeing of the participant (Murphy and Dingwall 2001, Shuster 1997) but recognises the importance of good research conduct. This section covers the key ethical issues for research of approval, professional issues, consent and confidentiality of this study.

3.6.1 Ethical principles of qualitative research

There are four primary ethical research principles: doing no harm, provision of full information, enabling informed consent and rights to confidentiality (Parahoo 2006). The violation of one principle may lead to the violation of one or more of the other principles

as Milgram's experiment in the 1960's clearly shows²⁴ (Milgram 1963). The principles themselves are the distillation of various underlying values based on the Nuremberg Code, the Declaration of Helsinki (Shuster 1997) and the Hippocratic Oath. More recently, Good Clinical Practice research training offered by the National Institute of Health Research (Franklin et al 2012, NIHR 2011) has become the conduit for ethical principles of health service research. The driving thrust is the safety and rights of the participant. However, there is a requirement for scientific justification or *beneficence* (Parahoo 2006, Murphy and Dingwall 2001) of the study, as evidenced on the research ethics forms, and good study conduct (Medical Research Council 2012, Richards and Schwartz 2002).

3.6.1.1 Confidentiality

It is generally accepted that research participants will be anonymised (Silverman 2006) and that confidentiality will be maintained. Confidentiality of participants may be contravened by elements of the study design. The level of written detail about qualitative research participants may identify them (Richards and Schwartz 2002). In my study, the location of the labour ward is known to my supervisors, the consultant midwife and all of the participants and those informed about my study at the research site, presenting an anomaly as I cannot stop those informed from disclosing the study location. This fact has been highlighted to midwife participants on the Participant Information Leaflet (Appendix 9.5) but not on the Women's Information Leaflet (Appendix 9.9). On reflection this latter omission may have been an oversight.

Demographic information about the women was not recorded, however, it was necessary to know obstetric and medical history in order to situate the type of care that women were receiving. Particularly rare conditions described in this thesis or in publications may make the women identifiable. Through the observations significant aspects of women's lives such as their children's dates of birth may also make the women identifiable, so raw data have been treated as confidential material.

Similarly, the midwife's rights to confidentiality needs to be maintained. The homogeneity of the sample (both midwives and women) meant that there was no concern with describing *she* or *he*, as all were female. Only essential identifying information was recorded (Lathlean 1996) and pseudonyms were used throughout. An electronic document listing the identities of the midwives (first name only) is kept on a password

²⁴ Amongst several deceptions, Milgram deceived his participants into believing the study was about memory rather than obedience, thus making the principle of informed consent invalid. Psychological and physical harm was caused to his participants because of the deception.

protected laptop along with their mobile numbers for later contact regarding being interviewed. Data recordings of interviews are stored on my password protected mobile phone. The pseudonyms will be used for publications. ‘Quotations, speech mannerisms and context’ (Richards and Schwartz 2002:137) are used which may identify participants. Therefore data for presentation will be carefully screened. After publication, there is also the potential for exposure (Murphy and Dingwall 2001) as, at this point, I will no longer be able to influence them.

3.6.1.2 Informed Consent

For all participants, direct or indirect, my presence renders them part of a field study. Although, for the former group they were formally invited and identified by the process of signed informed consent, whereas the latter group were affiliated by default. Informed consent is

‘the process by which a subject voluntarily confirms his or her willingness to participate in a particular trial, after having been informed of all aspects of the trial that are relevant to the subject’s decision to participate’ (NIHR 2011).

The primary participants are the consenting midwives. It was agreed with the consultant midwife that women would be consented verbally, by the midwife, whilst I was not in the room, a process used and acceptable to women agreeing to the presence of student midwives which gives the woman an opportunity to decline consent. As the most vulnerable, the informed consent process was tailored to ensure the least disruption and the most power of veto to the woman. Both midwives and women were given a dedicated participant information leaflet (PIL) (Appendix 9.5, 9.9) and given time to consider and ask questions. The efficacy of this process was confirmed as consent was not received by either the midwife and/or the woman on several occasions.

There are arguments to suggest that informed consent should be an ongoing process (NIHR 2011, Richards and Schwartz 2002). For qualitative studies this ensures that as the data collection unfolds the participant is explicitly given the option of withdrawing as it becomes clear to them what they are expected to divulge. On my arrival in any room I stated very clearly that the woman or the midwife may ask me to leave at any time. I was never asked to leave once observation had begun. This raises the question of whether this latter process was actually suitable. Equally I did not continually check the ongoing consent of both midwife and woman during observation. For the interviews I asked midwives for consent to contact them at a later date for interviews, seeking verbal consent

when I contacted them and then, by virtue of them attending for the interview took this to be implied consent. The true level of the midwife and woman's understanding of the study can never really be known (Murphy and Dingwall 2001) and the qualitative nature of the study means, that to an extent, the midwives and I could not fully know what they were consenting to (Silverman 2006). To counteract this I took an open approach to providing information requested by potential participants along with provision of information in the PIL. The study was very low risk but there may have been unforeseen or unpredictable events or consequences that may emphasise something that I or the midwife may not have anticipated (Richards and Schwartz 2002).

The consent form and PIL's for both midwives and women (see Appendix 9.5, 9.9 and 9.10) were constructed using current guidance from the University of Southampton and from the Research Ethics Committee (REC). Whilst they aimed to inform the midwife and the woman they offered an element of protection to me the researcher (Murphy and Dingwall 2001). The consent form also provided a contract between me and the midwife that delineated our relationship as researcher/participant rather than friends.

3.6.1.3 Harm

For clinical trials of investigational medicinal products (CTIMPs) the potential for harm is clearly related to the potential for an adverse event (Murphy and Dingwall 2001). However, for this qualitative study harm is less visible but no less important (Murphy and Dingwall 2001). It may manifest as anxiety, distress or exploitation (Richards and Schwartz 2002). This study is low risk, there is no deception of participants and it does not involve a sensitive area of human experience - midwives are unlikely to be traumatised by considering their information behaviour. However, to minimise the possibility of harm, the policy was to be as open as possible about the aims and purposes of the study regardless of how this could affect data collection through midwives withholding data. Ultimately I do not believe this affected the data.

3.6.1.3.1 Researcher/participant relationship

The content of this study is unlikely to be of significant value to the midwives taking part and the level of contact was not prolonged thus reducing the probability that midwives would become dependent and experience loss (Murphy and Dingwall 2001). Having said this the relationships I had with midwives were generally comfortable. One midwife disclosed significant employment and health issues about herself and concerns about the

student midwife with whom she was working. The employment issues were known to the management. As an observer of the student midwife for a short period of time I could not comment on the midwife's concerns. I adopted a listening rather than contributing stance. On another occasion midwives in the office had a conversation about another midwife whilst I was in earshot. My entry in my field note diary was

'I'm not sure if it is a good thing if staff talk about their colleagues in front of me – are they displaying a weapon or demonstrating trust in me?' *Field Note Diary (13/01/01)*

3.6.2 Ethical approval

The application for ethical approval from an independent research ethics committee (REC) was submitted in July 2011. Approval was withheld for two reasons: my planned action if poor practice was observed and justification for the sample size (see Appendix 9.11 Research ethics letter). The REC specifically asked that a statement was placed on the consent form regarding the use of direct quotes which suggests an understanding of a potential form of harm and breach of confidentiality presented by qualitative research (see 3.7.1.1 Confidentiality). Final favourable ethical approval was granted on second submission.

3.6.3 Professional issues

As a registered midwife my professional responsibility was to women and their babies and as a researcher it is to collect data. Burden (1998) states that

on more than one occasion it became necessary to drop the role of researcher because of the need to practice midwifery in order to maintain the health of the woman (Burden 1998: 18)

Kirkham (1992) found she was also drawn into midwifery care, although she took a more informed approach having considered her dual roles of researcher and midwife prior to data collection. Based on this dichotomous position and the experiences of previous midwifery ethnographic researchers I requested an honorary contract. Therefore, in the unlikely event of being required to give maternity care for whatever reason there was appropriate cover in place for the safety of the women and the protection of my registration. However, I ensured that midwives understood that I would not provide

midwifery care. I planned to shadow the midwife for the duration of the observation, meaning I would never be alone with women. In an emergency situation (rather than workload pressure), my reflection in my field note diary is that I would intervene in an emergency if the attending midwife did not. The rationale is that as a researcher my role is to observe, if a situation is being handled then it should not require input.

One of the issues raised by the labour ward manager's meetings during the study set up was what my action would be if I witnessed substandard care. I gave assurance that I would intervene but was uncomfortable with the suggestion that midwives may be practising poorly and that I was to be the judge of this. During data collection there was only one event enacted by an obstetrician that triggered my commenting to the midwife participant. This resulted in the midwife discussing the care with her peers. On reflection I am not convinced this was the right course of action and it should have been discussed directly with the obstetrician. It did not change the care²⁵.

My conduct as a researcher in the presence of midwives and women was always in accordance with NMC Code of Practice (NMC 2008).

3.6.4 Data handling

All of the data is stored alphabetically by midwife pseudonym on a password protected laptop and personal computer. It has also been emailed to two password protected email accounts as per Medical Research Council guidelines (MRC 2012). A backup is stored on a separate hard drive that is kept in a locked cupboard. Current guidelines suggest that data need to be kept for ten years (MRC 2012). This is in line with the University of Southampton Faculty of Health Sciences' current recommendations. As this is a small study data were shared with study supervisors, Dr Elizabeth Cluett and Dr Susan Colley at the Faculty of Health Sciences, University of Southampton. Relevant competent authorities may need to see the data but this will be verified at the time of request should there be one. My supervisors at the University will see the anonymous data as required but this will be in accordance with Caldicott Principles (Public Health England 2014).

²⁵ See 8.2.2 Midwife as researcher or researcher as midwife

3.6.5 Ethical omission

Four student midwives were observed directly when they were working with the midwife in the study and on two occasions the midwife went for lunch or a break and the student midwife provided care for the woman whilst being overseen by the labour ward coordinator who was not present in the room. On these occasions the student midwife was consented to the study using the principles of informed consent and continued to observe care. When discussing this with my supervisors it became clear that I had not accounted for student midwives in my ethics application and, equally as important, I had not requested permission from the university to observe student midwives at all. This was a considerable oversight. On contacting the ethics committee for advice, the chair suggested that I should use these data as it would be unethical not to. I retrospectively requested permission via email from the professor of the faculty at the university to include the student midwives' data which was also approved.

3.6.6 Funding

I opted to self-fund the first year of my doctorate, giving me the benefit of being able to self-select the area that I wished to research rather than entering an existing research stream. Personally I recognise the value of my study which was borne of my experiences as a labour ward midwife working in an acute high risk environment. I have since been successful in gaining funding for each year from NHS Education South Central (now Higher Education England), the Hampshire and Isle of Wight Comprehensive Local Research Network, the Florence Nightingale Foundation, Portsmouth Hospitals NHS Trust (my employer), Mr H D McGeorge MPhil, CEng, FIMarEST, MRINA and Mrs I P McGeorge MCSP (both personal benefactors). Additional funds for expenses relating to the dissemination of the study at postgraduate student conferences was obtained from the University of Southampton and the Iolanthe Midwifery Trust. Funding for data collection expenses and study resources was awarded by the Ruth Davies Research Bursary from the Royal College of Midwives [RCM]. I was also fortunate enough to receive considerable funding from the Hampshire and Isle of Wight Comprehensive Local Research Network and the Wessex CSC Steering Group via Health Education England for employment backfill during the write up of my thesis.

3.7 Chapter summary

This chapter has detailed the methodology and research design of my study. Its breadth covers the study foundations, acknowledgement of the research context and me as the researcher and how this influenced the methodology and research design. The subsequent sections considered my reflexivity thus enabling the reader to establish the quality of the study and the level and/or presence of any bias in data collection, analysis or write up. The key elements of ethics required for the safe treatment of participants in research are detailed specifically for this study. Finally the funding for the study is described.

The next chapter is the analysis.

Chapter Four

Analysis

This chapter details the process of the analysis. Initially, the data set including its preparation is discussed. This is followed by an overview of thematic analysis, including a rationale for adopting this particular type of approach for the data analysis. The processes of using sensitising concepts in the data, the level of interpretation expected, open coding and focussed coding are detailed. The management of early emerging findings and the construction of data matrices is recorded along with a cross section of the analysis. It should be noted that the analysis was not a linear process and that each part of the analysis was constantly revisited as required.

4.1 The data set and preparation

The data set used for thematic analysis (Braun and Clarke 2006) are the observational data and transcribed interviews, with support from the field note diary (see Appendix 9.7 Data recordings from the field). Seventy-four hours on the labour ward yielded nearly 50 hours of direct observation. The maximum time spent in an episode of observation was three hours, and, in total 21 different midwives were observed. Interviews were conducted with ten of the midwives who had been observed between one and three months after the observations. Each interview was transcribed verbatim and with as many utterances as it was possible to record to ensure that the participant's language and authenticity was represented (Van Maanen 1988, Spradley 1980).

The observational and interview data comprised 254 and 281 pages of double line spaced data respectively. At the suggestion of Hammersley and Atkinson (1983) every line of data were labelled to aid navigation through them. This ensured a complete cross reference during data handling meaning every part of the data were accessible (see Appendix 9.12 Sample of prepared observational data and 9.13 Sample of prepared interview data). Observational and interview data were analysed together so as to maximise the blend proposed by Agar (2008) but also to avoid possibly creating two separate studies of the same phenomenon. The combined data enabled 'a deep understanding of the practices and beliefs of the group' (Roper and Shapira 2000:4). The midwife participants themselves and the content of the observation were present in both. A formal analysis of the prepared data set according to a recognised process rather than the explication of sensitising concepts, was

conducted after completion of data collection as is consistent with thematic analysis (Vaismoradi et al 2013).

4.2 Thematic analysis

The analysis method used is a composite of the techniques suggested by Scott Jones and Watt (2010), Strauss and Corbin (1990) and Emerson et al (1995). It is 'a method for identifying, analysing and reporting patterns (themes) within the data' (Braun and Clarke 2006:79). Thematic analysis is usually characterised by the noting of interesting instances in the data, coding of data, grouping the codes into themes and then listing overarching categories and creating a write up of the findings to present to the reader (Scott Jones and Watt 2010, Emerson et al 1995, Strauss and Corbin 1990). Some researchers may rely on the creation of themes and matrices; others such as Strauss and Corbin (1990) and Emerson et al (1995) suggest more intricately detailed processes with additional analysis tools to highlight and enhance the data. The composite used in my study was based on the understanding of each technique and the suitability of the tools with the data. The rationale for this is detailed throughout the chapter. The data were handled manually rather than with a computer program to enable my immersion as a researcher with full contribution to the analysis.

Analysis should 'increase the understanding of particular phenomena' (Vaismoradi et al 2013:403). It is valuable to consider the theoretical underpinnings of the analysis in a similar fashion to the way they are understood for the methodology. This recognition of the match between epistemological underpinning, methodology and the design and context of the study underscores the rigour of the analysis in qualitative enquiry (Attride-Stirling 2001). Thematic analysis is suited to various methodologies. It fits with the ethnographic method and fieldwork but is also consistent with the epistemological underpinnings of ethnographic methodology (Vaismoradi et al 2013, Holloway and Todres 2003). However, as it relies on the identification of themes, thematic analysis may not enable the representation of single powerful events in the data that may contribute to overall knowledge generated (Buetow 2010). Despite this, thematic analysis is appropriate due to its suitability to the methodology and also its accessibility (Braun and Clarke 2006), for the novice researcher.

4.3 Sensitising concepts in the data

Concepts appeared in the data during transcription such as the woman as a source of information for midwives and midwives seeking information or receiving passive information. Another example was when Tessa, a midwife, continually discussed care of the woman with registrars but was aware that she was not included in the registrars' discussion of woman's care. Concepts such as this were identified without recourse to a specific set of criteria, arrived at through experience and understanding of midwifery and the literature relating to information behaviour (Hammersley and Atkinson 1993, Giorgi 1992). For a different researcher the sensitising concepts may be different based on their alternative exposure as to what creates a concept (Blumer 1954). A continuous probing and interrogating of the concepts occurred, testing and developing against other instances in the data. This was done as Blumer (1954) suggests that the worst that can be done is to not probe the concepts further and accept them as they are without looking at the empirical circumstances in which they occur.

4.4 Level of interpretation of findings

Vaismoradi et al (2013) maintain that thematic analysis provides less interpretation than the phenomenological or grounded theory approach. However, Braun and Clarke (2006) suggest that thematic analysis, especially from constructionist epistemology, may move to a more interpretive or *latent* level to

identify or examine the underlying ideas, assumptions, and conceptualisations and ideologies that are theorised as shaping or informing the semantic content of the data (Braun and Clarke 2006:84)

The presentation of my findings is a description of the labour ward, followed by grouped themes of data with quotes and justification for the grouping (Chapter Five Findings) and discussion of the findings with interwoven existing theory with the potential for the development of a model, or, less likely, a theory of midwives' information behaviour (Chapter Six Discussion). Braun and Clarke (2006) state that together with the epistemological aims of the analysis, the level of interpretation of the findings produced by thematic analysis should be made clear. Sandelowski and Barosso (2003), in their typology of qualitative findings suggest that there is a qualitative findings continuum from 'no finding', which is 'closest to the data' through 'conceptual/thematic description' to the 'interpretive explanation' which is 'farthest from the data' (Sandelowski and Barosso 2003:908). The 'no findings' end of the spectrum is linked to *description* rather than

interpretation, which is ‘the use of language to articulate the intentional objects of experience within the constraint of intuitive or presentation evidence’ (Giorgi 1992:121). The description presented initially in Chapter Five Findings equates to this. Vaismoradi et al (2013) appear to suggest that descriptive findings may be of less scientific value than interpretive findings. However, Giorgi (1992) points out that descriptive findings, in that they are closer to the data itself, are more representative, whereas interpretive findings are open to many possible interpretations by different researchers. He does, however, point out that whichever strategy is used it must be the appropriate one. Findings from ethnographic studies often provide the context through description based on data (Fetterman 2010, Duneier 1992, Hammersley and Atkinson 1983, Spradley 1980, Capote 1967, Whyte 1943).

A further example of descriptive findings in this thesis are the questions asked of the data such as what and where is information? These shallow questions did not require analysis as such and were answerable by simply looking in the data and describing, and are, therefore closest to the data. This *description* is essential, information is the crux of the study and without being able to *describe* the study lacks legitimacy. Equally, there are other areas of the analysis which reach the level of ‘conceptual/thematic description’ (Sandelowski and Barosso 2003: 913) after *interpretive explanation*. An example of this is *information types* (6.1.2 Types of information) developed from the question *what is information*. Despite the view of Vaismoradi et al (2013) it is apparent that, for this study, description does have a place in qualitative findings, its value being that it is close to the data and representative. The descriptive findings of the clinical environment (see 5.1 The maternity unit), representative of the data are salient to the analysis. They provide the scene foundation upon which information behaviour is based and thematic description which increases the level of interpretation. Furthermore the findings with greater explanation after analysis (comprising the majority of the findings) provide a balance to the descriptive findings and therefore a complementary view of the data.

4.5 Open coding, focussed coding and themes

Coding is ‘the process of breaking down, examining, comparing, conceptualising and categorising data’ (Strauss and Corbin 1990:61). The data was coded three times (*initial open, focussed and final*) to provide a suitable and coherent structure for the write up of the findings. The need for this may be attributable to my novice researcher status. The three iterations of coding contributed to my development as a researcher as well as to the final analysis. Observational and interview data were coded together according to the

principles of Strauss and Corbin (1990) (see Appendix 9.14 Examples of open coding). Codes were assigned by labelling every part of the data to ‘entertain all analytic possibilities’ (Emerson et al 1995:151). During this initial open coding, the data was coded indiscriminately as, at the study outset, it was not clear what midwives’ information behaviour would be. Codes were generated rather than pre-conceived with a continuing momentum and fluidity. This inductive approach to the coding is commensurate with the exploratory nature of the study (Braun and Clarke 2006). The codes were largely descriptive of what was occurring in the data in order to give them context.

In the *initial open* coding, codes were grouped into themes such as *guidelines* and *contractions* which were then deconstructed to form smaller groups or sub themes (Appendix 9.15, 9.16) and then categories and broader overarching themes (see Appendix 9.17). To illustrate the volume of data the numbers of codes generated by *initial open coding* are shown in Table 4.5.1

Table 4.5.1 Organised data groups for *initial open coding*

<i>Codes</i>	5700
<i>Sub themes</i>	329
<i>Themes</i>	45
<i>Categories</i>	15
<i>Overarching themes</i>	3

On reflection the data may have been coded too thoroughly as there are so many codes. Otherwise there is little to critique, as open coding is an analytic step used by many researchers from different sociological disciplines (Fetterman 2010, Scott Jones and Watt 2010, Emerson et al 1995, Strauss and Corbin 1990).

The next step, according to Emerson et al (1995) is the selection of themes and the construction of a data matrix. However, fired by enthusiasm, my chosen step was the writing of the first draft of the findings using the initial open codes as raw material. The writing experience felt like trying to weave straw into gold. The initial writing was overburdened with detail – most notably too much attention to each individual code. At the time this was frustrating and felt like a waste of time, however, it served the purpose of noting ‘memos’ about the data (Emerson et al 1995). The sum total of these memos enabled me to embrace a range of ideas emerging from the data (Emerson et al 1995).

In my view as a novice researcher, the step from coding to write up should have been straightforward. The combination of broad and unfocussed data (from *initial open*

coding) and my slow acceptance of writing as the continuation of analysis meant that the initial write ups were difficult to organise and did not convey a coherent representation of the findings. I returned to theory of information behaviour (Ormandy 2010, Harland and Bath 2008) and ethnographic analysis (Scott Jones and Watt 2010, Emerson et al 1995) for guidance. In order to support the organisation of the data it was coded again with the application of the research questions, consideration of the principles of information behaviour and a cautious limit to the number of codes. Emerson et al (1995) term this *focussed coding*.

This was a much shorter process than the initial open coding. Having conducted initial open coding, it was clear which data were pertinent to the research questions. Codes were assigned again and sub themes, themes and categories were developed. In a bid to streamline the data I was cautious but not restrictive with the number of sub themes generated. At the end of the focussed coding 46 sub themes were generated (Appendix 9.18), a considerable reduction from the 356 sub themes generated from initial open coding.

To create structure I considered themes in the data by looking for links and similarities in the sub themes. Interestingly, after the focussed coding, *clinical care* became a much smaller theme (rather than an overarching theme or category). On reflection this may be a reaction to its initial domination or possibly me, as reflexive researcher, beginning to *see* the data as strange rather than being attracted to that which I know well (the clinical care). Another sub theme identified was the sources and types of information used by midwives. These are tangible entities such as guidelines, notes, plans and charts. However, the data suggested that there are other resources such as midwives' knowledge, discussion with the woman and midwives using multiple sources of information. These became the theme of *Resources*. Nine themes were generated leading to two overarching themes (Appendix 9.18). Integrative memos were created (Emerson et al 1995) by grouping codes under a sub theme within a theme (Appendix 9.19, 9.20) thus noting similarities and thoughts about the data. The two examples in Appendix 9.20 caused me to look for other instances in the data of information arriving unbidden and of midwives purposively seeking information and recognising why the information may not be given.

However, the writing up continued to lack coherence and structure therefore a further *final coding* was undertaken. A complete re-sort of all the initial open codes, building on the work that was done in initial open and focussed coding and drawing upon written memos, resulted in finalising four overarching themes supported by categories and sub-themes (see Appendix 9.21). This presentation of the data analysis is conveyed in the final data matrix see Appendix 9.22).

4.6 Early emergent findings

The list in Appendix 9.23 is a raw and inconsistent summary of some aspects of midwives' information behaviour that provides the initial spark for entities such as types of information, collaborative information and passive information in my findings. There is also reference to immediate and deferred information needs. These early findings emerged from coding, memoing and early writing and were noted in my field note diary. Types of information were considered and subsequently questions were asked about the relationship between source and type of information (see Appendix 9.24). Ultimately these emerging findings were the seedling stages of the analysis, some of which blossomed into more significant findings. In the early stages of writing their importance was unclear and it is only now that the analysis has significantly progressed that their value is evident.

A powerful piece of data, featuring the chaos that Tessa deals with during a busy night shift, which could not be considered a pattern or theme, was included to illustrate a negative aspect of collaboration. Ultimately it became a crucial piece of data illuminating many aspects of collaboration but it presented two key issues. The first being the importance of the data to the analysis, and the second being justification of its inclusion and how the data was interrogated.

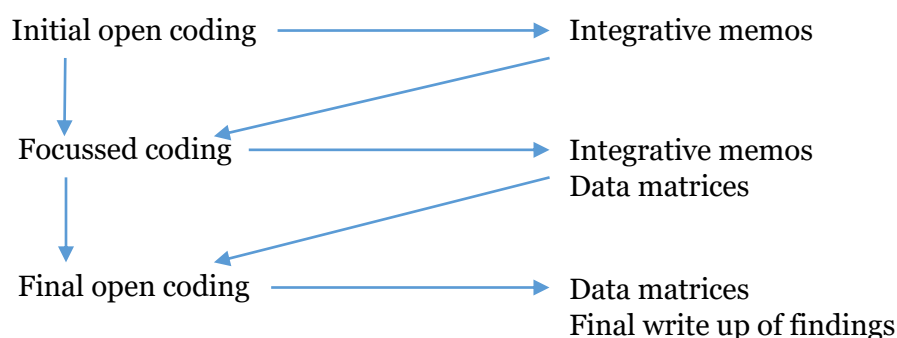
Firstly, as a midwife and a researcher I recognised that this was valuable data that should not be lost. Its importance was flagged for me by it being one of the most evocative interviews and Tessa herself commenting that the care was not good. To overlook it because it did not reach criteria for thematic analysis would have disregarded valuable information. This instigated the second issue of justifying the presentation of this event involving Tessa's collaboration with obstetricians. Thematic analysis is necessarily concerned with *themes* in the data suggesting that some events will be themed due to their frequency in the data (Buetow 2010), a dimension associated with qualitative enquiry (Emerson et al 1995) but one that appears to be prominent in thematic analysis. Buetow (2010) suggests that thematic analysis is unable to account for these single events. As a collaboration that was unproductive, it became clear that it was an opposite stance to many of the other collaborations observed. Fuelled by the concept of the information network, it was tested against other collaborations, looking for similarities and differences. This testing showed the differences between collaborations generating information and Tessa's collaboration, which did not provide information for Tessa. The event initially generated the code of *information behaviour not working*, but with the final coding it became part of *discussion and collaboration by the round* in the overarching theme of *Midwife and colleagues* (see Appendix 9.22). This methodological rigour established that it is indeed a key piece of data illuminating many aspects of collaboration.

4.7 Data matrices and writing up

Each version of the write up linked to each coding, produced meaningful memos to contribute to the analysis. This, in turn, generated successive iterations of data matrices. The confluence of data matrices and writing up, with constant referral back to the data, coding, integrative memos and tables²⁶ supported the organisation and presentation of the findings²⁷. The complexity of this process and the time invested in it cannot be understated. The matrices illustrate the evolution of the themes, categories and overarching themes based on sub themes of grouped codes that remained relatively stable. However, it is imperative to note that the early write ups contributed to the evolution of the matrices and what appears to be a large step has a significant amount of writing (technically a large ‘memo’) behind it.

The ultimate structure of the findings is summed up in the final data matrix (Appendix 9.22), based on the three codings (initial open, focussed and final) and the succession of integrative memos and matrices (Appendices 9.19, 20, .21, .22, .23, .24, .25, .26, .27) linked to each. Each of the overarching themes have a strong relationship to their sub themes. Clinical care, as a key component of midwives’ information behaviour, is represented but not dominant. Through this the overarching themes were whittled down to their best and most coherent presentation (Geertz 1973). The diagrammatic representation of the relationship between the codings is shown in Diagram 4.7.1.

Diagram 4.7.1 Relationship between the codings, integrative memos, data matrices and the final write up of findings



²⁶ I have not included each and every aspect of these in my appendices but there is a representative sample

²⁷ And every stage of the analysis

Thick description, the hallmark of ethnography, (Fetterman 2010, Emerson et al 1995, Geertz 1973) is the rich representation of the data from the participant to the reader via the channel of the researcher. The writing up of ethnographic findings is the final presentation of the data and analysis before the discussion of the findings. Emerson et al (1995) talk of weaving the ethnographic story together. They suggest that

...an ethnographic story proceeds through an intellectual examination of evidence to eventually reach its contributing central idea (Emerson et al 1995:171)

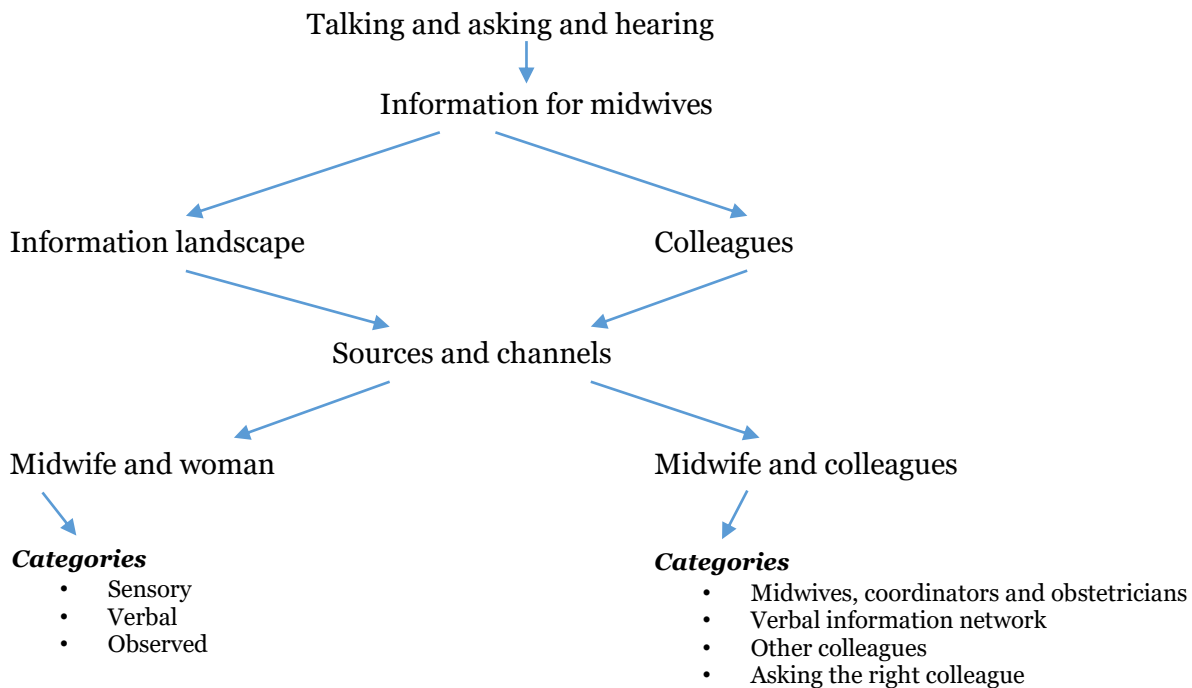
and this is what I have emulated in the following chapter. The analysis matured through each write up and gained depth. The data and findings finally included are the product of the entire analysis process from transcription and coding through to the intensity of memoing and writing up.

4.8 Analysis Cross Section

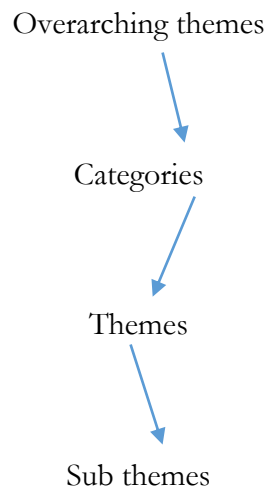
This section endeavours to show how the data moved around throughout the analysis. The complexity of the section is testament to the complexity of the analysis. The analysis divided broadly into intangible concepts and things. *Intangible concepts* being the conceptual, thinking processes that midwives go through; and concepts linked to information itself (ie: types of information, using information). *Things*, as a larger area, are the sources and channels that midwives use, divided by their attributes, formats and the types of information they deliver. The titles of the overarching themes reflect the midwife's relationship with each of the four themes (see Appendix 9.22: *In the line of duty* relates to concepts, and *Midwife and woman*, *Midwife and colleagues* and *Sources and channels* relates to things).

As an illustration of the analysis process, a cross section of the analysis journey of **verbal information** follows. The category *Talking and Asking and Hearing* found in data matrix one²⁸ (see Appendix 9.25) ended up within two categories in the final data matrix (see Appendix 9.21) – *Midwife and Woman* and *Midwife and Colleagues* after final open coding (see Appendix 9.21). Its movement through the successive iterations of data matrices is represented in diagram 4.8.1.

²⁸ Derived from initial open and focussed coding

Diagram 4.8.1 Analysis relating to the verbal format

Throughout the analysis, the people approached by midwives for verbal information have been recognised as information sources along with other inert sources and channels such as guidelines and maternity notes. During the early stages of data analysis, when undertaking initial open coding, it was clear that information was received verbally by midwives. The early overarching theme of *Midwife and Woman* (see Appendix 9.17), has the category of *Midwife Communicating* encompassing asking and discussion with the woman and with colleagues, handover, the round and referrals. These are all events grouped at sub theme level (see Diagram 4.8.2).

Diagram 4.8.2 Analysis levels

Thus, initially the entire verbal format was combined (ie: women and colleagues) at the category level. However, the category itself was somewhat misleading in that its title was *Midwife and Woman* but it housed communication with colleagues. The woman featured in the categories *What and where is information* and in *Midwife and information interface*, indicating the woman as a verbal information source but also as a sensory information source. These points are reflected in matrix two and three (Appendix 9.26 and 9.27). By matrix seven (Appendix 9.31) the attributes that made colleagues so distinct – approachability, effectiveness and collaboration – had emerged. Women, on the other hand, remained as part of the group of information sources or *Information Landscape* (see Appendix 9.31), grouped by virtue of being an information source rather than by distinct attributes. However, matrix eight (Appendix 9.32) attempted again to encompass all sources into *Sources and Channels*, including the verbal, by their presenting attributes. This is testament to the difficulty of deciding which defining attributes that sources would be placed under and the interlinking with the other overarching themes (ie: information source attributes also influence information seeking).

The two verbal sources (women and colleagues), at this point, were not analysed as parallel and their defining attributes were not used to distinguish them from other information sources. These attributes and the significance of the difference between information yield (ie: what information women and colleagues can give to the midwife) was such that they should become overarching themes in their own right. Whilst there are similarities in that a verbal format is used and both women and colleagues may be subject to biases that are not evident in inert information sources, there are significant differences between women and colleagues. As well as verbal format, midwives receive information

from women in a sensory mode via touch, hearing and smell, and as observations of vital and other signs. Colleagues, on the other hand, usually present only verbal professional information, but their differing roles give them a propensity to respond to different information queries and there is no sensory or observed information.

The categories identified in the diagram 4.8.1 show the different directions that information from women and information from colleagues may take. Colleagues are usually other midwives, midwifery coordinators or obstetricians but could be student midwives, consultant midwives or specialist midwives. Colleagues could each have been given their own overarching theme but their grouping factor is that the information transferred is always about the woman, her care management or the work that is going on in the labour ward. Information is transferred between midwives and their colleagues through the verbal information networks – forums such as handover, the round, referral and direct one to one. Thus, women and colleagues became overarching themes in their own right.

The final analysis revealed a complex picture of the midwife's information behaviour that was grouped into overarching themes of how the midwife enacts information behaviour (*In the line of duty*) and then the sources that she uses (*Midwife and **woman***, *Midwife and **colleagues***, ***Sources** and **channels***). These three groups of sources were classified according to their format (see Appendix 9.22). Spoken information is *verbal*; information that is read is *documented*; *cognitive* is that which is known and *sensory* is received through the senses (touch, smell). Subsequently the two verbal source formats (women and colleagues) were divided due to the type of information each delivers. Women may only deliver woman specific information whereas colleagues can also deliver practice, objective and organisational information. Further support for the separation of the verbal formats (*Midwife and woman*, *Midwife and colleagues*) is that for *Midwife and woman* the sensory information format is evident too.

The analysis stemmed from the final version of the overarching themes (Appendix 9.21) derived after final open coding, and data matrix nine (Appendix 9.22). The overarching themes of *Midwife and Woman* and *Midwife and Colleagues* are based on the type of information, the source, format and, for *Midwife and Colleagues*, the attributes of the source. The other two overarching themes – *In the Line of Duty* and *Sources and Channels* – acknowledge the role of clinical care in the generation of midwives' information behaviour and the other, non-verbal information formats used by the midwife.

4.9 Chapter summary

An overarching framework of thematic analysis was selected for this study. This analysis itself is ultimately a composite of several authors' analysis frameworks (Strauss and Corbin 1990, Emerson et al 1995, Scott Jones and Watt 2010), an approach that has the approval of Hammersley and Atkinson (1983). The analysis has drawn on using sensitising concepts in the data, and consideration of the level of interpretation anticipated by the study. Analysis is an iterative practice which could continue ad infinitum. Ethnographic analysis has a framework but lacks stringent organisation and this is a necessary feature – it needs to be fluid throughout. Indeed the more stringent the analysis becomes the less revealing it is. Open and focussed coding were used, with linked data matrices and the production of integrative memos, to deliver the final iteration of data matrix and table of overarching themes. The final data matrix provided the structure for the findings chapter.

The analysis journey is complex and is still not over until the final word is written. It has been partly guided and partly 'off piste' and unsettling due to the paucity of rigorous writing on the subject. Scott-Jones and Watt (2010) acknowledge the dearth of literature regarding ethnographic analysis. The texts that are available are confusing because, it appears, for each researcher the analysis journey is individual and, whilst they achieve a similar outcome, the tools and processes differ. Equally, for this study the volume and content of data, my novice researcher status and the crossing of midwifery and information behaviour disciplines, rendered the process complex and arduous.

The following chapter is the presentation of the findings after analysis.

Chapter Five

Findings

This chapter presents the findings from the data. The first section is the *background to the maternity unit*, the descriptive findings that situate the reader into the labour ward context at the time of the study. After this the interpretive findings from the analysis are presented.

5.1 The maternity unit

The study is about information behaviour which is a part of labour ward care. However, before I present the findings of midwives information behaviour it is important for the reader to have an understanding of what labour ward care is – what happens, where it happens, how it happens and with whom it happens. This is based on my observations and my field note diary, and was largely written prior to analysis. My intention here is to *set the scene* of the labour ward and how I fitted into this context as a researcher. Initially this section was located in the appendices. I have enhanced it and moved it to the main thesis as it has an intrinsic value in providing the context to the interpretive findings.

5.1.1 Demographics

The research takes place at a maternity unit within a teaching hospital in a city of 240,000 people in England. The service provides routine, consultant and emergency antenatal care, low and high risk intrapartum care, high risk postnatal and transitional and intensive neonatal care with an annual delivery rate of around 6000 women per year. It is a tertiary referral centre for neonatal services and provides specialist neonatal services. There is an alongside birthing unit, antenatal ward, postnatal ward, antenatal clinic, day assessment unit and neonatal unit. The focus of the study is the labour ward. Current policy is that women with high risk needs (see 1.3 High risk midwifery care) are recommended to birth in the labour ward.

The entrance to the labour ward is tucked away down a short side road and on the bottom floor of an imposing 4 storey red brick building. The metal and glass entry doors are dark and uninviting and lead to a linoleum floored waiting area with functional chairs and vending machines. If there are people in this waiting area they are relatives or porters and

not the maternity unit staff. There is an office and two corridors, accessed by double doors, leading off this waiting area. The labour ward is through one of these sets of double doors and along a short corridor to another set of double doors. There is an entry phone system on the wall. Dressed in civvies, with a named photo identity badge and my flowery bag, I am never challenged on my many trips through these doors. It is only sometime after data collection is complete that I am told that, unlike the labour ward that I work in, these doors are not locked.

5.1.2 The labour ward

Once through the doors I am on the labour ward and can see the reception desk and a corridor ahead and one to the left. The familiar hand gel and invitation to use is it on the wall alongside a poster about a research study. Sometimes there may be a bed parked in this area or knitted baby blankets and clothes folded in piles on a metal clinical trolley. During the day there are often staff milling around the reception desk – receptionists, ward clerks and midwives who can be approached for directions and introductions. In the evening it is quiet and the lack of human activity and welcome gives me a sense of unease – not least because I know I will have to present myself into the labour ward office with all the staff therein.

The labour ward is a square configuration similar to a Monopoly board made up of corridors at the sides and key areas on the corners - the reception desk, the labour ward office, the staff coffee room and the maternity theatre complex. All of the labour rooms are situated on both sides of the corridors. From the corridor the labour room doors are all covered by a privacy curtain. When not being used the labour room doors are often open, revealing a tidy and clean space with a bed and equipment. The labour room set up is very similar in every labour room. *Reception to office* corridor has three labour rooms on the left and the induction room and day assessment unit on the right. It is the brightest corridor with windows on the right overlooking a grassed garden. *Office to coffee room* corridor has no natural light and three or four labour rooms on each side of it and the sluice and kitchen on the right. The room with the birthing pool is on this corridor. *Coffee room to theatre* corridor has one labour room, a small resource room and a store room on the right and the large high dependency room and an office to the left. The final corridor – *theatre to reception desk* – houses the treatment room and access to the theatre complex. The corridors are littered with equipment - resuscitaires, cots, cleaning trolleys, beds, stools with wheels, scales to weigh babies, treatment trolleys with drawers of clinical

equipment for blood taking and intravenous cannulation, portable Entonox cylinders and wheelchairs. The walls have decorative portrait photographs of women with their babies. Occasionally I can hear a woman screaming.

5.1.3 The staff

Normally there are seven midwives and a labour ward coordinator on each shift – high dependency, integrated, core and caseloaders. Women with high risk needs are usually cared for by a high dependency midwife. Fifteen high dependency midwives are on the roster, qualified by a relevant module at Masters level and 2 ½ years' experience at the maternity unit.

The midwives on duty wear various clothing – scrubs, their own clothes and uniforms. Some midwives work short shifts of 7 ½ hours from 7am to 3pm, 1pm to 9pm and a night shift from 8.30pm to 7.30am. Other midwives choose to work a double shift from 7am to 9pm with a 90 minute break.

There are two registrars and a senior house officer with the intermittent presence of an obstetric consultant and an anaesthetist. Occasionally there is a specialist midwife on the labour ward but she is usually only available during office hours. The consultant midwife is in the labour ward once a week on a short weekday afternoon shift to support midwives in their clinical practice. The midwifery coordinator has overall responsibility for the management of the labour ward and is a constant and visible presence in the labour ward. She does not provide direct clinical care to women. This is the domain of each midwife on the shift whose responsibilities are the direct provision of midwifery care. The obstetric senior house officers and registrars are usually on the labour ward during a shift or are contactable via a bleep service. The obstetric consultant may be present on the labour ward for part of a shift or by telephone²⁹. The obstetric team are responsible for providing guidance and care management plans for women who are high risk or those that deviate from an expected physiological labour. Midwives are professionally obliged to refer to obstetricians when there is a deviation from normal in clinical care (NMC 2012). The obstetric anaesthetist may be present for part of a shift or contactable by bleep. They are less likely to be referred to directly by midwives about obstetric care.

Each midwife is based in one of the delivery rooms but may be found in the labour ward office or walking in the corridors to get to other sites in the labour ward (treatment room,

²⁹ Usually contacted by registrars rather than midwives directly

office etc). The midwifery coordinator, obstetric registrars and senior house officers move from room to room as required and are also found in the labour ward office. Together, the labour ward staff are known as the multi-disciplinary team. They are all available to the midwife for individual collaboration and discussion on an ad hoc basis. Midwives frequently look for colleagues around the labour ward. Most midwives will start by looking in the labour ward office.

