



A FRAMEWORK FOR INFORMATION COMMUNICATION THAT CONTRIBUTES
TO THE IMPROVED MANAGEMENT OF THE INTRAPARTUM PERIOD

by

DOREEN KAINYU MUGENDI M'RITHAA

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Supervisors: Prof. Mikko Korpela
Prof Retha De la Harpe
Prof. Sue Fawcus

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DECLARATION

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ABSTRACT

Background: Daily activities within a health care organization are mediated by information communication processes (ICP), which involve multiple health care professionals. During pregnancy, birth and motherhood a woman may encounter different professionals including midwives, doctors, laboratory personnel and others. Effective management requires critical information to be accurately communicated. If there is a breakdown in this communication patient safety is at risk for various reasons such as; inadequate critical information, misconception of information and uninformed decisions being made.

Method: Multi method, multiple case study approach was used to explore and describe the complexities involved in the (ICP), during the management of the intrapartum period. During the study the expected ICP, the actual ICP, the challenges involved and the desired ICP were analysed. 24 In-depth interviews with skilled birth attendants were conducted, observer- as- participant role was utilized during the observation, field notes, reflective diaries and document review methods were used to gather the data. Thematic analysis and activity analysis were applied to analyse the data.

Findings: The findings illuminated that there are expectations of accessibility to care of the woman during pregnancy birth and the intrapartum, especially linked to referral processes. The actual ICP focused on documentation and communication of the information within and between organizations. Communication was marked by inadequate documentation and therefore errors in the information communicated. The desires for communication were illuminated by the need to change the current situation. Further a framework for effective information communication was developed: the FAAS framework for the effective management of the intrapartum period.

Conclusion: In conclusion what is expected is not what is actually happening. The skilled birth attendants (SBAs) do not necessarily have the answers for change but the challenges were identified as desires for change. I urge that the framework will provide a basis for the evaluation of the effectiveness involved in the ICP for the effective management of the intrapartum period.

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DEDICATION

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Glossary

Act AD	Activity Analysis and Development
AD	Activity Driven
ANC	Antenatal care
AT	Activity Theory
CHAT	Cultural Historical Activity Theory
EDD	Expected Date of Delivery
EMR	Electronic Medical Records
FAAS	Feasibility Acceptability Availability and Safety
IC	Information Communication
ICP	Information Communication Processes
ISBAR	Identification Situation Background Assessment Recommendation
SBA	Skilled Birth Attendant
ISD	Information Systems Development
MCR	Maternal Case Record
MDG	Millennium Development Goals
MDHS	Metropole District Health Services
MMR	Maternal Mortality Rate
MOU	Midwifery Obstetric Unit
PHC	Primary health Care
PV	Per Vagina
RH	Referral Hospital
SBA(s)	skilled birth attendant (s)
SBAR	Situation Background Assessment Recommendation
UNICEF	United Nations Children's Fund
WHO	World Health Organization

1 CHAPTER ONE: WHAT THE STUDY IS ABOUT

1.1 Introduction

Globally, approximately half a million women die during childbirth every year with up to 99% of these deaths in the developing countries (Ochako et al., 2011). A woman dies every minute from complications related to childbirth while there is less progress in reducing the neonatal mortality rates (Ochako et al., 2011; Lawn et al., 2010). Maternal mortality is referred to as death caused by complications from pregnancy or childbirth. According to the current report by the World Health Organization (2014), there is a decline in the maternal mortality ratio (MMR) from 1990 to 2013 by 45 per cent – from 380 deaths to 210 deaths per 100,000 live births. The decline does not necessarily meet the 5.5 per cent rate required for the three quarters reduction targeted in the MDG goal 5 by 2015. Although all regions have shown significant advancement the levels of maternal mortality in sub-Saharan Africa remain unacceptably high (WHO 2014).

In South Africa, the average MMR of 140/100,000 with a lower rate of 85/100,000 and 210/100,000 on the higher side indicates the need to implement further measures to reduce the lifetime risk of maternal death. Currently the industrialized countries have a lifetime risk of maternal death of 1 in 4,000, versus 1 in 51 in countries classified as 'least developed' (WHO 2014). Effective information communication during the management of labour and birth is an effective strategy to reduce maternal morbidity and mortality through identification of risks and abnormalities and promptly attending to them (Gephart and Cholette 2012).

Within the perinatal environment, interdisciplinary teams collaborate in providing quality care to women during pregnancy, birth and motherhood with the ultimate goal of delivering a healthy mother and baby (Gephart and Cholette 2012; Gephart, McGrath and Effken 2011). This collaboration during perinatal care in addition to the management of obstetric emergencies, allows the skilled birth attendants (SBA) to intercept errors before they happen (Gephart and Cholette 2012).

The coordination of these collaborative activities require information communication to be clear, timely, comprehensive and respectful in order to

achieve cohesiveness within the perinatal setting (Gephart et al., 2011; Lyndon and Kennedy, 2010). Fragmented activities, failure in systems and breakdown in communication contributes to a chain of actions that cause unexpected fatal outcomes (Veltman and Larison, 2010).

Therefore the need for coordinated care becomes even more important in midwifery led units also known in South Africa as midwifery obstetric units (MOUs) that require transfer of women in cases of emergencies to obstetric facilities. MOUs that are either within hospital settings, alongside other units or freestanding facilities provide midwifery- led care for women with low risk pregnancies.

Birth centres internationally have a model of care that supports woman-centred approach for spontaneous birth according to Overgaard et al., (2011). The monitoring of these women during pregnancy allows for early detection of problems and preparation of the women for birth and motherhood within comfortable home like settings that are non-threatening. Several published systematic reviews on cohort studies done (Hodnett et al., 2010; Walsh and Downe 2004; Overgaard et al., 2011) revealed that women delivering in midwifery led units are less likely to have interventions during delivery and more likely to have spontaneous vaginal birth. This therefore emphasizes the need to provide high quality care even with competing complexities of low resources for women at the basic level and allow smooth transitions in case of transfers for obstetric emergencies. The need for MOUs within South Africa increases accessibility to perinatal care. In case of complications during labour or birth it is recommended by the WHO (2007) that these women be transferred to obstetric facilities in an appropriate and timely manner.

In order to have smooth transitions during transfer of complications, there is need for effective communication and support by specialists in the management of the woman. Vital information may need to be communicated accurately and timeously in order to make informed decisions.

Inaccurate and lack of information communication during the transfer of a woman to the referral hospital could cause delays in the urgent interventions such as caesarean sections (Overgaard et al., 2011).

This study follows two useful recommendations for the effective information communication processes emanating from the WHO (2007) article on information communication include: exploring technologies and methods that would improve and streamline information access and exchange; and the inauguration of processes that are interactive and effective in the use of electronic technology. These recommendations require an analysis of the activities and processes involved in the care while identifying complexities that can be improved.

1.2 Motivation for choosing this topic

The motivation for choosing this topic is threefold; firstly, it emanates from the awareness of the issues relating to maternal and neonatal mortality and morbidity in South Africa. The author having worked in the clinical setting in the area of maternal and neonatal care identified various issues related to factors contributing to the morbidity and mortality among pregnant women and children. Secondly, the author in her teaching experience has highlighted the role of skilled birth attendants as key actors in the effective delivery of maternal and neonatal healthcare – any targeted pedagogic enhancement of skilled birth attendants skills would result in superior care in this sector.