When I move around the labour ward or sit in the office the staff smile or ignore me but they are not unpleasant. They may start a conversation with me or ask for details about the study. I initiate conversations with staff in the office, introducing myself and my study. As this is not my own trust I am surprised when I know some of the registrars and am able to exchange pleasantries.

5.1.4 The office

The office is a room of activity and furniture. There is a table in the middle and a couple of desks with computers on them around the edge. At least three telephones are visible. Notes are often on the central table. Posters and advertisements adorn the walls – it is a busy looking room. In one corner there is a large open fronted stationery cabinet and on the other wall a shelf with files on it. There is a small code accessed drug cabinet on the wall. I frequently see midwives going to this cupboard for paracetamol or other commonly used drugs for the women in their care. A large whiteboard fixed to the wall has all the women's names on it, with a row of information for every room - woman's name, brief details of what is happening with her and who is caring for her. The only fixed information on the whiteboard is the room number, the rest is all transient.

A tea trolley with cups and a kettle is to one side of the room. I see people having cups of tea in the office. When I bring biscuits I leave them on the table in the middle of the room for the midwives and their colleagues.

The mood in the office can vary, on one occasion it is cheery and light. On another it is tense but appears manageable. When the staff are waiting for the arrival of a woman who has had an eclamptic fit in the community they accumulate in and around the office. They are prepared and ready, they do not seem to see me waiting in the office and observing what is happening. The constant phone calls and talk are evidence that they are readying themselves for what could be a real problem. When the woman arrives unconscious, flat on her back on a stretcher with paramedics the staff calmly move her to a room. As it is

my first day and I sense their disquiet and acknowledge mine I do not ask to observe the care.

The office is used for handover at the start of each new shift. Midwives, maternity support workers, doctors and anaesthetists sit around the table facing the whiteboard to hear the coordinator discuss each woman in turn. It is difficult to know whether my presence affects handover – it appears similar to the handover I am used to seeing. During handover there are some laughs and jokes and a dissolution in the middle when the doctors have their own chat. Then it is finished, cases are quietly allocated to the midwives and the room empties. Handover is one of the few occasions when the office door is closed and interruptions are discouraged.

During shifts various staff, often midwives, enter and leave the office with little herald – one minute it is full of chatter and people and the next it is completely empty. Midwives sit in the office to write notes and look things up on the computers. The coordinator is frequently in the office. There is discussion in the office about aspects of practice and information is sought and delivered. Midwives come here to find the coordinator to help with tasks such as siting a fetal scalp electrode or to discuss care for a woman with diabetes. One midwife comes in and asks the coordinator what ulcerative colitis is another asks about Ogilvie's (syndrome). When the pharmacist is in the office, midwives take the opportunity to ask whether women with lactose intolerance can take ranitidine, or what antibiotics can be taken by a woman with a heart condition. The only people who are rarely seen in the office are the women or their birth partners.

Anyone coming from another area such as the induction room or one of the wards comes to the office first. When I first arrive in the labour ward entering the office makes me feel slightly uncomfortable as if I am intruding, uninvited into other people's space. This feeling goes as I begin to sense that the midwives and obstetricians are becoming used to me being there and I become more comfortable.

The office is the hub of the labour ward, a room for discussion, using computers, finding paperwork or commonly used drugs. It is a room to talk and collaborate, drink tea and eat biscuits. For the staff it appears to be a sanctuary where questions may be answered, refreshment can be taken and preparation can be made.

5.1.5 The coffee room and other areas

The coffee room, by comparison, is smaller and less busy. Bags and coats are kept there by the midwives and maternity support workers on shift although this is discouraged by the

management of the unit. It is used by midwives taking breaks and their lunches. There are soft chairs all around the edge, a microwave, television set, fridge and a small table. When I am in the coffee room eating my lunch I hear and join in with the midwives talking about work and other things. They tell me about their concerns regarding a student midwife and holidays abroad.

I do not visit the theatre complex at all during my observations in the maternity unit. None of the midwives I observe accompany women to theatre whilst I am present and the infection control guides in place preclude a casual visit.

5.1.6 The labour rooms

The numbered labour rooms are accessed from the corridor. Each one has a wide wooden door with a privacy curtain which opens onto a pastel painted room. The door is usually closed when a woman is using the room. There is a small metal framed sliding window, which, depending on the side of the building the room is on, allows the natural light to come in. Many of the rooms feel gloomy. On one occasion there is a mid-morning downpour of rain as the woman labours strongly and the room becomes dark, noisy and dramatic. Each room is crammed with furniture, the most noticeable of which is the bed - a functional piece of equipment rather than a comfortable place to sleep. It is usually situated in the middle of the room ensuring that it is accessible from both sides. There are a couple of occasions when it is against the far wall of the room, and once the midwife moves it from the wall back to the centre of the room. As with most of the other equipment and furniture in the room the bed is on wheels. It is made up with white linen - a sheet and absorbent pads and a pillow. A small wooden veneered chest of drawers is to the side of the bed for storing midwifery bits and pieces such as swabs and gloves. The top of the drawers are filled with paraphernalia adding to the busy feeling in the room. A wheelable metal clinical trolley is against the wall at the foot of the bed. In a corner there is always an upright easy chair made of wipe clean material. A small recess in the corner of most of the rooms houses large brightly coloured air filled birthing balls along with tall metal drip stands with hanging hooks at the top. There is often an electronic blood pressure machine too and stirrups hanging on the wall. As a midwife the clinical aspects of the rooms are familiar to me. One midwife wheels a resuscitaire into the labour room when she is anticipating delivery. Some rooms have baby cots. There are yellow clinical bins and handwashing sinks in all of the rooms.

When I am in the labour rooms I find myself a perch - maybe a birthing ball, or birthing stool depending on what is available. On one occasion I am wedged behind the

cardiotocograph. As staff come into the room they acknowledge that I am there. Sometimes where I sit is driven by the location of plug sockets that can power my netbook. I may ask the midwife some questions about the woman and what is happening with her care but I ensure that I do not interrupt discussion between the midwife and woman or clinical care.

5.1.7 What the women and midwives do in the rooms

On any day there are between 4 and 14 women on the labour ward. Sometimes midwives care for two or more women at the same time. Often women are sitting or lying on the bed or standing very close to it. The location of the cardiotocograph machine is occasionally responsible for the woman's position in proximity to the bed as the grey electrical leads from the machine to the tocograph/transducer on the woman's abdomen are about one metre long. If the woman is being treated with medication via a pump it is usually located next to the woman's bed with a fine tube attached to a cannula in the woman's hand or arm. One woman who is labouring strongly moves around frequently and gives birth leaning on the edge of the bed. Another, who is sitting on the bed, says her bottom is going numb as she has been sitting in the same position for a while. Women change their positions sometimes at their own behest but often when the midwife asks them to. Midwives, however, move around the room. There are various places they stop such as the cardiotocograph, the notes on the trolley at the end of the bed, coming to the side of the bed to talk with the woman, out of the room and back in again, into the toilet if the woman is in there. These movements are often calm and deliberate, occasionally quick and frustrated and sometimes brisk and efficient and staying in step with the tempo of the labour. There are varying noise levels in the rooms made up primarily of talk and the sound of the fetal heart on the cardiotocograph.

The women and midwives talk to each other about everyday things like football practice, their children, shopping, decorating and, on one occasion, deckchairs. Women tell midwives that they want to push or they are uncomfortable or hot or they may ask questions about their babies or what will happen next. Midwives chat with women and their partners but they also talk and explain things to women – what is happening and how they will push their baby out. Sometimes this is instruction and sometimes it is coaching. Sometimes midwives and women do not talk leaving the sound of the fetal heart through the cardiotocograph to fill the room.

Midwives give drugs to the women, paracetamol is given for headaches and medication for specific conditions such as lupus. They document what is happening on the

cardiotocograph in the woman's notes. They absent mindedly fold the paper along the perforated lines and place it in the drawer underneath the machine. During labour it is unusual for the cardiotocograph to be stopped. However, for inductions women are monitored with the cardiotocograph for intermittent periods. If women want to go to the toilet the midwife stops the cardiotocograph and then re-starts it when they are back. Very occasionally there is no cardiotocograph sounding in the labour room.

Body fluids are evident in the labour rooms, some everyday ones such as urine and vomit, and others found only in pregnancy such as liquor (amniotic fluid) and show. There is blood – normal postnatal blood and abnormal antenatal bleeding. Women pass urine in the en suite toilet. If there is no en-suite in the room the woman has to leave the room to visit the communal toilets – usually having asked the midwife if she can. Midwives can put a bedpan under a woman in her bed to pass urine in, which the midwife then removes. She disposes of the urine in the sluice. Some women with epidurals have catheters inserted with the filling urine bag hooked to the side of the bed. Many women feel nauseous but are not actually sick but one vomits into a cardboard vomit bowl and is assisted by the midwife who disposes of the vomit in the sluice. On one occasion a midwife is kneeling on the floor behind a labouring woman who is leaning on the bed when her waters break. Another midwife breaks a woman's waters with an amnihook inserted into her vagina. When the woman stands up shortly after to go to the toilet the clear liquor drips down her legs and onto the floor.

There is the regular touch of blood pressure cuffs on arms, thermometers in mouths and pulses palpated at the wrist. However, there are many more invasive and uncomfortable touches from the midwife - blood taking and cannula insertion, blood sugar levels and the injection of medication. They insert catheters into urethras and prostin medication to induce labour into women's vaginas. They rupture membranes and examine the cervix by putting two fingers into the woman's vagina. After a birth I see a midwife inspect the woman's perineum to assess whether she requires suturing.

5.1.8 Human traffic in the labour rooms

Human traffic enters and leaves the room in varying degrees during the three hours stints I observe. The most unvarying presence in the labour room is the woman. In each room the midwife, woman and birth partner/s are the most consistent presences. When women arrive on the labour ward they are allocated a room and the coordinator assigns a midwife to care for them. The midwife usually stays for the duration of her shift. A new midwife comes at the end of a shift or occasionally, during a shift if the workload on the labour

ward alters. The woman remains in the room until her care is finished. In the main the women I observe stay in their rooms, many of those not moving from the bed. Those that do leave go out to use the toilet (most rooms are en-suite but some are not). One woman is in early labour and is asked to mobilise around the labour ward. It is unusual for women to change rooms and the only instance I observe is a woman with vaginal bleeding at 31 weeks being moved on her bed by the midwife and the coordinator from the birthing pool room to another labour room.

Women's partners are a steady presence in the labour rooms. They occasionally leave to refresh, or to eat, smoke, and sometimes to contact other family members to update on progress. Occasionally there is a medical student who sits and observe what was happening – sometimes asking questions of the midwife and sometimes being asked to do things by the midwife. Student midwives are a noticeable presence in many labour rooms. Midwives occasionally ask them to go and find equipment but their presence is often constant too and they tend to follow or be directed by the midwife. I am also a presence in the room. I enter as quietly as I can, introducing myself to the woman and reminding her that I will leave if she would like me to. I endeavour to sit quietly observing and tapping away at my netbook. Midwives and women talk to me whilst I am there. When it is time for me to leave, I say goodbye and thank you to the woman and the midwife exit the room quietly.

Midwives, however, are constant in that they are present and directing operations but they also leave the rooms frequently but not for very long. There are frequent trips to the drug cupboard for medication, to the office for blood results or to look for the coordinator when needing midwifery help and to answer the sharp tone of the emergency buzzer. Midwives collect (or ask student midwives to collect) equipment. They go to find obstetricians to consult with about the women in their care.

Other people come and go at varying intervals, some by invitation and some without. Everyone who comes to the room always knocks before coming in and waits if asked to do so by the midwife. The door to the labour room is often closed with the curtain pulled across the door for extra privacy. Midwives looking for equipment or offering to cover breaks simply arrive at the room, knock, enter and announce why they are there. Sometimes midwives inform midwives who are covering them for a break about what has been happening (one to one midwifery handover). One midwife who is covering a break asks the student midwife and woman for details of what is happening as the midwife she is covering has not given verbal handover.

It is unusual for doctors to arrive unannounced in the room. Midwifery coordinators and doctors can both be invited by the midwife to check an aspect of care. The midwife tells the obstetrician the reason why she has asked for a review, in return the doctor may ask some questions and or talk with the woman, inspect the cardiotocograph and sometimes examine the woman. Having documented their visit and plan, they may arrange to return in half an hour to see how things are. On one occasion two doctors and midwife gather in the room discussing the woman's high temperature and the decelerations on the cardiotocograph. The consultant arrives and joins the collaboration. The woman talks to the collaboration but it appears that she is not part of the discussion. The midwife explains the dialogue that has taken place between the obstetricians and midwife to the woman and her partner after the obstetricians have left the room.

The doctors round, however, is an organised and expected visit to each woman in the labour ward to discuss care and consider care plans. It is made up primarily of obstetricians – consultant, registrar and senior house officer and usually an anaesthetist and midwifery coordinator. Midwives prepare for the round by looking up blood results and doing vital signs. Some find this onerous. The round knock on the door, the midwife goes out of the room to the round and gives information about the woman to the round. The midwife brings the notes and talks to the round. I go with them to observe. The whole round and the midwife then discuss the case and then all go into the room to talk with the woman. There are occasions when staff congregate around the woman in a room.

5.1.9 Summary to the maternity unit

The labour ward is defined by its layout, the people within and the work that is carried out here. I have presented my view of the labour ward, seen through my midwife/researcher eyes. This is the part of the findings that are closest to the data (see 4.4 Level of interpretation of findings) – representative of what I observed (Giorgi 1992) and written prior to active analysis of the data. It is the part that shows the reader where things are happening and what those things are. Its purpose is to provide a contextual foundation for the findings after analysis which follows.

5.2 Findings after analysis

This section presents the interpretive findings. It is structured into four sections according to the matrix below of the final overarching themes and categories. The order of

presentation gives an overall picture of what happens during clinical care to instigate information behaviour (*In the line of duty*) and then comprehensive analysis of the information sources midwives use (*Midwife and woman*, *Midwife and colleagues* and *Sources and channels*). The sub themes are listed in Appendix 9.21. To aid understanding, there are pointers in the text to show whether it is observational or interview and data presentation principles are in Appendix 9.36.

Table 5.2.1 Findings matrix

<i>In the line of duty</i>	<i>Midwife and woman</i>
<ul style="list-style-type: none"> • Triggers • The search • Types of information • Using information • Value of information 	<ul style="list-style-type: none"> • Sensory • Verbal information • Barriers to verbal information from women • Observed and observations
<i>Midwife and colleagues</i>	<i>Sources and channels</i>
<ul style="list-style-type: none"> • The art of talking and asking • Colleague characteristics • The talking forums 	<ul style="list-style-type: none"> • Knowledge • Guidelines • Maternity notes • Equipment and computers • Environment

5.3 In the line of duty

This section relates to things and behaviours that happen in information behaviour enacted by midwives. It is embedded in the data relating to clinical care but is not just clinical care – it is something that happens concurrently and as part of clinical care. The main difference to the other three sections is that it is not about sources, it is about what the midwife is doing. It is first because it provides a foundation to midwives' information behaviour.

5.3.1 Triggers

Information behaviour starts with a need, and the most basic is 'not knowing'. When midwives do not know something, lack confidence or are unsure it triggers a need for information. There are circumstances in which midwives have information needs

- new situations

- lack of practice or procedures changing
- because the situation changes
- knowing that there will be information they need
- preparing for what may happen

Needs may be triggered by midwives themselves because they recognise limitations.

Kathy, a newly qualified midwife says

at 3 o'clock in the morning you think you might know something and actually get it slightly wrong because you are tired and things and there is always good to look up things specifically *Kathy Int KI473*

Things change during the course of care. Marie, a caseloading midwife with 20 years' experience, recognises this

I think you are always going to need information because of the situation changes *Marie Int MI43*

Similarly, when Rachel, also a high dependency midwife with many years' experience, admits a woman she takes a preparatory approach

I haven't got all that information accessible to me in my head so I'll go and look it up and be prepared *Rachel Int RI260*

This information seeking behaviour triggered by anticipation of an imminent case means they are 'one step ahead' (*Nancy*) and prepared for what may happen during the course of the care.

At the start of care midwives have information needs. They told me they like to know women's birth plans and their history and like to have an understanding of any conditions the woman may have.

As care progresses some of the midwives in the sample exhibited reactive information needs such as following up and acting on blood results as this may influence the care plan. When giving treatment the preparation of the medication and the regime for administration may trigger an information need. This is because this information is difficult to remember, may require precision and the midwife may not do it frequently enough. Kathy requires specific information on how to draw up drugs.

so you have got concentration like to put together so you know how much you are mixing it with or how long you are putting it in over um so that is really useful for drugs *Kathy Int KI466*

This demonstrates an information need that is resolvable by a precise or prescriptive piece of information.

This section starts to illuminate some key areas for exploration in the discussion. Midwives' knowledge (what they know) is key to instigating an information need. Once identified midwives have a drive to resolve their needs. These may be proactive means to equip themselves with information that may suggest expert or enhanced information behaviour because they are professionals. There is also a suggestion here of using reliable information for drug preparation. What is also evident is that information needs (triggers) appear to be an individual event. Whether this is a situation that the midwife has created meaning for by interacting with her colleagues or through her own experience is unclear.

5.3.2 The search

Having identified an information need, information seeking is the process by which a midwife identifies a source and gains information from it. There are a range of information seeking techniques dependant on the source and format.

The search may be sensory. Nancy is using touch to feel whether there is a contraction so as to guide the woman when to push

Nancy places (her) hand on (woman's) abdomen, 'Belly feels nice and firm all the time.' She is waiting for a contraction *Nancy Obs N151*.

Midwives read the guidelines and maternity notes to find the information they require, in a manner suggestive of *mining* or *filtering* to find what they need. When midwives talk to their colleagues or the women they are seeking verbal information.

Midwives like information seeking to be easy, accessible and quick

How easy it is to access, how quick it is to access, like if it is there and available then you would use it but if you have got to hunt for it you just don't have the time on labour ward, too busy *Kathy Int KI288*

In an urgent situation Jodie streamlines her information requirements

if a woman comes in and she delivers quickly I need to get the really important bits of information from her or the computer like what her blood group is ready for when she delivers ... have you got any medical problems have you had any massive bleeds before or group B strep and all those sort of things *Jodie Int JI574*

She says she goes back when the urgency has passed to make sure there is nothing missed.

As well as the information seeking technique associated with the source and urgency, there may be other factors that inhibit information seeking such as having more than one woman to care for

if I'm given lots of women to look after then that can be difficult, it can definitely stop you from actually thinking any broader *Una Int UI476*

As midwives are mindful of needing to be with women

if you are looking after a high risk woman, she needs you there all the time, actually having the time to go and look bits and pieces up is going to be hard, because you need to be with the woman to provide her care *Marie Int MI273*

Seeking information is likely to involve leaving the room and walking around the physical environment of the labour ward to get to the computers to access guidelines or find a colleague.

Midwives maintain that they find the information they are looking for and know where to go to find it

I've always felt confident in the fact that I have found the information I need if I haven't understood something *Kathy Int KI293*

Information seeking is dependent on the format of the source, abdomens are palpated and guidelines are read. The way each is interrogated is dependent on the format. Midwives express preferences for sources with attributes of speed and ease of access. This is evident in the equation of the midwife wanting to be with the woman or women, needing information and recognising the time it will take. Therefore there is a time and space element alongside the drive to resolve information needs that is instrumental in information seeking. However, there is also a proficiency shown by midwives in that they can streamline their information seeking when time is limited. The individual experience of the midwife is evident here too – her information seeking is conducted on her own volition. As in the previous section, how much this is dependent on the norms and culture of the social group is less clear.

5.3.3 Types of information

The analysis suggests that there are types of information that midwives use. Nancy, an integrated midwife who usually works night shifts, recognises that she uses different types of information during clinical care

Well obviously the woman's condition, so, depends on what or what scenario I was in or what information I wanted to gather would influence where I would go, whether it was clinical or whether it was something social *Nancy Int NI229*

The information relates specifically to the woman (social), her condition and clinical information and this influences the provision of care. Women with conditions identified antenatally will often have a woman specific care plan filed in the maternity notes

the diabetic midwife coordinates a plan of care there is a pro forma so that's very useful because of course there are varying types, between gestational, type I, whether people go on the protocol or not so that will give me a very clear indication of what to do with what's probably going to be a far more managed labour *Beatrice Int BI153*

Beatrice, a caseloading midwife with seven years' experience, is gaining information from the woman's care plan and the guideline about diabetes and clinical practice. The quote suggests that she will use these to inform her care management. This example shows an indirect interaction with a colleague (a member of the social group or fellow) via the plan of care, but it also shows that the plan of care has a meaning for Beatrice in terms of how she will manage care.

When providing care for a woman with a condition, Jodie combines information from the woman with care pathways in the guidelines and uses them together to direct care

by going to the woman to work out what, how that medical condition is individual to her and then that brings .. me more information for her individual needs that you then use in conjunction with the guidelines to provide the best care for her *Jodie Int JI175*

Midwives use and seek different types of information to provide clinical care. The information from the woman's care plans and the information from the woman about her condition are both woman specific, and cannot be applied to anyone else. The information in the guideline is practice and objective information which informs the midwife about the clinical care. When combined, woman specific, practice and objective information guide care management. The guidelines and care plan also have meaning that influence how Beatrice and Jodie will act towards them.

5.3.4 Ways of using information

Information use may be checking using an alongside single source, or complex interactional use of more than one source.

Midwives have different ways of using single and multiple information sources during clinical care. The observational data shows Rachel, a part time high dependency midwife, using the syntocinon regime (a single source) as *alongside* information when inducing the woman's labour.

'I'm just going to put that up as well' Rachel checks synto(cinon) regime, changes pump (she is referring to the synto). Rachel documents in notes using the laminated regime *Rachel Obs R146*

It is a simple use of one information source with one objective. Kathy describes more of the background as to why she uses it

I never remember that (syntocinon regime) so ... we have a folder which has certain bits in it like um the syntocinon protocol for going up and down it's out of the guideline, but it's been printed off just the individual sheet on the chart ... so I never start synto without it and blocks (epidural) as well ... as much as I think I know where a block is, I still seem to check, I don't know if it is a dyslexic thing or not but I don't like getting the numbers the wrong way round ... and there would be quite a possibility of that *Kathy Int KI493*

A single source may also be used to work things out

with something complicated that's technical so I need to go and work out erm you know exactly what that regime is going to be *Una Int UI71*

In both situations there is only one way for it to be done. Alternatively, midwives use pro formas (another single source) *interactively* as information that directs their practice.

Tessa adjusts the sliding scale using the results of the blood sugar and the information on the pro forma (called the combined chart here) (another single source)

Blood sugar is 8.2. 'Up down, up down' says Tessa, she documents on the combined chart, 'So, we have got to go up to 4.' She is referring to the sliding scale. Tessa is altering the syringe driver *Tessa Obs I157*

The pro forma is *interactional* rather than being *alongside*. This is a more complex use of a single information source. These examples are midwives using single sources for specific information. Jodie describes how she uses three main information sources together for broader information seeking

the woman and the guidelines and the medical team, those are my three that I use on a daily basis ... yeh, every single shift I'd say I use those *Jodie Int JI438*

Midwives may use information sources to validate their information. This may be a stepwise process of finding information and then verifying the information

that's when I would get, talk to colleagues, when I've pulled the guideline ... that's the sort of time I'd ask, because I'd have that as my backup if I asked somebody what's going on *Rachel Int RI412*

Rachel would use her colleagues after she has accessed the guideline. Whereas Diana uses the same stepwise process but the other way around

if I wasn't happy or it didn't sit comfortably that the information that person was giving me was right then I would always back it up either going to ask someone else or, if not, and if I still wasn't happy then I would check the guidelines *Diana Int DI 602*

The midwives are validating their information from one source to another but the values of the information sources are different. However, Tessa, talks about combining information sources in complex care. She has four years' experience and is a core midwife, and is caring for a woman with diabetes and pre-eclampsia. She describes the complexity

when she came back (from theatre) that was impossible because she had to have a certain amount of synto(cinon) but then her insulin was changing and they (obstetricians) wanted her on 85mls an hour ... and again it didn't matter what guidelines I had in front of me then because we were changing the guidelines to try and fit er, they even changed the amount of synto(cinon) *Tessa Int TI390*

Tessa describes the complexity of the care and infers that she is using information from the guidelines and the obstetricians as the situation is changing. This suggests that care advocated by guidelines may need to be tailored to the woman's individual needs and that information may be sought because of these variations. Una clarifies this

we have to kind of expect that in our job ... there's very rarely a right way of doing things you know, it's right for that individual person but doesn't mean that you can apply that for somebody else *Una Int UI357*

In these examples the midwives may be creating meaning for the situation by talking with colleagues or checking with the guideline. Tessa's quote shows that the information source did not fit the situation. Una's quote shows that there may not be a right way to do things. This suggests that midwives may establish meaning through talking and checking with colleagues.

Information may not be used at all. Marie will not use information if she knows it is wrong but when explored at interview, she does not state how she would know this. Yolanda also responded in interview by stating that if information is correct she would be encouraged to use it:

if it was right, if it was helpful, so if it gave me the answer what I was looking for *Yolanda Int YI210*

Midwives consider accessibility by positioning information nearby for use. They consider reliability, if information is correct or it gives them the answer they need they may use it, but they may also adapt or select parts of the information. They may combine information to validate sources particularly when care does not fit guidelines. Managing several information sources may be difficult for the midwife especially in complex care. Managing and combining information sources may be where cultural meanings are created through interaction with colleagues. This may add clarity for the midwife but may also contribute to the labour ward culture through shared meanings.

5.3.5 Value of information

Midwives place value on information behaviour. Kathy, who is newly qualified, discusses her feeling about responsibility during interview

because the responsibility is just an overwhelming like nervous scared feeling you get when you are on the labour ward because you have then got responsibility and then you are like if I mess this up it's my fault now, not somebody else's *Kathy Int KI317*

Una, who has sixteen years' experience, when asked during interview what prompts her to look for information says

I really do like my job and I'm so interested in people and what makes people tick *Una Int UI455*

Several midwives acknowledge information behaviour as part of their role

it's not something you think about, it's ... just something we do, we just, we are always having to ask questions, always having to get information so it's, I've not really thought about it until now really, it's just part of what we are really, it's just second nature to be always asking things and accessing information and trying to find out things *Diana Int DI471*

Beatrice says that she is constantly gathering information

you are invariably doing four different things at once when you are looking after a woman in labour, you are trying to keep an eye on what she is doing and as regards you say about information gathering, you are constantly information gathering in modern midwifery, not only the signals you should be reading but the paper trace you are gathering the, oh are my records contemporaneous, am I ready for those wretched ward rounds, you are constantly tweaking the information in your head, ... you are constantly thinking ok well I'm with a lady in labour I'm aware that bloods were sent for a full blood count and a group and save and those need to be checked at some time, so when are you going to find the time to do that? So if she is going 4 in 10, at some point you have got to have that information

ready, you're constantly trying to dovetail information and bits of paper and gleaning the information from her all the time *Beatrice Int BI277*

Jodie says she would never not look for information.

Researcher: 'is there ever a time when you wouldn't look for information?'

Jodie: 'No, not knowing me, I don't think there is

Researcher: 'Why would that be?'

Jodie: 'I'm like, my whole character is a perfectionist who likes to be very thorough and um very organised and I cannot imagine myself just not doing that *Jodie Int JI522*

However, Nancy situates her information behaviour within the context of the priority for providing the best experience for the woman

at the end of the day the midwife whether you are gathering information or not what you want to do is give that woman the best experience that she can have with the best possible outcome that she can have and with the best possible care *Nancy Int NI513*

These quotes suggest that midwives see themselves with responsibility to coordinate clinical care and to ensure the best care for the woman. They have core values to their role but also see the fundamental necessity and value of information behaviour within that role.

5.3.6 Section summary

The identification of information need and its relationship to midwives knowledge is highlighted as a key area for discussion, along with the drive to meet or resolve the need through professional responsibility. Information seeking for different types of information is seen to be dependent on the format and accessibility of the source and an element of reliability. Midwives seek information depending on whether they require specific or more general information and they acknowledge that sometimes there is more than one way to do something. They may combine sources or use them in a stepwise process. The findings begin to suggest that the complexity of seeking and managing several information sources may be challenging for midwives. This section shows that in uncertain circumstances midwives talk to their colleagues to create meanings. The next section considers how the midwife seeks and gains information from the woman.

5.4 Midwife and woman

This section considers how the midwife gains information from the woman whilst they are in the labour room together, through what she sees, hears and smells, through discussion and through measuring and recording observations.

5.4.1 Sensory

The sensory information format is that which the data suggests the midwife receives and gathers through hearing, touching or smelling. Women sigh and groan and make noises that the midwife can hear, breathing audibly through their contractions and occasionally without. When Zoe hears the woman in her care sighing, she talks to her

Woman breathing again and sighing ‘Oh no’, ‘Concentrate on your breathing’ says Zoe *Zoe Obs Z63*

The midwife receives this information and attends to the woman when she makes noise.

As well as listening to the woman, midwives listen to the noise of the fetal heart often via the cardiotocograph. They are listening for decelerations

Minor deceleration – Beatrice hears it – alert to what is happening on CTG *Beatrice Obs B180*

Touch is used by midwives to establish the position of the baby in the uterus. Midwives palpate women’s abdomens using their hands, they push their fingers low into the woman’s abdomen to find the position of the baby’s head

‘Take a breath in for me’ Zoe feels for head abdominally, ‘Does that feel tender there? Just feeling to see how far engaged baby’s head is ok’ *Zoe Obs Z112*

They may feel the baby moving and its size

‘little bit uncomfortable now’ (she palpates). Sarah says she can feel the kick from the baby. ‘You’ve got a lovely well grown baby’ *Sarah Obs S19*

Or a contraction coming

Frances: ‘Are you having a tightening now? Your tummy feels a bit hard.’ Woman: ‘Yes’ *Frances Obs F15*

Occasionally midwives use their sense of smell. Marie is trying to confirm whether a woman’s membranes have ruptured or whether it is urine

Marie asks for the old pad. ‘It doesn’t smell of wee’ *Marie Obs M227*

Midwives gather sensory information from women directly. The women give this information even when it is intimate or uncomfortable. This information supports diagnosis and sometimes action when it is required. This is woman specific information as it relates directly to the woman. It is in a sensory format. Midwives gather this information hardly acknowledging that it is information.

5.4.2 Verbal information

During their time together in a labour room midwives and women talk and information is exchanged. Nancy sees this time together as an opportunity for conversation

You've got 10 hours you do tend to make a bit of conversation so you are constantly information gathering *Nancy Int NI343*

Sometimes it is social discussion which may arise because the woman volunteers information but it may also be related to clinical needs. They are observed telling the midwife they feel sick, hot, shivery or having headaches. Midwives may offer anti-emetics, paracetamol or take temperatures or blood pressures in response.

The woman in Kathy's care informs Kathy and the student midwife several times that she is itchy. Initially Kathy explains that it is a common side effect of the epidural. When Kathy is out of the room, the woman mentions it again

She (woman) comments that 'Itchy like this', student midwife explains that Kathy has gone to get ranitidine. Woman asks 'Is that for the itching?' Student midwife says 'It's something else', woman comments about itching again, student midwife says 'I'll ask Kathy when she gets back' *Leanne Kathy Obs KL198*

Later, the woman says again that she is itchy, the student midwife suggests medication. Kathy then says she is

not quite pulling your hair out yet *Kathy Obs K270*

and does not give medication. Kathy's reason for not responding to the woman's request is unclear.

The woman in Kathy's care also says she has an urge to push

Woman says 'I feel like I need to push' *Leanne Kathy Obs KL152*

Which she re-iterates later on

Woman 'I can feel pressure pushing down, it feels like baby coming down' Kathy says 'We'll see at 4pm' *Kathy Obs 217*

The above vignettes from the observational data shows that midwives receive information verbally from women without it being requested. It could be described as *passive*. It may prompt action or assistance. The midwife may receive information but not act.

Midwives request information from women such as what happens with their allergies or their previous labour and birth. They seek information from women verbally about their pregnancy history

Eugenie is covering a break for Rachel. The woman's labour is being induced as the baby (fetus) has a gastroschisis. Eugenie asks the woman about the its size

Eugenie is reading ultrasound scan reports, asks woman about whether it is quite a big gastroschisis, woman says she doesn't know. Eugenie reads the size of the bowel in the notes *Eugenie Obs E226*

It is not clear why Eugenie asks this question as the information is also available from the maternity notes.

Midwives ask women about current things - their comfort, whether they require water and how they are feeling but also about what has recently happened. Midwives check women's identities when administering medication and ensure that women consent to procedures and examinations. If they are assessing fluid balance they question women about their urine output.

Midwives enact care planning with women by gathering information. As the birth of the baby in Nancy's care becomes imminent Nancy asks if the woman would like the baby skin to skin – the woman requests for the baby to be cleaned first.

The woman in Jodie's care who has mitral valve disease has had a plan created by the multi-disciplinary team (the round). During observation, Jodie is seen explaining the plan to the woman to seek approval

Next plan ctg (cardiotocograph) at 11.30 in anticipation of prostin, Jodie explains probable course of action (to woman). Jodie (says) 'Are you happy with plan?' *Jodie Obs J101*

A significant area of midwife questioning and discussion with women in the labour ward is around contractions and pain relief. Beatrice is using syntocinon to induce labour and wishes to know if the contractions are increasing in strength

Beatrice asks 'Are they biting?' Woman says 'Starting to' *Beatrice Obs B160*

The rationale for asking these questions is not always clear from the observational data, although the midwives are certainly receiving information. However, the interview data shows that when midwives talk to women about their conditions or what is happening with contractions, it is to establish whether they are taking medication that may affect labour, to plan and assess care and to inform management. These things have meaning for the midwife.

Midwives seek woman specific information from women in the verbal format. Sometimes it may be passive, in that the woman volunteers it. The reliability of the information is dependent on what is requested – some information only the woman will know, or it may be accurately documented in the maternity notes. Information is received and delivered to the woman verbally by the midwife and the multi-disciplinary team.

5.4.3 Barriers to verbal information with women

Despite the proximity and apparent ease with which midwives request and receive verbal information from women, there are barriers. Jodie, a high dependency midwife, who has undertaken professional development for her role, recognises that she needs to ask questions in a particular way to ensure she extracts the right answers

so if it is a cardiac problem there'll be a whole list of questions that I will ask in relation to their cardiac problem, or if it is a breathing problem then I will ask a load of questions about that and if, um because I have done it so many times now I know what questions I need to ask in reference to what medical condition they have got *Jodie Int JI255*

Whilst using a technique to extract information from women may improve information yield there are other factors that may inhibit women. Jodie cites an example of a woman with HIV whose birth partner present in the room did not know

It was very very difficult to try and treat that patient without letting the birth partner know so I had to find a way for (birth partner) to go out of the room and then, she was very receptive once I asked her straightaway about her diagnosis and ... we had a very quick but very accurate conversation about her whole history in the time that she was on her own *Jodie Int JI151*

Equally, information may be inhibited due to who the woman is and what she is experiencing. During observation Olivia's view is that some women are better at giving information than others

Foreign, tired and in-pain not the best informant *Olivia Obs O209*

Tessa, on the other hand, acknowledges that the woman is not able to provide some information

they are not going to know our guidelines or what we need to do ... there's certain things they wouldn't be able to tell me to obviously give me the information I need *Tessa Int TI248*

The reliability of the woman as an information source varies. Jodie acknowledges that the woman's frame of reference may influence how she puts information across to the midwife

sometimes I find that if you ask people 'Have you got a medical problem?' they won't necessarily, if they've got asthma, they don't always say 'I've got asthma' because it's well controlled, it's not a current medical problem in their eyes so in their mind, so they'll say 'No, I don't have a medical problem' and then you go 'Haven't you got asthma?' because you've read it as well and they go 'Yes I have but I didn't think you meant all of that' and that is because they see it as not an issue for them *Jodie Int JI128*

In this example the meaning of asthma for the woman is clearly different to the meaning for Jodie.

The woman in Tessa's care has had diabetes for many years and she knows how to manage her hypoglycaemia, however, the context of returning from theatre having had a caesarean section is not something she is used to and this renders her information of limited value to Tessa.

Sarah is admitting a woman in possible early labour, she is trying to establish whether she is labouring so asks about per vaginum loss

'Show at all?' Woman says she was going to have a sweep (or had a sweep). They talk about the colour of show and what it is like. Sarah asks 'How do you describe a show'. Sarah tells woman that something is happening with cervix *Sarah Obs S13*

Despite talking about show, the woman does not actually respond to the question and Sarah still does not know if she has.

Diana, on the other hand indicates that women may elect to withhold information

sometimes they choose to not give, either not give the right information or neglect to tell you all of the information and that's something I'm, I'm getting a bit more gemmed up on now as well. You know I always thought that everyone told the truth, why wouldn't they (laughs) but that is not always the case *Diana Int DI367*

The barriers to seeking verbal information from women highlight several aspects that are not identified in the previous section. The feature of reliability is evident here and midwives are seeking information. However, midwives also select and use the woman as

an information source based on her propensity to deliver the information. Barriers may also exist when women do not disclose information, either intentionally or unintentionally (when their understanding is different), and midwives may recognise the different meaning to women and enact more proficient information seeking to account for this.

5.4.4 Observed and observations

The midwife observes the woman's behaviour and uses clinical observations for information regarding her wellbeing. These may be measurements of aspects of the woman's physiology or checking that cannula sites are comfortable and patent.

Nancy, a core midwife who usually works nights, talks about watching women's behaviour

it's like the whole night you're looking for information, you're looking to reassure yourself that the labour is going well I guess in other ways, as well as watching their behaviour *Nancy Int NI491*

Anna is caring for a woman who has had a previous caesarean section and is now six centimetres dilated. Anna responds when she sees the woman's expression

Woman standing by bed, CTG on again, sounds ok. Woman makes pained expression, Anna and partner both go to her. Partner holds her hands, Anna helps to instruct breathing, explains that (contractions) more painful when standing *Anna Obs A113*

As well as observing behaviour, midwives conduct observations according to a schedule on the maternity early observations warning chart (MEOWS) or when conditions (ie: raised blood pressure) or treatment (epidural) dictate it. They use equipment routinely to measure observations, or in response to clinical events such as feeling shivery, a previous low blood pressure or persistent high blood pressure.

Other less routine observations are urinalysis, per vaginum loss, blood sugars, bloods and checking cannulas. Eugenie, is caring for a woman who is 32 weeks gestation who has had vaginal bleeding. She observes abnormal per vaginum blood loss after the woman uses a bedpan

'Have you managed to go (pass urine)?' Eugenie says bedpan is full of blood *Eugenie Obs E350*

Observations are carried out when required by guidelines or when the midwife has an information need and an opportunity arises. They inform the midwife about potential problems such as ketoacidosis and fetal distress. Midwives find and note blood results.

Observed information is in the sensory format and is woman specific. It precedes information need and can provide passive information. It may also be triggered by or trigger information need.

5.4.5 Section summary

The woman is a pivotal element of the midwife's information behaviour. The combination of her presence and the role of the midwife generates the midwife's information need. As a sensory and verbal source of information with characteristics and other social determinants, the woman has attributes that influence how the midwife seeks information from her. Equally, the midwife may receive information passively from the woman. If selected and used for certain information she is a reliable source. Midwives gather sensory information from women easily but they may demonstrate a proficiency when seeking verbal information. This may be because midwives and women do not share meanings as in the example of Jodie and a woman's asthma. Verbal information is also sought from colleagues but the attributes and information yield are different to that offered by women. This is covered in the next section.

5.5 Midwife and Colleagues

Midwives talk professionally with their colleagues to gain information. They may invite colleagues into the labour room, or colleagues may visit the room. Alternatively they may go and look for colleagues around the labour ward or in the office. They consider attributes of approachability, suitability, availability and reliability.

5.5.1 The art of talking and asking

When midwives have information needs about clinical practice they may choose to talk to other midwives, high dependency midwives, coordinators and obstetricians or other colleagues (see Appendix 9.33 Other colleagues). Observation and interview show that coordinators are singled out as an information resource. They are valued and are asked for a variety of information including checking cardiotocographs, whether to suture, care plans, administration and how to use equipment. Shared meanings are evident here. During interview Kathy says

I am forever asking the coordinator, I don't understand this what do I do ... they'd often point you in the right direction, maybe like check this or do that *Kathy Int KI196*

During observation, Tessa has asked the coordinator for information about the cardiotocograph

Knock on door – it is coordinator, she says 'They (obstetricians) need to see it, it is sinusoidal', then 'Pseudo-sinusoidal.' Coordinator asks how long it has been like that. 'Is it 20 minutes or 40 minutes or more?' Coordinator leaves to find the doctors *Tessa Obs T143*

The coordinator assesses the trace, informs Tessa what needs to happen and then goes to let the obstetricians know. Tessa has information about what will happen next and the coordinator has information about what is happening in Tessa's room.

Midwives also provide verbal information to the coordinators

She leaves room to update midwife in charge (coordinator), writes on board. She gets drugs from cupboard (?ranitidine). Tells ward co-ordinator verbally and returns to room *Eugenie Obs E211*

The coordinator is therefore informed and updated about what is going on. This suggests that midwives verbally contribute information to the coordinator which collectively could be considered as organisational as it may influence how the coordinator manages the labour ward.

Organisational information may be delivered back to midwives and influence their care

We (midwife and researcher) go to kitchen, see another midwife who has a woman with raised BP (blood pressure), she tells Marie that BP has now settled. Marie was waiting until the round for decision because labour ward is full and high BP lady lurking. However, after that piece of information Marie has decided to go ahead with ARM (artificial rupture of membranes) *Marie Obs M103*

What this means to Marie is that the obstetricians are now less likely to have another case to deal with and will be available should Marie need them. Thus the organisational information is valuable to midwives in terms of how they conduct care of individual women and the care options available.

Midwives have several reasons for asking colleagues for information. They believe that compared to using a computer, it is quicker and the

labour ward is so busy that you don't always have time to find ... there might not be a computer free because we only have a couple and sometimes everyone is on them and you can't necessarily leave your woman for very long *Kathy Int KI228*

Diana says that the verbal information she receives is easy to absorb

for me personally ... that is the quickest and easiest way for me to take it in *Diana Int DI197*

Marie likes the flexibility and the potential to discuss care that may not fit a guideline (protocol)

what works for one person may not work for another person and I know that things like protocols and those sorts of things and you have to follow the protocol but you know like the little bits the individual bits, what works for one woman won't work for another *Marie Int MI106*

Nancy values the breadth of her colleagues' collective experience

(They have) goodness knows how many years of experience if you put them altogether and knowledge and working in maybe here for years and maybe they have experience of working abroad, they've worked in different countries, they've worked in different hospitals *Nancy Int NI367*

Una likes the fact that she can benefit from the different perspective colleagues may bring

because talking to your colleagues can give you a completely different angle, so it can reassure you that you've gone along a right line *Una Int UI218*

She also likes to gain a second opinion

I would definitely want second opinions, so when I see that I'm thinking what's the scenario what's the sort of picture and why is this baby behaving in this way and then I want other people to come and say yeh, well maybe it's because of this and maybe it's because of that *Una Int UI94*

These examples reinforce the earlier point (5.2.4 Ways of using information) that midwives may be deriving meanings for situations by talking with their colleagues.

Midwives are comfortable asking their colleagues for information although the data suggests that this is something that has evolved. Tessa says she had felt uncomfortable in the past

probably the fear of asking and you should perhaps know the answer and I think that was the biggest thing, and feeling like you should know the answer to everything ... but actually I don't have to know everything *Tessa Int TI49*

Midwives seek verbal information from their colleagues because sometimes there is no alternative and colleagues are accessible. This verbal information has many advantages for midwives both in terms of what their colleagues can offer by their knowledge and their accessibility. They select and use them as an information source for practice and organisational information, whereas women are only a source of woman specific information. The organisational information they share is suggestive of a verbal

information network. There is an insinuation that midwives may be uncomfortable approaching colleagues because of their expectations of themselves.

5.5.2. Characteristics of colleagues

Midwives consider their feelings towards colleagues prior to approaching them for information

if I liked the person in charge because every so often there are some that make you more nervous than others *Kathy Int KI541*

Nancy suggests that it is inhibitive if she cannot approach colleagues for information. Una, a more senior core midwife with 16 years' experience, acknowledges that some midwives are intimidated by senior colleagues

there are still some more junior midwives who will avoid running their careplans past or getting information from more senior colleagues that they feel intimidated by so I know it still exists, but personally I, I'm, it doesn't for me *Una Int UI302*

Another feature that midwives consider before asking colleagues for information is their suitability to provide the information - whether they are experienced, often work on the labour ward or have done something regularly may influence the choice of colleague.

Una considers the nature of the woman she needs information for when considering which obstetrician she will approach

depending on how high risk somebody was that would make me decide who, which doctor I would speak to and who was available, whether I would go straight to senior reg(istrar) or consultant or whether I would speak to the registrar or the SHO (senior house officer) depending on what they needed *Una Int UI44*

Sometimes midwives cannot find a colleague if they are in theatre or unavailable. They may use an alternative source of information if this happens.

The reliability of colleagues is also considered by midwives. Diana says she knows her colleagues are reliable

I guess because I have trained here and I know those people to be reliable *Diana Int DI429*

But they are also up to date

I would just ask one of the senior midwives because I know that they are going to be up to date they are going to have a lot more practice and knowledge on it than I have *Yolanda Int YI162*

Reliability, whilst considered during selection of the colleague also appears to be evaluated once the information is received. Diana thinks about selection and then assesses reliability once she has received the information

there's a sort of pecking order of who you'd, you know, you'd go and ask someone that you thought knew the information first of all, then you'd process the information and then think oh actually that doesn't, that doesn't quite sound right, and then if you weren't sure then I'd most probably go and look at the guidelines then, until I was comfortable *Diana Int DI592*

The colleague asked may not know the answer. During observation Penelope suggests that there is not much difference between what colleagues say and the guidelines

I (researcher) ask about whether there is ever any discrepancy between what colleagues say and the guidelines. Penelope says not really *Penelope Obs P63*

Despite Penelope's opinion, there is acknowledgement that colleagues may deliver incorrect information. When asked during interview, Nancy explains the problem of not knowing if someone is wrong

But you don't, that's the problem I mean I guess there are certain things and you'd ask, but you half know the answer, then you think are you sure about that but you might go further and go check it somewhere else but I guess there's quite a lot of things we just ask and take from colleagues and don't necessarily question that much and they could be completely wrong *Nancy Int NI418*

Colleagues are a verbal information format. Their characteristics influence their use as an information source. Midwives select and use colleagues based on their ability to provide the information but also on their approachability. Reliability is considered as part of the selection process but midwives may assess the reliability of information once it is delivered. Midwives acknowledge that information from colleagues may be incorrect.

5.5.3 The talking forums

Verbal information about each woman is disseminated around the labour ward via the midwives, coordinators and obstetricians using the traditional talking forums of handover, the round (King's Fund 2012, NMC 2009) and referral (NMC 2004)³⁰. At the beginning of each shift there is an all-labour ward handover where every incoming member of staff sits in the office in front of the whiteboard and the outgoing coordinator hands over about

³⁰ The woman as part of the verbal information network is covered in the previous section

every woman. Frances suggests that handover delivers the organisational information of what is happening in the labour ward to the staff on shift

Frances tells me about handover. Big handover in office then small handover in room. Half an hour to do this. Used to allocate woman before shift change but no one liked it because they didn't know what was going on *Frances Int F279*

This suggests that everyone in handover knows what it is for and what to expect. The care of each woman is then allocated to a midwife who goes to the labour room to receive one to one handover from the outgoing midwife. The handover comprises woman specific information including the woman's history and the plan of care.

Nancy comes to the labour room where Eugenie has been providing care for a woman with an epidural. Eugenie hands over to Nancy and the student midwife, she begins with basic detail

'first baby, pregnancy normal, T+1 (term plus one day)', ...

She then covers social history and what has happened since admission and the woman's birth wishes and the time the woman's membranes ruptured, and then what has happened since labour began

Examined at 2330 3cm, 2am, examined 4cm, then 4.30 epidural – has been working well – bag has just been changed, 6am still 4cm so ARM (6 this morning? says Nancy), 8am still 4cm so started synto (cinon) at 8.25. 3 hours, contractions were like 7: 10, baby happy, stopped syntocinon, still 6:10, 4 hours later 8cm, 6.30pm 9cm. there is caput, 2+ little bit of moulding, no membranes, clear liquor, head at -1, not sure about position, palpates OT (occipito transverse). Syntocinon still off, all connected to pump'. *Eugenie Nancy Obs N535*

Eugenie delivers information that Nancy will need. Nancy asks an occasional question to clarify timings.

When Penelope, a high dependency midwife, receives handover, she verifies information in the maternity notes afterwards

Penelope is reading the notes – I (researcher) ask her about this. Penelope wants to catch up with what happened because she is aware of the limitations of handover *Penelope Obs P59*

Penelope is acknowledging that information in handover may need verifying. Diana, a newly qualified caseloading midwife, is informed during handover that it would be possible to rupture the woman's membranes prior to labour in order to induce. On examination Diana finds that it is not. Penelope is told on a different handover that

bloods are normal, on further investigation she realises that they are actually abnormal. This shows that handover may be unreliable.

The round takes place after handover. This is a walking meeting of the consultant, registrar, senior house officer and midwifery coordinator which visits each occupied labour room and meets with the midwife outside to discuss the woman and her care.

Jodie knows what to expect from the round and her role within it. Having prepared herself with information about the woman, Jodie attends the round for the woman in her care who has mitral valve disease

(Jodie) describes plan and what Jodie has done bloods etc. Induction of labour main thing in plan stop heparin 6 hours prior to arm (artificial rupture of membranes) and 30 min 2nd stage and 3rd stage not ergometrine. They look at notes, find discrepancy in notes and plan ... They note ergometrine contraindicated. Anaesthetist discusses process of epidural. Doctor asks whether having another prostin, stopping heparin is problem, doctor says don't stop yet. Heparin more important than anything else says doctor (registrar). Doctor says clindamycin as penicillin allergic. They discuss what antibiotics for labour. Jodie listens. Current issue is aptt (activated partial thromboplastin time ratio) says doctor. Doctors ask questions, Jodie shows them in notes. Doctor is asking about baby and usual function. How (to) monitor cardiac, Jodie says ecg (electrocardiogram) in labour. Bloods not back yet says coordinator Doctors introduce themselves to woman, ask about plan. One doctor talking to woman, stresses the importance of heparin therapy. *Jodie Obs J221*

Jodie, who will be conducting and administering care, receives information from the round. She inputs woman specific information and practice information verbally and from the maternity notes.

Discussion and collaboration takes place on the round

No protocol, where (to go) for information, no one knows, questioning where information is from, questioning whether it should be 'fudged, no it shouldn't. Falling platelets, 'do you want bloods tonight?' 'No morning, bloods at 6am'. Interesting handover as this is a treatment away from usual protocol for heparin treatment *Harriet Obs H5*

In both cases the midwife hears what each member of the round says. In the latter example there is no protocol and consensus is reached about care. The woman is involved in the round once it has had a discussion outside the room.

Referral is when the midwife notifies or informs the multi-disciplinary team of the woman's condition or admission to the labour ward, it may be sharing or confirming the

woman's plan of care. It is a professional requirement (NMC 2012). Nancy considers referral as information seeking

I want the doctors to come and help which would obviously be information giving because they may have different knowledge about what's happening *Nancy Int NI311*

Occasionally women will input information directly to the referral

the doctor will come in and they (the woman) will say something extra that they haven't told you at all, that would change the whole thing as well and, sometimes I don't know if they see the doctor in a different role *Jodie Int JI280*

Although the data suggests that sometimes it may be less likely to involve the woman

'I want the baby safe and I'm so hot as well' says woman. Zoe is listening to the plan, consultant suggests epidural and review in 30 minutes. Consultant talks to Zoe and asks her if she thinks the plan is ok *Zoe Int Z310*

Despite the woman talking to the referral collaboration, her input is not acknowledged.

Referral may also become a collaboration between the midwife and obstetrician and possibly other colleagues. Sometimes the collaboration may fail. Tessa is on a busy night shift providing care for a woman in labour who is diabetic and appears to be developing pre-eclampsia rendering her care even more high risk. Care is complex involving two high risk treatment regimens and vigilant monitoring. Tessa approaches the registrars on several occasions for referral

I said she's got flashing lights and her headache is getting worse, she's now got epigastric pain etc etc, no matter what I did and what I said there was never a decision made with her PET (pre-eclampsia toxaemia) *Tessa Int TI369*

Tessa knows that her care needs to be managed

it just felt like we were in a bit of a grey area as to how to manage her *Tessa Int TI298*

Despite making an appropriate referral for collaborative information, Tessa is unable to get information for care management. She is aware that the registrars are talking to the consultant on the telephone but she is still unable to gain information

it just felt like there was this from being on the phone to Mr (name), to the registrars, to me there was like Chinese whispers almost *Tessa Int TI308*

At the end of the shift Tessa is left feeling that the woman, whose labour care is complex and challenging to manage, has not had the best care

it made me feel like we had completely mismanaged her and the care was awful and I went home feeling awful *Tessa Int TI334*

Despite initiating collaboration with the registrars Tessa cannot elicit any information and the registrars do not appear interested in the information she presents. She consults the guidelines but these need to be altered to fit the situation. The collaboration has been ineffective and the guidelines are inapplicable.

Handover, the round and referral deliver information to the midwife about the woman which guides care management. Handover, may deliver unreliable verbal information from colleagues. These talking forums support the concept of a verbal information network (VIN) in the labour ward. It is apparent that the woman has a role in the VIN but it does not appear to be equal to the role of midwives and their colleagues. The talking forums are suggestive of collaborative information behaviour and also indicate the social interactions with shared meanings on the labour ward.

5.5.5 Section summary

Colleagues are a verbal information format or source, selected and used for their propensity to deliver woman specific, practice and organisational information. Midwives see them as accessible. However, their approachability may reduce this. Midwives are cognisant that verbal information from colleagues may be unreliable. The verbal format used by midwives, colleagues and, occasionally, women, supports the concept of a verbal information network. This can be seen to develop into collaborative information behaviour between midwives and colleagues. This social interaction may be where shared meanings are developed. In contrast to interaction with women seen in the previous section, meanings for situations seem more likely to be similar for midwives and colleagues. Between midwives and women meanings may be different. The next section considers the non-verbal information sources and channels used by midwives.

5.6 Sources and channels

Midwives use information sources and channels for information during clinical care. The data suggests that these comprise midwives' own knowledge, the clinical guidelines, maternity notes, equipment and computers, and the labour ward environment that midwives work in. Each source and channel has attributes and presents types of information.

5.6.1 Knowledge

The midwives in the study suggest that knowledge comes from training, experience and frequent exposure to working in the labour ward. Midwives know aspects of clinical care. Beatrice can remember the syntocinon regime and sliding scales, Jodie has knowledge of mitral valve disease and Rachel knows how to recognise a deteriorating woman. These midwives did not say *how much* they knew. Knowledge is an individual experience rather than social interaction.

The data suggests that there are times when midwives will have partial knowledge, where they are aware of something or that they do not know

you know if you know something and if you know that you don't know something you know that you have to ask or you have to find that information *Kathy Int KI176*

If they ask a person it is social interaction. They may know because they do it frequently, meaning they do not need to seek information. Jodie's memory is jogged and she starts to remember the care pathway for women with heart disease when Ivy is handing over care

Ivy shows charts in notes (to Jodie). Jodie says 'Prescribe each time?' Ivy says 'Yeah. Was on 2.7, then prescribe.' This brings back memories *Jodie Obs J42*

But during observation Jodie shows things that she does not know

'When do the antibiotics start?' (says) Jodie, 'I presume when labour starts' says Harriet. 'I can't remember when you start doing it' says Jodie *Jodie Obs J21*

Jodie knows that antibiotics need to be given but she cannot remember the details. These quotes suggest that midwives know what they know and they know what they do not know.

Nancy, however, suggests that

you think you should just know *Nancy Int NI145*

Kathy has a similar vein of thought

because you want to look like you know what you are doing *Kathy Int KI306*

Both Nancy and Kathy think they should know or have knowledge but it is not clear why. There may be an element of interacting socially with colleagues by asking for information that then informs the colleague that the midwife lacks knowledge. The quotes suggest that this is an undesirable state for the midwife.

In the clinical environment midwives use their knowledge to direct, conduct and deliver care. It is a cognitive process or format as it cannot be seen and exists in the mind of the knower. When midwives have partial knowledge of something they appear to know what they do not know, they may remember enough to know that they do not know. Not knowing appears to be an undesirable state. The data does not show how reliable midwives believe their knowledge to be.

5.6.2 Guidelines

Midwives use guidelines for information. They print them from the computer, search for specific information within them and read the background information. They are often filed in the woman's notes by midwives who have already accessed them.

Diana suggests that when compared with discussion with colleagues, guidelines are the most reliable information source

Researcher: 'Which one do you think would be more reliable and more likely to be correct ...

Diana: 'Oh well, if we are talking about correct then probably a guideline because as I say, they change so often the guidelines' *Diana Int DI558*

Nancy uses her own criteria for reliability

if it's in black and white and it's up to date or seems to be up to date *Nancy NI297*

Tessa sees guidelines as information

you have always got the answer should you need it, it is there in black and white and the correct or recommended care is there *Tessa Int TI569*

Marie suggests that guidelines are

clear information, if this happens you do that, if that happens you do this, it's just concise *Marie MI346*

As well as using the guideline for conditions or things that she has not seen before, Yolanda, a midwife with one year's experience also uses the wording in them to explain the condition to the woman

you have got the background guidelines on the internet as well to look at kind of why the condition is there ... you can then explain it easier to the women as well *Yolanda Int YI172*

The meaning of this is not clear, it may indicate Yolanda's lack of confidence in her own knowledge or a perception of the quality of the guidelines.

Guidelines are stored on the computer system, therefore searching involves accessing a computer, finding the relevant guideline and then finding the information within the guideline. Eugenie maintains they are easy to access. Marie, on the other hand, finds it difficult

you go onto the (trust internet) and you put in the policy for and then loads of other stuff comes up and you think well I didn't ask for that I just want the policy for this thank you very much *Marie Int MI286*

Once the guideline is found, information needs to be located within it. Una says during interview that a lot of the guidelines

are far too wordy and complicated and too, they're not user friendly to use in a hurry *Una Int UI140*

Kathy is dyslexic and, along with Diana, another newly qualified caseloading midwife, finds it difficult to read large portions of text

(Reading) big texts, if I flick through a whole document to get my answer I wouldn't be able to do it quick enough because I am just not very good at that from a dyslexic point of view *Kathy Int KI208*

These quotes suggest that midwives see guidelines as information for use during clinical care but one which requires searching through *background* information to find *specific* information. Yolanda finds this helpful, whereas Kathy, Diana and Marie do not.

However, guidelines may not always be used by midwives. Yolanda does not use the guideline for the woman in her care with high blood pressure as she is familiar with it but it is not clear whether she would use the information that she knows from the guideline combined with discussion with the obstetrician.

Equally, guidelines may not be used because they do not exist for some conditions.

we don't have a policy or guideline if it's an unusual condition *Nancy Int NI116*

There are lots of guidelines, and they change periodically. The data suggests that midwives are aware that they cannot know all of the guidelines because there are so many

I think sometimes we have got too many of them um it, you know, because you can't possibly retain all that information *Diana Int DI378*

But it appears that they believe they should

there's 17 new guidelines and you think how can everybody sit and read, when do we get the time to do, to read all those *Rachel Int RI399*

Guidelines are information for practice and knowledge based information about conditions that women may have. However, because they are up to date and based on research evidence, midwives see guidelines as reliable information. However, they come with some accessibility issues which may inhibit their use.

5.6.3 Maternity notes

Midwives read the women's notes to seek information about medication, scan reports and due dates and what has been documented by their midwifery colleagues.

Notes are created by the midwives writing in the notes as they conduct the care. Georgie writes in the notes when she increases the syntocinon, Zoe records that she has given the woman paracetamol on her drug chart and Una documents the woman's fluid intake in the notes.

If the notes are unavailable midwives cannot use them as information. Eugenie says that occasionally women will lose their notes. Rachel says that sometimes women will forget to bring them. There may be omissions within the notes themselves. Rachel sees that there are no blood results in the notes so she does not know what the woman's haemoglobin level is

Rachel shows me the results page it is blank and there is nothing filed there. Rachel is searching through the notes, 'No recording of hb (haemoglobin) anywhere' *Rachel Obs R105*

Occasionally there may be an issue with reading handwriting

Una reading notes, struggling to read writing in the care plan, comments explicitly about the quality of the handwriting *Una Obs U12*

The notes detail antenatal care and the woman's history and include screening and tests such as ultrasound and pathology results for this pregnancy. Care plans and guidelines may be filed in them too. Frances looks in the notes for the woman's estimated due date and her blood results when she is completing the partogram. Jodie reads through the woman's history

I like to read through all their stuff myself, their history *Jodie Obs J71*

Previous cardiotocographs are filed in the maternity notes. Una looks at these traces when she is unhappy with the current trace

Una tells me (researcher) she doesn't like it (the cardiotocograph). It looks like there is some shallow long episodes on it, not accelerative either, gestation is 31+5, known IUGR (intra uterine growth

retardation) and PET (pre-eclampsia toxemia). Una is going to look at traces from earlier to see if there are any similarities. *Una Obs U46*

Beatrice is a caseloading midwife who meets the women on her caseload in the labour ward once they are in labour. If they are induced this care will be provided by the induction of labour midwife. Beatrice looks to see what has happened during an induction

she might have come in, and I'll have only come in, (once she is) in established labour, so you need to see what's been going on but I mean an example of that would be an induction of labour, somebody starts that process for me so that I am kept within a reasonable working frame then I will need to backtrack exactly what has been going on *Beatrice Int BI121*

The data suggest that midwives all read and look at the notes which deliver woman specific information.

Midwives use the maternity notes for woman specific information. They were not observed having difficulty finding specific information in the notes but occasionally something was missing or they could not read the handwriting. They do not comment on the reliability of the maternity notes. Reading the notes is something that midwives do as an individual experience.

5.6.4 Equipment and computers

Equipment provides midwives with information. They use it for measuring observations, for administering medication or treatment and listening to the fetal heart.

The cardiotocograph is a significant piece of equipment that is often used by midwives. It is used during labour, or antenatally if there are concerns about the baby or the woman is unwell. Midwives listen to the sound of the fetal heart and look at the trace without any apparent provocation.

Other equipment such as the datex delivers information to the midwife about the woman's observations.

Computers are also equipment. Midwives use them to access guidelines, blood results and consultant's letters via the computers. Rachel knows that information on the computer is up to date

there is guidelines, there's protocols, everything is on the computer, everything is kept up to date the most up to date copy ... actually guidelines and protocols, I'd always access (them on) the computer, always *Rachel Int RI359*

The computer also *channels* the guidelines, blood results and consultant's letters too. Therefore there is a benefit to using them as midwives can find a lot of information on computers, but there are some downsides too. Tessa does not like computers

I hate computers like if I can avoid computers I will, so if I can handwrite something rather than type it I will, if I can (unclear) I just personally would always go to a person over a computer *Tessa Int TI554*

There are only a few computers on the labour ward and they may be broken or blocked by another midwife³¹. Una uses the computer primarily to find guidelines but problems may arise

When the computers are not working or they are all being used or that kind of thing, not enough resources *Una Int UI135*

She then has to delay getting her information.

Equipment and computers both provide information to midwives about clinical care or in order to conduct it but the way in which the information is required and used may be different. Some information, such as that gained from the datex or cardiotocograph, can only be found with that equipment. It is largely woman specific. Whereas the computer may channel either woman specific (blood results) or knowledge and practice based information (guidelines). Accessibility may be an issue as midwives may need information or skills to use the equipment. Equally, the equipment may deliver information or the midwife may seek information from the equipment following an information need.

5.6.5 Environment

There are other information sources around the labour ward. Their diverse nature makes them difficult to classify so I have grouped them into the *environment* as they are located around the labour ward. There are drug books such as the British National Formulary kept in the treatment room. Information posters are placed in the labour ward office. Rachel talks about the posters but midwives are not observed looking at them for information. Within each labour room is a file with laminated information

I (researcher) ask Anna about the files. She shows me the ? guidelines type folder. It has dilatation, sliding scales information, epidural block height, syntocinon information, DR C BRAVADO and stickers. Anna says more for the students. Because Anna does syntocinon all the time she only has the

³¹ This situation may have changed since data was collected

protocol out when it is up really high as she doesn't get it high that often. If there is something she doesn't do all the time she might have the folder open, like sliding scale *Anna Obs A76*

Anna selects and uses parts of this information. Anna's understanding of the file is that it is more for the students. It is not clear why Anna believes the file to be for student midwives.

The interactional paperwork pro formas derived from the guidelines and theatre checklists, are filed in the stationery cabinet in the labour ward office.

The labour ward whiteboard holds information about every woman in the labour ward. Midwives look at it during all-labour ward handover.

Information exists in the environment for midwives. Like computers, equipment and maternity notes it could be considered a *channel* as it stores the information sources. Channels do not generate information but transmit the information source to the midwife. Handover, is a social interactional source whereas as the others are sources that the midwife uses alone.

5.6.6 Section summary

Information sources and channels have varying accessibility and reliability attributes. They are largely in a documented format, although knowledge is cognitive. Their use is linked to the information midwives require and how to access the information source or channel. With the exception of handover they are not social interactional sources. Midwives did not always acknowledge all of the sources they use.

5.7 Chapter summary

The descriptive and interpretive findings presented in this section are the findings from this study. *The maternity unit* delivers the context and the findings after analysis provide meaning.

Midwives have information needs for which they may initiate a search for a type of information. There are several ways of using information once sought. Midwives see value in information seeking.

Women contribute information to the midwife. The midwife may gain it in a sensory or verbal format directly from the woman, or through equipment that measures and records

information from the woman. Some of this information is received passively by the midwife. Women may inhibit transmission of their information to the midwife

Colleagues provide verbal information to midwives. This is often via the talking forums. They come with attributes relating to accessibility, approachability, reliability and suitability which may influence who the midwife considers to ask.

The information sources and channels deliver different types of information. Their utility also appears to be determined by how accessible and reliable they are deemed to be by the midwives using them.

There are several aspects of the findings that demonstrate social interaction with women and colleagues, but others that show the midwife experiencing things as an individual. Equally, it is possible that midwives may share meanings with colleagues, but that meanings may be different for women.

The following chapter presents the discussion of the findings in relation to current theory and key aspects of these findings.

Chapter Six

Discussion

The aim of this chapter is to answer the research questions and begin to identify implications for clinical practice. This discussion integrates key areas of the findings and current theory, and draws on the literature review in Chapter Two and the research questions. To further support this discussion I returned to the literature in the key areas of the findings and the overall topic and looked at more recent literature since data collection.

The research questions ask how midwives identify their information needs whilst practising clinically in the labour ward, what sources and types of information are used by midwives, how midwives use information and the factors that facilitate or inhibit access and use of information. These are addressed throughout this chapter and summarised in the final section. As with the findings, the discussion required careful consideration of structure to ensure that key areas were represented within a credible framework. I considered the structure and key areas of the analysis and findings, and then stepped back to consider the framework for the presentation of the discussion. Individual experience and social interaction of midwives' information behaviour is evident in the findings. These features provide the foundation for two frameworks:

- Midwife information trajectory
- Verbal information network

The midwife information trajectory (MIT) is how the midwife enacts information behaviour when working on the labour ward. It is the composite of need, search, source selection, sources and types and information. It links to the overarching themes in the Findings grid (see Table 5.1 Findings matrix) of *In the line of duty* and *Sources and channels*. It is dedicated to the midwife's interaction with information sources and information behaviour. It is described as a trajectory as it works from information need to identified sources and channels. This is something that the midwife does by herself – not as part of the social group.

The verbal information network (VIN) framework, on the other hand, is the socially constructed verbal transmission of information created and used by midwives, their colleagues and women in the labour ward. It is identified as a separate framework as the social and networking way in which verbal information is transmitted is different to that

which is enacted by the midwife alone because of its interactive nature. It is linked to the overarching themes in the Findings grid of *Midwife and woman* and *Midwife and colleagues*.

It should be noted that there is some fluidity between the frameworks. The MIT encompasses *sources* and the verbal information network is itself an information source. Therefore, the *verbal information network* can be encompassed within the *midwife information trajectory* but due to its social interactional significance is identified as a separate framework. Both frameworks are now explored in the context of this study, the wider literature and current midwifery practice.

6.1 The midwife's information trajectory

This section discusses the midwife's information trajectory. This comprises behaviour including need (triggers), what information is and type, sources and source selection, search and receiving information. The section also includes passive information and proficiency and adequacy of midwives' information behaviour which have been identified as a valuable finding from the study but was not indicated in the research questions.

The definition of information and identification of information types in the light of the findings both warrant further discussion. The latter because the exclusivity of some sources and the versatility of others may be influential in what sources are selected. It is also one of the research questions. The former, because its polysemantic nature made it difficult to define. Equally, as mentioned in the literature review (Chapter Two) a definition of information based on midwives understanding of information is required and this was not available prior to the data collection and analysis.

6.1.1 Definition of information revisited

Information was defined earlier in this thesis (see 1.6 Background and 2.2.3 What is information: information for midwives is that which contributes to the care of the woman). During the analysis and the writing up of the findings, the definition of information within this study became clearer from the context of midwifery, the labour ward and midwives themselves. This was determined through listing *information* used by midwives during the course of the study. Nancy sees referral to the obstetricians as information. Tessa says that the guidelines will give you an answer. Beatrice finds information in the maternity notes about what has happened to the woman. Observation showed that midwives receive information passively from equipment and the women. These events and sources change

the midwife's state of knowledge in relation to clinical care – they inform the midwife. Therefore, anything seen, heard or felt by the midwife that changes the midwife's state of knowledge, whether sought or delivered, and is applicable to the clinical care provided to the woman could therefore be considered *information* for midwives. This definition is specific to midwives working in the labour ward, rather than a generalised definition, and is determined from the findings of this study.

6.1.2 Types of information

Exploring types of information is one of the research questions. The findings show that midwives use different types of information (see 5.2.3 Types of information) when conducting clinical care. *Type* differs from *information source* in that it is the product or the request rather than the delivery system.

My study has identified types of information available and used by midwives in the labour ward according to the content or purpose of the information itself. They are:

- woman specific - *that which relates directly to the woman*
- objective - *usually evidence or research based and printed*
- practice based - *the 'how to do' information*
- organisational - *information that relates to what is happening in the labour ward*

The following table lists types of information identified and their components. It was developed during analysis to pinpoint what *information for midwives* actually is, and it led to the analysis and development of *information types*.

Table 6.1.2.1 Information types

<i>Information type</i>	<i>Comprised of</i>
<i>Woman specific</i>	<ul style="list-style-type: none"> • Demographics • Blood, pathology and microbiology results • Woman's birth plan • Current medication • History • Antenatal history • History prior to admission • History since admission • Routine care: clinical observations • Routine care: examination • Routine care: fetal wellbeing • Routine care: progress of labour • Routine care: monitoring of epidural • Routine care: monitoring of infusions
<i>Practice</i>	<ul style="list-style-type: none"> • Procedures (phlebotomy, sliding scale etc) • Setting up and using equipment • New procedure
<i>Objective</i>	<ul style="list-style-type: none"> • Existing guidelines • New or changed guidelines • Care pathways • Conditions (ie: cholestasis) • Drug information • Drug regime • Drug dosage • Treatment regimes (syntocinon or sliding scale) • Pro formas (theatre, group B streptococcus, meconium) • Instructions for equipment
<i>Organisational</i>	<ul style="list-style-type: none"> • Overview of labour ward activity • All labour ward handover • Expected bed occupancy • Staff allocation for shift • Clinical skills allocation (siting cannulas etc) • Staff availability

There is research evidence on information type. McKnight (2006) used the taxonomy of information types identified by Gorman (1995) in his study of physician's information needs. Gorman (1995) identified *patient data*, *population statistics*, *medical knowledge*, *logistic information* and *social influences* as information types. Neither Gorman nor McKnight explicitly state the difference between sources and types of information.

Gorman's study, which was not included in the literature search due to its age, lacked rigour because the sampling methodology was not specified. Despite this, he does point out that *information type* is often overlooked in studies of information need, and that to be comparable across studies a 'framework ... that permits classification' is required (Gorman 1995:730). My study identifies information types and defines what the type is therefore enabling *classification*. These are listed in table 6.1.2.1 Information types.

Woman specific information is that which relates to the woman. It is available to the midwife from the woman and her maternity notes. For example Jodie reads women's histories in their maternity notes and then she is able to focus her information seeking. It is comparable to Gorman's *patient data*. Two other studies reviewed in the literature search also allude to information type. Davies (2007), in a literature review of doctor's information seeking, concurs with Gorman's stance on the lack of continuity of terms. She identifies information types as *foreground* and *background*, the former of which is similar to woman specific information (directly related to the patient, such as diagnosis, treatment and prognosis Davies 2007:83). Bonner and Lloyd (2011), on the other hand, classify information types used by renal nurses in terms of their sources. Their identification of *corporeal* information is like woman specific information received in a sensory format (ie: from the woman's body). They also identify *social* information (verbal format in my study) receivable from patients (women).

Woman specific information can be equated with the 'individual clinical state and clinical setting' (Straus et al 2011:1) of evidence based medicine. Straus et al (2011), in their publication of evidence based medicine, suggest it is a key component in the quest for evidence based practice, as it defines what may subsequently searched for. As information that may be delivered by the woman to the midwife it may also be equated with the widely acknowledged woman centred model of care 'where women are the centre of the experience' (Midwifery 2020b:6). This underscores the role and value of woman specific information in evidence based practice.

My study identified an objective type of information used by midwives. Yolanda says there is background information in the guidelines relating to conditions. Beatrice uses information about type I and type II diabetes to manage labour care. My study suggests this objective information is often printed, research based evidence, including guidelines and published drug information and it provides background information on disease, conditions and treatments. Its key features are that it can be applied to any woman, is not dependent on or influenced by any other type of information and it remains stable for the duration of a shift (and usually much longer). Davies (2007) and Straus et al (2011) both cited this as *background* information. It is a 'simple look up retrieval of information'

(Davies 2007:90), or ‘general knowledge about a condition, test or treatment’ (Straus et al 2011:15) that assists understanding of a condition. McKnight (2006) referred to this as knowledge based information. Gorman (1995) identified *population statistics* and *medical knowledge*, both based on ‘aggregated’ and ‘generalisable patient data’ (Gorman 1995:730) thus removed from the specificity of the patient.

Practice information is ‘how to do’ information. Tessa finds it on the sliding scale pro forma which tells her how to adjust the scale according to the blood sugar level. Davies (2007) does not identify this or anything similar. Gorman (1995) describes it as *logistic information* or ‘how to get the job done’ (Gorman 1995:730). As shown in Tessa’s example above, the midwife uses it to conduct clinical care, although it is only a part of what was observed when midwives were working on the labour ward. Midwives may ask colleagues for this information or find it in the guidelines.

Organisational information relates to what is happening in the labour ward as a whole. The findings suggest that this includes bed states, resources, staff allocation, the overall person content of the labour ward (staff and women), where the obstetricians are and who can do what (ie: cannulation) during each shift. It is highly changeable and became evident in the *talking and asking* section of the findings (see 5.4.1 The art of talking and asking). It appears to be information that is largely gained by social interaction. However, it can be found on the labour ward whiteboard (see 5.1 The maternity unit) which was seen to be used by midwives and their colleagues (notably during all labour ward handover). The midwifery coordinator is a source of organisational information as she is present with other colleagues on the round and during handover. Eugenie informs the labour ward coordinator what is happening with the woman in her care, therefore she is informed by individual midwives about what is happening. The coordinator assesses the cardiotocograph of the woman in Tessa’s care, acknowledges that it is suspicious, and goes to find the obstetricians. The care management of the woman remains with Tessa. The coordinator has the *organisational* information – a potential problem and locating obstetricians to deal with it. The literature search did not identify any studies that acknowledge this type of information or its importance for clinical care. Using observation and the principles of ethnography may be the reason why organisational information was identified in my study and not those used in the literature review.

There is research evidence to support the existence of information types, however, classifications are variable. In line with the research aims, this study has identified labour ward context information types based on the purpose of the information rather than the source from which it is gained. All types are required and used by the midwife. The value of the descriptive approach taken with this study of midwives is that concepts such as

information type are understandable (accessible) rather than requiring in depth definition. Philosophical terms such as ‘epistemic, social and corporeal’ (Bonner and Lloyd 2011:1213) require interpretation before they can be understood. Equally, there is no acknowledgement of *organisational* information in any of the literature review studies. This may be a facet of their research aims or their classification system, but as a study of midwives in an environment, this is a new finding. The relationship between information types and midwives’ selection of information source is discussed further on in this chapter.

6.1.3 Information need

Information need is one of the research questions. The data suggests that there is a link with midwives’ knowledge and the drive to resolve information needs (see 5.2.1 Triggers and 5.2.5 Value of information). Therefore, midwives’ information needs, knowledge and resolution of information need are discussed in this section. The section builds on the research from the literature review but also draws on general information behaviour research.

The interview data in my study shows that midwives’ information needs arise because midwives do not know things and/or lack confidence. As something that became apparent predominantly through the interviews rather than observation, this may suggest that information need may not be articulated. Cranley et al (2009) also suggest that information need is not expressed verbally. Thus it may be a cognitive process and therefore unobservable. However, observing or hearing (through data collection) that information *seeking* has taken place suggests that an information need has been generated, as without need there is no motivation to search (Wilson 1999).

To an extent the cognitive nature of information need was borne out by my data. There were instances when midwives told me during interview that their information needs may be preparatory in that they anticipate what their needs will be. Rachel says she looks information up so she is prepared at the start of care. Kathy describes a concurrent information need when she talks about using information *alongside* during treatment of a woman with syntocinon as she does not want to get the numbers wrong. However, observing *information seeking* suggests that an information need has been generated. Eugenie calls for help when the woman in her care is bleeding and has decelerations on the cardiotocograph. Using observation of information seeking may provide a credible methodology for studying information need through observing a search which *implies* that an information need has occurred.

In the previous paragraph, there are examples of information need being acknowledged as the midwife acts by seeking information. What is less clear is whether information needs are always acknowledged by the midwife. The findings did not reveal instances of midwives information need being ignored or going unrecognised by the midwives, although this would be difficult to establish due to the cognitive nature of the process. Equally, midwives in my study were not asked whether they always acknowledged their information needs. The literature review established that information need must be recognised (Cranley et al 2009) and acted upon (Davies 2007, Thompson et al 2004). Whilst there is a professional difference in the populations studied (nurses), it is possible that the same premise could apply to midwives. In a study of nurses' understanding of safety through information available³², the researchers noted that nurses who are 'doers' rather than 'appreciators of what it is they are doing' (MacIntosh-Murray and Choo 2005:1338) may not recognise their information needs. Their finding was based on *critical thinking* identified through interviews with an array of hospital based health professionals. However, they provided no direct examples of what these missed needs were.

Another view is that some information needs may be categorised as deferrable rather than immediate thus not initiating an immediate search. Krikelas (1983), a library scientist who created an early model of information seeking, suggested that *immediate* needs provoke information seeking whereas *deferred* needs provoke information gathering with no time limit. Similarly, Case (2012), an American professor of communication and information, suggested that a need that can be challenged is actually a *want* and a want is not a *need*. To place this in the midwifery context, if the status of information *need* can be challenged or it can tolerate a significant time delay, it could be placed in the category of *want*. Jodie demonstrates this when she streamlines her information needs if a woman is labouring quickly as there is a time limit. This is an *immediate* need. Midwives immediate needs (rather than *wants*) are accurately described as needs because of their purpose, ie: midwives *need* the information to provide clinical care. If the midwife classifies her information need as a *want*, she may not instigate a search immediately. If it is a *need* and no search is instigated, the need will be missed. Several healthcare researchers included in the literature review (Cranley et al 2009, Davies 2007, Thompson et al 2004) also make this point. In practice terms this may mean that important information is missed with the potential to lead to substandard care or poor outcomes. Recognition and categorisation of information need were beyond the scope of my study but my data supports their value. It shows that midwives have information needs and the

³² not included in the literature review due to its patient safety focus

cognitive nature of this process. Perceived difficulties in studying this cognitive process may be overcome by using the principles of ethnography but also *information seeking* to study information need.

6.1.3.1 Knowledge and information need

The findings suggest that midwives identify their information needs when they are aware of a gap in their knowledge. Beatrice knows the syntocinon regime, whereas Kathy and Rachel do not so they always have the chart nearby. Knowledge and information are linked but separate entities. Eraut (2000) defines knowledge as a 'personal resource which a person brings to a situation that enables them to think and perform' (Eraut 2000:114). It is also defined as tacit, in that it is available only to the user (Brooks and Scott 2005, Sensky 2002). According to Case (2012) knowledge is 'a phenomenon of the human mind, whereas data and information are often represented by tangible, physical objects' (Case 2012:73)³³. The analysis suggests that, for midwives, information is acquired and knowledge is either present already or is transformed acquired information. Ormandy (2010), in a paper of reasonable quality³⁴ to define healthcare information needs for patients, provides a comparison of information and knowledge by stating that information

by being told, is acquired (external to the individual); whereas knowledge is information that has been given meaning and understanding through thinking (internal to the individual) Ormandy (2010:93)

According to cognitive constructivist theory when information is acquired by individuals it becomes knowledge through its integration into new and existing 'mental models' rather than becoming information exactly as it is received (Talja et al 2005:83). Nursing researchers (Bonner and Lloyd 2011, Cranley et al 2009, Estabrooks et al 2005a) suggest that knowledge is obtained through experience. Cognitive constructivist theory would suggest this knowledge is accumulating with existing mental models thus building experience onto experience.

Barber (1963) defines a professional by attributes including 'a high degree of generalised and systematic knowledge' (Barber 1963:672) which he goes on to state needs to be applied by those who are trained in its use. Leckie et al (1996), in a model of professionals' information seeking behaviour derived from existing literature, note that what

³³ This limited view does not account for verbal information - whilst it may be *about* a physical object, its format is not physical

³⁴ The paper is a thorough assimilation of complex information behaviour theories but the methodology is not clearly defined

differentiates a professional is the 'specialised knowledge that an individual must master to practice a particular profession' (Leckie et al 1996:184). The Nursing and Midwifery Council acknowledge that the knowledge (and skill) levels of midwives (and nurses) should enable safe practice (NMC 2015). Taken collectively these views would suggest that midwives have professional knowledge. The findings suggest that midwives are able to incorporate new information which may become new knowledge.

This study suggests that for midwives, knowledge, as well as being an information source, is key to information need (see 5.1.1 Triggers and 5.4.1 Knowledge). Case (2012) defined the role of knowledge in information need as 'a recognition that your knowledge is inadequate to satisfy a goal that you have' (Case 2012:5). If midwives know things, they do not need to search for the information, if they know part of the information it prompts them as to what they do not know. Anna maintains that because she knows the syntocinon regime she does not need to use the printed information. However, when the woman is receiving very high doses, Anna does use the printed information because she does not know this part. Jodie remembers that antibiotics need to be given to the woman with mitral valve disease but she cannot remember when. Belkin (1980), a library information scientist, recognised the influence of the user's state of knowledge on information need in that the user with more knowledge could define their need and what they needed to resolve it. The findings from my study are not clear with regard to *how much* knowledge midwives may have but it does support the importance of knowledge in information need.

The findings of this study suggest that knowledge is an information source for midwives but there is some contention about this. Estabrooks et al (2005b) suggest that knowledge is an information source acknowledged by nurses and not by researchers. But nursing researchers Spenceley et al (2008) list and rank knowledge in their literature review and Bonner and Lloyd (2011) also comment explicitly on the value of knowledge. However, Wilson (2000), a general information behaviourist, disregards knowledge in information behaviour theory, stating that 'knowledge is knowable only to the knower. It cannot be transmitted' (Wilson 2000:50). The findings would suggest that, in midwifery practice, knowledge has value and is instrumental in the generation of information need and it is also transmittable. Midwives showed that they were able to transmit their knowledge. Eugenie shows her knowledge of the woman in her care when she hands over to Nancy. Jodie presents her knowledge of the woman with mitral valve disease to the round. Wilson's theory does not acknowledge professional knowledge in a single setting such as the labour ward, as his work is generic information behaviour and therefore not so context dependent. Midwives were observed using their colleagues' knowledge, delivered as information. When Jodie receives handover from Harriet and Ivy she uses their

knowledge of the woman. Georgie asks Frances about the woman for whom she is taking over care, when Frances replies she is receiving Frances' knowledge about the woman.

Estabrooks et al (2005a) state that as a cognitive entity knowledge is 'protected from debate and scrutiny' (Estabrooks et al 2005a:473). Therefore, unlike research evidence or documented information formats, there is a possibility of bias as knowledge is beyond an external challenge. The problem with this is firstly that midwives may rely on their knowledge, if it is not adequate they may not recognise an information need and therefore not initiate a search for information. Secondly knowledge from a third party with all its possible biases may be shared with the midwife (or by the midwife) thus becoming information. Estabrooks et al (2005a) suggest that 'legitimacy (of knowledge) continues to be questioned' (Estabrooks et al 2005a:473). In view of the significance of knowledge in defining information needs and the potential for unreliable knowledge to be shared as information, this requires further study.

Knowledge in midwifery information behaviour cannot be disregarded. It is arguably what defines midwives as professionals and it establishes and contributes to information need. However, midwives' knowledge is open to bias and, due to its cognitive nature it is difficult to scrutinise.

6.1.3.2 Drive to resolution

The findings point towards the professional role and responsibility of the midwife driving the resolution of information needs through information searching (see 5.2.5 Value of information) rather than just the information need itself. The drive to resolve an information need may be the catalyst that makes the midwife *recognise the need* and also *categorise the need* (see 6.1.3 Information need). Midwives in this study talked about wanting to get things right and not get things wrong, and their overwhelming responsibility for the care of the woman. Midwives follow up on things that happen because they believe it is their professional responsibility to do so. Tessa retrospectively feels the responsibility of poor care when she has been unable to find information to provide care for a woman with diabetes and pre-eclampsia. Tessa said 'it made me feel like we had completely mismanaged her and the care was awful and I went home feeling awful' Tessa Int T1334.

Midwives' recognition of their limitations when they are not working at their best drives them to check information. From a professional viewpoint, the nurses and midwives code of practice (NMC 2015) states explicitly the principles of responsibility and accountability for midwives. Leckie et al (1996) acknowledge that a professional conducting work related

tasks may be influenced by urgency and complexity that drives the resolution of information need. In information behaviour Kulthau (1993), a Canadian library scientist, suggested that information need induces anxiety which in turn will trigger information searching, although it is not clear whether her model accounts for need characteristics (immediate or deferred³⁵). Whilst Kulthau's model is based on her previous studies, the data from these were not used to illustrate the components of the model. Wilson (1999) in his 1996 model considered three possibilities for a drive to resolution of information need: 'stress/coping, risk/reward and social learning theory' (Wilson 1999:257). The explanatory power of these is limited in the model meaning that it is difficult to establish whether they can be considered for midwives and as the explanation is so limited it is difficult to comment. Case (2012), on the other hand, in comparing researchers' views of information need proposed a continuum from objective to subjective wherein the former is the emotionally void rationalistic view of information to the latter's anxiety driven need to resolve a situation. In the findings Jodie demonstrates a rationalistic approach 'by going to the woman to work out what, how that medical condition is individual to her and then that brings .. me more information for her individual needs that you then use in conjunction with the guidelines to provide the best care for her *Jodie Int JI175*. Whereas Tessa may show elements of concern about what is happening to the woman 'I said she's got flashing lights and her headache is getting worse, she's now got epigastric pain etc etc, no matter what I did and what I said there was never a decision made with her PET (pre-eclampsia toxemia) *Tessa Int TI369*.