Further, advances need to be made in the professional midwifery sector to equip in-service midwives to effectively utilise the available resources for better maternal and child healthcare provision. These specific targets can be achieved through appropriate application of knowledge and skills in order to improve: information communication, examination of the woman and carry out pregnancy-specific procedures in the field of midwifery timeously, especially during labour where the response time is a matter of life and death for both the mother and child.

Thirdly, the author is part of the research group Information Systems Design for Development (ISD4D) project that identifies information communication technology systems for improvement of maternal care. This involvement enabled the author to realize the need to study the current information communication processes in the context of maternal and neonatal care. The concern was more specifically the intrapartum period that has the highest maternal and neonatal mortality and morbidity. The results would enable the development of information communication framework for desirable effective communication among skilled birth attendants.

These inter-linked issues were interrogated from the perspective of the Cape Town Metropole District Health Services (MDHS) whilst simultaneously positioning such concerns within broader developmental and health indicators globally.

1.3 Research Problem in context

The increase in maternal and neonatal mortality and the need to reach the Millennium Development Goals (MDGs) influences the need for improved care. However faced by the challenges of the quality of care and the focus to reach the MDGS by 2015, the urgency of identifying effective solutions to emerging challenges remains imperative to the MDGs.

Effective communication of woman's information at clinical handover is important for improving patient safety while reducing adverse outcomes (Abraham, Kannampallil, and Patel 2012). The fact that more than one practitioner could manage a woman over the period of her pregnancy requires accurate, adequate and appropriate information communication (Gephart et al., 2012; Abraham et al., 2012). The perinatal period requires timely and swift responses to problems that would arise such as meconium stained amniotic fluid, premature rupture of membranes, labour dystocia, and foetal distress, which are common reasons for intrapartum, transfers, according to Laws et al., (2011); da Silva (2012).

The main research problem emanates from the inadequate or the lack of appropriate information communication processes among skilled birth attendants that would enable effective management of the intrapartum period. The fact that there is an increasing number of problems associated with communication during handovers, does not specifically indicate the kind of problems and how they are addressed in the South African context (Lawn *et al.* 2011)

The problems thus identified have a significant influence on the quality of care provided to women. There is a possibility that a woman is managed by several health-care professionals in the different settings within different levels of care (Abraham et al 2012; WHO 2007), and this requires coordinated communication. Further, during the intrapartum period a woman can be managed by more than one professional at any given day over a number of different shifts – this consequently introduces a safety risk especially that relating to information communication needs with each interval (Griffin 2010). The risk occurs when vital

information related to the care of a woman is omitted or in other cases poorly represented through verbal or written communication (McKenzie 2002:32; WHO 2007).

Notwithstanding, the perinatal period requires accurate documentation and handover of essential information amongst care teams. This information might not include all the essential information, or information may be misunderstood. These gaps in communication contribute to serious breakdowns in continuity of care for the particular client Abraham et al., (2012). Furthermore, poor information communication transfers between the various health facilities further aggravate the problem with referrals.

Lawn *et al.* (2011), further asserts that in South Africa, delay in (or lack of) information transfer and inadequate collection of information is one of the key factors responsible for delays in the provision of adequate basic and comprehensive obstetric emergency services. This issue therefore underscores the need to understand the information communication (IC) processes among the skilled birth attendants. At the same time it is important to determine ways to effectively optimise Information communication to enable fast and efficient service delivery during the critical intrapartum period.

1.4 Basic Assumptions

In formulating the study objectives two tentative assumptions were formulated:

- a) The assumption that there is a relationship between information communication processes between and within health service organizations. This association influences the management of the intrapartum period in Cape Town MDHS.
- b) Further, there are unique factors within the Cape Town MDHS that would influence the development and/or adoption of an information communication framework for the effective management of the intrapartum period.

At a philosophical level the study assumed that if maternal mortality and morbidity is less in developed countries, then it means that it is preventable with appropriate measures in place. This would be reasonable with appropriate strategies that are context specific due to the dynamic nature of healthcare contexts that are influenced by social cultural and political mandates. Further, there is readily available information for communication, but ICP are socially constructed as the skilled birth attendants engage with each other on a day-to-day basis according to Spangler (2012); Crotty (1998).

On a more practical level the skilled birth attendants engage with their setting and make sense of it based on the historical-social perspectives bestowed to them by their own culture. The author further asserts that understanding the context or participants in their setting enabled the development of an information communication framework that is relevant to the users as it was based on the findings from this context although the interpretation was based on the researchers own experience and background (Creswell 2009:8-9).

1.5 Aim of the Study

The aim of this research was to interpret the complexities around the information and communication processes during the intrapartum period in terms of the work flows of the relevant key actors in order to contribute sustainable information communication (IC) framework aimed at improving the management of the intrapartum period by the skilled birth attendants in the Midwifery Obstetric Units (MOUs) in the Cape Town MDHS.

1.6 Research Question (RQ)

The main research question and its sub questions address the following:

How can skilled birth attendants address the complexities of the information and communication processes to enhance the management of the intrapartum period?

RQ 1: What is the *expected information communication* process during the intrapartum period described in the policies and protocols in the Cape Town MDHS?

RQ 2: How do skilled birth attendants *actually communicate information* within the MOU and between the MOU and referral hospital during the management of intrapartum period in the Cape Town MDHS?

RQ 3: Why do skilled birth attendants find it *difficult to communicate information* during the management of the intrapartum Period?

RQ 4: How do the skilled birth attendants *desire to improve information communication* effectively during the management of the intrapartum?

1.7 Research Objectives

The overall objective of this study was to propose an effective strategy to improve information communication while enhancing the management of the intrapartum period for skilled birth attendants in Cape Town MDHS. To achieve this resolve specific objectives (SO) were addressed by doing the following;

SO 1: Analysing the trends and patterns of the *expected information communication* processes during the intrapartum period through analysis of policies and protocols in the Cape Town MDHS.

SO 2: Acquiring insight into the IC that transpires during the actual information communication processes with skilled birth attendants within the MOU and between the MOU and the referral hospital during the management of intrapartum in the Cape Town MDHS;

SO 3: Gaining insight into the complexities associated with the communication of information during the intrapartum stage;

SO 4: Evaluating a desired information communication to be used to develop an appropriate IC framework for effective management of the intrapartum period.

1.8 The Significance of the Study

Millennium development goals (MDGs) are the eight goals, which form a blue print as agreed by all the worlds' countries and leading development institutions. MDGs include stimulated unprecedented efforts to meet the needs of the world's poorest (WHO 2008).

The achievement of MDGs 4 and 5 remain key priorities within the South African context. The study targets the contribution of the outcome towards the attainment of two specific MDGs (namely 4 and 5) – which broadly address issues around maternal and child health. With respect to the Cape Town MDHS in the Western Cape Province in South Africa, the proposed study will focus on addressing the optimisation of resources for effective management of the intrapartum period. It will be focusing on the point of birth where there is access for majority of the pregnant women i.e. MOUs which are based at the primary care level.

The development of the IC framework would assist the key actors (skilled birth attendants) to evaluate the ICP within their context while identifying development points.

The study was able to gain insight into the service activities, to examine trends, patterns and the consistency of the Information Communication (IC) Systems during the management of the intrapartum period also referred to as - labour. Understanding the processes allowed the researcher to come up with an IC framework, which will require evaluation in another study for effectiveness.

Although information communication occurs during pregnancy, labour, birth and motherhood periods the study only focused on the intrapartum period which although the shortest period of pregnancy, is intense and has the highest maternal and neonatal mortality and morbidity.

1.9 Operational Definitions of Key Concepts

Activity Driven (AD) approach: Activity Driven approach refers to efforts that share the principle of “activity-drivenness” which draws its theoretical basis from Activity Theory, Activity Analysis and Development framework, social technical approach to information systems development and participation of users.