The midwives in this study suggested that the drive to resolve an information need is what triggers the search, and that the drive is triggered by professional responsibility. However, it may also be what drives the quality of the search and sources used. O'Leary and Ni Mhaolrunaigh (2012) in a large mixed methods Irish study of nurses' information seeking acknowledge that quality is not always the driver to complete the search. Certainly, for some midwives accessible rather than reliable information sources were used. Equally, the inference from the findings is that whilst midwives acknowledge their professional responsibility and the drive to resolve the information need, their professional responsibility to the woman and being required to stay with her may also hinder the drive to resolution (when she is providing care to a woman and cannot leave the room).

Despite some studies being situated in the clinical environment and acknowledging nurse's desire for accuracy (Cranley et al 2012) there is little discussion of the role of professional responsibility in information behaviour. In that information needs can be deferred it is possible that midwives may have information needs that they disregard

³⁵ A deferrable information need may induce less anxiety by virtue of being deferrable

because their professional responsibility requires them to stay with the woman. In the interests of best care for the woman, information needs should be acted upon. However, if the driver and inhibitor in some circumstances are one and the same – professional responsibility – this presents a problem for searching. It is possible that some midwives may be able to manage this dissonance more effectively.

6.1.4 Search and sources

This section discusses how midwives seek and use information and its accessibility. It is inherently connected with information sources. Information seeking is the action taken after information need and the drive to resolve it. It is described as ‘a process with which humans engage to purposefully change their state of knowledge’ (Ikoja-Odongo and Mostert 2006:148). Several information behaviourists have created search models which Case (2012) describes as

the strategies employed [and] shaped by the searchers’ conceptualisation of both the gap and the bridge and by the answers, ideas and resources obtained along the way (Case 2012:85)

Information search and seeking is relevant to the research question regarding facilitators and inhibitors to information access. This is specifically covered in the areas of seeking, accessibility and passive information. However, a novel finding of adequacy and proficiency which was not declared in the research questions is also discussed here as it has a potential value to clinical practice.

6.1.4.1 *Information seeking and using*

The findings from this study tentatively infer that midwives’ information seeking is more towards reduction of uncertainty as there were no examples of them acquiring completely new knowledge³⁶. Unlike information need, information seeking is a largely observable behaviour which may also be articulated during interview. Source selection, on the other hand, may be more cognitive. For midwives the search itself combines features of selecting and finding a source and interrogating it according to its properties. Sometimes, however, the information seeking is so immediate, such as the palpation of a contraction and the information is only available from a single source that the midwife conducts the

³⁶ This may be a feature of the research context which was the immediacy of the labour ward

search without acknowledging the source or making a conscious decision of source selection.

The analysis suggests that midwives are competent with the sources available for information seeking in the labour ward. Kathy says she is confident that she always finds her information. Midwives did not tell me that they could not find information although sometimes they had difficulty locating it. They knew where and how to search for general or specific information. For example, Jodie commences her information gathering about the woman by reading their notes. Frances finds the woman's blood results and estimated due date when she needs to. Ellis and Haugan (1997), in a methodologically sound study, modelled research scientists' information behaviour using behaviour rather than cognitive processes. In this time-rich model, as opposed to the potentially time critical model of the labour ward environment, they identified *browsing, distinguishing, filtering, extracting* and *ending* (Ellis and Haugan 1997:399). Although she may be time-limited Jodie's reading of the notes could be equated to *browsing* and her method is suggestive of an inductive search for *non-specific* information. The information she has gained is evident when she delivers parts of it back to the round (see 5.4.4 The talking forums). Ellis' model appears to describe inductive seeking (at initiation) which is what Jodie is doing too. Kulthau (1993) defined the stages of seeking as *initiation, selection, exploration, formulation, collection, presentation* (Kulthau 1993:343). As with Ellis' model, this appears to be based in the time rich environment, most notably with reference to the stage of exploration but Kulthau's model is based on the 'affective feelings of uncertainty' (Kulthau 1993:343) and moving from imprecise to fixed information. Whilst this may be pertinent to the inductive searching seen by Jodie it is less relevant to the *deductive* searching to resolve a specific information need such as Una looking specifically at previous cardiotocograph traces to find information as to whether the current trace is similar, or Kathy searching within a documented format such as a drug book for drug preparation. For midwives some of the search features identified by both Ellis and Kulthau are relevant but more so if the search is inductive.

6.1.4.2 Accessibility

Accessibility is the proximity of the source or channel, the ability of the midwife to use it and the ease with which this can happen. It is a function of seeking. Midwives' information sources come with their own attributes of accessibility.

My study shows that midwives use alongside information for treatment which is the provision of a specific regime of medication or similar for the purpose of care. The

midwife makes the information concurrently available so that she can refer to it during care as an aide memoire. When using the syntocinon regime, Rachel reduces her uncertainty because it is documented and she uses it alongside. It is deductive and it is information seeking, but the midwife engineers the information to be close so she can use it concurrently. This suggests that the type or quantity of information and the time over which it is needed is more than the midwife can cognitively manage so she keeps it visible. Alongside information facilitates information access on a continual basis.

Observed documented sources or channels include the guidelines, maternity notes and drug preparation books (see 5.5 Sources and channels). Midwives reported difficulties and dislikes with information seeking for and within guidelines, they need to be found and information from the guideline needs to be located within it. Marie says the search for a guideline is difficult as lots of other things come up when she puts the title in on the computer. Guidelines themselves may be thirty or more typewritten pages long with trust audit standards incorporated into them. Diana and Kathy both find it difficult to wade through portions of text. Mahran et al (2007), in a small, but thorough non-validated questionnaire survey of clinician's attitudes to clinical guidelines, proposed the development of user friendly guidelines for precisely this reason. In comparison, the maternity notes, another lengthy documented information source, did not generate the same search issues identified by midwives using guidelines despite the probable familiarity of midwives with both documents. However, Sharit et al (2006) established that clinicians in an intensive care unit found that searching through pages of notes and compiling information from clinical notes were reported as an issue. This may indicate that, for midwives in my study, maternity notes are easier to navigate than guidelines. Midwives willingness to search a drug preparation book for guidance on the preparation of a drug corroborates this. Another common denominator may be the content. Mahran et al (2007) asserted that guidelines are considered by midwives and obstetricians to limit clinical freedom, whereas maternity notes hold information rather than instruction. However, this premise does not hold for drug information, which could be considered instruction rather than information. Therefore, the gain when searching for drug information may be the value of the information to midwives. They do not want to get drug calculations wrong and therefore may be willing to invest in the search. The final point in the comparison of these information sources is the volume of guidelines alluded to by midwives in this study (see 5.5.2 Guidelines) compared to a single set of notes per woman and a single drug preparation book, both of which hold dedicated information (ie: related to one topic).

Computers as an information channel provide access to local guidelines, the internet (including Cochrane reviews, NICE guidance) and hospital databases. My findings show that midwives who lack aptitude to use computers avoid them. Davies (2007) review of doctors' information seeking similarly identified lack of computer skills. Likewise, if computers are blocked, broken or unavailable as shown in the findings (see 5.5.4 Equipment and computers) it disables a lot of information for midwives therefore rather than the expansive information that should be available it is conversely limited.

Effectively using the information deliverable via computers presents recognised further accessibility problems. Research evidence gained may require critiquing, a literature search is time consuming to conduct and synthesise, and midwives may not have these skills or the time during clinical practice (Straus et al 2011, Funk et al 1991). Technology and healthcare information continue to move on and even though it is present in the labour ward, some midwives are not comfortable with it. Cochrane reviews and guidance from the National Institute for Health and Care Excellence (NICE 2010) are search accessible and the evidence within is summarised clearly for lay people and professionals. Ironically, the Cochrane review of outcomes after the use of electronic health information by clinicians concludes that there is insufficient evidence (McGowan et al 2010), although this is clearly a complex area to investigate. Despite this the value and scope of an electronic resource should be embraced and enhanced rather than discarded. There appears to be a dissonance between midwives, the pace of technology and resources which is evident in this study as both Marie and Tessa state categorically that they do not like computers.

6.1.5 Passive information reception

I define passive information as that which is not preceded by an information need. In this discussion the focus is on the receiving of information by the midwife rather than the nature of the source. Hence the referral to *verbal information* in the *midwife information trajectory* framework rather than the *verbal information network* framework (in the next section).

Information behaviour researchers label information received unbidden and in the absence of identifying an information need as passive (Wilson 1999), information encountering (Erdelez 2004), serendipitous (Foster and Ford 2004) and incidental information (Williamson 1998). These researchers all worked on the premise that passive information is found and acknowledged usually during an active search or browsing (Toms 2000). However, the findings show that midwives may have information presented

to them but not as part of a search. Zoe sees and hears the woman in her care sighing and responding to her contractions. Kathy is informed that the woman in her care needs to push (see 5.3.1 Sensory, 5.3.2 Verbal information, 5.3.4 Observed). This is arguably a type of opportunistic acquisition of information (OAI) but it departs from the definition of OAI as it occurs in the absence of an information search (Erdelez 2004).

When information is sought the state of knowledge of the user changes then 'leading to a different anomalous state of knowledge (Belkin 1980:141). My analysis suggests that this may also happen when midwives receive information passively because someone or something is delivering it (see 5.2.4 Observed). It is not in response to a midwife's recognised information need but it changes the state of knowledge of the midwife.

The midwife's observation of the woman is a source of significant passive information. Midwives are with women for periods of time conducting clinical practice. Beatrice is using syntocinon to induce labour and on several occasions becomes aware that there are decelerations on the cardiotocograph. Handover could be considered a form of passive information in that the midwife does not request it, although Nancy asks questions therefore initiating information seeking during handover. The most salient examples however, are information volunteered by the woman. These include the signs of labour progress that the woman in Kathy's care delivers and the unacknowledged contribution that the woman in Zoe's care made to the referral.

Passive information may be an indication of when the midwife does not recognise an information need but a third party, and in midwifery care this is likely to be the woman, does. Case (2012) uses the term exposure, suggesting that it is used by a third party to influence the information receiver. Therefore when a woman volunteers information to her midwife it is likely to be because she wishes to inform her. This finding challenges the 'recipient instigated and recipient controlled' viewpoint (Belkin 2005:44) suggesting that the woman as the receiver of care is affecting the passage of information to the midwife and influencing her behaviour. Despite not being listed in the research questions, passive information is debatably a facilitator. There is clearly a clinical value to passive information (in this case received from the woman) as there will be some things like wanting to push or preferences for care that only she will know. Midwives may be aware of the clinical value of passive information which may indicate why there were minimal instances of disregarded passive information. However, if it is disregarded, such as when Kathy does not act on the woman's request for medication (see 5.3.2 Verbal information) important information may be missed, care could be compromised and the woman becomes an unequal participant in her care.

6.1.6 Adequacy and proficiency in information seeking

During interview midwives exhibited a sense of value to seeking information for practice and a professional responsibility to provide the best care. Diana says information seeking is second nature and ‘part of what we (midwives) are’. Jodie always looks for information because she is thorough. Whilst this is a stable feature amongst midwives in my study, the proficiency with which information behaviour is enacted is less consistent. This is demonstrated by the comparison of information searching techniques amongst midwives³⁷. This suggests there is a proficiency and complexity of information behaviour for some midwives demonstrated by a set of behaviours. It was evident in core, caseloading and high dependency midwives but not in every midwife. For the purpose of this study and as a result of this analysis it is termed *information proficient*³⁸. It is hallmarked by a networking, collaborative and proactive approach to information behaviour; engaging and managing several information sources at a time. It may exist on a continuum from adequate to proficient, but may also be the ability of midwives to add to a portfolio of *information proficient* skills. When using the verbal format appropriate colleagues are approached to deliver information to ensure that collaboration is effective³⁹. Jodie, Beatrice and Una all demonstrated these characteristics during observation and when discussed during interview. This finding shows the level of complexity that the information proficient midwife is able to engage in during information search. It suggests that the information proficient midwife is able to calibrate the value of information gained against the search time taken and clinical needs. As an example, when seeking information verbally from women Jodie says she considers reasons why information may not be given such as if the woman is HIV positive or does not recognise the significance of her condition. Again, due to the search element and factors that facilitate or inhibit information, information proficiency it is included in the framework of *midwife information trajectory*.

Information proficient behaviours exhibited by midwives seem to be the proactive approach of furnishing themselves with information such as guidelines that they anticipate they will need. My study shows that in the labour ward midwives also have a low threshold for using guidelines. This was something which was most notable with high dependency midwives. The findings also suggest that there may be a greater likelihood of information proficient midwives extracting information from information sources. Conversely, *information adequate* midwives adopt single lines of inquiry at a time. Tessa

³⁷ It should be noted that this is a qualitative study and these are findings that have been identified rather than confirmed

³⁸ Not the same as level IV Proficient in Benner's theory of nursing expertise (Benner 1982)

³⁹ Approachability is discussed in greater detail in Approachability 6.2.2

involves the coordinator in cardiotocograph interpretation that Una manages by analysing and checking previous traces and then direct referral to the consultant. When considering colleagues as an information source the approach of information adequate midwives may be based on whether they like the colleague or find them approachable rather than how suitable they are to provide the information⁴⁰ (see 5.4.2. Characteristics of colleagues). Their propensity to use guidelines may be reduced; both Diana and Kathy express concern at having to read portions of text in guidelines. They are observed to question less and then evaluate information gained moving to another source if they deem it unsatisfactory (see 5.4.2 Characteristics of colleagues and 5.5.2 Guidelines). Equally, information adequate midwives' use of information may be hindered by not realising the value of presented (passive) information and a lesser ability to organise complex information sources. Kathy does not acknowledge a woman's request for medication to stop itching or her statement that she wants to push. During an episode of complex care Tessa struggles to coordinate her collaboration with obstetricians and using the guidelines. The findings suggest that information proficient midwives may be those with further developmental training and/or greater experience in a particular area. Jodie and Una have both undertaken further study, and are experienced in the labour ward. Beatrice is an experienced caseloading midwife.

There are features of information proficiency enacted by midwives but not necessarily labelling midwives as information proficient themselves. This position sidesteps the debate regarding whether an individual is an expert or novice and instead uses the concept of exhibiting *information proficient* searching techniques. However, it may be more integral to midwifery practice than this. The differences in behaviour (proficient and adequate) can be observed but other characteristics which may stimulate and enhance it are of clear interest. Midwives with information proficiency appear to simultaneously interweave their information needs with the resources available and the situational requirements of the clinical scenario. Whereas midwives with information adequacy do not share this level of engagement.

There is research to support adequacy/proficiency. Palmer (1991) identified different information seeking techniques amongst agricultural scientists. Certain subgroups demonstrated a set of characteristics to their information searching. The population was different to midwives in the labour ward in terms of profession and information environment but the study provides support for variation in information behaviour techniques. Ultimately these techniques may impact on the quality of information behaviour and for midwives this could be crucial to the quality of care. The techniques

⁴⁰ Colleagues are discussed further in 6.2.2

could be labelled expert as it is more proficient and productive. There are other areas of nursing (and arguably midwifery) proficiency or expertise. Mackintosh-Murray and Choo (2005) refer to 'first and second order problem solving' and 'critical thinking' (Mackintosh-Murray and Choo 2005:1337) denoting surface level and more in-depth strategies for dealing with problems. This may equate with information proficient and adequate midwives.

The implication of this finding is that the way midwives enact information behaviour may influence the volume, quality and effectiveness of information retrieved by midwives. By implication, if a lesser quality of information behaviour is enacted it is possible that the volume and quality of information will be reduced. If unsuitable sources are used to provide the information then there may be a resultant issue with quality. Benner suggests that expert practice can be 'emulated by others' (Benner et al 1996:145) although she states that experience is required (Benner 1982). This may point to expert domains: experience is required for clinical practice, whereas for EBP information searching is taught at degree level. Similarly for information proficiency, appraisal could be used as a precursor to planned professional development. If information proficiency can be enhanced or taught, in much the same way as EBP techniques are and emulated in the way that expert practice is, it could improve information behaviour and contribute to better information quality.

6.2 Verbal information network

This second section considers the verbal information network (VIN) in the labour ward which transmits verbal information between the midwife, woman and colleagues via discussion and the talking forums of the round, referral and collaboration. Whilst the VIN could be considered part of the *midwife information trajectory* (previous section) it is discussed in a separate framework due to the significance of its social interactional nature. The findings show that the role of the woman and obstetricians is less in the verbal information network (VIN) whereas the midwife is more central in that she receives and transmits information from the woman and the obstetricians⁴¹. This section considers the woman's involvement in the VIN, how the approachability of colleagues may influence the midwife, the value of colleagues, reliability and collaborative information behaviour between midwives and the obstetric team.

⁴¹ This may be a facet of the research methodology

6.2.1 Woman's involvement in the verbal information network

Information is requested or gathered by the midwife from the woman during midwife/woman interaction to build a picture of the woman's history. Jodie verbally seeks information from the woman in her care and uses the maternity notes too. She then presents parts of the information⁴² to the round, referral or collaboration, which take place outside the labour room whilst the woman is still inside. This suggests that, in this study, midwives may filter and interpret the woman's information for presentation to the talking forums, acting as an information conduit. Beatrice is observed watching the woman's contractions and the fetal response to them, talking with the woman to establish the strength, referring because the contractions are not strong enough and the fetus is showing some signs of distress. During the referral the woman does not participate in the discussion. The woman in Zoe's care delivers information directly to the obstetrician to whom Zoe has referred, but it is not acknowledged. Although the woman appears to have the opportunity to deliver information to the midwife these examples suggest her opportunities to deliver information to the multi-disciplinary team is usually via the midwife prior to the talking forums. The rightfully accepted practice of maintaining women's privacy in the labour room by restricting members of staff who can enter the room (see 5.1 The maternity unit) reduces the woman's opportunity further. For the woman to have access to members of the multi-disciplinary team they need to be invited in although the data suggests that this invitation is usually from the midwife. This would suggest that the midwife acts as an information repository and information manager for the woman and is the conduit through which information from the woman is transmitted verbally to the multi-disciplinary team.

Midwives acting as gatekeepers in this way may distance the woman from her clinical care in that she is informed rather than involved in care decisions. Porter et al (2007) term this model 'classical professional, where control lies with the professionals themselves' (Porter et al 2007:526), rather than 'new professional' in which negotiation takes place between the woman and healthcare professionals. The strategic vision for the NHS is that women (patients) 'take much more control over their own care and treatment' (NHS England 2014:7). It may be a greater concern, however, that the woman is not party to all the information available and shared between the midwife and her colleagues. Women enabled by the *informed choice* model are able to 'make a choice based on unbiased, clear and full disclosure of available information with their preference in mind' (Noseworthy et al 2012:43). The scenario identified in the findings is more suggestive of a *paternalistic* or *classical professional* model. Jodie maintains that women do occasionally deliver

⁴² In conjunction with information from the maternity notes

information directly to the network but this is not a frequent occurrence and how it is received could vary. It may be delivered, acknowledged and not incorporated into the collaboration. Equally, it may deliver valuable passive information that the midwife did not retrieve during information seeking. As the information hub, the midwife can involve the woman in the round whilst benefitting from the information that the woman can contribute.

There is little research evidence of the woman's perspective of being a verbal information source for midwives. Healthcare professionals can effectively use patients' understanding of their conditions during a consultation (Eraut 2005, DoH 2001b). Jodie, for example, clearly capitalises on women's knowledge of their conditions so as to work out 'how that medical condition is individual to her (the woman)' *Jodie Int J1175*. More research, however, is directed towards the woman receiving information (Lavender et al 1999). Arguably by using women as a source, midwives are collating information, building a relationship (McKnight 2006) and laying the foundations for effective communication. Nancy sees the value of the ten hours that she may spend with a woman during a shift for gathering information. Women want to be involved in decision making about their care (Furuta et al 2014, Harrison et al 2003) and seeking information and encouraging her input to referral and the round may facilitate this. Women (high and low risk care) are currently reporting greater satisfaction with their care especially during the birth of their baby (all units) (National Audit Office [NAO] 2013) as compared to previous NAO surveys. Despite this my study shows that women may not be inputting as much to the verbal information network as current policy recommends. During handover between Eugenie and Nancy the woman's voice is not heard at all. Similarly when Jodie attends the round, the woman in her care is not involved until the end when the round moves into her room to deliver the plan. Women's involvement in the VIN could be improved to a model where 'control is shared between professional and client' (Porter et al 2007:526) but also informed (Noseworthy et al 2012). According to patient charters (DoH 2013a, 2010, 2001b, Royal College of Obstetricians and Gynaecologists [RCOG] 2008, 2007b, ICM 2008b, 2005b, NHS England 2014) all patients (women) should be involved in their care and the talking forums are an ideal opportunity for this to happen. With only one conduit (the midwife) to the verbal information network, the woman is clearly limited in how she inputs information into the verbal information network. There is also a potential for the midwife to filter the information that the woman wishes to transmit to the wider obstetric team.

6.2.2 Approachability

The VIN is reliant on the midwife approaching and then engaging with the colleagues and women who can be involved in it. The findings do not show midwives having difficulty approaching women. Colleagues, on the other hand, may be less approachable.

Approachability is the midwife's perception of a colleague that influences whether she will contact them for information⁴³. Approachability as one of the unique features of selecting colleagues as an information source, is evident in the literature (Cranley et al 2012, Estabrooks et al 2005a, Mackintosh-Murray and Choo 2005, Leckie et al 1996). Midwives enacting *information proficient* behaviour were clearly uninhibited about approaching colleagues, selecting by appropriateness rather than approachability. On the other hand, information adequate midwives tended to use approachable, available colleagues who they believe are likely to know the answer rather than those who are most appropriate⁴⁴ from an information perspective (see 5.4.2. Characteristics of colleagues). However, the findings show that occasionally there may be a reluctance of some midwives to let colleagues know that they have an information need as they believe they should know things (see 5.5.1 Knowledge). MacIntosh-Murray and Choo (2005) and Leckie et al (1996) attribute this to possibly being labelled incompetent. What this means in practice is that if collaboration or referral is required, the midwife may not approach a colleague or may approach someone less appropriate. This in turn can potentially impact on clinical care as information may not be sought, or may be sought from an inappropriate colleague. The suggestion here may be that the culture of the labour ward environment, for some midwives, may not be facilitative for collaborative verbal information because they may be nervous (Kathy KI541) or intimidated (Una UI302).

6.2.3 Value of colleagues as an information source

This section considers the benefits and possible disadvantages of colleagues as a social interactional information source. The findings support the consensus in the literature that colleagues are information sources for healthcare professionals during clinical practice (Marshall et al 2013, Newman and Doran 2012, O'Leary and Mhaolrunaigh 2012, Gabbay and LeMay 2011, Marshall et al 2011, Cranley et al 2009, Bertulis 2008, Bertulis and Cheeseborough 2008, Spenceley et al 2008, McKnight 2006, Estabrooks et al 2005a, Estabrooks et al 2005b, Thompson et al 2004, Leckie et al 1996).

⁴³ It may also influence referral

⁴⁴ Clearly this also requires the midwife to be able to discern *who* is an appropriate colleague

Some of these studies suggest that colleagues are a preferred information source. The literature includes terms such as prevalence, importance and reliance and it becomes less clear whether they are preferred by healthcare professionals or just abundant in the literature. Several studies identify accessibility or proximity, as a key feature of preference for colleagues as an information source (Marshall et al 2011, Cranley et al 2009, Thompson et al 2004). Unlike the colleagues of the acute and critical care nurses (McKnight 2006, Davies 2007), and with the exception of the specialist midwife, midwives' colleagues are usually in the labour ward thus making them accessible. However, my study suggests that colleagues are part of a complex picture of midwives' information behaviour that is not adequately accounted for by accessibility alone. Colleagues, including midwives, coordinators and obstetricians, are versatile and, for a midwife approaching them for information, there is an ease of access in comparison to searching through a guideline. Seeking verbal information excludes *browsing* and *exploration* (Ellis and Haugan 1997) as it directly mines the information from the colleague or woman. The findings suggest that information search times when compared with computers and guidelines, are reduced. Kathy says she may not have time to find a computer and Diana says verbal information is easy to absorb. Equally, all midwives are able to ask a colleague but some express concern at reading a guideline. The midwife has direct access to the information a colleague may have and will not need to *search*. Midwives acknowledge that discussion with colleagues is quicker than searches for and within documented formats, similar to *random access memory* in computer science. When the colleague or woman responds the midwife can accept or disregard the information as suitable or unsuitable and/or question again.

Search times are not the only factor. The findings from this study show that there are instances when the guidelines are unable to account for the care the woman requires, and/or the complexity of care means that the midwife is professionally bound to refer or inform the obstetricians. The care that Harriet and Ivy are providing to a woman with mitral valve disease is discussed and developed with the obstetricians as there is no guideline. When Tessa provides care for a woman with diabetes and pre-eclampsia, there are no applicable guidelines so she tries unsuccessfully to collaborate with the obstetricians. This suggests that necessity, rather than accessibility, may be the key for approaching an appropriate colleague or colleagues for information, as there is no other alternative. In cases such as this, collaboration is essential information behaviour for midwives that is recommended by the confidential enquiries (Knight et al 2014). As care is becoming more complex, the ability of midwives to integrate information and verbally network is essential as the guidelines may become less applicable for individual women

with very complex care needs. This integration and networking may also be a feature of midwives' information proficiency discussed in the previous section.

The relationship between information sources and channels, and the types of information (see 6.1.2 Types of information) each yields may also point to the prevalence of midwives using colleagues as an information source. It may also indicate why objective (type) information and by default, evidence based practice, may be less used in the labour ward. According to the principles of evidence based practice (Straus et al 2011) research, which is *objective* information in this study, should underpin care management and practice based information. Various studies (O'Leary and Ni Mhaolrunaigh 2011, Spenceley et al 2008, Funk et al 1991) suggest that this is problematic in clinical practice. It is possible that one of the reasons may be the lack of versatility of documented information. Objective information sources such as the guidelines can *only* deliver objective information. If this is all that is required, such as when using alongside or interactional information for treatment it is sufficient. However, colleagues are versatile and can deliver different *types* of information such as objective, practice, woman specific and organisational. When combined via discussion with the midwife's information about the woman, these can be pooled and assimilated by the midwife to direct and guide care management. This is evident when midwives and their colleagues are discussing care during the round. Harriet attends the round when there is clearly no care protocol and she is able to establish specific clinical care in collaboration with the obstetricians.

Marshall et al (2011) state that discussion with colleagues to gain information is *social interaction*. Bonner and Lloyd (2011) suggest that discussion with a colleague creates a shared nursing identity through social construction. Through sharing information verbally, midwives and their colleagues arguably share and contribute to the organisational (socially constructed) information of the labour ward. Discussion with colleagues is likely to have a proportion of objective information combined with locally agreed guidelines and accepted local practice. When Jodie and Harriet attend rounds on different shifts for the same woman with mitral valve disease it is clear there is no guideline. The care that is discussed becomes a dynamic fusion of information types that is interactive, current and responsive. This in turn may contribute to a shared understanding of midwifery practice and culture in the labour ward and lead to a positive impact of information sharing. Conflicting evidence and research evidence may be appeased and negotiated with colleagues, and the colleagues are versatile in the types of information they can deliver and how they deliver it. It is difficult to attribute the positive outcomes of these collaborations to any particular individual or situation. The data is clearly powerful but there are not many examples on which to base assumptions (probably

due to what I was able to observe and the usual frequency of rounds). It is possible that midwives and obstetricians with information proficiency may be the underlying factor. This is discussed further in 6.2.5 Collaborative information behaviour.

6.2.4 Reliability of verbal information

This study shows that some information is only available verbally from women, therefore they are the only source. However, midwives seek information from women that is available in the maternity notes. Eugenie asks the woman in her care about the size of the baby's gastroschisis. The notes provide reliable woman specific information for the midwife because they are unlikely to be falsified or erroneous, information cannot be withheld, and information such as scan reports are verifiable. Therefore, midwives may opt for the potentially unreliable verbal information from a woman when there is a reliable information source available. This may be part of relationship building or determining what the woman knows about her care as the information requested from women is not always required by the midwife for clinical care.

The findings show that colleagues may deliver unreliable verbal information during handover that is identified when the midwife reads the maternity notes. Penelope is informed on handover that bloods are normal but subsequently establishes that they are abnormal. It is possible that a similar situation may occur when midwives seek information from colleagues about information that is available in the guidelines. In terms of reliability, guidelines (local or national) provide evidence based information which is likely to be up to date as it is stored electronically. This is in contrast to the information from colleagues; whilst it is unlikely to be deliberately untrue, it may be wrong or out of date.

Krikelas (1983) suggested that when users seek an external (to themselves) source the criteria that they use to evaluate it is reduction of uncertainty rather than accuracy, suggesting that the reliability of the source is less important than reducing uncertainty. Whether this is the case for midwives is, at this point, unclear but if the aim is reducing uncertainty, it may undermine the quality of the information sought. Midwives value the knowledge and role of their colleagues. Yolanda and Diana believe that when they select and ask a colleague the answer will be reliable because they have assessed their characteristics and knowledge and experience prior to access. Marshall et al (2013) found that nurses undertaking decision making placed emphasis on the experience/expertise of the colleague rather than the quality of the information they delivered. O'Leary and Ni Mhaolrunaigh (2012) suggested that if experience is the approachability criteria then

nurses may accept information without appropriate consideration of evidence based practice. The combined conclusion of Marshall et al (2013) and O’Leary and Ni Mhaolrunaigh (2012) appears to be that nurses demonstrate bias when assessing the reliability of their colleagues but also have a lesser regard for the quality of the information because they are relying on their potentially biased selection process. Regardless of whether trust is proffered by the midwife and she has assessed experience, neither can influence whether the information is really reliable. Whilst information from colleagues can be reliable, the alternative position is that wrong information ‘can spread collective folly’ (Gabbay and LeMay 2011:203).

The actual reliability of verbal information is discussed here by contrasting with guidelines. The findings of my study show that there may be more than one way to do something. Guidelines will deliver specific information based on a synthesis of research evidence. Colleagues, on the other hand, could conceivably deliver the same information because they know the guidelines, or information based on experience, or a combination of the two. On the face of it, guidelines would appear to be the most reliable in that they are verifiable but there are two drawbacks. Firstly the difficulty of identifying the *right way* to do something even after synthesis of the evidence, and secondly the inflexibility of guidelines may render them unusable. Women are now more complex and their right to opt in and out of care is recognised, thus making the versatility of colleagues ideally suited to individual circumstances. Gabbay and LeMay (2011) in their study of GP’s knowledge management acknowledge these points – the question of ‘the ‘gold standard’ of context-free research based evidence’ (Gabbay and LeMay 2011:203). What is most reliable is likely to be dependent on the context, in this case the labour ward and the individual woman for whom care is being provided. Colleagues are flexible to a situation, whereas guidelines (and research evidence) have an objective clinical credibility. The endpoint is whether reliability or flexibility is the best quality for an information source in the labour ward environment.

Estabrooks et al (2005a) saw the value of colleagues experience or *professional knowledge*. However, they acknowledged that this knowledge is ‘

...challenging to defend ... [it is] in the personal, not public, domain and as such [is] protected from debate and scrutiny – both hallmarks of scientific knowledge (Estabrooks et al 2005a:473)

Nonetheless, despite being a versatile source of several information types, colleagues appear to have a greater risk of bias and therefore less reliability than guidelines. Nancy acknowledges that if colleagues were wrong she may not know and Diana suggests that the

most reliable information is from the guidelines. The question of how to ensure that *documented* objective information is used appropriately to influence care management and practice based information remains.

6.2.5 Collaborative information behaviour

When discussion with colleagues is used for information access by midwives, it may become collaboration. Collaboration is a group of colleagues discussing the care of a woman to discern care management. Factors leading to collaboration are

...complexity of information need, fragmented information resources, lack of domain expertise and lack of immediately accessible information (Reddy and Jansen 2008:268)

Referral suggests that one or more factors is in evidence and thus triggers the collaboration (Reddy and Spence 2008). An example of this is when a woman's care falls outside of clinical guidelines. Reddy and Jansen (2008) describe this as *collaborative information behaviour* wherein an information need is identified and information seeking is evident within a group. The findings suggest that the round is a proactive collaboration, exploring whether any of these factors are evident in the care of the woman, rather than being triggered. Referral, on the other hand, is a reactive collaboration. During these talking forums, care management plans are discussed and information needs are identified (see 5.4.4 The talking forums). In reactive collaboration (referral) other colleagues may join if the midwife, or colleague to whom she has referred, invites another member to join. A referral made by Zoe begins with one registrar and concludes with Zoe, two registrars and the consultant.

Yet the findings show that there is the possibility for a collaboration to be dysfunctional resulting in poor care. The reasons are difficult to determine from these findings due to the rarity of the circumstance and the opportunity to observe it. In a study of interprofessional working that acknowledged the requirement of midwives to work in collaboration, midwives asserted that there was a lack of understanding of their role which negatively impacted on collaboration (Murray-Davis et al 2011) and some of the findings here support the potential lack of understanding. The obstetricians did not include Tessa, the midwife in the collaboration for care of a woman with complex needs (diabetes, pre-eclampsia and labour) possibly because they did not recognise the value of her role. The members of the collaboration, the registrars in this example, may not have realised they were collaborating and therefore did not contribute according to the conventions of

collaborative information behaviour. It is possible that this may be a feature of how the collaboration is created. A round, as a recognised forum, is likely to be acknowledged by members as a collaboration. A referral, however, as an unplanned event, may not be. Invited members may not have the necessary expertise to contribute to the collaboration and more suitable members may not be invited. Equally, the reasons for collaboration dysfunction may be centred on the midwife. It is possible that midwives' perceptions of themselves as autonomous practitioners may influence their ability to collaborate (see Appendix 9.35 Autonomy and collaboration). Similarly those midwives who are information proficient (as opposed to information adequate) may be able to orchestrate collaboration more effectively, suggesting that the ability to manage collaboration in order to gain (and impart) information may be a behaviour associated with information proficiency. If information proficiency is a contributory factor to positive collaboration it stands to reason that it may also positively affect the care of women. Similarly, there may be a net gain of contributing to overall positive information behaviour culture.

As a significant aspect of midwifery care, collaboration needs to be effective by including appropriate colleagues with no approachability issues. This is especially important in *spontaneous* circumstances where collaboration appears most likely to fail.

6.3 Chapter summary

The salient areas from the findings have been developed in this discussion in conjunction with current theory and policy. In line with the research objectives I have explored midwives' information behaviour and can now claim to have an understanding. Midwives information behaviour in this study is enacted in the physical space of the labour ward, using a finite set of information sources. It is different to general information behaviour in that it is professionally and contextually driven.

The findings and discussion have contributed to answering the research questions and these are summarised here. The first question relates to how midwives identify their information needs. The study suggests that midwives identify their information needs using their professional knowledge and their interaction with women receiving care to identify what is required for care. They appear to know what they do not know by virtue of their knowledge. However, my study has identified that midwives' information needs may not be recognised by midwives or that they may be classified as deferrable rather than immediate and therefore may not initiate a search. The cognitive nature of information need makes it difficult to identify unrecognised and missed information need from this

study. Once an information need is identified, midwives' professional responsibility appears to drive the ensuing search.

In answering the second question regarding what sources and types of information are used by midwives in the labour ward, this study shows there is a finite group of information sources situated within the labour ward. These include the woman, colleagues, knowledge, guidelines, equipment and computers, maternity notes and the environment. Types of information were also identified as woman specific, objective, practice based and organisational. The difference between sources and types is that the source is where the information comes from, and the type is the purpose for which it is used (see 6.1.2 Types of information).

The final two questions ask how midwives use information and the factors that facilitate and/or inhibit information access and use. The study findings point towards the final two research questions being answered together rather than separately as they are both connected to information seeking. How midwives use information may be dependent on the source or channel. They may listen to verbal information, use documented information in an alongside manner and use sensory perception to receive information from women. Whilst information use is the *using* of an information source to complete an information search, it is also potentially the integration of new information into the midwife's knowledge. Cognitive information, and its relationship with knowledge, has already been highlighted for its role in information need but there is a suggestion that it functions in knowledge acquisition too. Each source and channel presents attributes of accessibility and reliability which may influence its selection and thus whether it is a facilitative or inhibitive source.

The woman, by virtue of her proximity to the midwife is a facilitative source of woman specific information. However, women may inhibit information that the midwife needs, but information proficient midwives can circumnavigate these well (see 5.3.3 Barriers to verbal information with women). Colleagues, as a verbal information source present greater versatility in terms of the types of information they can provide. Midwives who show information proficiency are not adversely impacted by approachability, whereas some midwives who show information adequacy may feel inhibited if the colleague is not approachable. Equally the information that colleagues deliver may be subject to bias.

My study has answered the research questions but has also found additional valuable new knowledge. Through the depth and rigour of the analysis and by using the frameworks *Midwifery information trajectory* (MIT) and *Verbal information network* (VIN) it has also shed light on areas over and above the original research questions. These are

information proficiency and adequacy, and the importance of the verbal information network (VIN) and the lack of input from the woman to the VIN. Using the frameworks, the additional areas, current policy and my understanding of midwifery has also enabled me to develop implications for practice. The MIT suggests the value of the appropriate and effective use of information sources and channels. Reliability and propensity to deliver the information should be the key feature of an information source or channel rather than accessibility and usability. Reliable information sources could be made accessible and usable to increase their appropriate use by midwives. However, for the circumstances in which the midwife requires information and there is no applicable source, being able to enact *proficient* information behaviour may improve the reliability. The VIN acknowledges information presented by the woman to the midwife and the woman's involvement in collaborations about her care. Similarly the appropriate and effective use of collaborations in the labour ward and teamwork is identified in the VIN framework. To effectively deliver information, verbal information networks need to include the right people and need to work well. Equally, the care of women that requires collaboration may be more about teamwork than midwives' autonomy. These implications for practice are valuable to midwifery and are presented in the next chapter.

Chapter Seven

Implications for practice and research

The overall aim of this study was to explore how midwives access and use information when providing care for women with high risk needs in the labour ward. It has provided new understanding and unique insight into midwifery practice for women with high risk care needs. The findings and analysis discussed in the previous chapters illuminate the information behaviours of midwives in one tertiary centre labour ward and the centrality of the midwife in information activity around the clinical care of the woman requiring complex care. In response to the research questions my data highlighted how midwives may identify their information needs, sources and types of information, how information is used by midwives and factors that facilitate or inhibit information access. My study identified two valuable additional findings *information proficiency* and the *verbal information network*. Information proficiency is hallmarked by a networking, collaborative and proactive approach to information behaviour; engaging and managing several information sources at a time. Its value lies in its potential to improve midwives' information behaviour, which leads to better use of information suggesting an enhancement to the care of women. Similarly, the *verbal information network* demonstrated the importance of dialogue and effective collaboration between midwives and the multi-disciplinary team. However, the absence of the women as participants in this network highlighted a key finding relating to the women's lack of inclusion in care discussions.

From these premises I have developed four implications for practice relating to improving the clinical practice of midwives:

- Enhancing the woman's contribution to verbal information exchange
- Information sources need to be accessible, usable and reliable
- Developing midwives understanding of effective information behaviour
- Teamwork and collaboration

In addition, the findings of this exploration of information behaviour also revealed three key areas of interest not explicitly in the research questions, that may benefit from further research - information need, passive information and information type. This chapter discusses the implications for practice and further research ideas developed from my study.

7.1 Enhancing the woman's contribution

The observations suggest that the midwife/obstetrician collaboration acknowledges minimal information from the woman directly. This means that her opportunity to participate in her care is reduced. The Royal College of Midwives (Sandall 2014, NHS England 2014, International Confederation of Midwives ICM 2008b, 2005b, Department of Health (DoH) 2010 and the Royal College of Obstetricians and Gynaecologists (RCOG 2008, 2007b) advocate that women should be partners in their care and decisions made about their care. A recent King's Fund report (2013) acknowledges that patient (woman) centred care is not a reality and that health professionals are the barriers to change. The King's Fund conclusion was based on a minimal number of case studies of proven leadership in the NHS and the apparent lack of training in these skills for health care professionals (Coulter 2012). The recent enquiries into Mid Staffordshire and Morecambe Bay Foundation Trusts re-iterate how focus can move from the patient to the system and the ensuing catastrophic demise of quality (Kirkup 2015, Francis 2013, RCM 2013b). Whilst the King's Fund and Mid Staffordshire reports are directed at all of healthcare, it is likely, by extension to apply to midwives too.

However, the challenge to improving women's involvement in their care does not rest entirely with individual midwives but with a model of care that may inadvertently promote a culture of classical professionalism (Porter et al 2007). My findings show that information behaviour in the acute model of care conducted by labour ward midwives includes the rapid extraction of information from women and their notes to build rapport and furnish the midwife with enough information to satisfy herself, the multidisciplinary team during referral and the round and to provide clinical care. In contrast, caseloading midwives develop rapport during the much longer antenatal period, thereby giving themselves the personal and baseline information to build information for labour care over a longer period of time. In the former model it is possible that information becomes a commodity rather than a process and the woman a vessel rather than an integrated part of her care primarily due to time constraints.

Within the current model, midwives and obstetricians providing care for high risk women may benefit from seeing a model of how labour ward woman centred care can work and what it should look like. My suggestion, having conducted this study, is that women are included in the talking forums. However, it could be argued that talking forums inherently involve more than one clinician (midwife and obstetricians at least) and that to present a suitable display of collegiality or teaching may require initial discussion outside the room. The counter argument is that the woman should be party to any discussion of her care, including teaching, and that clinicians need to be able to negotiate this

appropriately in her presence. With this in mind, encouraging the woman's participation is likely to require cultural changes to the talking forums. This study shows the midwife as information bank and conduit, communicating with the woman and obstetricians often separately. The start point for change could be development and piloting of a model that ensures that discussions of care take place within the labour room which could be found with bedside handover (Allen 2015 per comm). Limited exploration of the bed side handover research suggests that patients are able to take part in handover (Lu et al 2014). Women may require support and advocacy from midwives, but will be able to hear the discussion that informs the design of their clinical plans and be able to access obstetricians and the multi-disciplinary team directly. Greater implementation of the caseloading model of care may promote better woman centeredness (Newton et al 2014). Furthermore, ensuring that midwives recognise the key role they hold for women's information may provide support in the movement towards woman centred care.

7.2 Sources need to be accessible, usable and reliable

Midwives use information sources because of their accessibility along with their propensity for delivering the information required, but this may be at the expense of reliability. The findings show that the sources and channels available to midwives usually have one or two of these properties but not all three. Logically, in terms of value, reliability⁴⁵ is the key attribute as it will disseminate the best information. With this in mind the recommendations for guidelines, computers and the potential role of information leaders are discussed in this section.

7.2.1 Guidelines and evidence based information

Guidelines are constructed locally and nationally through the critique and summarising of clinical research. The net result is 'pre-processed information' (O'Leary and Ni Mhaolrunaigh 2011:381) in a tailor made package. They are objective and practice based information that equates to the *evidence* in evidence based practice (EBP), which is promulgated for excellent care (NMC 2015, Sandall 2014, DoH 2013a). EBP is 'the integration of the best research evidence with our clinical expertise and the patient's unique values and circumstances' (Straus et al 2011:1). It is supported and endorsed by the Cochrane Collaboration (2014), NICE (2014), DoH (2009, 2003), King's Fund (2008) and the Health Service Circular (HSC) (1999), although it has recognised issues for

⁴⁵ The concept of reliability of information or evidence is not discussed here due to word count limitations

applicability (Greenhalgh et al 2014). The Cochrane Collaboration and NICE both provide usable, accessible⁴⁶ evidence themselves. This provenance suggests that their reliability is good.

The Royal College of Obstetricians and Gynaecologists [RCOG] state that ‘maternity services should comply with evidence-based guidelines (e.g. NICE, Scottish Intercollegiate Guidelines Network [SIGN]) for the provision of high-quality clinical care’ (RCOG 2008:57). With the support of current healthcare policy and the evidence based practice movement behind them, local and national guidelines should be widely used by midwives. The findings and discussion suggest that some midwives do use guidelines frequently, and this is arguably an information proficient behaviour, whereas others find them arduous. Having to search through information superfluous to clinical care that is often found at the beginning of guidelines (author, date of ratification, disclaimers and so on) and background information, may not be an incentive. Whilst this is not proven to be a problem for clinical care and midwives in this study did use the guidelines, making them more user friendly by altering the layout may encourage the use of a valuable resource that incorporates one of the few outlets for research evidence in the labour ward. Encouraging the practice of printing guidelines and filing them in women’s notes may also improve familiarity and make them more accessible to midwives and women. As guidelines are stored on computers their accessibility will be addressed in the next section (7.2.2 Computers). The summary point of guidelines is that research evidence itself is recognised as difficult to apply (Greenhalgh et al 2014, Gabbay and LeMay 2011). Investment into implementation science by the National Institute for Health Research is testament to the importance of implementing research evidence (NIHR 2015). Clinical guidelines potentially have the capacity to bridge part of the implementation gap by synthesising related evidence to conditions.

The issues that some midwives have with guidelines is not limited to searching. My study shows that they believe they need to *know* all of the guidelines. What is arguably more useful is knowing what guidelines exist, where to find them during practice and how to navigate through them. This study has also shown that midwives need to find a mechanism to use guidelines that is not ‘taking me away from my ladies (Marie MI86)’. Promoting guidelines as a resource to be used rather than learned may improve how midwives feel about them. The benefit of this may be that midwives gain an information proficient behaviour and develop their expertise.

⁴⁶ Once accessed via the internet/computer

Although there are critics of guidelines (Mahran et al 2007, LeMay 1999), when up to date and appropriate they are an acceptable and accessible form of secondary evidence for midwives (and other clinicians) in the labour ward. If the search time for guidelines is reduced midwives may be more likely to use them, thus enhancing evidence based practice.

7.2.2 Computers

Much local information (consultant letters, blood and pathology results) is accessed via computers. The evolution of reliable healthcare information databases on the internet such as NICE, local guidelines and Cochrane Reviews are also further testimony to the increasing value of computers and devices with online capability.

Despite their good reliability for verified sources there are issues with accessibility and search times. At the time and location of the study using a computer required time to leave the room and locate information on the computer. Once accessed, computers may be blocked by another member of staff, thus increasing search time again. Lack of terminals is evident in other studies of healthcare professionals' information behaviour (Marshall et al 2011, Bertulis and Cheeseborough 2008, Nicholas et al 2005). The logical answer appears to be to increase the number of terminals and site one in each delivery room. There are three potential drawbacks; firstly the cost/benefit may be difficult to support, although arguably compared to the costs of litigation computer costs may be brought into perspective. It is feasible that since data collection this may already have occurred. Secondly some midwives lack computer skills and/or willingness to use them, suggesting that training and more user friendly databases are required or a better interface (android vs apple for example). In their five year plan NHS England have stated that they are committed to capitalising on the current information revolution and training healthcare staff (NHS England 2014). Although this would require taking into account the potential for changing technology during the implementation period and the concern midwives have with the perceived shift of focus from the woman to electronic resources (Craswell et al 2015). An alternative solution is to move information sources out of the electronic arena and back to paper to facilitate their use. The monetary and environmental cost notwithstanding, this could be a retrograde step given the potentially improved quality of care that may be offered by embracing new technologies (Craswell et al 2015, Stocker Partnership 2014). Printed copies present a threat to reliability when they become out of date and, as my study has shown, may not improve accessibility. The alternative is to create user (midwife) friendly technology and training in terms of how

midwives use information technology and how they perceive it. However, usability does need to be considered whether via educating midwives in use of technology or facilitating information searching.

Thirdly the findings show that when the midwife leaves the labour room and interacts with the labour ward staff she is contributing to the organisational information. If she does not leave the room the organisational information may not be delivered. Reducing interaction between members of the social group by replacing it with an electronic device may impact on organisational information. Resolution of this is difficult to envisage. Organisational information has been identified by this study and its true value to quality of care needs to be assessed through further research before claims can be made about its value.

One short term possibility to increase resources whilst minimising costs is to encourage midwives to use their own smart phones to access the internet and trust internet or to provide ipads for use in the clinical environment. Accessibility will be enhanced and, if midwives used their own smartphone, the need for taught computer skills will be eliminated. This may encourage midwives (and the multi-disciplinary team) to use Cochrane collaborations, NICE, RCOG and RCM guidelines as alternative, evidence based information that is available via the internet. Thinking ahead, the potential for creating apps for smartphones and ipads showing midwives how to perform aspects of clinical practice and gain access to national guidelines is vast. The cost benefits of capitalising on what midwives have already at their disposal and will know how to use could be significant.

As a resource that is growing ever more valuable and prevalent, the need for midwives to use information technology is increasing exponentially. Electronic and internet technology is growing rapidly and the potential for healthcare is immense (Stocker Partnership 2014). Whilst not yet a reality for midwives in terms of machine to machine communication, healthcare is heading in this direction. The pledge by NHS England (2014) to increase capability with technology through training is urgently required as some midwives in my study had difficulty with the comparably limited resources available at the time of data collection (databases, email, internet and database searching). This implies that research resources may be well placed to study the implementation of information technology and web science (University of Southampton 2015).

7.2.3 Information leaders

This study suggests that seeking information from colleagues in the labour ward may be driven by the colleague's versatility in providing information types and their ability to synthesise these within the context of the client (see 6.2.3 Value of colleagues as an information source). Equally the search time associated with a colleague was perceived by midwives to be less than that of a documented information source. Colleagues are, therefore, very accessible. However, their reliability is difficult to assess.

This study suggests that regardless of what type of information is requested from a colleague, it may be unsuitable or inappropriate but midwives (and colleagues) may not always be aware of this. As it is such a prevalent finding in this and other related studies (Marshall et al 2013, O'Leary and Ni Mhaolrunaigh 2012, Marshall et al 2011), it makes sense to enhance the information quality of colleagues who may be approached, rather than attempting to stop the behaviour altogether. O'Leary and Ni Mhaolrunaigh (2012) acknowledge this premise, suggesting that improving verbal information sources is of value because it will improve objective information. This is an arguable point, verbal information is open to bias and recall problems and, as it is not documented, is unverifiable. However, the development of key colleagues to act as information leaders by educating them with findings from this study and information behaviour may enhance the quality and reliability of midwives' information behaviour through:

- Guiding midwives to an appropriate knowledge based information source
- Supporting good interrogation of an appropriate source to retrieve optimum information
- Improving the quality and reliability of verbal information
- Broadening the role of an information leader to incorporate digital technology dissemination and support
- Provision of a role model

It is possible that the key attributes for being an information leader may have a connection and predisposition to those midwives who are information proficient.

There are some advantages to midwives seeking information from colleagues. Midwives may require information for individualised care when there are no applicable guidelines. By delivering information to coordinators to receive information back, the midwife contributes to the coordinator's organisational knowledge. Equally, specialist midwives and high dependency midwives have knowledge and practice based information, making them a valuable and informed information source for midwives. As experts, coordinators,

specialist and high dependency midwives, are in an ideal position to build on their capacity of becoming information leaders.

However, as my study shows; lack of approachability of coordinators, specialist and high dependency midwives, may still act as a barrier, meaning that midwives will still seek information from other, possibly less reliable, colleagues. Marshall et al (2013) suggest that new members of staff may not be aware of which colleagues are appropriate to approach. Therefore, there is scope for developing information leaders' approachability which, in turn, can build on the propensity for all midwives to seek information from them. This will ensure that midwives appropriately select a colleague to approach and therefore reduce the possibility of less reliable information being delivered.

7.3 Developing midwives understanding of effective information behaviour

Educating midwives about information behaviour may precipitate *information proficient* behaviours and highlight its value to midwifery practice. This study suggests that the midwife is the information bank for the woman and the link to the verbal information network in the labour ward. Therefore it is essential that the midwife understands her responsibility to the woman and also for the woman's information. Equally, if midwives understand the value of excellent information behaviour they may appreciate that the investment of time is worth appropriate information gain. The new academic midwife role (Health Education England 2015) may also be a position that can support and promote effective information behaviour. Statutory and mandatory training offered by healthcare trusts could incorporate education for improving midwives' (and other healthcare professionals) information behaviour. Further research may also show that if midwives understand the relationship between information types and sources, and the reliability issues associated with information formats, it may improve the appropriateness of the sources they use.

These behaviours or skills could also be enhanced in the syllabus of student midwives to prepare them from the point of registration to enact excellent information behaviour. However, it is imperative to define the difference between skills that relate to information behaviour *during practice* which are considerably different to information behaviour for study or training (longer term database searching). Student midwives will see midwives enacting information during practice but may not be aware that it is information behaviour or may see *information adequacy* rather than *information proficiency*. Educating student midwives to develop the theory and understanding of information

behaviour for practice such as the presentation of information to the round or interrogating appropriate information sources may prepare them for becoming information proficient midwives.

7.4 Teamwork and collaboration

Collaborations, the round and referral are recognised by the Royal College of Obstetricians and Gynaecologists (RCOG 2007b) and Royal College of Anaesthetists (2011) as essential in high dependency care. In this study the most effective collaboration is seen during the round where it is formally convened, each member of the multi-disciplinary care team is present, recognised and contributes to the discussion. My study suggests that by joining the round or collaborations, as well as receiving information, the midwife will also contribute to organisational information.

Effective collaboration is a valuable information source for midwives but there are potential threats. This may be lack of inclusion of midwives⁴⁷. The findings show the midwife as an essential collaboration member (see 5.4.4 The talking forums). If s/he is excluded their valuable contribution to the collaboration – the information they have gathered about the woman and as the *voice of the woman* – is lost. Equally, they will not receive the information required to conduct clinical care. Another threat highlighted by my study is that midwives perceptions of the round can be negative based on their requirement to prepare and verbally share information for dissemination. The tenets of collective leadership suggest that

all staff prioritise the effectiveness of the organisation and sector as a whole in creating this culture, rather than focusing only on individual or team success (King's Fund 2014:8)

Turning this disquiet into a positive appreciation of an information asset such as the round may be invaluable in enhancing effective collaboration.

Collaboration may be improved by impressing on the multi-disciplinary team that all contributions are valued and necessary and that the midwife, and all relevant members, need to be included and recognised. Highlighting that the midwife is often the voice of the woman may be critical to effective and inclusive collaboration. It is vital that midwives (and all members of the multi-disciplinary team) are welcomed to the round and invited to participate. This includes student midwives and medical students so that effective

⁴⁷ Or other key colleagues

collaboration becomes the norm rather than the exception. Equally midwives, must be aware of the value of the information they bring and receive to the round.

All potential members of collaboration need to be educated as to its role and function and how to facilitate excellent collaboration within the multi-disciplinary team. With support from policy in place (King's Fund 2014) it remains to implement and evaluate effective collaboration on the frontline. Current multi-disciplinary training, with its emphasis on teamworking in clinical scenarios, is a possible forum in which to promote effective collaboration.

7.4.1 High risk care and team working

This study, with its focus on midwives providing care for women with high risk needs and midwives information behaviour, suggests that the role of the midwife is different when providing complex care. In low risk care midwives are acknowledged as autonomous practitioners (ICM 2005a, RCOG 2007b) (see Appendix 9.35 Autonomy and collaboration with the multi-disciplinary team) able by training and experience to provide care they are often the only qualified professional in attendance. However, this study, current policy (Wee et al 2014, RCOG 2008, RCOG 2007) and midwifery commentators (Kirkup 2015, NHS England 2014, Midwifery (2020) 2010a) suggest that the midwife's role in high risk care is one of teamworking and collaboration with obstetricians and women, and, when required, with anaesthetists and/or other specialist medics. In the Morecambe Bay report it is stated that midwives apparently over normalised women resulting in several poor outcomes. The recommendations of the report specify that the trust

should identify and develop measures that will promote effective multidisciplinary team-working, in particular between paediatricians, obstetricians, midwives and neonatal staff (Kirkup 2015:186)

Whilst the midwife's expertise in normality is critical to woman centred care, the autonomous role of the midwife when she is providing high risk care may need consideration by midwives, midwifery leaders and strategic collaborators such as the RCM, RCOG and RCA. In high risk care emphasis on collaboration within the multi-disciplinary team is recommended. This point goes in tandem with understanding the collaborative rather than autonomous roles of *every* member of the multi-disciplinary team. It is not to denigrate the role of the midwife or promote the role of the obstetrician but to reinforce that all members of the multidisciplinary team should collaborate and recognise the value each brings for the care of the woman with high risk needs.

7.5 Further research

As this study is an exploration, each part of the findings and discussion present new and exciting knowledge which may provide a theoretical foundation for further research. However, as a midwife and the researcher, there are several areas that draw attention due to potential impact on care quality and influences on evidence based practice. Three of these, organisational information, implementation of information technology and education of midwives towards information proficiency, have been discussed earlier in this chapter (see 7.2.2 Computers and 7.3 Developing midwives understanding of effective information behaviour). Three other areas - information types, passive information and information need may also benefit from further study.

7.5.1 Information types

Information types were identified in this study. With the exception of organisational information all were linked to existing theory (Straus et al 2011, Davies 2007, Gorman 1995). The findings of this study suggest that there is an influence of *information type required* on the source that midwives access ie: the source may be selected because of the type of information required. This is most evident in the proposal that midwives access colleagues because of their versatility to provide different types of information despite the potential for unreliability. What this suggests by default, is the potential subsequent reduction of seeking documented evidence as per the principles of evidence based practice (EBP) (Straus et al 2011). Further focussed rather than exploratory study using an appropriate methodology on the type of information midwives require and the sources used, may illuminate this and provide a foundation for the promotion of EBP in the labour ward.

7.5.2 Passive information

As discussed in the findings and discussion chapters (5.3.4 Observed and observations and 6.1.5 Passive information reception) the premise for passive information is that it occurs in the absence of an information need or search but with information being delivered to the midwife thus changing her state of knowledge. The findings suggest that the role of passive information may be significant in midwives' information behaviour and for clinical care (see 6.1.5 Passive information reception). It is imperative to state here that there were many observed instances of midwives responding and acting on passive information, however, there were a tiny number of noteworthy instances of passive information not being acted

on by midwives⁴⁸. This is significant to midwifery care as ‘failure to recognise a problem’ (RCOG 2007:3) is noted as a feature of suboptimal care in the Royal College of Obstetricians and Gynaecologists report into safer childbirth (RCOG 2007b). This report states that substandard care occurred when ‘clinicians fail[ure] to recognise a problem and take appropriate action’ (RCOG 2007:3). The most recent report of confidential enquiries mentions that failure to act on observations can result in serious or fatal consequences (Knight 2014). Equally, reports into a neonatal death at Morecambe Bay shows that clinical observation, which would be recognised in this study as passive information (5.3.4 Observed and observations) were overlooked contributing to the unnecessary death of a newborn baby (Kirkup 2015, Parliamentary and Health Service Ombudsman 2014).

As with information need, passive information may be crucial to clinical care. Arguably the amount of information that a midwife receives but does not require for the care of the woman may mean that s/he filters it out. An understanding of how some passive information is overlooked or filtered by midwives (or other healthcare professionals) could hold significant benefits for optimising clinical care.

7.5.3 Information need

The exploratory nature of my study meant that midwives’ information need was identified as a component of information behaviour but could not be examined in detail. My study identified three aspects of information need requiring further study. The first is that knowledge is evident in the generation of information need. Due to its exploratory nature my study was unable to provide any depth to this finding. The second is that the findings and theory suggest that midwives may classify information needs as deferrable when they are immediate. Krikelas (1983) refers to immediate and deferrable needs, and Case (2012) discusses needs and wants. As presented in Chapter Six, if a need is inappropriately classified it may not trigger a search. Finally, the discussion identified that information needs may be overlooked by midwives (Mackintosh Murray and Choo 2005). If needs are not acknowledged by midwives, the care may be impacted as a result.

Further research dedicated to these areas of midwives’ information needs using a suitable methodology and with this study as a theoretical base may deliver an illumination of midwives’ information needs.

⁴⁸ These were identified by me during observations in which the woman asked for medication which was not subsequently given or overlooked decelerations in the fetal heart rate

7.6 Chapter summary

This study of information behaviour and the implications for practice espoused in this chapter have touched on aspects of midwifery care that are resonant with current policy and advances in information technology. Women's input to their clinical care is highlighted in this study, leading to consideration of care models that promote women centred care, a point clearly stated in policy and plans for the NHS.

My study also begins to unpick and contribute to the tensions of evidence based practice in greater depth. The findings are aligned with the merits of reliable evidence but equally contribute a potentially deeper understanding of the versatility of information sources and how this influences what, or who, is used as an information source. The implication of this is the foundation to promote reliable sources (ie: guidelines) or to improve sources (ie: colleagues as information leaders). On a more speculative note the role of information technology in the labour ward is considered. The current relationship between midwives and information technology in the labour ward could be improved and, within healthcare, should be addressed.

Developing midwives' and student midwives' understanding of information behaviour to promote information proficiency may be significant to care quality and could have far reaching consequences for the quality of care. Equally encouraging multi-disciplinary team working and collaboration as an adjunct to autonomy in high risk care may also influence care quality.

The exploratory nature of the study meant that there were valuable and interesting findings and potential areas for further research. The findings identified and discussed here are the ones I believe are most significant to clinical practice.

The role of the following and final chapter is to reflect on the methodology and next steps for this valuable study.

Chapter Eight

Reflections and next steps

Whilst the doctoral research journey is evident throughout the thesis, this final chapter provides a summary of the study, reflects on the methodology and considers the next steps.

This study of midwives' information behaviour provides an initial exploration of how midwives enact information behaviour in the labour ward environment and during their provision of care for women with high risk needs. Midwives' information behaviour has not been studied before and my study has identified new knowledge including the value of proficient information behaviour for the quality of midwifery care.

I identified midwives' information behaviour as an area for study through my clinical experience, notably in the labour ward with women with high risk requirements where care may be complex and women may not be known to the midwife. The literature review showed that information behaviour of midwives had not previously been studied, whereas the information behaviour of nurses and doctors had been explored in several healthcare contexts. Using this (the literature review), my understanding of the labour ward and the research objectives, I evaluated methodologies for the study. A qualitative methodology was required that could observe participants in their environment whilst enabling participants' own meanings to be explored. I selected ethnography as it used participant observation and interview thus using both emic and etic perspectives and the ability to provide description and/or theory. Thus context could be acknowledged, culture could be revealed, *understanding* of meanings for participants may be evident and there is an ecological validity associated with it. However, my status as a midwife with a limited duration of access to the field meant that the methodology was actually the *principles of ethnography*.

The data collection method delivered copious amounts of unwieldy data that I needed to organise to answer my research questions. The ensuing thematic analysis was complex and broad and featured repeated returns to the data and write ups of the findings leading to many iterations of the study findings. The analysis ultimately revealed sources and types of information but also the processes of information behaviour and how women and colleagues are used as information sources. This was exciting as it began to show, amongst other things, that verbal information from women and colleagues had its own attributes that set them apart from inert information sources. Equally sources that

midwives use were identified along with their search attributes. In the discussion chapter the findings were explored and developed with current theory. This highlighted key areas such as the existence of organisational information, the verbal information network and collaboration, and the role of knowledge in midwives' information need. Some concepts were then considered in the context of their implications for practice such as the information proficient midwife, information reliability and enhancing the woman's contribution to information. My study has shown the value of information behaviour to clinical practice and the development of student midwives and midwives, but has also highlighted some key areas for potential research. Significant outcomes are the new and valuable findings. These include the verbal information network, and its links to the woman's contribution to her care and the existence of organisational information but also the concept of information proficient midwives and the potential to enhance quality of care if developed in practice.

8.1 Study reflections

A study of midwives' information behaviour has not been conducted before. The findings are unique and enlightening, and at the forefront of midwifery practice centred on women with complex needs. Despite the success of the study being largely due to the appropriate choice of methodology, a critical reflection is required in the light of the findings and to guide those who may study this area in the future.

8.1.1 Harnessing the data

Accessing the field proved to have several hurdles, but once I had managed to jump these and access the labour ward, its ability to deliver the data was a distinct advantage. There were several attributes of the selected labour ward that facilitated data collection. The consultant midwife was accommodating and provided constructive guidance for ethical approval and conduct of data collection. Staff around the labour ward were supportive and interested. Midwives who were directly observed and the women in their care were trusting and their willingness to be observed by a researcher meant that data collection was straightforward and unconstrained. This, combined with the data gathering technique of using a netbook computer enabling conversations to be recorded verbatim along with actions and events, meant that rich data was gathered. Whilst this proved challenging for analysis and the construction of the findings, the depth of the data contributed immensely to its credibility.

8.1.2 The native novice researcher

As a midwife myself, rather than an outsider, observing bursts of clinical care in the field, rather than total immersion (Agar 2008, Pope and Mays 2006a), the study was conducted using *principles of ethnography* (Agar 2008, Roper and Shapira 2000) and is not an ethnography per se. However, in drawing upon the principles of ethnography I was mindful that 'the social researcher and the research act itself are part and parcel of the social world under investigation' (Hammersley and Atkinson 1983:234). The realisation of the significance of the 'self' in the research act required me to focus on the development of my own reflexivity. This brought the responsibility of worthy interpretation of the field in view combined with recognising how my researcher role and *nativeness* may influence the final account. Through the groundwork of studying, collecting data, analysis and many iterations of writing up findings I began to understand and develop my reflexivity further. This written account which ultimately is my presentation of others voices and actions is thus displayed for interpretation by the reader (Roper and Shapira 2000, Emerson et al 1995). I envisage that my transparency in all aspects of the study and the admission of this in the write up is sufficient to enable appropriate interpretation of my findings. The difficulty of achieving this cannot be overstated especially as the lack of research into midwives' information behaviour led to this being a broad and exploratory study. This meant a wealth of unfettered data that was complex and difficult to manage and analyse for a novice researcher. When completed, there was nearly fifty hours of observational data and around seven hours of interview data. This required a sustained and intense period of rigorous analysis and presented considerable challenges in terms of identifying and focusing the most important aspects of the data to answer the research questions. My supervisors repeatedly challenged me on my interpretations of the data and queried valuable aspects that I may have overlooked. I personally shuttled to and fro within the data, developing concepts with existing theory to gain depth and believability in the findings. To this end I am in no doubt that the analysis is thorough and rigorous, and that my status as a lone and novice researcher working with a considerable amount of data did not jeopardise the inclusion of worthy data.

8.1.3 Reflexive stance

As a key tenet of ethnographic research, this section seeks to explore my sense of myself as part of this study. From the outset to the completed thesis, I have moved significantly from being a midwife observing what other midwives do to a researcher collecting data, conducting analysis and writing up new knowledge. This transition has been essential for

the quality and purpose of the study. It has occurred through developing the necessary reflexivity to conduct research using the principles of ethnography and the subsequent recognition of possible limitations. Part of this development is acknowledging my intrinsic role in the study.

The ethnographic researcher is the research instrument through which all data is collected and analysed (Burgess 1984). As an observer-as-participant (Gold 1958) I accepted that I may unintentionally influence the research environment by affecting what happened in the field and acknowledging that it may suppress some behaviour by participants. To not accept this position may have undermined the ethnographic methodology and the acceptance of self as the research instrument, replacing it with the problem of how bias may be recorded (Agar 2008). Despite recognising acceptance of self, there is value in recording this potential bias and the effect my presence, my decisions and interventions may have had on the findings as it is then possible to identify limitations.

8.1.3.1 The effect of my presence

This section considers how my presence in the labour ward may have affected the research process and findings.

I spent many hours waiting in the labour ward office for suitable and willing midwife/woman dyads, sharing my Information Sheet (Appendix 9.5) and a verbal report of who I was and what I was doing with as many staff members as possible. This decision was taken to ensure that everyone was aware that I was a researcher using ethnographic data collection methods to study midwives' information behaviour. One midwife, Olivia, invited me to come and observe her in the labour room after seeing me in the office. Another acknowledged that she did not wish to be a participant because:

she didn't want another set of eyes as she felt out of her depth with a very complicated woman
(Fieldnote diary:16)

She clearly felt that my observation may affect her practice and put further pressure on her. It is possible that this potential observation may have netted valuable data. Nevertheless, the principles of qualitative enquiry and ethics accept the catchment of qualitative data that the researcher collects from consenting participants without needing to ensure a particular sample size is reached (as in positivist enquiry).

On reflection it is difficult to say how my presence affected the midwives within the labour rooms. I chose to be observer as participant, meaning that I was identified to the

participants but did not take part (in the main) in the activities I was observing. However, I was still present and this is likely to have had some influence on what I observed as much as my nativeness as a midwife influenced what I recorded (see 3.4.6 1 Observations). The midwives were in various degrees and combinations, welcoming, indifferent, inviting and sometimes irritated. I was offered cups of tea, and sometimes invited to join their conversations. Some appeared able to ignore my presence. One began to look and sound uncomfortable especially when I followed her repeatedly when she was referring to the obstetricians. Another made a comment that I could make the tea. I felt, on the whole that when things were happening that required their attention, the midwives overlooked me and focussed on the woman.

During observation in the labour rooms there were several other scenarios recorded in my field note diary of the effect of my presence on the midwives. My decision to be observer as participant legitimately enabled me to initiate conversation about what midwives were doing and why in order to gain understanding of the meaning for them. I tried to limit these to appropriate timing and to appropriate content. This intervention in the name of *informal interviewing* may have presented me as a colleague, wishing to discuss work – which is essentially what I may have been to them. This is evident in my field note diary entry after observing Jodie:

Jodie has been very enthusiastic and helpful. She took on board what I was trying to do and involved me every step of the way. It is a shame I can't follow her for longer. (Field note diary:12)

Kathy, on the other hand was very different. She did not acknowledge me at all. This is encapsulated in my field note diary entry:

Well that was interesting. Kathy seemed so different to the others I have observed. She hardly asked any questions, and did a lot of 'telling'. Not really sure what to make of that. I wonder if she thought that I was looking at how she 'gives' information, or if she was affected by me being there. She seemed to have so little engagement with the process. Or maybe it was because she had a student with her. Or because she was a caseloading midwife and knew the woman really well. Hmmmmm. Will need to think on that one. She also appeared more of a dyad with her student. I found myself referring to 'them' and 'they', in fact I stopped myself and started referring to them separately. Maybe this is my example of someone not showing their information needs. Jodie this morning was spectacular at showing her needs. (Field note diary:14)

These scenarios show that for Jodie I was an observer to whom she explained what she was doing and why. There was an element of me asking informal questions which may have precipitated this. My reflection of Kathy, on the other hand, is of someone who did

not engage me at all on a verbal level (which is as it should be), but appears to have been affected by my presence.

My field note diary entries are testament to the judgements I made about the midwives in the study. Social researchers acknowledge that their presence influences the participants in their studies (Homan 1991) through what is displayed to the researcher. Agar asserts that 'a social category will be assigned to the ethnographer by the group members' (Agar 2008:91) and it is probable that this will have happened during my data collection.

In turn, how I am defined by the group members may influence what they display to me. The circumstances in both rooms were complex and dynamic involving the midwife, the woman, the woman's birth partners and me. The work that was being enacted was complex and serious, involving the emotions of everyone in the room. It is possible that every person in the room was affected by my presence as a researcher (ie: recording what was happening). However, for all present, it may be as a result of simply being in the birth environment with concomitant factors that carry a considerable emotional burden.

Further reflection of Jodie and Kathy may start to illuminate the influence of my feelings about these two midwives on data collection and analysis. In my opinion, it was clear from the start of the observation that Jodie was managing a woman with very complex care requirements and she appeared to be doing it very well. She demonstrated an evidence base for care and provided woman centred care. The woman in Jodie's care was articulate and had a good understanding of her care needs. Jodie provided explanation for me during the observation. Kathy, on the other hand, was providing care for a woman whose care needs were moderate but who also had social problems requiring input from social workers at birth. The woman herself was less articulate but aware of the possible outcomes for her and her baby. Whilst Kathy's care was adequate, in my opinion, she appeared to be prioritising the student midwife as she asked if there were any assessments that needed completion. A request from the woman was not acted upon.

As a midwife these two care scenarios triggered judgements by me which may have impacted on my analysis of the data and the findings. I am an experienced midwife who observed midwives, unintentionally comparing what I saw with how I do things and how I think things should be done. As the analysis progressed I was able to look more at the data and the story that it told rather than the judgements that I had about care delivered. I did this by focussing on specific elements and looking for patterns or contrast with other parts of the data. My feelings towards the two midwives and the circumstances they found themselves in, are part and parcel of a very complex dynamic that will have contributed to the analysis and findings.

I selected both of these midwives for interview as they had given me such different views of information behaviour during observation. Whilst I could not have articulated it at the time, now I look back I suspect it is because they both triggered judgement and curiosity by the midwife in me.

8.1.3.2 Description

Once data collection was complete I wrote the background to the maternity unit (see section 5.1). From the point of choosing ethnography I always knew I would write this description of the labour ward. It has been done by previous ethnographers (Duneier 1992, Capote 1967, Whyte 1943). Knowing this, and seeing that it creates the scene for the reader I felt it would provide the foundation for my study. It also provides the context which, in conjunction with the findings after analysis could deliver the thick description that is the hallmark of ethnographic writing (Geertz 1973). As I wrote it there were times when I became aware of things that had happened during data collection. One was my feeling of trepidation on entering the labour ward office knowing that I would be positioning myself in the space of the staff who work there and asking to watch them work. In contrast I was aware that the sound of women screaming would present a different description to non-midwifery or non-obstetric staff than it would to me as a midwife. Whilst my perception of screaming on the labour ward is of a physiological process for others it may be one of extreme distress and pain that is not part of everyday encounters.

8.1.3.3 Interviews

Talking with midwives during interviews was very natural territory for me. I am a midwife and I was talking with midwives about things that they may do as midwives. I never felt any sense of withholding or discomfort. In fact, all the midwives were open with their answers⁴⁹. One to one discussions about midwifery with midwives is something I have always enjoyed⁵⁰ and this may be why the interviews were comfortable. From my perspective there was a trust offered by the midwife participants demonstrated by their openness. Sometimes it appeared that they needed to talk about aspects of practice and their concerns. My concern for this part of data collection stemmed from my inexperience at conducting interviews. I had prepared by learning about interview techniques. This

⁴⁹ During observation Kathy had presented a different picture than the other midwives but during interview was as open and lucid as the others

⁵⁰ As a supervisor of midwives I met with midwives to discuss midwifery on a regular basis

preparation was instrumental in increasing my confidence and supporting the collection of valuable rich data.

My presence and sense of self within this study is inherent and accepted as part of qualitative enquiry providing it is reflexive and adequately portrayed. It underscores the quality of the study and signals my development as a researcher. However, this means reflexivity in standing back from my data, analysis and findings but also reflexivity in how I featured in the data collection, data, analysis and writing up.

8.1.4 Methodology

Now the study is complete there is value in re-visiting the methodology and its ability to answer the research questions. This section discusses how well the principles of ethnography actually served my overarching goal. The data collection yielded lots of very rich data which, after analysis, was sufficient to answer the research questions.

Prior to this study there was minimal research of midwives' information behaviour. This meant that it was not possible to finely tune the research questions to a specific aspect of midwives' information behaviour. The research questions had to be broad and exploratory and the methodology had to be one that could accommodate this. The principles of ethnography worked well to provide an all-encompassing data set that has accommodated the research objectives. The findings show how midwives identify their information needs, the sources and types of information used by midwives, how they use information and what facilitates and inhibits information behaviour. Overall I can now state that I have an understanding of midwives' information behaviour in the labour ward. The evidence that this study has provided, supported by the wider literature on allied health professionals' information behaviour, would now enable more specific investigation in the future.

There is research around other health professionals' information behaviour. Whilst this was used to provide a framework for this study, it could not account for the context of the labour ward. Using the principles of ethnography I was able to gather data to enable findings relating to the very specific and unique social environment of the labour ward. This was facilitated by observational methods that did not rely solely on participant reporting and interviews that enabled meanings to participants to be identified. Through this I was able to identify the verbal information network (VIN), collaborative information behaviour and proficiency and adequacy all of which are contextual findings. For me as a

labour ward midwife, these were unanticipated findings. This suggests that the methodology enabled me to see a familiar environment as strange.

Meanings of things to midwives were made clear. I saw midwives using guidelines and printing them to file in women's notes. But I also understand that midwives see guidelines as difficult to find and complex to locate information in. I am aware that they may not always be applicable. An alternative methodology may not have shown these meanings (or the emic view) in conjunction with that which was observed (the etic view) and the influence they may have on midwives' practice in the labour ward context.

Whether the principles of ethnography were suitable for every aspect of the study is a point for discussion. From the outset I held the premise that the context and social construction of the labour ward were key drivers to addressing the research aims. This was based on the relevance of symbolic interactionism and its connections to the ethnographic method. These underlying theoretical perspectives suggested (principles of) ethnography as the methodology with the propensity to observe social interaction and meanings to individuals within the environment that would ultimately deliver the data to answer the research questions. Despite the ability of phenomenology to acknowledge the lived experience and meanings for the individual, I rejected it as a methodology because I was studying individual midwives within a group of midwives.

Consideration of the verbal information network (VIN) and sensory, cognitive and documented information formats present an interesting twist suggesting that further study may benefit from dividing the theoretical foundations of the study in further information research. The nature of the VIN and the verbal format when compared to all other sources, channels and formats suggests that *principles of ethnography* may not be the most appropriate overall methodology for further study. The VIN was social interaction. In contrast the other sources, channels and formats did not network or connect information to anyone else suggesting an individual experience. These differences are so marked that, in combination with appropriate research questions, further study of information behaviour should consider studying the verbal format separately from sensory, cognitive and documented formats. Reading, hearing, seeing, touching and knowing are all within the experience of the individual and only become part of the social interaction when verbally shared. Rather than the researcher interpreting what happens via the social interaction, it may be more illuminating to focus on the 'human experience' (Todres and Holloway 2010:177) and the meanings of things to individuals (Crotty 2013) by using a phenomenological approach with a cognitive constructivist perspective (Talja, Tuominen and Savolainen 2005). The verbal information network however is clearly in the domain of social interaction.

Ethnographic methodology can encompass a literature review. The literature review was able to set the scene and support the identification of research questions. In a study of contemporary midwifery practice it is possibly beneficial to draw upon a wider literature for the literature review rather than focussing on research papers only. Policy and practice reports were used to provide the context in the introductory chapter and were drawn upon in conjunction with the literature and theory in chapters six (Discussion) and seven (Implications for practice and research). This enabled the scene setting to be broad and focussed in clinical practice with an ample literature review to underpin the research aspects and define the research questions. It is conceivable that there may have been value in including research in the wider field of information behaviour research, however I elected to keep within the healthcare field to maintain focus and direction in a new area of study.

The study may have benefitted from a concept analysis of information behaviour. Whilst I considered what *information* was for midwives, I did not conceptualise *midwives' information behaviour* drawing instead on accepted definitions used in the literature. Then again, the exploratory nature of the study was to create an understanding of midwives' information behaviour and now that the study is complete, a concept analysis would have a stronger foundation if conducted on the findings of the study.

Midwives' information behaviour has now been explored and I am a more experienced researcher. There is value in considering the methodology in the light of this and the findings. Ultimately, the principles of ethnography enabled me to see data unfolding in the field

‘The value of being a participant observer lies in the opportunity that is available to collect rich detailed data based on observations in the natural settings’ (Burgess 1984:79)

This was always going to be one of my principle overarching goals. It is this ecological validity that resonated with me personally in a way that other methodologies could not.

8.2 Reflection on the ethical issues of research in the labour ward

This section seeks to compare the anticipated ethical issues declared at the outset of the study with those experienced during data collection and during the period of my studies. It reflects on my preparation for data collection based on my expectations of the field, my transition from midwife to midwife researcher and contemplation of my experience of midwife distress and poor practice. I also consider the request to the ethics committee to observe in the intimate space of the labour room and issues of data verification and time

to consent. This reflection is a valuable part of my journey to become a midwifery researcher but also for other researchers in midwifery as it highlights issues that I could not and did not foresee.

8.2.1 Preparation

Preparation for data collection was made explicit by the consultant midwife at the maternity unit where data was collected. She requested that I inform the multi-disciplinary team that research was taking place. This prompted the following in my ethics application:

I will inform midwives and the multi-disciplinary team that data collection will be taking place via posters, emails and meetings. This has been agreed by the Consultant midwife *Ethics submission 2011*

Posters were placed around the unit prior to data collection⁵¹ and emails sent but many staff appeared unaware of my research study when I arrived. I attended a labour ward meeting (see 3.6.3 Professional issues) to inform staff that the study was taking place. The meeting attenders were concerned about poor practice⁵². As written in the thesis (3.6.3 Professional issues) my reflection is *who am I to be the judge of poor practice and, in the event of poor practice, I would intervene if the midwife did not*. I had an underlying belief that I would not see poor practice. With hindsight this is clearly a naïve position. On further reflection the ethical issue goes deeper. After the labour ward meeting it is arguable that I became a researcher duty bound by labour ward seniors to judge the practice of midwives in return for being able to conduct observation. This begs the question of whether midwives should have been informed by me via the Participant Information Sheet that I was going to be observing their practice and judging its quality as well as collecting data. This may not have been an incentive for midwives to take part in the study.

Furthermore, the labour ward seniors, as far as I am aware, did not know me, my values or my practice. They did not assess or confirm my midwifery competence at the meeting and therefore could have had minimal credential for asking for my judgement. Personal competence aside, there are many ways to do things in midwifery based on localised practice, personal preference, research evidence and the woman's input. All may be used validly. My personal opinion, based on another trust's values (my own) and without the consensus of the local staff may not be correct either. Likewise I did not have access to

⁵¹ Some were removed as they did not meet infection control standards

⁵² The term *poor practice* is difficult to qualify and is dependent on many complex factors.

women's notes or to trust guidelines. Practising midwives are required to declare their competence on an annual basis via their supervisors of midwives. I would question why a lone novice researcher from a different trust would be tasked with this role. Faced with this situation again I would raise this with the consultant midwife.

There is another point on this issue relating to the blurring of the boundaries between research and quality of midwifery practice. As a researcher and collector of data my role is arguably *data collection* rather than quality control. This latter point should have been raised at the labour ward meeting where my observational role in the labour ward was co-assigned to quality. Greater value may have been achieved with ethical approval for my anonymised observation transcripts to be read by the consultant midwife. As a clinical lead in the maternity unit, the consultant midwife's opinion is valid, credible and has a vested interest in the quality of midwifery care being delivered. It may have highlighted several instances of clinical care I observed that was not in line with my understanding of contemporary midwifery practice. This may have provided an opportunity for the consultant midwife to enhance clinical practice in the maternity unit through supervision and training. However, whilst this would not have impacted on my role as a researcher, it may still have de-incentivised midwives to take part or made them change their behaviour during observation or interview, thus hindering the potential for valuable and credible research to take place.

When the study was set up, the consultant midwife was a contact point for me to report back on the progress of data collection and issues that may arise. I met with her on occasions, usually in the labour ward whereupon we talked about data collection. On reflection of the events that I observed and the ethical complexities of reporting on practice there is a clear requirement for a more robust system of clinical governance within a research study such as this. Since my data collection took place, poor healthcare practice at Morecambe Bay and Mid Staffordshire have been detailed in national reports (Kirkup 2015, Francis 2013) with subsequent requirements for healthcare professionals duty to whistleblow on poor practice⁵³. A system of requirement for researchers to deliver anonymised data transcripts to a clinical lead within the research environment would enable poor practice (if it exists) to be adequately identified and then acted upon as required. This same system could also highlight excellent practice by competent, caring healthcare professionals.

⁵³ It should be noted that I did not have concerns about quality of practice to this extent

8.2.2 Midwife as researcher or researcher as midwife

In constructing my ethics application I received valuable guidance and direction about situations that may jeopardise my registration from one of my supervisors, who is a midwife. Her concern was that I would be drawn into practising midwifery in a trust with whom I had no contract. Several midwifery researchers identified this scenario with their observational research (Hunt and Symonds 1995, Kirkham 1992, Burden 1998). To this end I stated the following in my ethics application:

If emergency care is needed I will summon assistance and act in line with professional codes of practice. In order to be able to deliver midwifery care (only in an emergency situation) I will have:

- An honorary contract
- Current intention to practice
- Current registration with the Nursing and Midwifery Council *Ethics submission 2011*

Whilst this was put in place I still naively assumed that as a guest in a different trust I would be able to truly observe without becoming drawn into practice. The reality was that I was asked questions by midwives, drawn into conversations with obstetricians in delivery rooms and I handed various things at crucial times to midwives who had their hands full. On one occasion I found myself alone in a room with a woman whose cardiotocograph was showing abnormal decelerations. This was a progression of events that the midwife and coordinator had been aware of (rather than unexpected). I left the room, found the midwife and informed her. The midwife returned and a referral was made to the obstetrician. To my surprise and despite several significant symptoms the obstetrician did not recommend caesarean section but instead suggested the cardiotocograph was continued. Regardless of any research and quality boundary blurring, this particular observation of action presented me with an immediate ethical dilemma. I asked the midwife directly what she thought of the cardiotocograph trace, she felt it was abnormal and subsequently discussed it with her colleagues in the labour ward office. The consensus was that this was ok. The baby was delivered by caesarean section under general anaesthetic about four hours later that night⁵⁴. This is the entry in my field note diary:

I went to the sluice with the midwife and said (wrongly) ‘what do you think about that trace?’, she said that she thought it was not very good and told me that she was going to go back to the office and check that they thought it was ok. The docs confirmed that they thought it was fine and we returned to the room. Not sure about the ethics of this situation. Especially as the midwife forgot to take a

⁵⁴ On my arrival the following day I established what had happened.

urine sample from the bedpan she was disposing of when I was talking to her. The woman was sectioned during the night for continuing bleeds and poor trace *Field note diary: 16*

I am still surprised that it was not done sooner. The question remains as to whether I should have reported this incident to the consultant midwife. It is possible that I may have discussed it with her at the time – I genuinely cannot remember. Reacting to a situation like this was difficult. I was a guest in their labour ward observing midwives. I managed to precipitate a second opinion from the obstetricians. I could have stopped recording data and challenged the consultant who made the decision who could rightfully question who I am and my credentials for confronting them. I am also aware that they may have had information that I could not have known as I did not have access to the notes.

Despite being an observer there were some things that I simply did not see and could not have reported. When observing in a room I was aware that the midwife was waiting for the coordinator's opinion for a cardiotocograph trace. The midwife presented as unworried during the twenty minutes or so that she waited for the coordinator to come. On arrival the coordinator initially labelled the trace as sinusoidal⁵⁵ but downgraded within the same review to *pseudo-sinusoidal*⁵⁶. From my position in the room I could not see the cardiotocograph trace and could not have commented⁵⁷. Whether I should have asked to see the trace and offer an opinion is a matter for discussion. In the previous example the trace was easily visible to me and I did act on it. However, whether I should have read and offered interpretations of the traces on either occasion is negotiable. I was not there to practice midwifery but to collect data and, as an observer-as-participant (Gold 1958) I still stand by this position now. When I conduct research in the future I will ensure that I have a robust plan for practice based on my participant role and my understanding of data collection in labour rooms. This will be developed at the time with the consultant midwife (or research facilitator) based on my experience (and theirs) of collecting data.