Communication: For the purpose of this study the term communication will refer to the transaction where skilled birth attendants create meanings by exchanging symbols to exchange information.

Information: Is defined as the facts or knowledge received, processed or communicated.

Information pathway: is the description of information transfer within the midwifery obstetric units (MOU) and between MOU and the referral hospitals by skilled birth attendants during the management of intrapartum.

Information process: is defined as the collection, recording, storing, analysing, and utilisation of maternal health information.

Intrapartum period/Labour: is defined as the period from diagnosis of labour to the birth of the baby which includes the first (latent and active phases), second, third and fourth stages of labour which includes diagnoses of labour to 1 hour after the delivery of the placenta (Frasier et. al., 2010). The same definition will be applied in this study.

Partograph /partogram: a graph used to record the progress of labour during the intrapartum period (Frasier et. al., 2010). The same definition is applied to the study.

Gravidogram: is defined as a graph used to record the progress of pregnancy during the antenatal / antepartum period (Frasier et. al., 2010) the same definition is applied to the study.

Foetus: A foetus is a period of development from conception to delivery of a mammal in utero (Frasier et al., 2010).

Skilled birth attendant: is defined as a skilled midwife who is accredited with the South African Nursing Council (SANC) or an obstetrician registered with the Health Professions Council of South Africa (HPCSA) after being educated and trained to proficiently manage pregnancies, labour and delivery with identification, management and referral of complications in women and new-borns.

Midwifery: “A midwife is a person who has successfully completed a midwifery education programme that is duly recognized in the country where it is located and that is based on the International Congress of Midwives (ICM) Essential Competencies for Basic Midwifery Practice and has acquired the requisite qualifications to be registered and/or legally licensed to practice midwifery” (ICM Council, 2011).

1.10 Structure of the Dissertation

The preliminary chapters of this dissertation introduce the concept of maternal information communication addressed in the study as well as related perceptions and improvements internationally.

1.10.1 Chapter one

Gives an overview of the topic under inquiry and specifically deals with the research focus, context of the study, delimitations, and the significance of the study. The aims and objectives are described in this chapter delineating the context of the study.

1.10.2 Chapter two

This chapter examines a discussion of literature focused on maternal health in respect to global, regional and national health perspectives. A focus on peculiar challenges in South Africa and the Western Cape are discussed in this chapter. This chapter also examines the management of the intrapartum period and the issues related to the management of this period. This includes the current status on maternal and neonatal morbidity that have influenced the development of the problem statement.

1.10.3 Chapter three

Provides an examination of literature on the highlights of information communication practices more specifically health information status nationally internationally. The use of health information in the enhancement of health in general and more specifically issues around maternal health informatics and more specifically ideal solutions in developed and developing countries. Convergent, divergent and sometimes contradictory views are shown to reflect the perspectives from which the views are expressed. In concluding this chapter the research issues, as they have been deduced from the literature are identified in the formulation of a conceptual framework for the study.

1.10.4 Chapter Four

Addresses the theoretical, conceptual and analytical frameworks including the philosophical underpinnings that influenced the study. The activity driven model development and use in the study is described including its application to the study. The chapter examines the concept of Activity Driven (AD) approach, Activity Driven information systems development model (ADISD), Activity Analysis and Development (Act AD) framework and Activity Theory which were the basis of the theoretical framework used in the study.

1.10.5 Chapter Five

Provides an overview of the study design and the way in which the case study design is used in the study to emphasize the particular context where the phenomenon occurs (Stake 1995; Yin 2003). Issues surrounding the phenomenon

as discussed in chapter two and three, form the basis from which the specific aim and research questions form the approach to the data collection and analysis.

The philosophical influence of interpretivism is briefly explored in examining the chains of reasoning underpinning this study. The way in which interpretivism shapes the study is outlined and synergies between interpretivism and the case study design are identified.

1.10.6 Chapter Six

Illuminates the findings of the case study. The overarching themes are presented and the subthemes discussed as analysed. The analyses also reflects how the data were interpreted using the developed thematic coding framework as well as presenting various data graphically – the chapter also discusses possible implications for ICP within Cape Town MDHS.

1.10.7 Chapter Seven

Analyses the findings indicating the interpretation of information communication processes while identifying constrictions or challenges using the activity analysis and activity theory model. The illustration of the information communication processes within and between the units of analysis is clarified to model the flow of work and activities influencing or influenced by ICP.

1.10.8 Chapter Eight

Discusses the development of the IC framework and the description used in the development of the framework. The findings of the research were used to highlight the concepts involved in the effective management of the intrapartum period while highlighting areas that need improvement thus becoming the focus of the framework.

1.10.9 Chapter Nine

Summarizes the main findings, conclusions and recommendations of the research study, and examines their significance to Cape Town's unique context. It examines the assertions with reference to the research questions. The nature of generalisation as it relates to case study methodology is explored. The limitations of the study are also highlighted in this final chapter alongside a critically reflexive

account of the quality of the research. Finally, the extent to which the study has provided an encounter' with ICP may have resonance for its readers (Stake 1995) was explored.

2 CHAPTER TWO: MATERNAL HEALTH CARE PERSPECTIVES

2.1 Introduction

This chapter focuses on maternal health care that is immeasurable in its contribution to the conceptual understanding of maternal health informatics. The literature review was focused on the description of health care and the implications of information communication in maternal health. The most important aspect of maternal healthcare includes effective management of pregnancy, labour, birth and motherhood. Use of health informatics in maternal care is discussed in subsequent chapter focussing on contributions and challenges of health informatics within maternal health spectrum. A comprehensive literature search was done using search engines such as EBSCO, google scholar etc. and the main databases used included the PubMed, Cochrane, Cinahil etc. relevant articles and studies were considered for reference.

2.2 Maternal Health care

Health according to the WHO (2010) is defined as a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity. Following the definition of health maternal health includes more than just the physical health of women during the reproductive period. Women's health goes beyond prior to menarche and preparation for menopause. This therefore explains the need for better primary health care in order to improve maternal health. However, even with the focus of primary health care maternal health cannot be managed in isolation within the primary health care setting but requires a global collaboration.

Fried et al., (2010) in his defence of global health as public health, affirms the definition of health as viewed by both the global health and public health without separating globalization of health and public health as separate concepts. This affirms the need for focusing on public health in order to improve global health.

Maternal health is a global concern as pregnant women although not viewed as patients but their physical, mental and social wellbeing should be a global priority.

Maternal health care as an aspect of health is one of the ways of reducing maternal and neonatal morbidity thus improving the general health of the society. Currently, literature shows alarming statistics of maternal and neonatal mortality that is contrary to the expectation that women should not be dying during pregnancy birth and motherhood.

The World Health Organization (WHO), defines a maternal mortality as the death of a woman during pregnancy or within 42 days after pregnancy termination, due to any causes related to or intensified by the pregnancy or the management thereof but not from accidental causes” (Ochako et al., 2011). Although pregnancy is not seen as an illness in our societies, the number of women dying due to pregnancy related conditions is alarming.

Approximately half a million women die every year and up to 99% of these deaths occurring in the developing countries. The fact that there are 1% deaths in more developed countries then it means that these deaths are preventable (Ochako et al., 2011; Hogan et al., 2010; Bhutta et al., 2010).