Having an honorary contract gave me a sense of reassurance for the unexpected. In the event, there was very little that was not managed by the midwives in the study. The only emergency (as perceived by me) was clearly not considered *emergency* by the staff in the labour ward. On reflection a written protocol constructed with the input of the consultant midwife may have helped in circumstances of this type especially when immediate action may have been required. As has been detailed above, it was nearly impossible to conceive

⁵⁵ This type of trace is considered pathological (Gibb and Arulkumaran 1999)

⁵⁶ Mimicking the sinusoidal trace but benign

⁵⁷ Sinusoidal cardiotocograph traces are now recognised to be of inconsequential importance

what I may see that I could credibly record as poor practice and to act when things happened that may have required urgent changes of care. It would have required a midwifery researcher's detailed reflection such as this to adequately inform my conduct for safety during data collection.

8.2.3 Midwife distress

Another unforeseen issue was of midwives' distress. I did not anticipate any possibility of distress as evidenced by my ethics submission

This study will involve no identifiable risk for midwives and women *Ethics submission 2011*

I was confident that the ethical procedures I had put in place would be sufficient to ensure that all participants would be safe during data collection (and any publications). These included participants being aware that they could ask me to leave the room or choosing to withdraw from the study (see Appendix 9.5). I was also confident that my professional role as a midwife would be enough for me to recognise participant distress and act accordingly (ie: leave the room). During observation I felt that one midwife was finding it difficult to have me in the room. On asking she assured me that things were fine and she was happy for me to stay. This illuminates the ethical limitations of asking outright. The question is if I perceive distress is it my responsibility to leave the room and halt the collection of valuable data as I may have misinterpreted the midwife's feelings. Similarly, to ask and receive a favourable answer could be considered coercive as the midwife may feel obliged to let me stay.

An instance of potential distress was identified during an interview with the full extent of the negative effect only really being considered after the analysis and write up of the thesis. The midwife described a difficult night shift during which she cared for a woman with distinctly complex needs. Her description of the care was that it was awful. At the time I recognised that I was listening to a difficult situation I could relate to – a busy labour ward combined with complex care for which the midwife felt out of her depth. By the end of the interview I felt that the midwife needed guidance as to the value of further support. She had accepted debriefing with the obstetric consultant but it appeared that this was of questionable value. I suggested that she speak with her supervisor of midwives and the consultant midwife for both debriefing and considering possible lessons that could be learned. On reflection there would have been merit in developing a distress protocol for participants in my study in order to mitigate for these circumstances. As it was

focussed on information behaviour, the study was perceived to be low risk. What is clear is that whilst the focus of the study may not be distressing for midwives, the emotional work they do in the labour ward might be. Again the value of the consultant midwife seeing my anonymised transcripts of both observational and interview data may have provided a suitable additional failsafe to this situation. The Patient Advisory Liaison Committee are cited in the participant information sheet for support for participants – usually patients in healthcare research. For midwives who were the participants in my study, the consultant midwife or a supervisor or midwives would have been a more appropriate contact for midwives affected by distress during data collection.

8.2.4 Ethical requests

This section considers my request to collect data in the labour room, a short time period for consent and the value of data verification.

8.2.4.1 Collecting data in the labour rooms

I was initially concerned that the ethics committee would be unhappy with my request to collect data in the labour rooms as it is an intimate environment for women who may be vulnerable. By comparison, I felt confident that midwives would be less vulnerable than women due to their professional status in the labour ward and my status as a researcher. Television documentaries such as *One Born Every Minute* have demonstrated that the birth environment is not as sacrosanct as I had first imagined. As a study of high risk care and midwifery practice, it was clear that data needed to be collected in the labour rooms. The data collected and study findings are testament to the value of this but it came with some ethical challenges that have already been detailed (see 8.2.2 Midwife as researcher or researcher as midwife). Whilst these are complex issues that require appropriate separation of quality and research, they are not insurmountable. It is imperative that observational research continues to take place in hidden places such as delivery rooms. These are isolated spaces where midwives work alone with women and their families. Sheila Hunt (1995) and Mavis Kirkham (1992) have already highlighted the benefits for women and improvements that can be made in midwives' practice through research conducted in labour rooms. For the progression of midwifery practice research in intimate spaces needs to continue.

8.2.4.2 Time for consent

It is common practice for healthcare researchers to facilitate a 24 hour period to consider whether to take part in research. However, for midwifery studies there are often exceptions to this⁵⁸ as the time bound nature of labour or requirement for diagnostic testing would mean the participant's applicability would expire before data collection began. I sought and gained ethical approval to obtain consent within the duration of the shift as the midwife/woman dyad would change by the next shift. I was confident that preparation for the study, the informed consent process and explicit participant right to withdraw would be adequate for a shortened time to consent. In the event, I received no complaints or indications of concern.

8.2.5 Data verification

At the time of data collection I considered data verification for the interviews and observations (see 3.5.2 Quality measures for qualitative enquiry) by the participant midwives. However, at study completion I am questioning whether data verification by a midwife *confirmer* should or could have been used. To an extent my doctoral supervisors fulfilled this role but only after data collection. As I observed in the field there may have been merit in finding a colleague or peer to observe and record data of the same field at the same time. The comparison and contrast of this with my own observations could have highlighted differences in the data, or similarities that would have provided verification. I have not read any accounts of such a confirmer, although I have heard anecdotal accounts of observational research being simultaneously recorded by one native and one alien researcher. There were no differences. There are of course potential ethical and practical issues with this. Firstly another person would need to be in the labour room having received informed consent. This would mean a greater impact on the midwife and woman. Furthermore, if simultaneous observations were recorded but quite different, whose would be considered more valid or would both have to be accounted for. On a practical level fitting two researchers into a room could have been problematic as the rooms were small and I was often squeezed into a corner.

⁵⁸ From personal experience

8.3 Section summary

At the start of the study I was a midwife but also a novice researcher, rather than an experienced midwifery researcher. Working as a midwife gave me a sense of confidence of being able to manage most things that arose, what I could not anticipate was the difference when I was in an observational research capacity not conducting clinical care. I gained valuable insight from my supervisor but also from the writings of other midwifery researchers. However, none prepared or enlightened me to the pitfalls of observing for data collection with a requirement for reporting poor practice superimposed upon it. My overriding conclusion is that there may be a place for someone, in this case the consultant midwife, to read anonymous transcriptions so that questionable practice can be credibly evaluated and acted upon. Clearly this would need to be stated to midwives and women in the study.

8.4 Next steps

This study has illuminated a previously unstudied area of midwifery practice. Amongst the many aspects of information behaviour identified and discussed in this thesis, the study has shown that information behaviour may provide some explanations for the lack of uptake of evidence based practice. The study also suggests that excellent information behaviour may contribute to quality in clinical midwifery practice. As one of the many recommendations of the confidential enquiries (Knight et al 2014) this study has analysed aspects of communication within teams which is crucial to effective team working. This may enable further study or work in practice to begin. The exploratory nature of the study made it complex. Now the study is complete, it is clear that having these research foundations means that more focussed studies could now take place.

Reflection on observation in the intimate space of the labour ward has raised valuable ethical and quality issues that may prove useful to researchers, research facilitators and ethics committees in the future.

As well as publications associated with midwifery research, my priority is to ensure that recommendations are developed to implementable objectives in clinical practice. The first is looking at ways to change practice so that women are included in discussions about their care on the labour ward such as bedside handover (Lu et al 2014). The second objective will be the production of accessible, usable and reliable information sources for practice, most notably through reconfiguring guidelines and supporting the effective use of computers. The third is to share the findings regarding effective information behaviour

with local and national educational programmes. I aim to present the study at a midwifery conference but also at an information behaviour conference. As stated earlier I would also like to consider research into passive information, information need and information types in midwifery/healthcare.

And so the final words are now written. This has been an exciting journey of learning and development, discovering new knowledge and considerations of new horizons. The concepts and ideas within this thesis need to be taken forward to ensure that the treasured contributions of the women and midwives who freely gave their precious experiences of labour, birth and complex high risk care for this study are presented for the benefit of the future generations.

Appendices

9.1 Literature search

The literature search began with broad search terms derived from the study title:

- Midwi*
- Information

Further search terms were derived from initial searches using the above search terms and from reading identified studies. As the search continued aspects of information behaviour such as *seeking* and *access* were used as search terms to ensure that all possible terms had been covered. Using search terms such as *labour ward*, *delivery suite* and *clinical practice* were unproductive even when used in conjunction with *information behaviour* or *information seeking*. I also used *nurs** and *primary care* as these are the allied health professions that resemble the one to one nature of midwifery care in the labour ward. Ultimately *midwi** and *nurs** were both systematically combined with each of the information and knowledge search terms.

At the outset of the literature search the criteria for the focus of research were as follows:

- Midwife or allied health professional searching for information during practice
- 2004 to point of data collection (October 2011)
- Systematic review or primary research only

It was necessary to search allied health professionals information behaviour as I could not find any studies of midwives' information behaviour. Searches were limited from 2004 to current in response to the volume of studies pertaining to information behaviour and the increasing use of internet resources since 2004. I chose to use primary research or systematic reviews only rather than book entries or conference proceedings as research is more consistent for critiquing purposes.

The details of the databases searched, search terms and hits and identified studies are in Table 9.1.1

Table 9.1.1 Search terms, databases used and hits in the literature search

Search Terms	AMED	CINAHL	EMBASE	MEDLINE	Web of Science
	<i>Hits/studies</i>	<i>Hits/Studies</i>	<i>Hits/studies</i>	<i>Hits/studies</i>	<i>Hits/studies</i>
Midwi* information behaviour	0/0	1/0	9/0	2/0	0/0
nurs* information behaviour	0/0	14/0	205/4	19/1	16/7
Midwi* information need*	0/0	8/0	22/0	25/3	210/3
Nurs* Information need	13/0	141/5	84/2	191/8	60/7
Midwi* Information seek*	0/0	4/0	5/0	8/0	0/0
Nurs* Information seek*	2/0	78/1	19/1	68/2	19/2
Midwi* information	1/0	65/1	69/0	153/4	26/1
Nurs* Information	30/0	4185/0	593/0	1889/0	1077/0
Midwi* Information access	0/0	1/0	56/0	3/0	3/0
Nurs* Information access	2/0	36/1	656/0	32/0	25/0
Midwi* Information use	0/0	1/0	Syntax error	5/0	6/0

Search terms (contd)	AMED	CINHAHL	EMBASE	MEDLINE	Web of Science
	<i>Hits/studies</i>	<i>Hits/studies</i>	<i>Hits/studies</i>	<i>Hits/studies</i>	<i>Hits/studies</i>
Nurs* Information use	2/0	100/2	Syntax error	103/1	223/3
Midwi* Knowledge management	0/0	2/0	0/0	51/0	2/0
Nurs* Knowledge management	0/0	135/0	12/0	150/0	122/2
Evidence based practice Information need	0/0	3/0	5/0	139/6	1/0
Evidence based practice Midwi*	0/0	76/0	27/0	78/0	8/0
Decision making Information need	4/0	187/5	101/1	18/1	25/0
Primary care Information behaviour Knowledge management	1/0	32/1	1/0	78/6	0/0
Primary care Information need	12/0	1/0	99/1	87/3	16/2
Totals	0	16	9	35	27

Approximately 87 research articles were identified from the initial search via their title and abstract. However, during the course of the literature search it became clear that some aspects of information behaviour research were too dissimilar to my study to be of value. Information behaviour in healthcare is a broad area and the study setting is central to relevance. The labour ward is an acute clinical environment with the midwife providing care to usually one woman and, in information behaviour terms, has little in common with the longer term and less time pressured community environment. Research in acute clinical environments is more applicable. Initial searches also found studies covering information requested by patients rather than health professionals. The information behaviour of midwives (or allied health professionals) arguably has a different focus to that of patients or caregivers and, as such, provides minimal support for this study. The work of theatre teams' information behaviour was also deemed inappropriate primarily due to the focussed team approach in a dedicated and planned environment always in the presence of an unconscious patient. Finally, some healthcare information behaviour research is focussed specifically on one source such as electronic databases, or one specific aspect of information such as breastfeeding or the effect of an intervention to improve information seeking or evaluate one source over another. These aims changed the methodology as it worked toward a goal rather than an exploration. A similar position was found with those studies directly relating to decision making and evidence based practice. As the aim of this study was the exploration of midwifery information behaviour it was clear that these studies were not relevant. Therefore, the criteria were modified to ensure the search limit was manageable and that directly relevant and analogous research only was included. The adoption of this modified criteria ensured that the search produced relevant studies that could provide the current knowledge base and theories used for allied health professionals' information behaviour in the patient environment.

Abstracts and titles of English language journals were searched. Following identification from the databases, the references lists of each article isolated were also scanned for suitable studies for inclusion according to table 2.1.1 in Chapter Two.

As noted above there is information behaviour research in the primary care arena. I searched this area on the databases for coverage of doctors' information behaviour as *doctor* was not specific enough. Some studies in the primary care search remained eligible as there was hospital care input. Ultimately the literature search does not encompass research of primary care practitioners' information behaviour. However, the search term *primary care* yielded studies that enabled me to realise that primary care was not relevant to my study but also yielded studies that ultimately remained in the review.

After removal of doubles and a first scan of suitability eleven studies were identified as meeting the criteria for the literature review. The reference lists of each of these studies were then scanned for other studies that may meet the inclusion criteria. Twenty six studies were identified in this way. However, after removal of doubles and suitability checking only two studies remained. This gave me thirteen studies from both the database search and reference list search that met the inclusion criteria. Once in-depth reading began one further study was discarded as it became evident that it was information seeking not in the presence of patients. The twelve selected studies are listed in table 2.1.2 (main thesis).

Once studies had been identified for inclusion in the literature review, each author and research was searched in Web of Science for related literature and/or citations in subsequent literature. The search details are listed in table 9.1.2

Table 9.1.2 Citations search for each study selected

<i>Researcher</i>	<i>Research history</i>	<i>Citations</i>	<i>Studies identified</i>
Bertulis	4 studies	4	0
Bonner	56 studies	2	0
Cheeseborough	1 study	0	0
Cranley	13 studies	2	0
Davies	17 studies	38	0
Estabrooks	79 studies	53	3 (Bonner & Lloyd, Cranley, Spenceley)
Lappa	8 studies	10	1 (Davies)
Lloyd	22 studies	8 (see Bonner)	0
McKnight	17 studies	19	1 (Cranley)
Sharit	13 studies	1	1 (Spenceley)
Spenceley	6 studies	18	1 (Bonner)
Thompson	28 studies	50	0

No new studies were identified as relevant to this study after searching author research history and citations. No studies were found relating only to midwives or the labour ward environment, however, studies focussed on nurses, intensive care nurses, renal nurses and doctors as detailed in the following table 9.1.3.

Table 9.1.3 Studies grouped by professions

<i>Profession</i>	<i>Study</i>
Nurses	<ul style="list-style-type: none"> • Bertulis (2008) • Bonner and Lloyd (2011) • Cranley et al (2009) • Estabrooks et al (2005) • McKnight (2007) • McKnight (2006) • Spenceley et al (2008) • Thompson et al (2004)
Nurses and midwives	<ul style="list-style-type: none"> • Bertulis and Cheeseborough (2008)
Doctors	<ul style="list-style-type: none"> • Davies (2007)
Nurses and doctors	<ul style="list-style-type: none"> • Lappa (2005) • Sharit et al (2006)

The search revealed that there are several theoretical frameworks that underpin information behaviour in the midwifery (and healthcare) arena:

- Information behaviour
- Evidence based practice
- Decision making
- Library science or services

These are listed in Table 9.1.4

Table 9.1.4 Studies grouped by theoretical frameworks

<i>Theoretical Frameworks</i> (some are in more than one group)	<i>Study</i>
Information behaviour	<ul style="list-style-type: none"> • Bonner and Lloyd (2011) • Davies 2007 • Lappa (2005) • McKnight 2006 • McKnight 2007 • Sharit et al (2006) • Thompson et al 2004
Evidence based practice (EBP)	<ul style="list-style-type: none"> • Bertulis 2008 • Estabrooks et al 2005 • Spenceley et al 2008
Library science or services	<ul style="list-style-type: none"> • Bertulis and Cheeseborough (2008) • McKnight 2006
Decision making	<ul style="list-style-type: none"> • Cranley et al (2009) • Thompson et al 2004

The literature search was enhanced by searching the Cochrane Review database using the following search terms:

• Midwi* and information behaviour	1 hit	0 studies
• Nurs* and information behaviour	17 hits	0 studies
• Midwi* and information need	10 hits	0 studies
• Nurs* and information need	70 hits	0 studies
• Midwi* and knowledge management	2 hits	0 studies
• Nurs* and knowledge management	9 hits	0 studies

There were no reviews directly relating to information behaviour and knowledge management of midwives and nurses. I then searched by topic and found several related reviews in the Effective Practice Health Systems (Implementation Strategies) section:

- Effectiveness of organisational infrastructures to promote evidence based nursing practice (review)
- Interventions for promoting information and communication technologies adoption in health care professionals (*ICT based*)
- Interventions to improve question formulation in professional practice and self-directed learning
- Printed educational materials: effects on professional practice and healthcare outcomes
- Guidelines in professions allied to medicine
- The effectiveness of strategies to change organisational culture to improve healthcare performance
- Interventions for improving the adoption of shared decision making by healthcare professionals
- Interventions to improve the use of systematic reviews in decision making by health system managers, policy makers and clinicians
- Local opinion leaders, effects of professional practice and health care outcomes

However, these reviews were related and not directly relevant to my study. The Cochrane database search was considerably smaller than the main database literature search due to the specific nature of the reviews and the smaller number of reviews available compared to the databases.

The twelve selected research papers were all included for the review.

9.2 Critiquing tool

Adapted from Burnard and Morrison (1994)

Abstract and title:

- Does the title convey the study clearly and accurately?
- Are the aims, design, results and conclusions clear in the abstract?
- Is the importance of the study justified?
- What is the context of the study?
- Does the literature review show gaps in the knowledge which the study seeks to fill?

The research problem:

- Is it clearly stated?
- Is the problem researchable?
- Are the aims of the study clear?

The literature review:

- Is the review of the literature relevant to the topic?
- Is it comprehensive?
- How current are the sources of literature?
- Is the referencing method used correctly?
- Is the review laid out logically?
- Is a summary offered at the end of the review that spells out implications for the present study?

Design of the study:

- What is the study design?
- Is it appropriate?
- Are the main concepts (to be measured) defined?
- Is there a statement of the overall design of the study?
- Is there a discussion about the theoretical framework of the study?
- If hypotheses are offered, are they unambiguous and clearly stated?

- Is there a clear description of what the researcher planned to do?
- ...what the researcher did?
- ...how the researcher did it?
- Are relevant technical terms defined clearly?

Funding and ethics

- Was ethical approval obtained?
- Are there any ethical implications?
- Is there potential conflict of interest from funders?

Data collection:

- What is the method of data collection and is it described clearly?
- Does the researcher justify the use of the method?
- Who collected the data?
- Is there any likelihood of bias?
- Is the sample discussed in terms of relevance and size?
- Who was selected?
- From what population were they selected?
- Is there a sample size calculation or justification of sample size?
- What was the precise method of selection and allocation?
- Is there a description of interventions or sample groups?
- Is the setting described?
- Are the instruments used for data collection clearly described?
- Are the issues of reliability and validity addressed?
- Is there a clear description of what the researcher did when data was collected?

Data analysis

- Are the methods of analysis appropriate for the data?
- Are those methods clearly described?
- What statistical methods were used?
- Is it clear how they were applied to the data and groups?
- Is the presentation of findings clearly laid out?

Results

- Are the results clearly presented?
- Are the results for all the aims presented?
- Are the results fully presented?

Discussion

- Is it a balanced discussion?
- Have all possible explanations for the results been given?
- Are the results discussed in the context of previous studies?
- Are the results fully discussed?

Conclusions and recommendations

- Are the conclusions that the researcher makes justified?
- Are the conclusions linked sufficiently with the researcher's original purpose?
- Are the recommendations practical?
- Has the researcher discussed the implications for further research?
- Has the researcher discussed the limitations of the study?
- Are the results generalizable?
- Overall structure and comprehensibility?

9.3 Literature critique summary

Table 9.3.1 Summary critique of research selected for literature review

Literature review in column two refers to any of: presence, absence or quality

No	<i>Authors, year, title and journal</i>	<i>Methodology: aims, literature review (LR), sample and setting (S&S), method, data collection (DC), analysis</i>	<i>Findings relevant to this study</i>	<i>Quality measures: reliability, validity and limitations</i>
1	Bertulis (2008) Barriers to accessing evidence-based information <i>Nursing Standard</i> 22(36), 35-39	Aim: examination of barriers to evidence based practice (EBP) in preparation for survey of nurses' information needs LR: conducted, 12 studies Method/DC: literature review S & S: nurses' and evidence based practice Analysis: not described	<ul style="list-style-type: none"> • Lack of time to access information • Lack of computer skills, search and appraisal skills, understanding of statistics and databases • Information selected by accessibility 	Reliability: difficult to ascertain as no search terms included or analysis Validity: search terms not included, only two databases searched, short time span Limitations: no process recorded for literature search

No	Authors, year, title and journal	Methodology: aims, literature review (LR), sample and setting (S&S), method, data collection (DC), analysis	Findings relevant to this study	Quality measures: reliability, validity and limitations
2	<p>Bertulis and Cheeseborough (2008)</p> <p>The Royal College of Nursing's information needs survey of nurses and health professionals</p> <p><i>Health Information and Libraries Journal</i> 25, 186-197</p>	<p>Aim: to find out nurses' information needs to improve practice and support lifelong learning</p> <p>LR: background literature included, no formal process to identify</p> <p>Method/DC: non-validated postal questionnaire survey</p> <p>S&S: 1715/7862 usable and complete from hospital, community, independent sector nurses and midwives (3%) identified through local 'champions'</p> <p>Analysis: numerical and percentages</p>	<ul style="list-style-type: none"> • 14.5% from NHS hospitals never use the internet at work • 26.3% from NHS hospitals use the internet daily at work • 49.4% from NHS hospitals had internet access when required • 1.5% of respondents always encouraged to search evidence for practice and had time to read during working hours, 21.5% never had time or encouragement • Nursing colleagues cited as information source especially for 'how to' information • Employer attitudes relevant to EBP 	<p>Reliability: aims slightly unclear, large sample size</p> <p>Validity: non-validated questionnaire</p> <p>Limitations: partially self-selected sample, limited analysis</p>
3	<p>Bonner and Lloyd (2011)</p> <p>What information counts at the moment of practice? Information practices of renal nurses</p> <p><i>Journal of Advanced Nursing</i>, 67 (6), 1213-1221</p>	<p>Aim: to identify how renal nurses experience information about renal care and the information practices used to support practice</p> <p>LR: background literature included, no formal process to identify</p> <p>Method/DC: qualitative interviews informed by Habermas and Schatzki</p> <p>S&S: six renal nurses from satellite renal units</p> <p>Analysis: thematic</p>	<ul style="list-style-type: none"> • Information landscape created by sharing of information between nurses • Development of mutual understanding about practice • Social dimension to information 	<p>Reliability: (transferability) interviews and analysis conducted by both researchers</p> <p>Validity: (credibility) aims, methods and outcomes compatible</p> <p>Limitations: qualitative research limitations acknowledged by the authors</p>

No	Authors, year, title and journal	Methodology: aims, literature review (LR), sample and setting (S&S), method, data collection (DC), analysis	Findings relevant to this study	Quality measures: reliability, validity and limitations
4	Cranley, Doran, Tourangeau, Kushniruk and Nagle (2009) Nurses' uncertainty in decision making: a literature review <i>World Views on Evidence Based Nursing</i> <i>First Quarter 2009, 3-15</i>	Aim: using literature review to determine how nurses clinical uncertainty is conceptualised in nursing literature LR: conducted, 23 studies Method/DC: literature review S&S: nurses Analysis: narrative/thematic	<ul style="list-style-type: none"> • Little exploration of nurses' uncertainty • Nurses rely on experience, preparation and discussion with colleagues to alleviate uncertainty • Uncertainty is operationalised as level of confidence in decision making • Few studies of information need per se • Nurses need ready access to information due to lack of time 	Reliability: well documented search criteria, details of analysis limited Validity: search terms and aims compatible Limitations: no detailed discussion of analysis, no limitations identified by authors
5	Davies (2007) The information-seeking behaviour of doctors: a review of the evidence <i>Health Information and Libraries Journal</i> 24, 78-94	Aim: review of literature of information seeking of doctors LR: conducted, 34 studies Method/DC: literature review S&S: hospital and community based doctors Analysis: narrative	Various types of information need <ul style="list-style-type: none"> • Types of information need: diagnosis, drug therapy, epidemiology and treatment • Foreground and background needs • Information seeking for single facts and substantive literature searches identified as different • Time is a factor for effective information seeking • Information retrieval reliant on good searching techniques 	Reliability: clearly conducted literature search, analysis not described Validity: yes according to search terms Limitations: not stated by authors, analysis method not clear

No	Authors, year, title and journal	Methodology: aims, literature review (LR), sample and setting (S&S), method, data collection (DC), analysis	Findings relevant to this study	Quality measures: reliability, validity and limitations
6	Estabrooks et al (2005a) Sources of practice knowledge among nurses <i>Qualitative Health Research</i> 15, 460-476	Aim: categorisation of kinds of knowledge used by nurses in practice LR: background literature included, no formal process to identify Method/DC: Secondary data from case study of two ethnographic studies, data collected by interview, card sorting interview, field notes, focus groups S&S: adult and paediatric nurses (number not defined) from four hospitals Analysis: NUD*IST, thematic by authors	<ul style="list-style-type: none"> Practice knowledge is social interactions, experiential knowledge, documentary sources and a priori knowledge Documentary sources identified 	Reliability: (transferability) clear purpose of primary data not clear Validity: use of secondary data may influence, but aims and outcomes compatible Limitations: sample size not clearly recorded
7	Lappa (2005) Undertaking and information needs analysis of the emergency care physician to inform the role of the clinical librarian: a Greek perspective <i>Health Information and Libraries Journal</i> 22, 124-132	Aim: to gain understanding of the information needs of emergency care clinicians LR: conducted but no details given Method/DC: Pilot/feasibility study using questionnaire and interview S&S: emergency departments of two hospitals, staff including consultants, registrars, nurses and librarians Analysis: interview analysis not recorded, numerical and percentage analysis of questionnaires	<ul style="list-style-type: none"> Majority of information needs occur when treating patients Nurses do not require information during work but doctors do 43% of participants are uncomfortable with computers 	Reliability: literature search not defined, Validity: non-validated postal questionnaire, unjustified sample size, incompatible participant groups, aims and outcome appear too well aligned Limitations: literature search unclear, lack of statistical analysis does not fit with conclusions drawn <i>Study withdrawn due to quality</i>

No	Authors, year, title and journal	Methodology: aims, literature review (LR), sample and setting (S&S), method, data collection (DC), analysis	Findings relevant to this study	Quality measures: reliability, validity and limitations
8	<p>McKnight (2007)</p> <p>A grounded theory model of on-duty critical care nurses' information behaviour</p> <p><i>Journal of Documentation</i></p> <p>63 (1), 57-73</p>	<p>Aim: to establish the observed behaviours of on duty nurses seeking information</p> <p>LR: background literature included, no formal process to identify</p> <p>Method/DC: participant observation and interview</p> <p>S&S: six registered critical care nurses representative of the population in the critical care unit</p> <p>Analysis: grounded theory, thematic analysis</p>	<ul style="list-style-type: none"> • Description of nurses' behaviour including interaction with patient and reading notes • Care is formed of informative interactions 	<p>Reliability: (transferability) process clearly defined</p> <p>Validity: (credibility) transcriptions member checked, thick description</p> <p>Limitations: acknowledged by author and related to the limitations of qualitative research, missing data due to not being recorded or to protect confidentiality, author is not a nurse</p>
9	<p>McKnight (2006)</p> <p>The information seeking of on-duty critical care nurses: evidence from participant observation and in-context interviews</p> <p><i>Journal of the Medical Library Association</i> 94(2), 145-151</p>	<p>Aim: description of on duty critical nurses information seeking from point of view of clinical librarian</p> <p>LR: conducted but no details given</p> <p>Method/DC: participant observation and interviews</p> <p>S&S: six registered critical care nurses representative of the population in the critical care unit</p> <p>Analysis: thematic</p>	<ul style="list-style-type: none"> • Nurses constantly sought information from nurses, patients, notes, computer systems, white boards and bulletin boards • Search methods included browsing scanning, monitoring, encountering • Types of information evident • Barriers to information seeking identified • Nurses were unable to do evidence based practice on duty 	<p>Reliability: (transferability) process clearly defined</p> <p>Validity: (credibility) transcriptions member checked</p> <p>Limitations: author not a nurse, limitations of qualitative study</p>

No	Authors, year, title and journal	Methodology: aims, literature review (LR), sample and setting (S&S), method, data collection (DC), analysis	Findings relevant to this study	Quality measures: reliability, validity and limitations
10	<p>Sharit, Czaja, Augenstein, Balasubramanian and Schell (2006)</p> <p>Assessing the information environment in intensive care units</p> <p><i>Behaviour and Information Technology</i>, 25 (3), 207-220</p>	<p>Aim: to understand factors impacting on accessibility usability and utility of information for patient care</p> <p>LR: not clearly defined</p> <p>Method/DC: Interview, task analysis, task simulation, verbal protocol, questionnaires</p> <p>S&S: 11 nurses and 6 doctors in the critical care unit</p> <p>Analysis: thematic and statistical depending on data collection tool</p>	<ul style="list-style-type: none"> • Differences in seeking information from different sources • Differences in ranking and importance of sources between nurses and doctors 	<p>Reliability: methods clearly defined</p> <p>Validity: multiple data collection tools to increase validity</p> <p>Limitations: complexity of the multiple data collection tools</p>
11	<p>Spenceley, O'Leary, Chizawsky, Ross and Estabrooks (2008)</p> <p>Sources of information used by nurses to inform practice: an integrative review</p> <p><i>International Journal of Nursing Studies</i> 45, 954-970</p>	<p>Aim: to establish the sources of information used by nurses in practice</p> <p>LR: conducted, 32 studies</p> <p>Method/DC: integrative literature review</p> <p>S&S: nurses</p> <p>Analysis: reduction, display, comparison and drawing conclusions</p>	<ul style="list-style-type: none"> • Information sources listed and ranked • Extra attention to unexpected finding • Context of nursing information seeking noted 	<p>Reliability: rigorously conducted review</p> <p>Validity: aims and outcomes compatible</p> <p>Limitations: acknowledged by authors, publication bias, inconsistent terminology</p>

No	Authors, year, title and journal	Methodology: aims, literature review (LR), sample and setting (S&S), method, data collection (DC), analysis	Findings relevant to this study	Quality measures: reliability, validity and limitations
12	<p>Thompson et al (2004)</p> <p>Nurses, information use and clinical decision making – the real world potential for evidence-based decisions in nursing</p> <p><i>Evidence Based Nursing</i> 7, p 68-72</p>	<p>Aim: exploration of decision making context when nurses engage with research based information</p> <p>LR: not clearly defined</p> <p>Method/DC: secondary analysis of ethnographic (in depth interviews, non-participant observation) data from decision making studies</p> <p>S&S: nurses and nursing managers</p> <p>Analysis: not documented</p>	<ul style="list-style-type: none"> • Information need is cognitive therefore difficult to study • Decisions show information need • Typology of nurses decisions • Decision drives information behaviour • Colleagues as information sources 	<p>Reliability: (transferability) some methods not clearly defined</p> <p>Validity: (credibility) volume of data</p> <p>Limitations: secondary analysis of data, analysis not described</p>

9.4 Conditions associated with high risk care

Conditions of pregnancy, that categorise a woman as higher risk include:

- Diabetes
- Obesity
- pre-eclampsia
- multiple pregnancy
- premature labour
- vaginal birth after caesarean
- medical or surgical conditions unrelated to pregnancy
- polyhydramnios
- oligohydramnios

Aspects of care categorised as high risk include:

- induction of labour (in itself and the reasons for induction)
- syntocinon augmentation
- epidural anesthesia
- Women who fulfil criteria for continuous electronic fetal monitoring according to local guidelines or NICE guidelines (Welsh 2008)
- Fetal blood sampling
- Requirement for intravenous antibiotics

Emergency events which categorise a woman to the high risk bracket include:

- cord prolapse
- antepartum haemorrhage
- postpartum haemorrhage
- fetal bradycardia
- maternal collapse

These conditions and emergency events would necessitate treatment in, or emergency transfer to, labour ward.

9.5 Participant information leaflet for midwives

Health
Sciences

UNIVERSITY OF
Southampton

Study: An ethnographic exploration of Labour Ward midwives accessing and using information in practice.

Researcher: *Ellie Jenkins, Midwife*

Ethics Number: 11/SC/0303

PARTICIPANT INFORMATION LEAFLET FOR MIDWIVES

Please read this information carefully before deciding to take part in this research. If you are happy to participate you will be asked to sign a consent form.

Thank you for your interest in this project. This letter gives more information as to how the research will be conducted, if you have further questions please do not hesitate to ask. *This research project has been reviewed by NRES Committee South Central – Oxford C.*

What is the research about? I am a midwife currently studying for a doctorate at the University of Southampton. Over the last few years I have become more interested in how midwives access and use information during practice and, as such, have decided to research this area. This part of my study has been funded by the Royal College of Midwives Ruth Davies Research Bursary, I have also been awarded funding from NHS Education South Central, Iolanthe Midwifery Trust and Hampshire and Isle of Wight Comprehensive Local Research Network. My research sponsor is the University of Southampton.

Why I have been chosen? You have been chosen because you are a midwife who is currently giving care to a high risk woman on the Labour Ward.

What will happen to me if I take part? I will ask you for your written consent. I will also ask you to gain the verbal consent of the woman for whom you are caring, similar to when introducing midwifery or medical students. If you decide to take part, I will observe you for a period of 1-3 hours, taking notes and occasionally asking you questions as you provide care for your woman. I may observe you again on another day when you have another woman to care for. In a few weeks' time, if you agree, I will meet with you for a more in-depth discussion/interview about how you work on the Labour Ward. Please be aware that I am not able to practice as a midwife during my time on the Labour Ward and I would ask that you treat me as an observer only. It is possible that you will be directly quoted in any publication of this research project, however, confidentiality will be maintained.

August 11/Version 2/Participant Information Leaflet for Midwives

Are there any benefits in my taking part? There may not be many benefits to you as an individual but this study will hopefully improve our understanding of how midwives work which may then contribute to improving how we organise midwifery care. You may find that you do benefit from taking part, as you will be given an opportunity to discuss aspects of how you work.

Are there any risks involved? Any risk will be minimal. This is an observational study only.

Will my participation be confidential? As far as possible yes, but your colleagues will probably be aware that you are taking part, as will the woman you are caring for. However, the data I collect will only be accessible to me and my immediate supervisors in compliance with the Data Protection Act and University of Southampton policy. The only exception being if there are any concerns about the safety of the mother or baby with regard to the *Safeguarding Children Act*. When the data is published as part of the final study you will not be named as a participant.

What happens if I change my mind? You are free to withdraw from the study at any time, you do not need to give me a reason. The woman in your care may also choose for me to stop observing you, she will not need to give me a reason either.

What happens if something goes wrong? In the very unlikely event that you have a cause for concern or complaint about this study you should contact Zena Galbraith or Margaret Bush at Research & Enterprise Services at the School of Health Sciences (University of Southampton, Building 67, Highfield, Southampton, SO17 1BJ, Tel: +44 (0) 23 8059 7942, Email: sohsreso@soton.ac.uk). If you remain unhappy and wish to complain formally Zena Galbraith and Margaret Bush can provide you with details of the University of Southampton Complaints Procedure. If you have a concern or a complaint about the hospital, you should contact Consultant Midwife at the hospital.

Which insurance provisions are in place? In the event that something does go wrong and you are harmed during the research and this is due to someone's negligence then you may have grounds for a legal action for compensation against the Sponsor hospital but you may have to pay your legal costs. The normal National Health Service complaints mechanism will still be available to you. As the Principal Investigator is an employee/student of the University of Southampton, additional professional indemnity and clinical investigation insurance is in place.

Where can I get more information?

Ellie Jenkins, midwife and doctoral student, E.C.Jenkins@soton.ac.uk
Consultant Midwife, consultant.midwife@hospital.nhs.uk

9.6 Extract from study protocol

This is part of the original protocol submitted for interim assessment detailing the precise methods of data collection and sampling

Participants

Participants for this study will be midwives currently working in the labour ward.

Midwives giving midwifery care in the Labour Ward environment will all have the following attributes:

- Usually aged between 20 and 65 years of age
- Of professional status and working requirements of the NHS in the UK
- Registered with the Nursing and Midwifery Council, based on completing ‘an approved midwifery programme of education’ (NMC 2004: 5)
- A recognised standard of English speaking

Inclusion criteria for entry into the study

- Giving midwifery care in Labour Ward to a woman with high risk care
- A practising midwife of any age or experience

My premise for the study is that care given in the Labour Ward may be complex and unexpected, requiring midwives to access and use information as they work. I have decided to study midwives, as opposed to the obstetric team. There is no reason to restrict by age or experience as they all have the same professional responsibility. Complex needs would be ante/intra/post-natal women currently receiving care on the Labour Ward with any of the following conditions:

- Diabetes
- Pre-eclampsia
- Medical or surgical conditions
- Twins or multiple pregnancy
- syntocinon augmentation or induction
- regional analgesia (epidural or spinal)
- Antepartum haemorrhage

- Premature labour (less than 35 weeks gestation)
- Polyhydramnios or oligohydramnios
- Post-partum haemorrhage
- Women who fulfil criteria for continuous electronic fetal monitoring according to local guidelines or NICE guidelines (Welsh 2008)
- Women receiving fetal blood sampling

There will be no comment on the rationale for intervention of any kind that is seen during the study (unless there are ethical considerations of poor practice).

Data collection site

I have decided to collect data for this study at a neighbouring trust. The rationale for this decision lies in the potential problems of collecting observational data in an environment where I know the staff and operational practices. It is likely to be threatening to my colleagues for me to collect data from them, it would also be impractical and likely to distort data. A consultant midwife at a neighbouring trust has kindly agreed to allow me to collect data for this project. Collecting data at a new site will require preparation for the midwives and obstetric team.

In order to inform midwives that data collection will be taking place, and in collaboration with the consultant midwife, I will attend staff meetings, place posters in the Labour Ward and send emails to midwives who work in the Labour Ward. As this study will also include the participant midwife interacting with other members of the multi-disciplinary team, it is vital to inform as many members of the team as possible that the study is taking place.

Sampling method

This study will use purposive sampling (Silverman 2009, Roper and Shapira 2000) from the group of midwives who work in the labour ward. As a result of prior communication (posters, emails and meetings) some midwives may come forward to take part in the research. After discussion with the consultant midwife, and in order to minimise selection bias of those midwives who self-nominate, I also plan to approach individual midwives and ask for their consent to be observed and possibly be interviewed for the study. This

approach was agreed with the consultant midwife as long as appropriate communication about the study has been completed prior to the start of data collection.

Observation during data collection

The number of midwives participating in the observation part of the study will be at least 10, with a maximum of 20. I will observe participant midwives directly giving care in the labour ward. I will attend across a range of day, night and weekend shifts and shift handovers. Observation of midwives will take the form of 'shadowing', a role similar to the role of medical student or first year student midwife.

I will observe an individual midwife for a period of between 1-3 hours at a time, termed a midwife episode. Time will be allowed between midwife episodes to allow time to make further notes and also to allow for fatigue for me and the participant midwives.

In an 8 hour period I may observe 3 or 4 different midwives or I may observe 1 or 2 midwives twice each. Each observation of a midwife will last between 1 and 3 hours.

My intention is to observe as many different midwives as possible, however, if the same midwife was present on different days and caring for a woman with different needs I will consider asking to observe again with her consent.

This observation regime is designed to be flexible. I will request guidance from the Ethics Committee regarding the maximum number of midwives to be observed.

Interviewing during data collection

Not all midwives involved in the observation part of the study will be interviewed. All midwives to be interviewed will have taken part in the observation part of the study. The number of midwives who will be interviewed will be up to ten, however there may need to be some flexibility in the interview part of the study and recognition of resources available (Silverman 2009). Determining the number of participants is difficult as qualitative studies do not rely on specific sample sizes and testing of populations in the way that quantitative research does (Proctor et al 2010), looking more to the depth and richness of data (Kingdon 2004). However, DePaulo (in Proctor et al 2010) suggests that a sample of ten is sufficient for studies not requiring variation within the group if this is supported by an appropriately thorough analysis.

Data collection methods

This study will use observation and post-observation interviews to collect data. I anticipate that 240 hours for data collection will be sufficient⁵⁹. This will cover 120 hours of observation, and 120 hours toward interviewing, transcribing fieldnotes and interviews, and the first stages of analysis.

Observation

I will take the role of non-participant observer (Roper and Shapira 2000, Donovan 2000). I am already a midwife, I will be exposed as a researcher to the participants and I will be studying a midwifery environment.

Data will be recorded by me, in fieldnotes and fieldnote diary. If resources allow I may use a netbook. Fieldnotes will be recorded whilst I am in the Labour Ward observing behaviour, and the fieldnote diary will be used after I have left the Labour Ward, to record my thoughts. In order to give a balance to my observation I plan to observe at different times including shift handovers, night shifts and across days of the week.

The observation period will begin with a detailed map of the labour ward including all relevant artefacts (which may only become evident during data collection), icons and tools used by the midwives, rooms and their uses, prominent areas such as the desk, telephones and others identified during the study. Each individual observation period will begin with a description of what is happening, including the number of women and midwives, doctors, healthcare support workers and any significant issues that may be happening which could impact on how midwives source information (ie: obstetric emergency in theatre which may take several hours to resolve, all obstetricians, anaesthetists and theatre staff unavailable). What may also be evident during observation is my professional judgement of the atmosphere and what this means to the midwives.

The information to be recorded in the fieldnotes also includes the times and dates of the observation. I will also record the experience of the midwife participant, and how long they have worked at the trust and as a midwife. I will only record relevant obstetric, medical and surgical information about the women being cared for and their ages as this may impact on the care the midwife gives. This type of data is considered necessary for the data analysis, and every precaution will be taken to ensure that women are not

⁵⁹ In practice this was much less

identifiable from obstetric histories recorded in this study. Specific demographic and identifying information will not be required.

During the observation part of the study I will observe midwives at the point in which they access and use information. I will, therefore, need to follow them should they leave the labour room. The types of information they use during practice will be noted in the fieldnotes. As far as possible I will record whether the midwife participant has used the information for practice. If appropriate I will ask the midwife how she has accessed and used the information. I will use my professional judgement when asking questions of midwives whilst they are providing care to ensure that there is no compromise to the care she is giving to the woman. My conduct in the presence of midwives and women will also be in accordance with NMC Code of Practice (NMC 2008).

Data collection by observation comes with recognised drawbacks. My presence in the labour room may inhibit midwives behaviour (Pope and Mays 2006a). If I am in the labour room, the midwives may use me as a source of information. Burden (1998) found that when the midwives were busy they asked for help from researchers. I will ensure at the start that participant midwives are aware that I am in an observational role only. Small tasks such as passing a vomit bowl or towel from a cupboard are not unreasonable and are unlikely to impact on data collection. Routine midwifery tasks such as administering syntometrine⁶⁰ or entonox to a woman may impact on data collection so I intend to keep these to an absolute minimum, even though I hold current midwifery registration and will have a contract at the trust. However, if there is ever any emergency care needed by a woman or a midwife I will summon emergency assistance as professional accountability will always override research activity. I will ensure that I have an Honorary Contract and current Intention to Practice to cover this eventuality.

Interviews

On completion of the observation part of the study, I will select 10 midwives who have been observed, to be interviewed. This creates an unusual sampling effect, in that I will be selecting from a previously purposively selected group. My initial plan is to use the midwives who were observed most frequently, and/or those midwives who used unusual information sources or who presented unusual data. My secondary plan is to use the midwives who are interested in being interviewed, as they are likely to comply with

⁶⁰ A drug administered to the woman, after the birth of the baby, to deliver the placenta

interview schedules and be forthcoming with information. Interviews will follow a semi-structured format and will be based on the information behaviour seen during the observation period.

The interviews will take a maximum of 1 ½ hours each. This is to ensure that productive data is being generated and to ensure that participants do not become fatigued. They will follow a semi-structured approach. The questions will relate to the data collected during observation and to questions about how information was accessed and used. The questions used for informal interview during data collection will also be used again if appropriate. There may be a significant time difference between observation and interview so examples of the particular participant midwife using information will be given to highlight what types of information they have used.

Study protocol for observation and data collection (originally cited as an appendix to the study protocol)

The following is a detailed list of procedures for the observation part of my study. On my arrival in Labour Ward for observation I will do the following:

1. Introduce myself to the shift leader or coordinator
2. Take notes about the surroundings and atmosphere on Labour Ward
3. On arrival to Labour Ward make appropriate introductions to ward co-ordinators or shift leaders and midwives
4. Take notes of surroundings on the Labour Ward
5. Ask the shift leader for guidance about which midwives I may approach to take part in the study
6. Knock courteously on the door and wait for answer
7. I will go away from the room if asked to or if there is an intimate procedure in progress, or any other reasons given
8. If welcome, I will introduce myself and my study to the midwife, and deliver a Participant Information Leaflet
9. I will ask the midwife to take part in the study, if she says no I will thank her and take note of her name so I don't ask her again unnecessarily
10. If she says yes I will ask for written consent and for details of her length of service at the trust and how long she has been a midwife
11. I will then ask the midwife to gain verbal consent from the woman

12. If the woman says no, I will thank the midwife and ask if the midwife would be happy to take part in the study on another occasion
13. If the woman says yes, I will enter the room when invited, introduce myself to the woman and her family, give a brief explanation of the study and give her an Information Leaflet
14. I will ask the woman if she is happy for me to record some details about her condition and her age
15. I will explain to the midwife and the woman that should they no longer want me in the room I will leave, I will not require reasons
16. I will explain to the midwife and the woman that I will be in the room with them recording notes on paper for between 1 and 3 hours
17. I will explain to the woman that I will be shadowing the midwife at all times and if she leaves the room I will leave the room too
18. I will explain to the midwife that I am observing only and am not able to carry out midwifery practice except in an emergency
19. I will find a space that is out of the way and sit and record notes for about 1 hour but up to 3 hours
20. Thank woman and midwife as appropriate
21. Leave room to write up notes and for short break
22. Identify another suitable midwife, or engage with the same midwife, and repeat process until eight hour observation period is over
23. Transcribe fieldnotes

The following is an explicit list of procedures to aid understanding of the interview part of the study.

1. Identify ten suitable midwives for interview, who will all have participated in the observation
2. Arrange interviews for each midwife on-site at the trust
3. Gain consent for interview
4. Gain consent for recording interview
5. Interview midwives referring back to observed data
6. Transcribe interviews

9.7 Data recordings from the field

Data recordings from the field

The nature of the labour ward and the field relations meant there was no need to leave the field to write traditional field notes (Fetterman 2010, Agar 2008) therefore no drawbacks of recording them, such as decay and missed data (Fetterman 2010, Agar 2008) or translation of codes or shorthand (Fetterman 2010). This enabled events to be recorded as they unfolded, thus enabling a 'rich immediacy of concurrent notes' (Fetterman 2010:117) and the avoidance of what may be missed in the field (Agar 2008). Whilst the possibility of a very initial analysis was sacrificed (Silverman 2006), the value of the immediacy of the observational data is a worthwhile price. Notes to follow up were inserted during the rest of the observation or during interviews (Agar 2008). Once the observational data was recorded it was not altered or amended in any way. This was to ensure it remained true to the vision of the field. Subsequent thoughts and ideas were recorded in the field note diary.

Field note diary

The field note diary is a combination of a diary of events during data collection and traditional ethnographic fieldnotes, written during the period of data collection. It provided an ongoing chronological commentary or background of thoughts about observation, the field, transcription and analysis, ultimately forming an initial stage of the analysis (Fetterman 2010, Roper and Shapira 2000) and the 'personal side of field work' (Spradley 1980:71). Recordings were entered into the diary under the date in which they were written. This meant that there was a facility to record new ideas (Emerson et al 1995) but still in chronological order and without contaminating the data with subsequently remembered, processed and arguably erroneous diversions in the data. It is questionable whether the study would benefit from writing up of 'full fieldnotes'. As the descriptive coherent story of what is or has been seen (Emerson et al 1995, Spradley 1979), full fieldnotes would have presented the first press of analysis but at the possible cost of accuracy. It is unlikely to have altered the analysis significantly.

9.8 Interview questions

- What influences the type of information you use for practice?
- What prompts you to look for information?
- What preferences do you have for types of information?
- Do you always use the information that you find?
- Did you apply this information to your practice for this woman?
- How did you know you needed to gain information for this?
- What influenced your choice of information source?
- Why did you choose this source particularly?
- Did you use this information to confirm your practice?
- Did you use this information to refute your practice?
- What made you use/not use the information?
- When you have asked for information, how do you know it is correct?
- Would you use this type of information again?
- Why?
- Will you remember this information and use it again?
- How do you know it is correct?
- When would you not ask for information?

9.9 Information leaflet for women

Health
Sciences

UNIVERSITY OF
Southampton

Study: **An ethnographic exploration of Labour Ward midwives accessing and using information in practice.**

Researcher: *Ellie Jenkins, Midwife*

Ethics Number: 11/SC/0303

INFORMATION LEAFLET FOR WOMEN

Thank you for your interest in this project. Please ask if you have further questions. *This research project has been reviewed by NRES Committee South Central – Oxford .C*

Who is the researcher? I am a midwife currently studying for a doctorate at the University of Southampton. I am interested in how midwives access and use information during practice and, as such, have decided to research this area. This part of my study has been funded by the Royal College of Midwives Ruth Davies Research Bursary, I have also been awarded funding from NHS Education South Central, Iolanthe Midwifery Trust and Hampshire and Isle of Wight Comprehensive Local Research Network. My research sponsor is the University of Southampton.

What will happen? I have asked your midwife to take part in my study and she has agreed. I will be observing your midwife while she works. I will take notes and occasionally ask your midwife questions.

I will ask you if I can record some details about your care and your age. I will be in the room for 1-3 hours. Please be aware that I am not able to practice as a midwife when I am in the room with you and your midwife.

What is the study about? This study will hopefully improve our understanding of how midwives work which may then contribute to improving how we organise midwifery care.

Are there any risks? This is an observational study only and any risk will be minimal.

Is it confidential? The data I collect will only be accessible to me and my immediate supervisors in compliance with the Data Protection Act and University of Southampton policy. The only exception being if there are any concerns for your baby with regard to the *Safeguarding Children Act*. When the data is published as part of the final study you will not be named.

What happens if I change my mind? You can ask me to leave the room at any time and you do not need to give me a reason. Your midwife may also ask me to leave and she will not need to give me a reason either.

What happens if something goes wrong? In the very unlikely event that you have a cause for concern or complaint about this study you should contact Zena Galbraith or Margaret Bush, at Research & Enterprise Services at the School of Health Sciences (University of Southampton, Building 67, Highfield, Southampton, SO17 1BJ, Tel: +44 (0) 23 8059 7942, Email: sohsreso@soton.ac.uk). If you remain unhappy and wish to complain formally Zena Galbraith or Margaret Bush can provide you with details of the University of Southampton Complaints Procedure.

If you have a concern or a complaint about the care you received from the hospital you should contact Consultant Midwife at the hospital on email consultant.midwife@hospital.nhs.uk)

Any complaint about the way you have been dealt with during the study or any possible harm you might suffer will be addressed. Please raise your concerns in the first instance with the Principal Investigator (that is the lead researcher), Ellie Jenkins, contact details are at the end of this form. If you wish to make a more formal complaint, please contact the Patient Advice and Liaison Service (available 9 am to 4.30 pm Monday to Friday, out of hours there is an answer phone).

PALS
Hospital Trust

Email: PALS@hospital.nhs.uk

Telephone:

Which insurance provisions are in place?

In the event that something does go wrong and you are harmed during the research and this is due to someone's negligence then you may have grounds for a legal action for compensation against the Sponsor, Hospitals NHS Trust but you may have to pay your legal costs. The normal National Health Service complaints mechanism will still be available to you. As the Principal Investigator is an employee/student of the University of Southampton, additional professional indemnity and clinical investigation insurance is in place.

Where can I get more information?

Ellie Jenkins, midwife and doctoral student, E.C.Jenkins@soton.ac.uk
Consultant Midwife, consultant.midwife@hospital.nhs.uk

9.10 Consent form for midwivesHealth
SciencesUNIVERSITY OF
Southampton**Study:** An ethnographic exploration of Labour Ward midwives accessing and using information in practice.**Researcher:** *Ellie Jenkins, Midwife***Ethics Number:** 11/SC/0303**Study Reference:****CONSENT FORM FOR MIDWIVES***Please initial the boxes if you agree with the statement(s):*I have read and understood the information sheet
(August 11/Version 2/Participant Information Sheet for Midwives)☐

I agree to take part in the observation part of this research project and agree for my data to be used for the purpose of the this study

☐

I agree to take part in the interview part of this research project and for my data to be used for the purpose of this study

☐

I agree to anonymous direct quotes being used in publications of this research project

☐

I understand my participation is voluntary and I may withdraw at any time without my legal rights being affected

☐

Name of participant (print name)

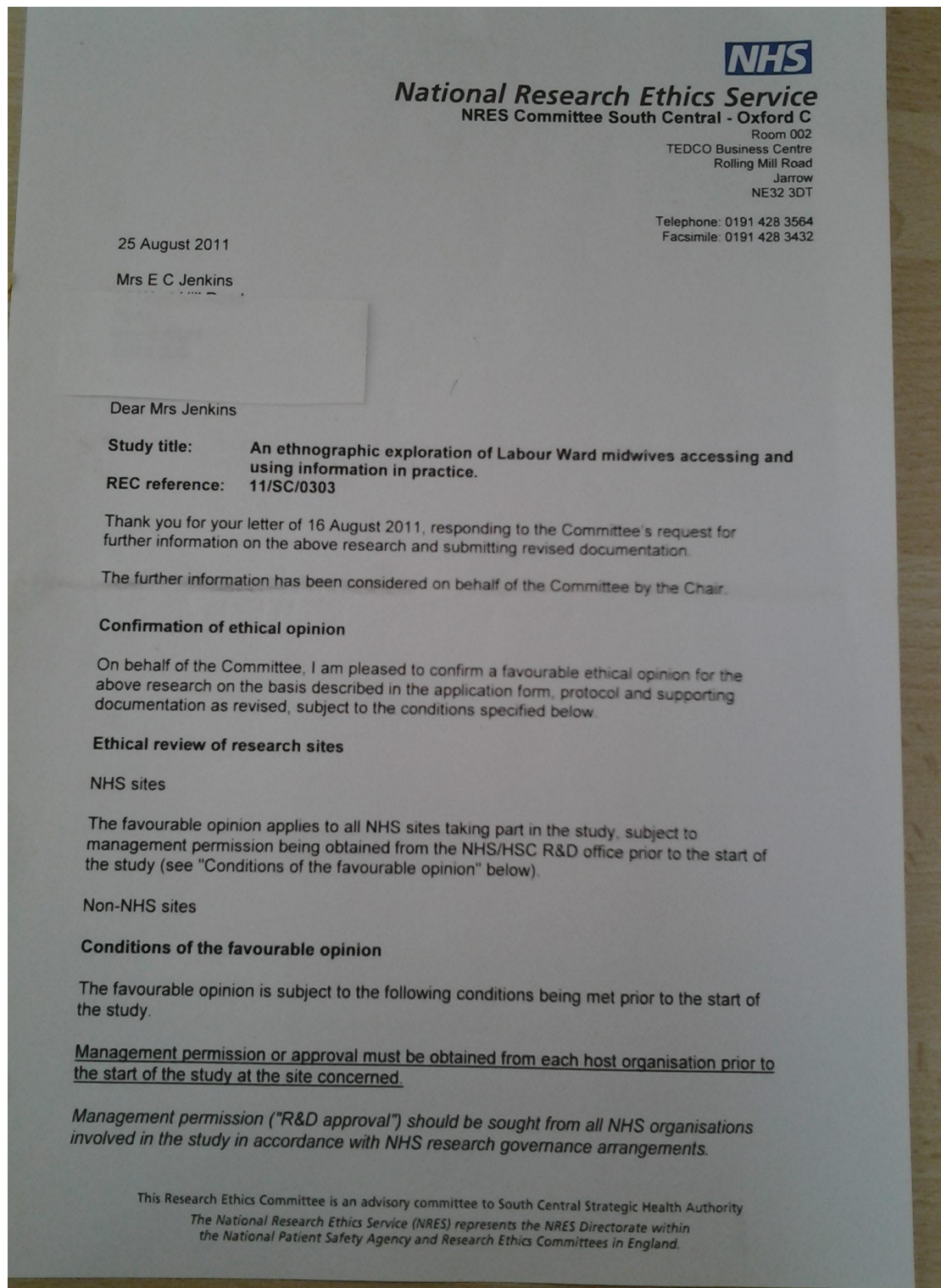
Signature of participant

Name of researcher (print name)

Signature of researcher

Date

9.11 Ethical approval



Guidance on applying for NHS permission for research is available in the Integrated Research Application System or at <http://www.rdforum.nhs.uk>.

Where a NHS organisation's role in the study is limited to identifying and referring potential participants to research sites ("participant identification centre"), guidance should be sought from the R&D office on the information it requires to give permission for this activity.

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

Sponsors are not required to notify the Committee of approvals from host organisations

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

Approved documents

The final list of documents reviewed and approved by the Committee is as follows:

Document	Version	Date
Advertisement	Version 1	01 April 2011
Covering Letter	Ellie Jenkins	05 July 2011
Evidence of insurance or indemnity	Ruth McFadyen (Email)	
Evidence of insurance or indemnity	Miller Policy No: PUNI01710	05 August 2010
Evidence of insurance or indemnity	AON Policy No: NHE-11CA11-0013	03 August 2010
Evidence of insurance or indemnity	Miller (Policy No: PPRI0711)	01 August 2011
Evidence of insurance or indemnity	AON (Policy Number: UKCANC37864)	01 August 2011
Investigator CV	Elizabeth Ruth Cluett	19 May 2011
Investigator CV	Doctor Susan Mary Colley	
Investigator CV	Elinor Jenkins	05 July 2011
Letter from Sponsor		11 May 2011
Other: GCP Attendance Certificate	Ellie Jenkins	07 May 2010
Participant Consent Form: Midwives	Version 2	01 August 2011
Participant Information Sheet: Midwives	Version 2	01 August 2011
Participant Information Sheet: Women	Version 2	01 August 2011
Protocol	Version 1.1	01 April 2011
REC application	IRAS Version 3.1 39889/225663/1/109	11 July 2011
Referees or other scientific critique report	Dr E R Cluett/Dr S Colley	07 April 2011
Response to Request for Further Information	Ellie Jenkins	16 August 2011

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees (July 2001) and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

After ethical review

Reporting requirements

The attached document "*After ethical review – guidance for researchers*" gives detailed

guidance on reporting requirements for studies with a favourable opinion, including:

- Notifying substantial amendments
- Adding new sites and investigators
- Notification of serious breaches of the protocol
- Progress and safety reports
- Notifying the end of the study

The NRES website also provides guidance on these topics, which is updated in the light of changes in reporting requirements or procedures.

Feedback

You are invited to give your view of the service that you have received from the National Research Ethics Service and the application procedure. If you wish to make your views known please use the feedback form available on the website.

Further information is available at National Research Ethics Service website > After Review

11/SC/0303

Please quote this number on all correspondence

With the Committee's best wishes for the success of this project

Yours sincerely

PP

Professor Nigel Wellman
Chair

Email: laura.kirkbride@sotw.nhs.uk

Enclosures: "After ethical review – guidance for researchers"

Copy to: Ms Diana Galpin

9.12 Sample of prepared observational data

Taken from Jodie: J=Jodie, coord=labour ward coordinator

J60 J started heparin last night at 8.15. They look at notes. That's 5pm there

J61 says coord. Admit ward 2pm (yes). 'down to lw (labour ward) 7pm says coord. Due

J62 prostin at 12.15, likely to be arm at 3rd, shall we stop prostin at 2nd

J63 prostin, depends what she is like at next VE (vaginal examination).

J64 She continues to look at notes, coord leaves room. 'oh good they've done

J65 it on here as well', she's got that and that (J is looking at notes and talking

J66 more to herself), TEDS on (to herself), writes in drug chart.

J67 I like to read through all their stuff myself, their history' J continues to

J68 look at notes carefully.

J69 Bp has been fine, J says it is important not to forget the other side of

J70 the maternity care outside of the cardiac problem. Jeez she was on

J71 alot of clexane 80 BD, wow.'

J72 She continues to look at notes 0751.

9.13 Sample of prepared interview data

From Nancy, N is the midwife, E is the interviewer.

NI81 E: when you look after high risk women on the labour ward, do you find that

NI82 you need to access information to give care to them?

NI83 N: *I think, depending on the type of high risk you are talking about, generally*

NI84 *whether they are high or low risk you need to gain access to certain information*

NI85 *to care for them because you need to know certain parts, you know, what*

NI86 *number of pregnancies they've had, what's happened in the past, what are their*

NI87 *medical problems, you know any drugs, so even say a low risk woman could*

NI88 *still be an asthmatic who (unclear) may not ever have been on anything*

NI89 E: right yeh

NI90 N: *But you need to know things because that could have contraindications for*

NI91 *what medications you might give or you know, certainly the high risk women if*

NI92 *you are looking at more PET or cholestasis you would want to know the recent*

NI93 *blood results, because it will be the first thing the doctors ask on the ward*

NI94 *round*

9.14 Examples of open coding

Coding was originally conducted with track changes but format changed for presentation purposes. The boxed text shows the codes for the data.

Georgie

G158 G looks at notes and ?scan pages. And a/n review pages, notes
 G 159 some things – not sure what. Door knocks, it is someone with a
 G 160 sandwich for the w. W 'can I eat' G says 'I will go and check that',
 G 161 leaves sandwich on the trolley and goes out of the room. 1824. G
 G 162 'no, I apologise.

- Midwife looks at notes and scan pages
- midwife looks at antenatal review pages
- woman asks midwife if she can eat a sandwich
- midwife says she will go and check if the woman can eat a sandwich
- midwife leaves the room to check if woman can have a sandwich the answer is no

G 168 G 'can I do your blood pressure?'
 G 169 G 'do you know what your baby is?', w 'yes a boy'.
 G 170 G triggers datex to do blood pressure.
 G 171 G 'I am increasing the syntocinon a wee bit', increases on pump
 G 172 and documents on CTG paper.

- Midwife asks woman if she can do blood pressure
- midwife asks woman if she knows what sex her baby is
- woman says her baby is a boy
- midwife does blood pressure on datex

9.15 Example of grouped codes

Information blocks guidelines

- 37IB the guidelines are cumbersome and long winded and they all look the same
- 55D difficult to find guidelines
- 35K my dyslexia stops me reading lots of text quickly
- 38K I don't always understand the words
- 83N most of the guidelines are wordy and long and that's time consuming
- 84N if I want to get to information quickly it is frustrating to read through information I don't need
- 33U a lot of the guidelines are not user friendly in a hurry
- 64U I would like to be able to access guidelines from the computers with no hold ups

No protocol or not according to protocol

- 69OE when things are not in the guidelines midwife asks the doctors and makes a plan with the doctors
- 10OH treatment for this woman is away from the usual protocol
- 11OJ previous student midwife says they are not following protocol
- 141OJ midwife knows that this woman is not on the usual heparin protocol
- 142OJ because woman is not on the usual heparin protocol the protocol cannot be used
- 34J sometimes we go outside the guidelines because of the woman's individual circumstances
- 80OT midwife is using the guidelines but it is for intrapartum and this is antenatal
- 97T when I didn't use the guidelines I had a plan
- 25OV midwife says if there is no guidelines there is usually a good plan

Where I put the guidelines

- 16IB in complex care we print the guidelines and put them in the notes
- 70J we print off the guideline and put it in the notes
- 72J put the guidelines in the notes for easier access
- 22OP midwife says she will print out the guidelines if it is something she has not seen before
- 65OR midwife says she prints guidelines for specific cases like cholestasis
- 42R I print off relevant guidelines and put them in the woman's notes
- 81R when I printed the guideline I could leave it for the next member of staff
- 79OT midwife usually prints off the guidelines for anything she is not familiar with
- 90T I print out the guidelines for high risk women
- 91T if I am unsure I would print out the guideline
- 5U I would print the guidelines and put it in the notes because I wouldn't remember
- 58Y I used to print off the guidelines and put them in the notes

9.16 Grouped codes - contractions

Counting contractions

- 90OB midwife recording contractions on CTG
- 139OF midwife counts contractions on CTG
- 172OF midwife counts contractions on CTG
- 274OK midwife and student midwife count contractions
- 49OM midwife counts minutes between 2 contractions on CTG
- 67OM midwife counts the minutes between contractions
- 120OO midwife asks student midwife how regular the contractions are
- 70OR midwife sees a contraction on the monitor
- 31OZ midwife counting contractions

Is this a contraction?

- 30E midwife asks woman if she is having a contraction
- 33OE3 midwife asks woman if she has a contraction
- 80OE4 consultant asks if pain comes and goes like contractions
- 100F midwife asks woman if she has a tightening as her tummy is hard
- 148OK student midwife says it may be a contraction
- 101OR midwife says woman is having a few niggles

Palpating and waiting for contractions

- 6OM midwife says contractions are coming
- 131ON midwife has hand on abdomen says belly is nice and firm all the time
- 132ON midwife is waiting for a contraction
- 137ON midwife says they keep missing contractions
- 142ON midwife asks student midwife if there is another contraction coming
- 62OS midwife says she can feel the contractions

Contractions on CTG

- 17OE3 midwife says contractions are showing up better
- 37OE3 the contractions are seen on the CTG
- 156OE4 midwife sees contractions on CTG
- 152OE4 contractions are on the CTG
- 87OF midwife sees contraction high on the CTG
- 34OK midwife says contraction are not picking up properly
- 52OK midwife sees a contraction picking up
- 265OK midwife looks at contraction frequency on CTG
- 82OD midwife says she can see contractions on trace

9.17 Open coding

Table 9.17.1 Overarching themes, themes and sub themes

<i>Over-arching theme</i>	<i>Categories</i>	<i>Themes</i>	<i>Sub themes (number of codes)</i>
Clinical care	Thinking about care	Plans	<ul style="list-style-type: none"> • The plan is (23) • The plan (5) • Quality of the plan (2) • Specialist plan (7) • Verbalising the midwifery care plan (5) • Checking woman ok with plan (10) • Communicating, confirming and asking about the plan (13) • Plans and the notes (5) • What affects the plan (8) • Problems and fudging with the plan (6) Planning care (13)
		Organising care	<ul style="list-style-type: none"> • Options • Preparation for clinic input • Organising care • Practical things Clinical care options
		Checking	<ul style="list-style-type: none"> • Checking names and hospital numbers (6) • Checking with something written (9) • Double checking and checking together (19) Checking something (22)
		Documentation	<ul style="list-style-type: none"> • Midwife writes in notes • Midwife documenting something specific • Midwife documenting in specific place • Midwife documenting by using another thing • Midwife documents on K2 • Looking at something specific in the notes • Looking in the notes for something specific • Looking at charts • Looking at paperwork Midwife looks at notes
	Doing the care	CTG's and fetal wellbeing	<ul style="list-style-type: none"> • Baby is happy (4) • Decelerations (29+28) • Noise of the fetal heart (1+21)

			<ul style="list-style-type: none"> • Midwife looks at ctg (4+12+29+15+28) • Loss of contact (5) • Comments about the ctg (6+25) • Ctg anomalies (26) • Midwife analyses decel (1) • Midwife documenting and reviewing ctg (12) • No ctg (3) • Dr c bravado (2) • Doing the ctg (14) • Ctg in the public (2) • Fresh eyes (4) • Adjusting the ctg (13+19+1) • Ctg ongoing (20+30) • Preparing or before ctg (6) • Ctg straps (7)
		Contractions	<ul style="list-style-type: none"> • What should happen with contractions (4) • Contraction frequency (7) • Coaching through contraction (10) • Contractions not on ctg (3) • Coping and using contractions (6) • Contraction distress (3) • Is this a contraction? (5) • Contractions on ctg (9) • Counting contractions (9) • Breathing through contraction (37) • Palpating and waiting for contractions (6)
		Routine clinical care	<ul style="list-style-type: none"> • Clear liquor • Disposal • Midwife assessing • Clinical issues • Clinical procedures • Privacy • Bleeding • Emergencies • Treatment and care • Clinical features • Vomit • Allergies • Palpation • Midwife directing woman's position • Comfort, hydration, eating and assistance • VE • Touch and equipment or drugs • Looking at clinical things

			<ul style="list-style-type: none"> Clinical things happened happening Pushing
		Observations and results	<ul style="list-style-type: none"> Doing observations (29+25+30+1+1) Waiting, delays and hindrance with obs (6) What I do with results (4) Planning, preparing obs and preparing for obs (17) Results and previous obs (5+24)
	Aiding the process	Pain and pain relief	<ul style="list-style-type: none"> Talking with the woman about pain relief (7) Offering pain relief (9) Using pain relief (15) Coping with pain (1) Epidural block (12) Epidural background (2) Before and after epidural (4) Epidural problems (7) Thinking about pain relief (5) Contractions, pain, pain relief only woman knows (23)
		Medication and IV's	<ul style="list-style-type: none"> Checking medication and fluids (15) Fluid balance (9) Documented and charted medication (9) Using information medication (17) Preparing medication (12) IV fluids (4) Increasing synton (14) Planning medication (8) Reason for medication (8) Anomalies to do with medication (13) No medication (10) Showing medication to student midwife (3) Giving medication (11+22) Medication and woman (19) Medication given (6)
		Equipment and tools	<ul style="list-style-type: none"> Midwife tools (1) Non electric equipment (4) What I do when I don't understand equipment (3) Updating or adjusting equipment (6) Routine use of equipment (9) Can't work, broken or wrong equipment (5)

			<ul style="list-style-type: none"> • Inaccessible equipment (5) • Looking at equipment (1) • Looking at the datex (5) • Looking at the pump (4) • Looking at the clock (7)
Midwife and woman	Midwife communicating	About asking	<ul style="list-style-type: none"> • Difference of opinion • Positives about asking someone • Reason for asking someone • The way I ask • Why I talk to a coordinator
		Asking and discussions	<ul style="list-style-type: none"> • Asking • Discussion with colleagues • Immediate history • Midwife asking for clinical help • Midwife asking for practical help and assistance • Midwife asking student midwife for information • Midwife asks and talks to doctors • Midwife communicating professionally • Midwife to coordinator • Midwife to midwife • Midwives asking about obs • Midwives discussing medication
		Asking woman	<ul style="list-style-type: none"> • Are you ok • Asking woman about pain • Asking the woman about her history • Asking the woman about pain • Have you passed urine • Midwife asking woman about using pain relief • Midwife asks woman about contractions
		Handover	<ul style="list-style-type: none"> • Handover • Handover quality • MDT handover • No handover • Questions and handover and referrals • Woman and handover
		Midwife explaining to woman	<ul style="list-style-type: none"> • Midwife explaining procedures to woman • Midwife explains clinical issues to woman • Midwife explains medication to woman • Midwife explains pain relief and things related to pain relief • Midwife explains the plan

		Midwife receiving	<ul style="list-style-type: none"> • Midwives listening and hearing • Opinions • Specialist staff explain , discuss and available
		Negatives with asking	<ul style="list-style-type: none"> • Negatives about asking • Uncertainty about asking • When the coordinator doesn't/can't help
		Talking with woman	<ul style="list-style-type: none"> • Midwife and woman chat • Midwife comments to woman • Midwife instructing woman • Midwife's response to woman • Midwife suggests to woman • Midwife talking to woman • Midwife warns woman • Student midwife talks to woman • Woman and midwife talk about contractions
		The round, the team and referrals	<ul style="list-style-type: none"> • Referrals • Round and the woman • Round decisions and discussions • Team decision • The round • The team
	Midwife woman dyad	Midwife woman dyad	<ul style="list-style-type: none"> • Consent and the course of clinical care • Finding out what the woman understands • Looking at the woman • Reassurance for woman • Recommendations • Speculating with the woman
	The midwife	How I work	<ul style="list-style-type: none"> ▪ Can't leave the woman ▪ How I work ▪ Keeping an eye ▪ Keeping up to date ▪ Midwife attention ▪ Midwife concerns and dislikes ▪ Midwife position ▪ Preparation for work ▪ Priorities ▪ Reassurance and confirmation ▪ Sorting things out ▪ What I usually do ▪ What the midwife is doing ▪ What the midwife sees
		Leaving the room	<ul style="list-style-type: none"> ▪ Leaving room for something ▪ Leaving room to find a person ▪ Midwife leaving room and a problem happening ▪ Midwife out of the room for decel ▪ Midwife out of the room

		Midwife identity	<ul style="list-style-type: none"> ▪ Experience ▪ Limits of myself ▪ Midwife identity ▪ Responsibility ▪ The professional ▪ What I am
		Non clinical work (the midwife doing)	<ul style="list-style-type: none"> ▪ Midwife doing non-clinical work ▪ Midwife mobile or bleep communication
		Student midwife	<ul style="list-style-type: none"> ▪ Midwife asking student midwife to teach ▪ Midwife explaining to student midwife ▪ Student midwife and midwife discuss and do ▪ Student midwife does ▪ Student midwife questions midwife ▪ Student midwife unsure
	The woman	Concerns	<ul style="list-style-type: none"> ▪ CTG, fetal heart and epidural ▪ Medication and condition
		Talking and asking	<ul style="list-style-type: none"> ▪ Woman's questions concerns about clinical issues ▪ Woman talks about pain ▪ Woman talks about pain relief
		What the woman is doing	<ul style="list-style-type: none"> ▪ Breathing heavily ▪ Can I pee? ▪ Hotness, itches, aches and numbness ▪ Sighing through contractions ▪ What the woman is doing ▪ Woman and touch ▪ Woman directing her position ▪ Woman making a noise
		What the woman knows	<ul style="list-style-type: none"> ▪ Blood taking ▪ Fetal movements ▪ Medication and condition ▪ Previous history from the woman ▪ PV loss ▪ Things that the woman will know that may or may not be in the notes ▪ Things women don't know ▪ What only the woman will know or knows ▪ What the woman could know but doesn't ▪ Woman as expert
		Woman and information	<ul style="list-style-type: none"> ▪ Information blocks with the woman ▪ Women and information ▪ Women giving information ▪ Woman used as an information source when there are other sources available

		Woman's choices	<ul style="list-style-type: none"> ▪ Birth attendants ▪ Woman's birth plan wishes
<i>Situational and conceptual</i>	Computers	Computers	<ul style="list-style-type: none"> • Information blocks computers • Ways the computer can work for me • What I find on a computer
	Doctors	Doctors	<ul style="list-style-type: none"> • Anaesthetists • Anticipation of what docs will say • Doctors action clinical • Doctors action other • Doctors asking doctors • Doctors asking midwives
	Finding things	Finding things	<ul style="list-style-type: none"> • Can't find or contact people • Finding things and people and obs • Finding what I need
	Guidelines	Guidelines	<ul style="list-style-type: none"> • Guidelines are not perfect • Information blocks guidelines • Limits of the guidelines • Lots of guidelines • Medication and guidelines • New changing and existing guidelines • No protocol or not according to protocol • Not using guidelines • Using the guidelines • What I do with the guidelines • What the guidelines are • What the guidelines do • Where I put the guidelines • Where the guidelines are
	Information	Actual information	<ul style="list-style-type: none"> • Alternatives • Books • I will always need some information • Previous history from notes • Student midwife giving information • The woman as an information source • What is in the notes
		Attributes of information	<ul style="list-style-type: none"> • Conditional information • Confidence in information • Information available • Information needed influences the source • I use specific information • Quality of information • Quickness and ease of accessing • The advantage of some sources of information

			<ul style="list-style-type: none"> • The unusual, rare and new • Things that help • What attributes make an information source good • What influences me • What makes me use information
		Information negatives	<ul style="list-style-type: none"> • I don't like some information • Information blocks notes • Limitations • Message delays and conduits • Not looking for information • Not using information • Problems getting information • Uncertainty with information • What isn't in the notes • What I wouldn't use • When I wouldn't look for information • When midwives can't get information • When the information is not so good • Wrong information
		What I do with information	<ul style="list-style-type: none"> • Confirming • Filtering • Interpretation of information • Looking for information • Midwife using values • Needing information • Using information • What I need • What I use • Working things out
	Knowing	Could know, should know	<ul style="list-style-type: none"> • Learning • What I should know and do • What I like to know
		Don't know	<ul style="list-style-type: none"> • I don't know • I don't know how I know • Not knowing the guidelines
		Know	<ul style="list-style-type: none"> • Coordinators knowing • Everyday stuff • Familiarity • Knowing medication • Knowing regimes and aspects of care • Knowing the guidelines • Knowing the likely plan • Knowing what I know • Things midwives know

	Relevant concepts	Relevant concepts	<ul style="list-style-type: none"> • Approachable colleagues • Conditional action • Conflict and discord or confusion • Errors and connections • Making time • No room for manoeuvre • Relationships • Retrospective • The right way • Trust • Not everyone fits into boxes
	Situational	Limits, barriers and workloads	<ul style="list-style-type: none"> • Barriers to action • Midwife workload • Physical environment as a barrier • Time limits and workloads
		Other staff	<ul style="list-style-type: none"> • Concerns about student midwives • Things a coordinator does • Specialist staff • Ward management and coordinator
		Situational	<ul style="list-style-type: none"> • Caseloading/caseloading other • High risk care • Low risk women • Misc • Situational • The bigger picture • Things we do here

9.18 Focussed coding

Table 9.18.1 Overarching themes, themes and sub themes

Overarching Theme	Theme	Sub theme
The midwife and information	Drivers	<ul style="list-style-type: none"> • Triggers • Purpose of information • No knowledge • Information required • Information need • Consequences
	The Process	<ul style="list-style-type: none"> • Process of information behaviour • Hierarchy • Preferences for information
	What midwives do	<ul style="list-style-type: none"> • Paper chase • Do I agree with information • Discussion with doctor/medical team • Discussion with midwife • Choosing source type • Information use • No worries
	Clinical care interface	<ul style="list-style-type: none"> • Handover and the round • Complexity of care • Information management • Conditional information • Predicted information • Required and gathered
	No information required	<ul style="list-style-type: none"> • No apparent information behaviour • No information required
Information attributes	Information attributes	<ul style="list-style-type: none"> • Usable information • Suitable source • Quality of information • Attributes of information • Information available • Feelings about information • Location of information
	Resources	<ul style="list-style-type: none"> • Knowledge • Woman • Guidelines, notes and plans • Multiple sources • Environmental information
	The right source/wrong source	<ul style="list-style-type: none"> • Poor information • Appropriate/inappropriate staff • Successful access • Unsuitable source • The right source

	No use, contradiction and barriers	<ul style="list-style-type: none">• Not using information• Can't get information• Information not available• Other barriers• Contradictions
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9.19 Drivers - integrative memos

This is a selection of integrative memos from the theme of Drivers (overarching theme The midwife and information). The codes are grouped according to the sub theme in bold. Italics in boxes are the integrative memos.

Triggers

Easier to look after them if you know all about them JI628

Sometimes Jodie gets the history and thinks it is complete and then something else might come out 'that spurs off a question' sometimes it doesn't make a difference and sometimes it will impact on their care JI268

If someone tells me something and they show me something else it makes me look for more information JI478, JI488, JI497

At 3am I may think I know the answer but I may get it wrong because I am tired KI473

On night duty I'm rubbish so I check everything UI236

This is a recognition that they are not functioning at their best.

I can never remember (the dermatomes) so I always look at the chart K46

Rachel does not like to give drugs unless she knows about them R79

No knowledge

Yolanda may never have heard of something 'you get people coming in with different conditions or different drugs and stuff, I'd look them up just so I know what it is and it is for, yeh or if it is a situation I haven't dealt ...with for a while' YI111

I asked open questions about the diabetes 'because it was an area that I felt probably I'm not experienced enough TI488

Tessa does not usually look after high dependency women T7

When the team have handover for high dependency woman they realise they do not have a protocol and they question where the information comes from H1

Is this an example of complex information behaviour?

Eugenie is caring for a woman with low platelets but she does not know if it affects care E242

'you check all the things that you know, you think you know them, you do know them because you have just qualified' KI315

Sometimes I don't know at all...I might be completely unfamiliar NI443

Information need

...going to my colleagues and saying oh, we are going to be doing such and such is there anything else we should be doing UI82

If I don't know something that what would prompt me, if I was uncertain about something, if I hadn't done something for a long time, if something was a new procedure or a new policy has come and something's changed UI65

Consider 'knowing what you don't know' in open coding here. Una's statement is clearly linked to that.

Tessa knew she needed information when the woman came back from theatre 'the information coming down the line got quite blurred and then perhaps then I should have then just gone straight back to somebody and just said right what are we doing because it all get very confusing TI315

I would get information from anything or anyone with anything I don't understand or know enough about because I'm like that, I'm paranoid especially with IV drugs TI586

Tessa goes on to talk about her paranoia with IV drugs and how she always gets the book out – incidentally she (and Kathy KI491) says this about the IV synton chart too

I never start synton without it (synton chart) KI491

Before the doctors started using the magnesium sulphate I wanted to make sure that we're drawing up the right amount because there's 2 different sorts of mgso4 RI450

Here Rachel is showing that she knows that something needs to be right but she does not know what is right so she checks. This is the same as knowing what you don't know. (see open codes).

You need to know things because that could have contraindications for what medications you might give or certainly the high risk women ... you would want to know the recent blood results because it will be the first thing the doctors ask on the ward round. NI90

Marie says her information needs are probably increased when the woman is higher risk because she does not feel 100% comfortable and she is more likely to ask. MI250

Kathy likes to look up the most recent blood results even though she knows her women well KI128 she also likes to know the cut off ranges for bloods KI162

The reason for finding information here is knowing that the doctors will ask you. See Kathy too as she refers to this. Nancy is also concerned that she needs to know things so the medications are safe. Also Kathy wants to know things so she can tell the doctor.

'lack of experience...just the lack of doing it often' DI183

Consider 'not every day' from open coding

Kathy knows what she doesn't know here.

The themes for information need appear to be unconfident, uncomfortable or unsure, needing information despite being experience (knowing what you don't know), unhappy – the situation changes,need to finish this

Beatrice can't remember drug dosages 'not something I will do every day' BI223

Consider 'not every day' from open coding here and the concept of practice.

Beatrice needs to know what has happened during the start of care BI117

If something doesn't happen very often YI40

If I don't do something all the time like sliding scale, I might have the folder open A76

This is another example of alongside information

9.20 Construction of integrative memos from focussed coding

The sub theme of *Woman* (theme: *Resources*, overarching theme: *Information attributes* see Appendix 9.18 Focussed coding) is suggestive of the woman as an information source. It becomes clear from this sub theme that some information arrives unbidden to the midwife and some is directly requested by the midwife.

B157 W out of toilet – says show. B says ‘I like that’

With the subsequent integrative memo:

This is an example of information arriving unbidden to the midwife. I suspect there is something here about gaining the midwife’s attention by the woman.

However, the following extract from Jodie’s interview was also placed within the sub theme *Woman*:

I find that getting a good patient or

J1113 woman’s history really tells me a hell of a lot as to how much of an impact their

J1114 current medical condition is making at that moment in time

J1115 E: so where would you get that history from

J1116 J: them

J1117 E: from the woman

J1118 J: yeh, always from the woman

With the subsequent integrative memo:

Jodie’s perception of the woman with complex condition as an information source is slightly different to the others. She is relating to conditions that the woman may have lived with for some time. She also recognises that some women do not see their condition as a ‘medical’ condition and so it may not have been picked up at booking. However, Jodie knows to question tightly to ensure she gets the right information. Some of the others believe the woman to be a poor source of information but maybe the difference comes when there is a serious condition.

The first example starts to consider a type of information from a specific source (woman) and the way it is delivered to the midwife – in this case – unbidden, the midwife did not request it. The second encompasses the source (woman) and the way it is delivered to the

midwife, but in this example the midwife knows what she wants to know and she knows where she is going to find it.

9.21 Final overarching themes, categories and sub-themes

Table 9.21.1 Themes, categories and sub themes

This is the final coding table developed in the analysis

<i>Overarching theme</i>	<i>Categories</i>	<i>Sub themes (codes)</i>
In the line of duty	Triggers	Self triggered (45) Being one step ahead Follow up and action Woman's history Treatment regime Woman's care plan Prescriptive information
	The search	Filtering Information about contractions Palpating contractions Successful search Helps the search Reading notes Unsuccessful search Hinders the search Physical environment Time and information sources Midwife workload Time Being with the woman
	Types of information	Midwife care management plans Alongside information Interactional information Practice information Care pathways for care management Advance plan for care management
	Ways of using information (Clinical care Triangulation Using information)	Giving the care Fluid balance Infusions Preparation of medication Medications Syntocinon High risk care Tailoring care Simultaneous triangulation Checking Stepwise triangulation What midwives use/don't use How midwives use information Reasons to use and not use information
	Value of information	Responsibility Part of the midwife's role
Midwife and woman	Sensory	Breathing through contractions Fetal heart

		Smell Woman making noise Breathing heavily Touch
	Verbal	Volunteering (Request to pass urine, Urge to push) History (Discussing condition, Discussing pregnancy history) Care planning Current care (PU and PV, Identity checking, Pain, Comfort, hydration, eating and assistance, Hotness, itchy, numbness and aches, Consent and continuing consent Baby moving, Using pain relief, Immediate care, Allergies, Medication given) Contractions and tightenings
	Barriers to verbal information from woman	Barriers to information (woman as info source, reliable information) Extracting
	Observed	Bloods Blood sugars Cannula Block height Saturations Pulse Temperature Blood pressure Looking at the woman Observations Urine PV loss Woman's behaviour
Midwife and colleagues	The art of asking	Comfortable to ask Presenting to receive Midwives Midwives checking Direction when asking Alternatives when no-one available Cannot find or not available Coordinators Reasons to ask
	Verbal information network	Handover Midwife input to the round No handover and limitations All labour ward handover Conduct of the round Referrals Discussions and collaboration by the round Team approach Discussion and collaboration with referral
	Other colleagues	Student midwife Conduits and barriers

		Alternatives to specialist staff Specialist midwife
	Characteristics of colleagues	Selecting someone who is approachable Selecting someone who is suitable Extracting information from colleagues Selecting or availability Reliability Difference of opinion or disconnect
Sources and channels	Environment	BNF and other information Filed charts Checklists and pro formas
	Maternity notes	Looking at specifics in the notes Writing in the notes Looking at the notes Omissions
	Equipment and computers	Benefits and disadvantages of computers Using equipment Looking at equipment (not CTG) Computers as information channels Computers blocked Equipment problems Deceleration occurs Reviewing and looking at CTG Documenting using CTG or K2 Aware of deceleration
	Guidelines	Bending or questioning Using guidelines Knowing the guidelines No guideline Printing guidelines Not using guidelines Keeping up to date Access and preference to guidelines What guidelines are
	Knowledge	Should just know Frequently Experience Partial knowledge Not knowing Learning from experience and information access Using knowledge for contractions Knowing aspects of care Caseloading Knowledge

9.22 Final data matrix

Matrix after combined open and focussed coding 20 November 2014

<i>In the line of duty</i>	<i>Midwife and woman</i>	<i>Midwife and colleagues</i>	<i>Sources and channels</i>
<ul style="list-style-type: none"> • Triggers • The search • Types of information • Using information • Value of information 	<ul style="list-style-type: none"> • Sensory • Verbal • Barriers to verbal information from woman • Observed 	<ul style="list-style-type: none"> • The art of asking • Verbal information network • Other colleagues • Colleague characteristics 	<ul style="list-style-type: none"> • Knowledge • Guidelines • Equipment and computers • Maternity notes • Environment

9.23 Early emerging findings

These notes were developed during the early stages of the analysis

- Alongside information – midwives using information as a guide during care
- One off information – only a single answer needed
- One step information – simple access such as asking a question of the woman in the room
- Collaborative information – taking part in discussion with the multi-disciplinary team
- Unbidden information – information arriving without being requested
- Requested information – midwife requesting information
- Complex information – complex access such as searching for a guideline for a specific condition
- Furnishing information – providing a background to the current situation
- Treatment information – a care regime such as the syntocinon protocol (could also be considered as alongside information)
- Concern information – requesting review of the woman when the midwife has concerns
- Immediate information – information needed now
- Environmental information – usable and available information for midwives

9.24 Information typology

Table 9.24.1 Early table showing information types and their sources

Early information typology table recorded as part of the development of types of information showing information types, source (and channel) and the possible secondary source (and channel).