In addition to women dying (Bhutta and Black 2013; Lawn et al., 2011) estimated that 2.6 million stillbirths occurred worldwide in 2009, with 76.2% occur in South Asia and sub-Saharan Africa. Approximately 1.19 million (0.8 to 2.0 million) of these stillbirths were related to intrapartum events known as death due to asphyxia. This therefore means that even if the women survive pregnancy contributes largely to disabilities in neonates born with asphyxia related to birth complications. This therefore calls for effective management of pregnancy birth and motherhood of both mothers and the newborns.

Further, ten Hoop-Bender et al., (2014), indicate that there are 3 million babies who die within the first month of life mostly from avoidable causes. Majority of these deaths occur on their first day of life. The WHO / UNICEF, (2012,) on their

countdown 2015 report indicate that the survival for new-borns is improving very slowly especially intrapartum stillbirths and preterm births. The need for systems

In South Africa, according to saving mothers report (2014) about 4867 maternal deaths were entered on the database for 2008-2010 by 15th April 2011. Non-pregnancy related infections (mainly deaths in HIV infected pregnant women) accounted for 40.5% of maternal deaths. The three main causes of death that accounted for 70% of the deaths were identified as non-pregnancy related infections, obstetric haemorrhage and hypertension. The report further identifies that the probability of 81% and 61% of cases of obstetric haemorrhage and hypertension respectively were preventable. This means that prompt identification of high-risk women management and referral is essential in order to prevent fatal complications.

Management of obstetric care requires identification of high-risk women and referral in case of emergencies. Notwithstanding, information communication processes require organization and structure in order to manage obstetric emergencies. This should be done adequately within the health services and between the health services.

2.2.1 *Attainment of (MDGS)*

The UN General Assembly in 2000 which included 189 countries and 147 Heads of State and Government, created the Millennium Development Goal (MDG) framework, to be used in stimulating efforts for development while setting global and national priorities with the focusing on action and resources.

The current South African MDG report (MDG report 2010) in a bid to domesticate the MDGs, strategic elements was developed to create a link between the MDGs and the national development plan. The MDGs in discussion in this dissertation are 4 and 5, which are categorised in the report as part of the strategy to improve the health of all South Africans that included MDG 4, 5, and 6. This indicates the weight of these MDGs that are seen as part of health improvement in South Africa (MDG report 2010).

MDG 4 is reflected by a number of indicators that includes infant and child mortality as well as immunisation coverage against preventable diseases. In the current report 2010 the reduction of infant and child mortality target is unlikely to be reached by 2015. The data indicates that by 2015 there should have a less than five mortality rate of 20 deaths per 1000 births but by 2007 there were 104 deaths per 1000 births. However, the infant mortality influenced by childbirth remains at 53 per 1000 births way above the required 20 per 1000 births (Nyamtema, Urassa and van Roosmalen 2011; Bhutta et al., 2010).

Another serious concern is that the current level of maternal mortality in South Africa is much more than the MDG target of 38 per 100 000 live births by 2015. The report identifies the fact that maternal health is a reflection on quality and accessibility of maternal health. Although the report indicates the possibility of attaining the 100 per cent births attended by skilled birth attendants it is unlikely for the attainment of reduction of maternal mortality that is currently at 625 deaths per 100,000 births far from the required 38. This is most likely due to factors associated with management of the pregnancy and birth complications by the skilled birth attendants (Johnson, Padmadas and Matthews 2013; DOH, UNICEF, 2011).

The lack of progress in both maternal and child mortality rates needs attention to the causative factors of which the intrapartum period seems to play a huge role in maternal mortality. A lack of access to emergency obstetric care and health systems challenges is a contributing factor for the high proportion of deaths during the intrapartum and neonatal period in South Africa (Lawn et al., 2011).

2.2.2 Health care

South Africa is classified as a medium developed country based on the global MDGs rankings. Notwithstanding, the country displays characteristics of both industrially developed, as well as that of developing countries as a result of the systemic socio-economic imbalances that are directly attributable to the former apartheid dispensation.

The concept of a health system is viewed on one hand as the establishment of service delivery related to health and on the other hand as just a system of health services including factors influencing service delivery either directly or indirectly according to (van Rensburg 2004). The specific health care systems are interrogated in the study in the context of those organizations that deliver healthcare to the population such as hospitals and Primary Health Care (PHC) clinics that also host the Midwifery Obstetric Units.

Globalization of health means that healthcare of the world's population is associated and determined more by global developments and even less by geographical position (Schrecker 2014; Bozorgmehr 2010). This aspect is said to be facilitated more by better information communication technologies beyond national boundaries, sharing of health policies and more importantly dissemination of scientific findings globally (van Rensburg 2004; Labonté et al., 2010).

2.2.3 Healthcare in the Developed Countries

Health care is provided to citizens in the developed countries through systems put in place by the government. These health care delivery systems may be owned by the state such as the NHS in the UK or managed by the health insurance firms such as those found in the US. These services cater for the needs of the people to some extent but not entirely according to Thomas (2009). The developed countries have a higher standard of living generally, better socioeconomic structures in place and therefore better health for the people. The morbidity associated with developing countries such as poor living conditions and overstressed healthcare facilities is not a concern in these environments (Thomas 2009). However, diseases that arise from the affluence such as cardiovascular diseases and metabolic disorders seem to have a larger burden of disease.

2.2.4 Healthcare in the Developing Countries

In most developing countries unlike developed countries, the government and the private sector jointly provide health care according to Thomas (2009). The public institutions in developing countries more or less seem the only hope for the underprivileged population. This population that seeks public healthcare also has

huge public health issues such as poor nutrition, lack of sanitation among other preventive measures which predispose them to more illness and further congestion in the already under resourced services in developing countries (Basu et al., 2012). On the other hand the private sector focuses on profitability and thus emphasis on curative medicine. Basu et al., (2012) conducted a systematic review on comparative performance of private and public healthcare systems in Low- and Middle-Income countries in which the authors did not support the claim that “the private sector is usually more efficient, accountable, or medically effective than the public sector”. On the other hand the authors (ibid) agreed that the “public sector appears frequently to lack timeliness and hospitality towards patients”.

Van Rensburg (2004) describes the health systems in Africa as varying with prevailing political-economic environments and cannot be as easily categorized as in the developed countries. Systems emanate from the predominantly socialist (Angola, Mozambique and Tanzania) to the socialized (Kenya) to a more free market dispensation (South Africa). More importantly most of the healthcare systems in the African context are “unplanned, uncoordinated, undifferentiated and highly mixed”. Currently, in Africa healthcare systems are composed of both traditional African or ethno medicine and Western or allopathic medicine. The degree of utilization of either of these components of healthcare systems varies within the African countries depending on degree of adoption (Van Rensburg 2004).

2.2.5 Healthcare in the Context of South Africa

The history of health care in South Africa dates to 1652 that coincided with the beginning of the Dutch rule. Development of the healthcare included adoption of personnel coming by ship through the Cape including midwifery and maternity nursing with the first officially approved midwife practicing as early as 1675 (Van Rensburg 2004). Various changes including post-apartheid transformation have changed the scene for the South African health system. Currently, the living environment that the country creates for its people influences the health of the South African population. However, South Africa being part of the global health

systems does not ultimately prescribe what it can or cannot give to the health system but rather adopts a more globalized context.

Notwithstanding, the situation of the women in the developed countries is not comparable with women living in developing contexts where the risk for complications during pregnancy and birth remain huge. Pregnancy related deaths during the reproductive years are large in developing countries directly related to pregnancy and delivery complications (Lawn et al., 2010; Kinney et al., 2010). If the deaths do not occur during pregnancy and delivery the women live with debilitating long term complications such as loss of bladder and bowel control (Van Rensburg 2004).