Information type	Primary Source	Format	Secondary Source*	Format
Guidelines	Computer Maternity notes	Documented	-	-
Care pathways	Guidelines Maternity notes	Documented	Handover	Discursive
Instructions for equipment	Published	Documented	Midwife	Discursive
Blood and pathology results	Computer Maternity notes	Documented	Handover Midwife	Discursive
Birth plan	Maternity notes	Documented	Handover	Discursive
Pro formas (theatre checklist, meconium observations etc)	Published Guidelines	Documented	-	-
Drug information	Published	Documented	-	-
Drug regime and dose	Published Guidelines	Documented	-	-
Care management plan	Maternity notes	Documented	Handover	Discursive
Child protection care plans	unknown	Documented	unknown	-
Current medications	Maternity notes	Documented	Handover Woman	Discursive
Past obstetric history	Maternity notes	Documented	Handover Woman	Discursive
Past medical history	Maternity notes	Documented	Handover Woman	Discursive
Woman's birth plan	Maternity notes	Documented	Woman	Discursive
Woman's demographics	Maternity notes	Documented	Woman	Discursive
Antenatal information	Maternity notes	Documented	Handover	Discursive
Information relating to current admission	Maternity notes Handover	Documented	Handover	Discursive

Setting up and using equipment	Published	Documented	Midwife	Discursive
Information when there is no guideline	Midwife Obstetrician	Discursive		
Information when there are options	Midwife Obstetrician	Discursive		
Referral	Obstetrician Midwife	Discursive		
Monitoring fetal heart and contractions	Equipment	Sensory		
Monitoring of epidural	Equipment	Sensory		
Monitoring of infusions	Equipment	Sensory		
Observations	Equipment Touch	Sensory		
Examination	Touch	Sensory		
Staff skills	Coordinator	Discursive		
Organisational				

9.25 Data matrix one with memos

Due to space considerations of this thesis, this is a selection of memos

O is from *open* coding and F is from *focussed* coding

In the line of duty	What and where is information	The search	Talking and asking and hearing	Who is the midwife	Barriers
Information management F	Computers O	Paperchase F	The woman O/F	Contradictions	Other barriers F
Required and gathered F	Guidelines O/F	Triggers F	Discussion with midwife O/F	I feel like I should know the answer	Information not available F
Medication O	Preferences and choices about information F	Process of information behaviour F	Discussion with doctor O/F	How I work O	Can't get information F
Pain relief O	Environmental information F	Successful access F	Appropriate or inappropriate staff F	Caseloading	No protocol or not according to protocol O (in Guidelines)
Contractions O	The woman O/F	Information required F	Handover O/F	What I am	When the information is not so good O (information negatives)
Cardiotocographs O	Notes and plans O	Information need F	The round O/F		Not looking for information O (information negatives)

What midwives know O	Do I agree or argue F	Finding things O	Approachable colleagues O/F		Contradictions or discord
Complexity of care F	Quality of information F	Not using information F	Collaborative		Midwife limitations
Predicted information F	What I do with information F	Information use F	Confirming O (what I do with information)		
Conditional information F	Locations of information F	Where I put the guidelines O	The way I ask O (about asking, midwife communicating)		
No information required	Multiple sources F	What influences me O (information attributes)	The value of asking O (about asking , midwife communicating)		
Conditional action	Information available F	Filtering O (What I do with information)	Midwives hearing		
	Information attributes F	The right way	Negatives about asking		
	Consequences F	Tailoring			
	Complex information				
	Timescale information				

Notes for data matrix one

It is important to determine several facets of and about information behaviour. Information is available and it is in several formats – verbal, written, etc. It is chosen by midwives or refuted by midwives or information is used in conjunction with another source of information. It is selected for certain attributes such as its ease of access or trustworthiness or the confidence that the midwife has in it or if she believes it to be reliable. Midwives know what sources are available, midwives know how they choose their own sources of information, midwives have a method of deciding whether information is reliable or whether they have confidence in it. Different things may influence how a midwife uses information or whether she uses it at all. When midwives choose a source it can be described as being used, but this may not be correct if they don't actually use the information that they gain. Or to put it another way, they choose a source, acknowledge the information and then decide if they are going to use the information or not.

There are different types of information too, there is the short term 'do the bloods need to be done' type information. There is the 'immediate history' (see immediate history, asking and discussions). Some of these are evident from the midwife asking the woman.

In the line of duty

What midwives know: knowing what they don't know, everyday stuff, no knowledge, no information required, information needs, medication and the guidelines O, things midwives know O (knowing), knowing medication O (knowing), knowing the guidelines O (knowing), knowing what I know O (knowing), knowing regimes and aspects of care 2 pages O (knowing),

When midwives know things it may be professional information that they know such as the heparin protocol, or more immediate information such as the woman has been given ranitidine – this might be better described as transient information as it is only needed for a short while. Midwives know of many things but maybe not always the finer details.

No information required: When I wouldn't look for information O (information negatives, information)

Complexity of care: previous history from notes O (actual information), looking at the woman O (midwife woman dyad), high risk care O (situational),

Required and gathered: I will always need some information O (actual information), (probably need to put all the different types of information that the midwife will always gather – name, high or low risk, obstetric history, immediate history, etc)

Conditional action: 2 pages O (relevant concepts)

What and where is information

Computers: what I find on computers O,

Guidelines: where the guidelines are O, what the guidelines are O, what the guidelines do O, What attributes make an information source good O (information attributes)

Preferences and choices about information: choosing source type, hierarchy, no choices, feelings about information, alternatives O (actual information), What I use 2 pages O (what I do with information)

Information quality: reliability, poor information, the right source or wrong source, usable information, user friendly, suitable source, unsuitable source, quality of information O (information attributes), confidence in information O (information attributes), what attributes make an information source good O (information attributes), What I use O (what I do with information), trust O (relevant concepts)

Environmental information: information unbidden, Student midwife giving information O (actual information), (use the example of dips in the induction room), information available O (information attributes)

Consequences: purpose of information

Notes and plans: what is in the notes O (actual information)

The woman: the woman as an information source O (actual information), things women don't know O (what the woman knows), what only the woman will know or knows 3 pages O (what the woman knows), what the woman could know but doesn't O (what the woman knows), medication and condition what the woman will know O (what the woman knows), woman giving information 2 pages O (woman and information,

9.26 Data matrix two with memos

O is from *open* coding and F is from *focussed* coding

In the line of duty	Triggers and searches	Midwife and information interface	Talking and asking and hearing	Who is the midwife	Barriers
Complexity of care F <ul style="list-style-type: none"> • medication • pain and pain relief • contractions • ctg's • conditional action 	Motivations <ul style="list-style-type: none"> • The right way • consequences 	What is the information medium and locations F <ul style="list-style-type: none"> • Guidelines O F • Environmental F • The woman O F • Notes and plans O • computers 	Who I discuss with <ul style="list-style-type: none"> • the woman O/F • midwives • doctors • appropriate or inappropriate staff • approachable colleagues 	What I am <ul style="list-style-type: none"> • caseloader • integrated • High dependency 	Other barriers F <ul style="list-style-type: none"> • Physical • Time • Workload • Resources • People • Things women don't know
Information management	Triggers F <ul style="list-style-type: none"> • information need • information required 	Preferences and choices about information F <ul style="list-style-type: none"> • influences • tailoring • hierarchy • feelings about information • choosing • trust 	The talking forums <ul style="list-style-type: none"> • handover • referrals • the round • midwives hearing 	How I work O <ul style="list-style-type: none"> • I feel like I should know the answer • Contradictions 	Information not available F <ul style="list-style-type: none"> • Can't get information • No protocol or not according to protocol O (in guidelines

What midwives know <ul style="list-style-type: none"> • no information required 	Process of information behaviour F	Quality and reliability <ul style="list-style-type: none"> • confidence in information • information attributes • what makes an information source good 	The value of talking and asking <ul style="list-style-type: none"> • collaboration • confirming (what I do with information) • the way I ask O (about asking, midwife communicating) 		Not looking for information O (information negatives)
What is information <ul style="list-style-type: none"> • Required and gathered F • Obs and bloods • Predicted information F • Condition information F • Timescale information 	Paperchase F and finding things	What information is available <ul style="list-style-type: none"> • multiple sources • alternatives • receiving information 	Negatives about asking		Contradictions or discord <ul style="list-style-type: none"> • when the information is not so good O (information negatives) • midwife limitations

	Reaching the goal <ul style="list-style-type: none"> the right source successful access 	What I do with information F <ul style="list-style-type: none"> filtering agree or argue where I put guidelines 			
		What I use <ul style="list-style-type: none"> not using information using information 			

Talking and asking

Who I discuss with

- the woman O/F
- midwives
- doctors
- appropriate or inappropriate staff
- approachable colleagues

Discussion with doctor: referral O (referrals, the round the team and referrals), formal (handover, round), informal (chat)

Discussion with midwife: coordinators knowing O (Knowing), why I talk to a coordinator O (about asking , midwife communicating), midwife to coordinator O (asking and discussion, midwife communicating), midwife to midwife (asking and discussion, midwife communicating),

asking 2 pages O (asking and discussion, midwife communicating), midwife asking student midwife for information O (asking and discussion, midwife communicating)

With talking and asking midwives may use a one-shot inform approach to update the coordinator or they may collaborate on care. It would appear from 'midwife to midwife' that there is a one-shot directive rather than collaboration. There may be a single shot question or a discussion or a formal presentation and discussion of information. One shot question approach evident in 'midwives discussing medication' (asking and discussions, midwife communicating)

The woman: midwife asks about pain relief, contractions O (woman and midwife talk about contractions, talking with woman), are you ok, history, pain, passing urine O (asking woman), chatting O (midwife and woman chat, talking with woman), things the woman will know that may or may not be in the notes 2 pages O (what the woman knows), fetal movements – only the woman will know O (what the woman knows), woman used as information when there are other sources available 2 pages O (woman and information)

The midwife may make the choice to ask the woman rather than look in the notes, is this because it is quicker or enables discussion or because the depth of evidence is better. There are some things that can only be gleaned from the woman such as fetal movements.

Approachable colleagues: relationships O (relevant concepts), approachable colleagues O (relevant concepts), trust O (relevant concepts)

The talking forums

- handover
- referrals
- the round
- midwives hearing

Handover: handover quality O (handover), questions and handover and referral O (handover), handover O (handover)

Midwives listening and hearing: midwife receiving O (midwife receiving), specialist staff O (other staff, situational)

The round: round decisions and discussions O (the round the team and referrals)

The value of talking and asking

- collaboration
- confirming (what I do with information
- the way I ask O (about asking, midwife communicating)

Collaborative: the advantage of some sources of information O (information attributes), my interpretation of information O (what I do with information), reason for asking someone O (about asking , midwife communicating), difference of opinion O (about asking , midwife communicating), specialist staff explain and discuss and available O (same, midwife receiving), opinions O (midwife receiving), the team O (the round the team and referrals)

Negatives about asking

Negatives with asking: uncertainty with asking O (negatives with asking), negatives about asking O (negatives with asking)

9.27 Data matrix three with memos

O is from *open* coding and F is from *focussed* coding

The information foundation			The process and barriers		
What is information?	Midwife and context	Midwife and information interface	Triggers and searches	Talking and asking and hearing	Barriers
What is information <ul style="list-style-type: none"> • Required and gathered F • Obs and bloods • Predicted information F • Condition information F Timescale information	<ul style="list-style-type: none"> • Complexity of care F • medication • pain and pain relief • contractions • ctg's • conditional action 	Preferences and choices about information F <ul style="list-style-type: none"> • influences • tailoring • hierarchy • feelings about information • choosing • trust 	Motivations <ul style="list-style-type: none"> • The right way • consequences 	Who I discuss with <ul style="list-style-type: none"> • the woman O/F • midwives • doctors • appropriate or inappropriate staff • approachable colleagues 	Other barriers F <ul style="list-style-type: none"> • Physical • Time • Workload • Resources • People • Things women don't know
What information is available <ul style="list-style-type: none"> • multiple sources • alternatives • receiving information 	Information management	Quality/reliability <ul style="list-style-type: none"> • confidence in information • information attributes • what makes a source good 	Triggers F <ul style="list-style-type: none"> • information need • information required 	The talking forums <ul style="list-style-type: none"> • handover • referrals • the round • midwives hearing 	Information not available F <ul style="list-style-type: none"> • Can't get information • No protocol or not according to protocol O in guidelines

What is the information medium and locations F <ul style="list-style-type: none"> • Guidelines O F • Environmental F • The woman O F • Notes and plans O • computers 	What I am <ul style="list-style-type: none"> • caseloader • integrated • high dependency 	What I do with information F <ul style="list-style-type: none"> • filtering • agree or argue • where I put guidelines • tailoring 	Process of information behaviour F	The value of talking and asking <ul style="list-style-type: none"> • collaboration • confirming (what I do with information) • the way I ask O (about asking, midwife communicating) 	Not looking for information O (information negatives)
	How I work <ul style="list-style-type: none"> • I feel like I should know the answer • Contradictions 	What I use <ul style="list-style-type: none"> • not using information • using information 	Paperchase F and finding things	Negatives about asking	Contradictions or discord <ul style="list-style-type: none"> • when the information is not so good O (information negatives) • midwife limitations

	What midwives know no information required		Reaching the goal <ul style="list-style-type: none"> • the right source • successful access 		
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What is information?

Required and gathered: I will always need some information O (actual information), (probably need to put all the different types of information that the midwife will always gather – name, high or low risk, obstetric history, immediate history, etc)

Timescale information: previous history from woman O (what the woman knows)

What information is available?

- multiple sources
- alternatives
- receiving information (conduits see TI312 second hand information)

What is the information medium and locations F

- guidelines
- environmental
- the woman

- notes and plans
- computers

Guidelines O F Guidelines: where the guidelines are O, what the guidelines are O, what the guidelines do O,

Computers (Computers: what I find on computers O)

Environmental information: information unbidden, Student midwife giving information O (actual information), (use the example of dips in the induction room), information available O (information attributes)

The woman: the woman as an information source O (actual information), things women don't know O (what the woman knows), what only the woman will know or knows 3 pages O (what the woman knows), what the woman could know but doesn't O (what the woman knows), medication and condition what the woman will know O (what the woman knows), woman giving information 2 pages O (woman and information,

Notes and plans: what is in the notes O (actual information)

Midwife and information interface

Preferences and choices about information F

- influences
- tailoring
- hierarchy
- feelings about information
- choosing
- trust

Preferences and choices about information: choosing source type, hierarchy, no choices, feelings about information, alternatives O (actual information). What I use 2 pages O (what I do with information), what attributes make an information source good O (information attributes)

Tailoring: not everyone fits into boxes O (relevant concepts), woman as expert O (what the woman knows)

What influences me: quickness and ease of access (information attributes), information needed influences the source 2 pages O (information attributes)

Quality and reliability

- confidence in information
- information attributes
- what makes an information source good

Information quality: reliability, poor information, the right source or wrong source, usable information, user friendly, suitable source, unsuitable source, quality of information O (information attributes), confidence in information O (information attributes), what attributes make an information source good O (information attributes), What I use O (what I do with information), trust O (relevant concepts)

What I do with information F

- filtering
- agree or argue

where I put guidelines

Do I agree or argue: confidence in information O (information attributes),

What I use

- not using information
- using information

Information use: alongside information, one step information, filtering O, what I do with the guidelines O, I use specific information 2 pages O (information attributes), using information O (what I do with information), Working things out O (what I do with information)

Not using information: not using guidelines O, not using information O (information negatives), what I wouldn't use O (information negatives), Books O (actual information)

9.28 Data matrix four

<i>Midwife and context</i>	<i>Midwifery information context</i>	<i>Triggers and searches</i>	<i>Talking, asking and hearing</i>
Midwifery roles	Information for midwives	Motivations	The talking forums
Level of risk and baseline information	Information combinations	Information need	Why midwives talk and ask
Routine information	Limited or single sources of information	Filtering and tailoring	Negatives with asking
Performance limits and professional responsibility	Choices and options	Paperchase	Barriers
Knowledge and practice	Preferences	Reaching the goal and the right way	Information not used
	Circumstances	Reliability	Information unusable or unavailable
	Beliefs		

9.29 Data matrix five

<i>Information for midwives</i>	<i>The relationship between clinical practice and information behaviour</i>	<i>Context of midwives and information</i>	<i>Hurdles</i>
Information used by midwives	Midwifery roles	Preferences and choices	Time, workload and resources
The woman	Baseline information	Information circumstances	Not using information
Colleagues	Routine information	Reliability and trust	Information unusable or unavailable
The talking forums	Knowledge and practice	Beliefs about information	
Maternity notes	Performance and limitations	Selection, filtering and tailoring	
Computers	The right way		
Knowledge			
Background information			

9.30 Data matrix six

<i>Information for midwives</i>	<i>The relationship between clinical practice and information behaviour</i>	<i>Context of midwives and information</i>	<i>Hurdles</i>
Information used by midwives	Midwifery roles	Information limitations	Time, workload and resources
The woman	Baseline information	Preferences and choices	Not using information
Colleagues	Routine information	Reliability and trust	Wrong information
The talking forums	Knowledge and practice	Beliefs about guidelines	Information unusable or unavailable
Maternity notes	Performance and limitations	Selection, filtering and tailoring	
Computers	The right way and the individual		
Knowledge			
Background information			

9.31 Data matrix seven

<i>Information Landscape</i>	<i>Information Behaviour</i>	<i>Situational</i>	<i>Colleagues</i>
What is information	Definition	Context	Accessibility
Sources and types	Need	Time	Usability
Knowledge	Search	Barriers and facilitators	Approachability
Woman	Retrieval		Effectiveness
	Experts and novices		Collaboration

9.32 Data matrix eight

<i>Sources and channels</i>	<i>Information behaviour</i>	<i>Clinical care</i>
The Hardware	The software	
Availability	Need	Baseline information
Accessibility	Search	Routine information
Barriers	Active and passive	Type of information
When used	Interrogation	Individualised care
Why used	Preference and choice	Time limitations
Properties and format	Reliability and trust	Midwife roles

9.33 Other colleagues

This section was constructed during analysis

Student midwives may be consulted by midwives for information when working in the labour room under the supervision of the midwife. Cassie, a midwife with one year's experience, is covering Beatrice for a coffee break. Beatrice has not handed over what has been happening with the woman. Cassie asks the student midwife if the observations have been alright. The observation continues

Cassie asks student midwife 'Do you know the plan?' ... Student midwife tentatively discusses plan ? at 2.20pm ?obs(ervations), hours CTG reviews. Cassie asks 'VE (vaginal examination)?' Student midwife (says) 'Last one at ? 4 hourly.' *Cassie Obs C103*

Cassie is asking the student midwife about the plan and she takes an opportunity to provide information to the student midwife.

As an information source, student midwives may act as a barrier or a conduit. Olivia asks the student midwife about observations

'Did you do her sats (saturation)s)?' Olivia asks 'What jumps out and hits me on this chart (MEOWS)' to student midwife, 'There is a yellow.' Olivia is concerned that she wasn't told by student midwife when documented. 'Score, activate, tell midwife' says Olivia. Olivia asks about respirations, student midwife says they were 16, 'I just didn't write it in' *Olivia Obs O194*

Olivia has missed, and subsequently found, key information that the student midwife could have informed her about. In another situation, Sarah, the midwife working in the induction of labour room, is at the computers in the office and the student midwife working with her is in the induction room with the women being induced

student midwife comes back and says that one of the IOL's (induction of labour) has had a couple of dips on the trace, Sarah is up like a shot and goes to check the trace. Sarah reassures woman and explains about dips. Sarah also explains to the student about decelerations. *Sarah Obs S84*

In a similar fashion to the volunteered information from women, student midwives may bring information that the midwife needs to act upon.

As well as student midwives, there are other colleagues. A consultant midwife is sometimes present on the labour ward. Wanda, the diabetes specialist midwife is present when Tessa is working a weekday shift. The plan is for the diabetic woman in her care to have a sliding scale. Wanda, is present in the room and is assisting Tessa with the sliding scale

more advice starting at 5% dextrose KCL, if blood sugars become less than 4 the normal range is 3.5 – 5.9 (4 is the floor)’. Tessa is listening and looking at paperwork. *Tessa Obs T44*

The diabetes specialist midwife gives Tessa information about the sliding scale. On a night shift, when Tessa is providing care for the same woman, Wanda is not available so Tessa seeks information from the consultant.

This section infers that midwives will select and use verbal information sources based on their ability to deliver the appropriate type of information. Student midwives may deliver voluntary or passive information ie: that which has not been requested by the midwife. Other colleagues may also contribute to the verbal information network, this is most notable with student midwives.

9.34 Expert and expertise

Expert and novice nurses are defined according to a set of characteristics (Morrison and Symes 2011, Benner 1996, Benner 1982). In the midwifery domain the definition of a midwifery expert is sparse and disparate and there is some interchangeability of the terms *experience* and *expert*. Begley et al (2012) suggest that it is adequate exposure to a particular aspect of clinical practice. Butterworth and Bishop (1995), in a study of optimum practice, use a composite of greater than five years current clinical experience, senior pay grade and described as experts by peers. Price and Johnson (2006) share the view of midwifery experience equalling midwifery expertise. However, O'Leary and Ni Mhaolrunaigh (2012) question whether nursing experience alone is the same as expertise. Eraut (2005) advocates that expertise is demonstrated by learning from experience.

According to Benner (1982) experience is

the refinement of preconceived notions and theory by encountering many actual practical situations that add nuances or shades of differences to theory (Benner 1982:407)

with the insinuation that expertise requires experience *and* theory. Equally, in nursing expertise it is the nurse who is the expert (Benner 1982) rather than a set of behaviour attributable to expertise.

9.35 Autonomy and collaboration with the multi-disciplinary team

The midwifery profession is recognised as autonomous, based on its 'body of knowledge, code of ethics, self-governance, decision making and recognition from society' (ICM 2005a:2). To be autonomous, individual midwives must 'have the capacity of autonomy (ie: the ability to form a set of reasoned preferences), and must then freely act according to that set of preferences (Herron 2009:22). However, in the labour ward environment, where the focus is high risk, the model arguably changes to one of referral and collaboration. This is acknowledged by the profession scoping document *Midwifery 2020* for women requiring complex care:

they (midwives) will work as the key coordinator of care within the multidisciplinary team, liaising closely with obstetricians, general practitioners, health visitors/public health practitioners and maternity support workers and maternity care assistants (Midwifery 2020:5)

A point also underscored by the Royal College of Obstetricians and Gynaecologists Standards for Maternity Care (RCOG 2008) which explicitly states the necessity for good communication and 'effective multi-disciplinary working' (RCOG 2008:33). This multi-disciplinary working is arguably referral, collaboration and information sharing between the midwife, as a *member* of the multi-disciplinary team and obstetricians, anaesthetists and/or other colleagues rather than an autonomous practitioner leading the care.

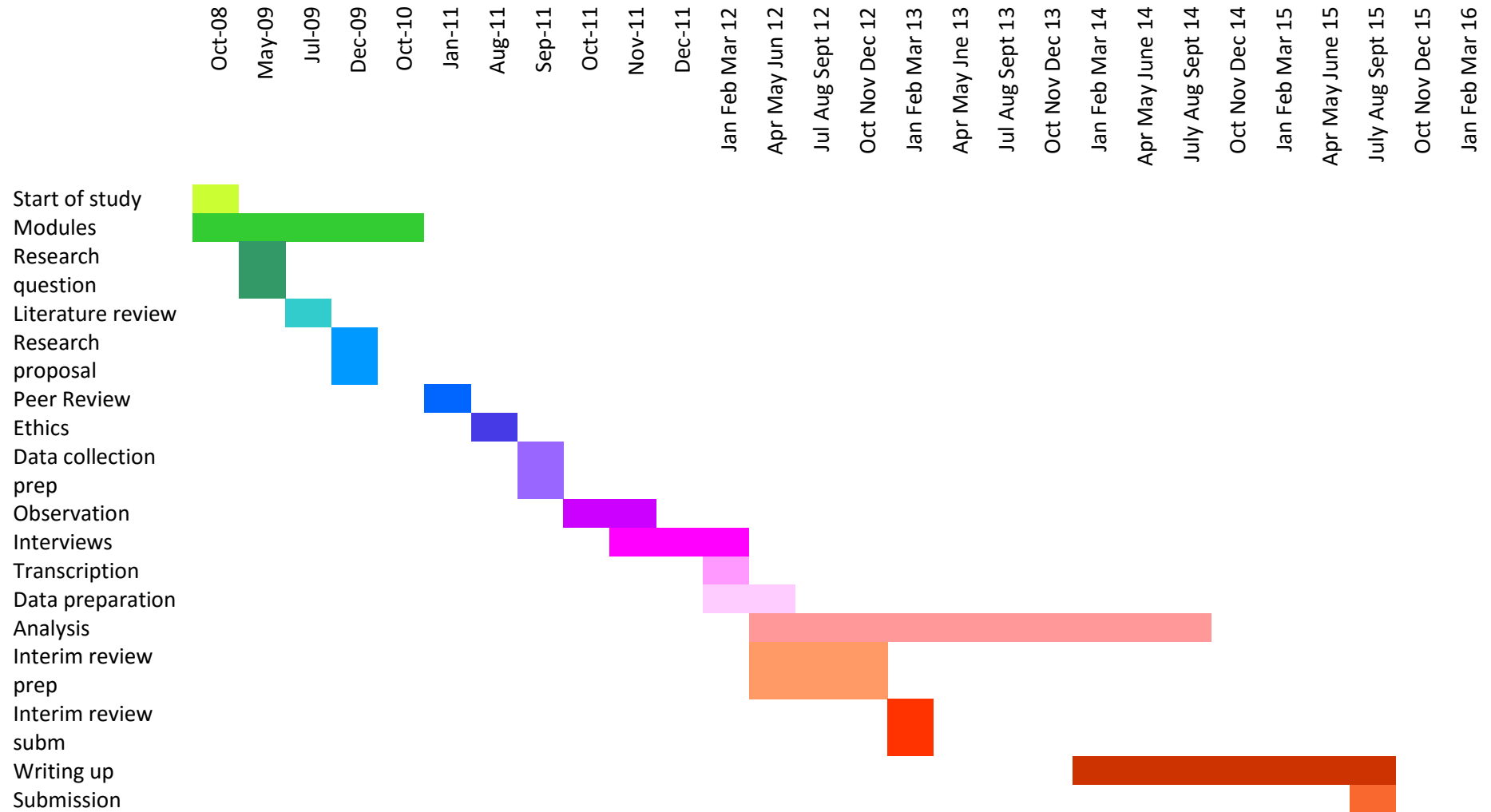
9.36 Data presentation principles

I follow several principles in my presentation of the data and findings. Quotes from the data are typed in a different font. When a midwife's name is used it is the pseudonym assigned during data collection. The woman for whom care is being provided is always referred to as 'the woman'. This is not to demean the role of the woman in the data but to reinforce that the midwife is the focus of the study. Other personnel such as consultant and registrar have been referred to as such. This approach acknowledges their role in relation to the midwife. Midwifery jargon and abbreviations have been left in but expanded in brackets within the text. Names in the text have been removed to protect anonymity. However, to maintain understanding the role has been substituted in brackets - (consultant) for example instead of their name. As all study participants were female, midwives are always referred to as she/her.

I have kept the removal of some features of verbatim speech such as ummm, errrr, right and repetition, both mine and the midwife's, to a minimum. Removal has only occurred if the features are likely to distract the reader and there is no effect on the meaning in the data. Features of verbatim speech support the validity of the speaker to the reader (Emerson, Fretz and Shaw 1995, Sandelowski 1994, Spradley 1980). As one of the descendants of Henrietta Lacks observed in a researched account of her life and immortality

If you pretty up how people spoke and change the things they said, that's dishonest. It's taking away their lives, their experience and their selves' (Skloot 2010:xi).

If removal has occurred, it is signalled by ... at the point at which it was removed. I have included words in brackets to aid sense making when the data does not make sense. At the end of each quote there is a name, 'obs' or 'int' and a number. These relate respectively to the midwife pseudonym, whether it is observational or interview data and the location of the quote in the data. On occasions there are two midwives in which case both names are quoted.

9.37 Gantt chart to show study timelines

Viva
Final submission



9.38 Data flow chart

Glossary

Abruption	separation of the placenta from the uterine wall prior to the birth of the baby
Accelerations	an increase in the fetal heartrate of 15 or more bpm above the baseline which then returns to the baseline during cardiotocograph monitoring
Activated partial thromboplastin time ratio (APTR)	blood test to measure heparin levels
Alongside birthing unit	location for low risk birth that is situated next to the obstetric unit
Amnihook	disposable instrument used to artificially rupture membranes
Antenatal	the period of pregnancy until labour
Antepartum haemorrhage	bleeding from the vagina after the 24 th week of pregnancy
Anterior lip	the final part of the cervix palpable on vaginal examination prior to full dilatation
Anti d immunoglobulin	treatment to counteract isoimmunisation of maternal blood
Arterial line	device to directly measure arterial blood pressure and enable blood gas analysis
Artificial rupture of membranes (ARM)	procedure to deliberately rupture the amniotic sac to induce or augment labour or establish if there is meconium present
Ascending infection	description of potential infection to the fetus (baby) in the event of preterm prelabour rupture of membranes
Augmentation	medical or surgical procedures used to enhance or increase contractions if the progression of labour slows down
Baseline fetal heart rate	the average fetal heart rate during cardiotocograph monitoring excluding accelerations and decelerations
Bereavement midwife	midwifery specialist for care of women experiencing stillbirth or neonatal death
Birth centre	midwifery led place for women of low risk to give birth
Blood sugars	measurement of blood glucose in the presence of diabetes
Bolus	a single dose of administered medication

Bradycardia	slowing of the fetal heart to below the lowest normal rate of 110 beats per minute
British National Formulary	published information about drug dosages, contraindications and effects
Bureaucratic	A conceptual model of decision making influenced by the rules of an organisation rather than collaboration between healthcare professional and patient
Butterfly cannula	a device for conducting venepuncture
Caesarean section	surgical procedure to remove the fetus via the abdomen
Cannula	a device sited within a vein to allow intravenous access
Capillary blood gas	blood sugar level
Caput	oedematous swelling in the fetal scalp between the superficial connective tissue layer
Cardiotocograph	a printed recording of the fetal heart rate and contractions used to determine the wellbeing of the fetus during labour (used antenatally if there are fetal concerns such as reduced movements or antepartum haemorrhage)
Care management plan	plan of care developed for a woman
Care pathway	pre-determined care management based on a number of similar features of a condition
Care planning	individual plans for a woman's care and treatment based on their signs and symptoms
Caseloading midwife	midwife with responsibility to provide maternity care for a caseload of women from booking through birth to postnatal discharge
Central venous pressure	The pressure between the right atrium and veins in the thorax measured by a cannula sited in a vein
Cervix	the part of the uterus extending into the vaginal canal
Cholestasis	disease of the liver associated with pregnancy which presents a small risk of stillbirth
Classical professional	A conceptual model of decision making led by the healthcare professional rather than collaboration between healthcare professional and patient
Clinical Negligence Scheme for Trusts (CNST)	scheme to manage claims by service users against health service provision
Consultant	obstetrician with overall responsibility for clinical care

Continuity of care	care given to a woman by the same midwife through pregnancy, birth and the postnatal period
Contractions	intermittent painful tightenings of the uterine muscle during labour
Coordinator	the lead midwife in the labour ward
Cord prolapse	prolapse of the cord adjacent to or beyond the presenting part when the membranes are ruptured
Datex	Electronic machine to measure blood pressure, mean arterial pressure, oxygen saturations and pulse
Day Assessment Unit	outpatient facility in maternity for management of high risk conditions
Deceleration/s	a decrease in the fetal heartrate of 15 or more bpm below the baseline which then returns to the baseline during cardiotocograph monitoring
Dermatome chart	chart used for measuring height of epidural block showing the skin segments on the abdomen connected to specific spinal nerves
Diabetes	a metabolic condition of defective insulin secretion and/or insulin action (type I and type II)
Diastolic	the unit of measurement of blood pressure when the heart is at rest
Dr C Bravado	mnemonic for the interpretation of cardiotocograph consisting of <i>defining risk, contractions, baseline rate, accelerations, variability, decelerations, overall</i>
Early warning chart	observation chart with acceptable and action warning markings
Electrocardiograph (ECG)	a device used to record differences in heart action across the body
Electronic fetal monitoring	continuous monitoring of the fetal heart rate and contractions using a cardiotocograph machine
Epidural	a continuously pumping infusion of pain relieving drugs delivered directly into the epidural space of a woman's spine via a catheter. They are used by women in labour and women can choose to increase the amount of drugs by pressing a button attached to the pump by a lead which then delivers a bolus dose.
Ergometrine	a naturally occurring drug used to contract the uterus after birth to prevent post-partum haemorrhage

Estimated due date (EDD)	the expected date of delivery based on the evidence of early ultrasound scan or last menstrual period
Evidence based practice	the combination of quality research evidence, clinical experience and patient values to support individual patient care
External cephalic version	manual turning of a fetus presenting by the breech to cephalic by a trained practitioner
External signs of full dilatation	indications without the need for vaginal examination that a labouring woman is at full dilatation
Fetal blood sampling	taking a sample of blood from the scalp of the baby during labour to assess well being
Fetal heart	the action of the fetal heart, the noise of which is used exhaustively by midwives and obstetricians to monitor fetal wellbeing during labour
Fetal hypoxia	lack of oxygen to the fetus
Fetal scalp electrode	device attached to the fetal head during labour to directly monitor the fetal heart rate with the cardiotocogram
Fetus	the baby in the uterus
Fibronectin	a connective fibrous protein found at the cervix in threatened preterm labour
First stage of labour	from initial to full dilatation of the cervix during labour
Fluid balance	the balance of body fluid intake and output to facilitate normal metabolic function
Fluid balance chart	pro forma to record fluid intake and output in order to calculate correct fluid balance
Fourth degree tear	perineal trauma after childbirth involving the anal sphincter which requires suturing in theatre
Fresh eyes	practice used by midwives to peer check the cardiotocograph for anomalies usually on an hourly basis
Full blood count	commonly used blood test in midwifery to measure haemoglobin, white cell count, platelets and other blood content
Fundal height	pertaining to the growth of the uterus and fetus within according to pregnancy gestation
Fundus	the uppermost part of the uterus
Gastroschisis	fetal condition in which the internal parts of the abdomen protrude through the abdominal wall and are visible outside the body

Gestation	pertaining to the number of completed weeks of pregnancy
Giving set	adjustable connector to administer medication and/or fluids given intravenously
Group and save	commonly used blood test to establish maternal blood group which used to cross match blood in the event of haemorrhage
Group B Streptococcus	bacteria of the genital tract which can cause life threatening infection to the baby at birth
Guidelines	a local or national pathway for treatment or care based on research evidence which serves as a guide for clinical practice
Haemoglobin	red blood cells
Hartmann's solution	an isotonic fluid used for intravenous therapy
Heparin	anticoagulant therapy
High dependency midwife	Midwife specialist for the care of women with high risk needs.
High dependency unit	Location within the labour ward for women receiving high dependency care
High risk care	obstetric led care for women with risk factors
Hyperstimulation	overstimulation of the uterus by uterotonic drugs
Hypoglycaemia (hypo)	fall in blood sugars sometimes experienced by diabetic women and newborns
Inco pad	large absorbent pad commonly used in maternity care
Induction	process by which labour is started artificially
Induction room	location within the labour ward for the care of women being induced
Information behaviour	the overarching term for searching for information
International normalised ratio	standardisation of prothrombin time
Intrapartum	during labour
Intrauterine growth retardation	disproportionate fetal growth according to gestation
Intravenous infusion	fluids or medication administered directly to the venous system
K2	cardiotocograph training system
Kardex	paper based system of patient data recording, no longer used
Knowledge management	the intellectual or knowledge capital of an organisation

Labetalol	drug for management of raised blood pressure
Liquor	amniotic fluid
Lots to remember cards	small cards with midwifery information designed to fit in midwives' pockets during practice
Low risk care	midwifery led care for women with no risk factors
Lupus	autoimmune disorder
Magnesium sulphate	drug therapy used to prevent eclamptic fits
Meconium	fetal stool which may be found in the liquor prior to delivery
Meconium staining	the evidence of fetal stool seen in the liquor
Membranes	the amniotic and chorionic sac surrounding the fetus in the uterus
Membrane sweep	digital separation of the membranes from the cervix used to stimulate labour
Moulding	effect of compression and flexion of the fetal skull during labour
Multi-disciplinary team	maternity care team in the labour ward comprised of midwives, obstetricians and anaesthetists
Multiparous	woman who has had one or more babies at more than 24 weeks gestation
Neonatal Intensive Care Unit	unit providing intensive care to newborns of any gestation
New professional	A conceptual model of decision making using collaboration between patient and healthcare professional
Nursing and Midwifery Council	overseeing body for the registration of all nurses and midwives practising in the UK
Nursing and midwifery register	a register of all practising nurses and midwives in the UK held by the Nursing and Midwifery Council
Obesity	body mass index of greater than 30
Obstetrician	medic with specialism in obstetrics
Obstetrics	medicine and surgery linked to pregnancy and childbirth
Occipito transverse	position of the fetal head in the pelvis
Ogilvie's Syndrome	colonic obstruction which may occur after surgery
Oligohydramnios	too little amniotic fluid around the fetus during pregnancy
Oramorph	oral morphine in a medicine

Oxygen saturation	saturation of haemoglobin and oxygen in the blood
Palpation	manual examination of the uterus to establish the presentation, position and growth of the fetus
Paralytic ileus	bowel paralysis which may occur after surgery
Partogram	graphical notation of labour progress
Perineum	muscular body between the vagina and anus
Pinard stethoscope	device to listen directly to the fetal heart through the abdomen
Polyhydramnios	too much amniotic fluid around the fetus during pregnancy
Postmaturity	pregnancy that exceeds 42 weeks gestation
Postnatal	from birth to 6 weeks
Postpartum	after the birth of the baby
Post-partum haemorrhage	excessive bleeding of more than 500mls from the vagina after the birth of the baby
Post term	see postmaturity
Pre-eclampsia	a condition of pregnancy evidenced by rising/raised blood pressure and proteinuria
Pre-eclampsia toxemia	potentially severe condition of pregnancy involving raised blood pressure and proteinuria and/or visual disturbance, epigastric pain, oedema and frontal headache
Prelabour preterm rupture of membranes	rupture of the membranes prior to 37 weeks of pregnancy and before labour has started
Primiparous	woman having her first baby
Prostin	drug inserted into the vagina to induce labour
Pyelonephritis	bacterial infection of the kidneys
Ranitidine	drug to raise the pH of the content of the stomach
Recovery area	reception room for close observation of women post-surgery
Regional analgesia	an effective long acting form of pain relief, otherwise known as an epidural or spinal
Registered midwife	a midwife registered with the Nursing and Midwifery Council
Registrar	a senior doctor training in a speciality having completed medical school, house officer and senior house officer levels and prior to becoming a consultant

Resuscitaire	machine dedicated to the resuscitation of newborn babies with heat, light, oxygen and suction
Rhesus factor	the expression of C, D and E antigens on red blood cells
Rupture of membranes	rupture of the amniotic sac, can be spontaneous or artificial
Saturations	see oxygen saturations
Second degree tear	trauma to the perineum involving skin and muscle
Second stage of labour	from full dilatation of the cervix to the birth of the baby
Senior house officer	a usually non-specialist junior doctor having completed medical school and house officer levels and prior to becoming a registrar
Sepsis	infection of the tissues caused by micro-organisms
Sertraline	drug used to treat depression and anxiety
Sinusoidal	the consistent fetal heart rate pattern demonstrating potentially severe fetal distress
Sliding scale	a continuous intravenous infusion of insulin used to stabilise blood sugars of diabetic women during labour
Sphygmomanometer	device that uses air to measure blood pressure
Staff midwife	a midwife employed by a trust to work within the hospital setting
Station of the fetal head	position of the fetal head (or presenting part) in relation to the ischial spines of the pelvis
Steroids	a drug usually, dexamethasone or betamethasone in obstetrics, given to women at risk of preterm birth to mature the fetal lungs
Supervisor of midwives	a midwife with extra training to support parents and midwives for the protection of women and babies
Sutures	i) stitches used to repair genital trauma after birth ii) soft parts between the bones of the fetal skull
Syntocinon	trade name of oxytocic drug widely used to augment or induce labour or to manage post-partum haemorrhage by its action on the contractility of the uterus
Syntocinon infusion	an intravenous preparation of syntocinon increased incrementally according to local guideline to either augment or induce labour or postnatally to manage post-partum haemorrhage
Syntocinon regime	dosing quantities for the administration of syntocinon to augment or induce labour

Syringe driver	device to enable the measured administration of medication through a syringe over a period of time
Systolic	the unit of measurement of blood pressure when the heart is at work
Tachycardia	rise of the fetal heart rate to 160 beats per minute or more
TEDS	Thromboembolic deterrent stocking used in maternity care to reduce the risk of thromboembolism
Term	forty completed weeks of pregnancy
Transcutaneous electrical nerve stimulation	(TENS) a form of pain relief which stimulates nerves using modulated electric current
Tertiary unit	a specialist consultant led, regional referral unit (hospital) with a broad range of services including obstetrics and advanced neonatology
Third stage of labour	from the birth of the baby to the delivery of the placenta
Toco	device placed on women's abdomens during cardiotocography to measure the pressure of a contraction
Transducer	device placed on women's abdomens during cardiotocography to record the fetal heart rate
Urinalysis/urine dip	test to measure protein, blood, ketones, leucocytes and erythrocytes in the urine
Vaginal examination (VE)	digital examination of cervix to assess dilatation and progress during labour
Variability	the variation in beats of the fetal heart over a one minute period
Venepuncture	drawing blood directly from a vein
Venous thromboembolism	blood clots which form in the veins
Vertex	the top of the fetal head
Vital signs	pulse, temperature, respirations, blood pressure
Vitamin K	drug given to newborns to counteract the potentially harmful effects of haemorrhagic disease of the newborn

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