2.2.6 Maternal Healthcare Perspective

Subsequently, there are significant disparities with respect to the degree to which MDGs relating to maternal and child health are involved. “Taking stock of maternal, new-born and child survival” asserts that improving access and quality care in maternal and child health services should include investment in health information, referral systems, equipment medical supplies and infrastructure (WHO 2010; WHO 2004). This study aimed to map the information communication processes while identifying the challenges in information and communication. Information and communication processes influence delivery of care and further the referral process.

The study is based on the Cape Metropole MDHS obstetric services that involve the MOUs and the referral hospitals. The obstetric services in the Cape Peninsula were made up of a domiciliary midwifery system with a variety of clinics, supported by one tertiary unit and three secondary obstetric hospitals with services that were not well coordinated (Fawcus et al., 2005).

Further in the 1970s, MOUs were started in the ‘townships’ and various suburbs, which have substituted the domiciliary midwifery. The Peninsula Maternal and Neonatal Service (PMNS) were formed in 1980, by integrating and rearranging all maternity facilities. The PMNS according to Fawcus et al., (2005) involves seven

MOUs: Khayelitsha, Guguletu, Mitchell's Plain, Retreat, Hanover Park, Heideveld and St. Monica's/Vanguard), two secondary hospitals (Somerset Hospital and Peninsula Maternity Hospital (which was later named the Mowbray Maternity Hospital in the 1990s and one tertiary maternity unit (Groote Schuur Hospital). A coordinated system with agreed upon referral routes were established.

2.2.7 Referral chains in maternal health care

After the Alma Ata Declaration in 1978 the primary health care services gained motion in South Africa and a beginning of analysis on the essence of the model with an implementation strategy to South Africa. The aim of primary healthcare according to (WHO 2011; 2000; Puska and Ståhl 2010) being to promote health and prevent disease saw South Africa public health service describe three broad levels of care which include: the primary, the secondary and the tertiary level of care (Van Zyl et al., 2000).

Three broad levels of care are used to describe the integration of primary health care services, as all have to be present in order to apply a whole system. These include:

The primary level of care which has PHC1 which has mobile satellite and fixed clinics delivering services up to eight hours a day five days a week. The PHC II has larger clinics with 24 hour services seven days a week including maternal and obstetric services with a larger catchment area than PHC I. PHC III are community health centres with basic hospitals services rendered at district hospitals receiving referrals from satellite clinics and the district. Guguletu and Elsies River MOU are part of the primary level of care with PHC III category. Karl Bremer hospital, which is a district hospital, is in the category of PHC III at the district level rather than a community level.

The secondary level of care receives complicated cases that cannot be treated at a district level hospital where there are general specialists and will accept both direct admissions and transfers from other hospitals. Mowbray maternity hospital is categorized as a secondary level hospital with Guguletu MOU referring to MMH.

The tertiary level comprises of sophisticated intermural services rendered by specialists and super specialists working in academic hospitals and in a multidisciplinary approach. They receive referrals from regional hospitals and serve an entire province. In the Western Cape Province Groote Schuur hospital and Tygerberg hospital are the two tertiary hospitals dealing with maternal health care services at a tertiary level (Heunis et al., 2003; Van Rensburg 2004).

2.2.7.1 Skilled birth attendants (Midwife and Obstetrician)

Skilled birth attendant is defined as accredited health professionals with midwifery skills (doctor, midwife, or nurse) who are proficiently trained in skills necessary to manage normal deliveries, diagnose, manage and refer complications within the community they are serving (WHO 2004; Darmstadt et.al, 2012; Adegoke, van den Broek, 2009; Harvey et al., 2007).

Further, Renfrew, et al., (2014) according to International Labour Organization (ILO) describes midwives as the primary professional group to provide midwifery. Although midwives provide midwifery the need for collaboration with physicians/obstetricians in the delivery of care is important and thus a skilled birth attendant (SBA) reference.

Proportion of births attended by skilled health personnel alongside the maternal mortality ratio are used to measure progress towards MDG5. However, to date Darmstadt et.al, (2009); Van den Broek (2009) indicates that there are still fewer than half of births that occur with a skilled birth attendant. The authors suggest that in order to reduce mortality and morbidity related to intrapartum hypoxia there is a need to provide universal skilled birth attendance while improving the quality and equity of skilled obstetric care.

Skilled birth attendants at the community level play a significant role in improving perinatal and intrapartum related outcomes. A systematic review on evidence of the effect of community health cadres conducted by Darmstadt et.al, (2009) which

included skilled birth attendants showed a 12% reduction in the causes of perinatal mortality (PMR) and a 22%–47% reduction in intrapartum-related neonatal mortality (IPR-NMR).

The core competencies of the skilled birth attendant as described by the WHO (2004) and ICM (2011), include being able to monitor the progress of labour, augment labour, conduct a normal delivery, active management of the third stage of labour, and the resuscitation of the new-born. In addition the skilled birth attendant working in remote areas with limited access should be in a position to perform vacuum or forceps extraction, manual vacuum aspiration for incomplete abortion, and symphysiotomy for obstructed labour.

Some of the core competencies required for information communication by all skilled birth attendants are ((WHO, ICM 2004) ;

- Communicate effectively cross-culturally in order to provide holistic “women-centred” care by cultivating effective interpersonal communication skills and an attitude of respect for the woman’s right to be a full partner in the management of her pregnancy, childbirth and the postnatal period.
- Take a detailed history during pregnancy by asking relevant questions, assess individual needs, give appropriate advice and guidance, calculate the expected date of delivery and perform specific screening tests as required, including voluntary counselling and testing for HIV.
- Record maternal and foetal well-being on a partograph and identify maternal and foetal distress and take appropriate action, including referral where required.
- Identify delayed progress in labour and take appropriate action, including referral where appropriate.
- Collect and report relevant data and collaborate in data analysis and case audits.

The 5th MDG goal target of 90% births in low and middle-income countries to have a skilled birth attendant by 2015 will not be assumed.

Crowe, et al., (2012), in an attempt to estimate the number of births which will not

be attended to by skilled birth attendant by 2015, found that about an estimated 130 and 180 million in South Asia and sub-Saharan Africa from 2011 to 2015. 90% of these non-skilled birth attended births will be in the in rural areas. Efforts to improve access to skilled attendance were suggested which should be accompanied by interventions to improve the safety of non-attended deliveries. Improving skilled birth attendants is not a standalone intervention but requires improving skilled birth attendant competencies such as effective information communication. Streamlined ICP is a driver for effective management of women during pregnancy, birth and motherhood while advocating for emergency obstetrics and referral when necessary.

Further, Darmstadt et.al, (2009) suggests that the success of maternal-child health interventions within a community necessitates a deeper engagement with the social cultural implications of childbirth. This is possible while trying to engage with the role of the key stakeholders in reducing maternal and child mortality. Strategies such as developing and contextualizing tools and technologies for use as indicated by Darmstadt et.al, (2009) in the community allows easier access to maternal healthcare. Not every technology or tool is universally acceptable, therefore the need to implement strategies for information communication that are acceptable feasible, accessible, and safe.

Basic emergency obstetric care, skilled care at birth and comprehensive emergency obstetric care are key interventions that could reduce still birth rate. Notwithstanding, time frames in the care provision are influenced by the information communication among the skilled birth attendants within and between their organisations. Poor management of labour was identified as a major contributing factor for neonatal deaths especially during the intrapartum period (Pattinson et al. 2011; Lawn et al 2011).

2.2.8 Management of pregnancy and birth

Effective management of the intrapartum period is mostly dependent on the antenatal period and the management of any complications.

2.2.8.1 Antepartum

The process through which every woman has to go through during reproduction is experienced in stages. There are three stages that include the antepartum, intrapartum, and the postpartum period (Lowdermilk, et al., 2012; Frasier, Cooper and Nolte, 2010). Antenatal care is a multifaceted intervention, which is offered differently in different countries and different settings (Dowswell et al., 2010).

The antepartum period (also known as the antenatal period) begins from conception until the diagnosis of labour (0 to 40 weeks). It has three periods that include the first trimester (0-12 weeks), second trimester (13-28 weeks) and third trimester (29 - 40 weeks) (Frasier and Cooper 2010). Each of these trimesters has very specific requirements in maternal and foetal health and become a predictor of the outcome of delivery and the neonatal period. Notwithstanding, the antepartum period is also influenced by the maternal social, medical-surgical and past obstetric history (Lowdermilk et al., 2012; Frasier et al., 2010).

Information regarding the maternal history is vital and has to be communicated throughout pregnancy, delivery and the postnatal period. A gravidogram is used to record all the proceedings during pregnancy. This period is especially vital due to the fact that both the mother and the baby are affected by the management of the antenatal period (Frasier, Cooper and Nolte 2010).

According to Kinney et al., (2010) there should be at least one antenatal visit during pregnancy. However, the authors recommended four visits to monitor the growth of a foetus and the health of the mother. The objectives of these visits include;

- First visit 8-12 weeks – confirmation of pregnancy and expected date of delivery, classifying women for basic antenatal care (ANC) (four visits) or more specialized care. Screen, treat and give preventive measures while developing a birth and emergency plan.
- Second visit 24-26 weeks- maternal and foetal well-being assessment while excluding pregnancy induced hypertension and anaemia. Preventive measures are given and a review visit agreed on to modify birth and emergency plan.
- Third visit 32 weeks; maternal and foetal well-being assessment while excluding pregnancy induced hypertension and anaemia.

measures are given and a review visit agreed on to modify birth and emergency plan.

- Fourth 36-38 weeks; Maternal and foetal well-being assessment is done while excluding pregnancy induced hypertension, multiple pregnancy, malpresentation and anaemia. Preventive measures are given and a review visit agreed on to modify birth and emergency plan.

Dowswell et al., (2010) conducted a systematic review on “alternative versus standard packages of antenatal care for low-risk pregnancy” including both trials from low and high-income countries. The results showed that in settings with low number of visits in antenatal programs were associated with a high mortality rate. This therefore emphasizes the need for more antenatal visits, adequate assessment and management with good information collection and communication during labour and birth.

2.2.8.2 Intrapartum

The intrapartum period, which is the focus of the study, begins with the diagnosis of labour. According to Lowdermilk et al., (2012) onset of labour is a process not an event. For a woman without complications and a foetus in vertex presentation onset of labour is diagnosed when there are: 1) regular progressive uterine contractions; 2) progressive dilatation and effacement of the cervix: and 3) progressive descent of the foetus. The management of the intrapartum period is dependent on the diagnosis of true or false labour that is variable although dependent on the factors above.

Lowdermilk et al., (2012), recognises four stages of labour that include: the first stage of labour lasts from the diagnosis of labour to full effacement and dilatation of the cervix. The first stage of labour is further divided into two stages of labour: the latent phase and the active phase. The latent phase of labour lasts for 6 – 8 hours with cervical dilatation of up to 3cm.

Factors such as the foetal condition, contractions, labour progress, and maternal condition, management of medication and fluids and pain relief are vital for

communication during the latent phase of labour. These are recorded in a partograph in the maternal health record every hour and communicated to the skilled birth attendants who need to keep abreast with all information. In the active phase of the first stage of labour there is more rapid dilatation of the cervix and increased rapid descent of the presenting part. The same factors that are observed and examined in the latent phase of labour are also recorded in the active phase of labour but in this case they are recorded more frequently every half hour.

The second stage of labour begins when the cervix is fully dilated and fully effaced. Lowdermilk et al., (2012) indicate that the period lasts 20 minutes for a woman who has had more than one pregnancy (multipara) and 50 minutes for a woman in her first pregnancy (primigravida). A period of up to 2 hours can be allowed for a woman to bear down. Frasier et al., (2010) discuss five vital factors that need to be observed to determine if the second stage is continuing optimally which include: uterine contractions, descent rotation and flexion, foetal condition, maternal condition and suspicious/ pathological changes in the foetal heart.

The third stage starts at the birth of the foetus and ends at the delivery of the placenta within 10 to 15 minutes after the delivery of the baby. The time taken for the third stage, complete delivery of the placenta, management of uterotonics and bleeding are noted and recorded. Communication of these factors becomes essential in the management of the mother post-delivery (Frasier et al., 2010).

During motherhood the mother is expected to breast feed or formula feed the neonate depending on the choice. The health care workers have the duty to assist the woman through effective communication to make the right choice for feeding the baby. The acceptability, feasibility, affordability, sustainability and safety (AFASS) criteria was developed and recommended by the WHO, (2010) for assessing the viability of formula feeding in infants who are HIV exposed. The criteria ensured that the health workers were able to assess the risk for an HIV exposed infant to infection and thus enabling the health workers to assist the infected mother to make an informed decision.

All these stages of labour discussed above have influence of information communication processes during the management of the intrapartum period.

The researcher wishes to focus on three aspects of information communication that include the perceived information communication processes, the actual communication processes and the desired information communication processes.

The process of the study with a definition of terms as the researcher will follow the study, which will include: expected information communication processes are the processes according to laid out guidelines that include the international, national, and provincial guidelines. This will be the information expected to be included in the documentation and communication during the management of the intrapartum period. This expected information communication would be evaluated through the relevant document analysis. Although there are laid out guidelines the researcher anticipates that what is expected is vastly different from what is actually communicated.

Secondly, actual information communication processes include what the skilled birth attendants will be communicating as information whether verbal or nonverbal during the intrapartum period. The researcher will observe the communication processes, evaluate documented information, record telephone conversations and interview the skilled birth attendants. The actual information communication might not necessarily be the desired Information communication processes.

Further, the researcher wishes to identify the desired Information communication processes including all the information that needs to be communicated according to authorities for legal and management reasons and what the skilled birth attendants value as information necessary for communication during the intrapartum period. This information will be analysed and used in the development of an information communication framework.

2.2.9 The partogram

The Partogram originates from the Greek word meaning labour curve (Alauddin, et al., 2014). A partogram is a simple inexpensive tool usually in a paper version that provides a graphical representation of labour progress, the state of the foetus and maternal condition during labour (Lavender, Hart and Smyth 2013; Agrawal, et al., 2013). Most partograms have three main sections for maternal condition, foetal condition and a section for monitoring the labour progress (Lavender et al., 2013).

Friedman (1954) conducted a study of 100 primigravidae (women in their first pregnancy) on cervical dilatation at term and developed a labour graph. This was followed by the development of the original cervical graph by Philpott and Castel (1972) introduced the concept of the alert line, the transfer line and the action line. The transfer line was two hours to the right of the alert line and the action line was four hours to the right of the alert line. The action line was necessary for alerting the need for prompt management according to Lavender et al., (2013)

In 1994 the WHO modified the existing partogram following a randomised controlled trial in South East Asia involving 35,484 women. The results of the study showed a reduction of prolonged labour (from 6.4% to 3.4%), reduction in the proportion of labours requiring augmentation (20.7% to 9.1%), less emergency caesarean sections (from 9.9% to 8.3%) and stillbirths (from 0.5% to 0.3%)(Lavender et al 2013; Alauddin et al., 2014; Agarwal et al 2014).

Although the partogram is a tool used for monitoring and predicting the outcome of labour, appropriate visualization of the intra partum events requires seamless use of the partogram. If utilized appropriately a partogram is able to indicate the appropriate timing of intervention during labour that includes transfer or referral to a hospital in case of a health centre (Alauddin et al., 2014).

The information collection cycle during completion of a partogram begins when a mother is admitted and diagnosed as being in labour. She is under observation until the cervical dilation is 4cm when she is declared as being in the active phase

of labour. All data is entered manually onto the graph and the skilled birth attendant interprets the graph in order to decide on the management. The potential of errors is increased due to multiple data entries and management of many patients at the same time. In one study, cases of data entry are done post incidence, nullifying reason for its use (Bhatt, et al., 2013).

The data collection process needs to be appropriate for effective communication during the management of the intrapartum period. Further data interpretation on a partogram determines the decision made for management of the patient or appropriate referral. Clinical handover in nursing and midwifery (also referred to as 'handover') is identified as an on-going issue causing risks to the patient and therefore the need for effective communication during the management of clients or patients with acceptable handover (Welsh, Flanagan and Ebright 2010; Novak and Fairchild 2012; Gibson et al., 2010).

Griffin (2010) elaborates that the change of shift report requires responsibility and accountability for the care of a patient (client) is conveyed between nurses or midwives for the safety of the patient (client). The report could be in form of information about the patient /client's condition, treatment and care plan being passed on. The communication could either be verbal, written or in a group format. In the midwifery setting team communication becomes vital as the woman in labour could change condition quickly with unexpected complications sometimes occurring.

Most of the communication during labour is about the condition of the foetus, progress of labour and the maternal condition, which are all aspects that are required for documentation on a partograph. Accurate documentation without missing data allows the other skilled birth attendants to refer to when information is required at a later time.

2.3 Chapter Summary

This chapter focused on the aspects of maternal healthcare in South Africa as part of the global arena, which ultimately influences maternal and neonatal morbidity

and mortality. Evidently, effective, accessible, acceptable and affordable maternal health care is dependent on socio-political influences whether local regional or global healthcare. Transitioning from point of care to referral requires effective information communication. Information communication processes are influenced by the daily work activities dictated by the policies and protocols drawn up locally, regionally or globally.

Maternal mortality in the developing countries is much higher than developed countries due to the effectiveness of maternal healthcare services. The fact that maternal mortality is low in developed countries as compared to developing countries indicates that it is preventable.

Further, the fact that the intrapartum period is the shortest period of pregnancy yet with the highest maternal mortality means that it requires swift management. For effective management of the intrapartum period, there should be understanding of activities involved in the care and management of women in labour is important in order to map the flow of information.

3 CHAPTER THREE: HEALTH INFORMATICS

3.1 Introduction

This chapter addresses the issues surrounding the health informatics, more importantly identification of information and communication as concepts influencing the study. A focus on health records is addressed while focussing on information communication in maternal health.

3.2 Health Information

*To act in the world we need to make decisions and to make decisions we need information that helps us choose one course of action over another
Coiera (2003)*

Humans ascribe to having received information, when what they know is altered. The fact that one source of information is better than the other means that information should be measurable for it to be informative. A document can contain a lot of data from a patient according to Coiera (2003), but to the clinician who sees the patient everyday it has very little information. Although data knowledge and information are commonly used interchangeably in speech, each of the terms is defined distinctly in information sciences according to Coiera as described below:

3.2.1 Data

Data is made of facts or observations about the world Coiera (2003). For example the foetal heart rate is 100 beats per minute (bpm). Medical data is central to all medical care, due to its critical role in decision making. All activities in healthcare involve gathering, analysing, or using data whether it is the gathering of single datum or multiple data with several observations, which are not similar according to Shortliffe and Barnett (2014). The definition of single datum or multiple data is defined below;

“One single observation of a patient—e.g., a temperature reading, a red blood cell count, a past history of rubella, or a blood pressure reading is defined as medical datum while medical data are multiple observations which may include several dissimilar observations made simultaneously” (Shortliffe and Barnett 2014).

Types of medical data include narrative, textual data, numerical measurements, recorded signals, drawings, and even photographs according to Shortliffe and Barnett (2014). Most of the data used in patient care and midwifery is narrative data that is mostly paper based. Although this requires a lot of writing and transcriptions in cases of electronic medical record (EMR), over time acronyms are developed which may cause significant problems due to the fact that they may have different meanings depending on the context used. For example “FH” could mean foetal heart or foetal head.

Numeric data is usually used as discrete numeric values in laboratory tests, vital signs and other physical examination measurements. The issue of precisions of such measurement is important. For example the difference between 9 and 10 cm cervical dilatation is questionable measurement. Other data such as analogy or visual images used such as Doppler also produce data necessary for decision making in obstetrics and health care in general.

3.2.2 Knowledge

Knowledge on the other hand defines relationships between data by identifying recurring patterns in data which could be between different patients / clients. For example the foetal heart rate of above 160 bpm is high because the normal foetal heart rate is between 110 -160 bpm Coiera (2013). Further Shortliffe and Barnett (2014; 2006) indicate that if a blood pressure of 120/80 might well be recorded as a single datum where knowledge that a patient’s blood pressure is normal is all that matters.

Knowledge, therefore is a consequence of both the formal or informal analysis (and interpretation) of data which includes the outcomes of formal studies, facts, assumptions, models and heuristics (strategic rules of thumb) for example if the pH of blood is greater than 7.4 then it is abnormally high - which may be influenced by the interpretation of the experts reading the initial data. The knowledge base of the clinician according to Coiera (2013) on acid base balance will influence the interpretation of pH and the required management.

3.2.3 Information

Information is then obtained by the application of knowledge to data. Therefore a foetal heart rate of 110 bpm that is data produces information if it tells us something new. Therefore until such a time that an inference is drawn related to data that the foetal heart rate is now normal as compared to previous heart rate. Therefore using knowledge data is interpreted to produce information. Shortliffe and Barnett (2014; 2006) provide a view that;

“ if the difference between diastolic (while the heart cavities are beginning to fill) and systolic (while they are contracting) blood pressures is important for decision making or for analysis, however, the blood pressure reading is best viewed as two pieces of information (systolic pressure = 120 mm Hg, diastolic pressure =80 mm Hg)”.

The fact that you need more than a piece of data to make decisions requires knowledge of what is normal from abnormal. In healthcare generally there is always standard data agreed upon according to set standards of physiological explanations based on evidence. All pathophysiology is interpreted according to this agreed upon ranges of data. Information is termed as a generic term due to the fact that it involves both organized data and knowledge according to (Shortliffe and Barnett 2014: 2006).

3.2.4 Information behaviour

Information behaviour is summarised by Robson & Robinson (2013) as involving both information seeking and communication. In summarising a review of models used for communication and information seeking, Robson & Robinson (2013) described information behaviour in terms of activities of the users as well as the factors affecting those activities including the sources of the information.

The chain of information communication is a process that involves the production of information, which is used by the information seeker (Robinson 2009).

Robson & Robinson (2013) indicate a number of factors affecting information behaviour which emerge from various models which include:

- The context within which the actor functions, which could include location culture, social influences activity and work, related factors. Context could also include personal factors such as demographics, expertise and psychological factors.

- The information users' needs which could be internally or externally motivated
- The information providers' needs prompting communication of the information.
- Factors that motivate or discourage behaviour
- Actions and feelings experienced while seeking information
- Characteristics of information sources such as utility and credibility of the information, which influences the user's choice of sources and judgement of information, retrieved.

When a user of information receives communication he might use it or discard it after assessing for utility and credibility. This information leads to decisions actions, which may be reviewed depending on perceived outcome. The communication may happen proactively when the user seeks information or reactively when the provider seeks feedback (Robson, & Robinson, 2013).

3.3 Information skills

Clinical decisions, treatment choices and investigations are moulded by the available information, effective communication and the knowledge to interpret the information in order to make informed decisions.

Coiera (2003:36-98) explores five basic clinical informatics skills, which include communicating effectively, structuring information, questioning, searching and making decisions as discussed below:

3.3.1 Communication

Effective communication is based on the understanding of the cognitive information processing models. Accessible information shapes the clinical action, treatment choice and investigation according to Coiera (2006:36-43). The clinicians use the information as clinical evidence, which is gathered through communicating with others or what is documented previously to decide on the right action (Gephart et. al., 2012). Clinical evidence emanates from patient care, clinical literature, patients record, clinical measurement or clinical colleagues who may give messages regarding the patient/client (Coiera 2003).

Coiera (2003) alludes to the fact that messages exchanged in the clinical setting could be delivered through face to face conversations, letters, emails, voicemails and electronic or paper records. Most of these messages are delivered as handover during shift changes, or when another practitioner takes over one patient from another.

Effective communication is extremely important to the care of a patient / client according to the Joint Commission on accreditation of healthcare organizations (2012) who have included it in the national patient safety whereas ineffective handovers especially when all information is not presented are unsafe for the care of patients/clients (Street et al., 2011). In the health care setting team communication is usually in terms of handovers. Handovers are often verbal or written and could either to individuals or a group. The report of the previous group may be taped and available for listening. The report could occur at the nurses' station, in a conference room, or the hallway, away from patients and families according to Griffin (2010).

When information exchange works well clinical care is based on concrete evidence, but if information exchanges are poor the quality of care is greatly affected (Griffin 2010; Johnson et al., 2014; Sarvestani et al., 2012).

Coiera (2006:35-39) discusses communication processes and how the structure of various clinical messages may affect the way in which they are interpreted as discussed below;

- Firstly, the structure of a message determines how it will be understood. What is received may not necessarily be what the message was meant to convey when it was created. Human beings react to different data presentations and the understanding is greatly shaped by the presentation. What is seen in a patient record is different to how the health care worker understands it.
- Secondly, the message that is sent may not be the message that is received.

Messages could be misunderstood due to the limited ability of the agent (human or computer) receiving the message to interpret it and also due to the process of communication itself.

- Communication channels also distort the message communicated, which could be face-to-face, telecommunication or even the medical records used. The distortion is usually noise Coiera (2006:38). The standard information theory indicates that a channel may modify when an agent sends a message and the receiver may get a different message.
- Further individuals know different things and the fact that knowledge influences the interpretation of data, then different diagnosis and clinical decisions could be based on the same data.
- Messages are constructed according to imperfect models of the world due to,
 - Perceptual limitations in which we may misperceive the symbols, which are written such as poor handwriting.
 - Human's attention limitations where we pay attention to a message and miss some of the content. The current cognitive ability determines the inference drawn to the message
 - Cognitive biases in which humans do not perceive information in a neutral way. "We hear what we want to hear"

Thirdly, regardless of the limitations in message exchanges, Grice's conventional maxims according to Coiera (2003) provide a set of rules for conducting agents whether human or computer. These rules allow the agent to communicate effectively if they follow a set of rules that ensure conversations are effective and each of the agents understand what is going on. Each agent participating in the conversation is required to follow a cooperative principle to ensure the conversation succeeds by making appropriate contributions to the conversation, saying just what is required, saying at an appropriate time in conversations and only satisfy the accepted purpose of conversation (Coiera 2003).

Grice proposed a set of four maxims on the principle of cooperation according to (Coiera 2003; Dale and Reiter 1996).

The Maxim of Quality: Make your contribution one that is true.

- Do not say what you believe to be false.
- Do not say that for which you lack adequate evidence.

The Maxim of Quantity: Say what is needed

- Make your contribution as informative as is required for the current purposes of the exchange
- Do not make your contribution more informative than is required

The Maxim of Relevance: Be relevant

- Say what is relevant in the context of communication

The Maxim of Manner: Be perspicuous

- Avoid obscurity of expression.
- Avoid ambiguity.
- Be brief
- Be orderly.

Effective communication according to Gephart et al., (2012) are conversations that accomplish a goal that both the sender and receiver of the message understand. The conversation should achieve the purpose; produce an effect while allowing action to take place. There is always a need to evaluate the effectiveness of communication.

3.3.2 Structuring information

Time wasting and misleading information have a huge impact on the efficacy of clinical work due to the scarce resources and the healthcare workers who are thinly stretched. Coiera (2003) agrees that Grice's maxims are not just a "social nicety" but also a requirement for professionals to follow the rules in order for the sender to construct and send a message efficiently, the receiver to understand the intended message within their constraints. In order to determine the structure and content of the message Coiera (2015) suggests that messages should be structured to accomplish a specified task with the available resources to suit the receiver of the message, and the fact that the patient record can have many different structures.

Various organizations within and out of healthcare, have established structured communication acronyms in order to provide a formal approach to organizational communication such as; Situation, Task, Intent, Concern, Calibrate (STICC) Needs, Background, Assessment (NBA); Introduction, Patient ID, Assessment, Situation, Safety concerns, Background, Actors, Timing, Ownership, Next steps (I

PASS the BATON) and Situation, Background, Assessment, Recommendation, Repeat back (ISBARR) (Veltman and Larison 2007)

Structured communication techniques have been implemented to improve communication including when doing bedside reporting. The most common structured approach adopted was the Situation–Background– Assessment– Recommendation (ISBAR) framework that is said to streamline information exchanges, and promote patient safety (Street et al., 2011; Veltman and Larison 2007). However, there has been an issue raised in the use of structured communication where low quality communication has been attributed to the quality of information communicated causing frustrations (Veltman and Larison 2007).

3.3.3 Questioning

Searching and finding missing information improves patient's care especially when key information is missing. Healthcare workers have more knowledge gaps as more research findings improve the care of patients. The need to question the care provided allows for the search of evidence-based information (Coiera 2003)

The main goal to patient or client safety addresses the issue of communication during handovers and focuses on the need to communicate while improving the effectiveness of communication among caregivers with an opportunity to ask and respond to questions during handovers as indicated by (Novak and Fairchild 2012).

3.3.4 Searching

Choo (2006) ascribes to information seeking behaviour as the behaviour which is based on the identification of information needs where the individual identifies gaps in knowledge. Further, the information seeking involves searching for information to change the state of mind and information use which allows the individual to act based on the information received.

Searching requires well-structured questions to be requested from well-informed agents (Coiera 2003). In healthcare, information seeking behaviour is common among the healthcare workers either for consultation reasons or referral to guidelines.

Kannampallil et al., (2013) in their study on understanding the nature of information seeking within a critical care environment found out that clinical decision making and reasoning is based on the information seeking which is exploratory, cumulative, and iterative. The physicians were involved in a process of constantly finding and re-finding information from multiple sources to confirm or invalidate their various theories.

Health information seeking is not just engagement in a search for information, but involves complex characteristics which include the characteristics of the information seeker, the environment, the context, and the current events, within the search process according to Anker, Reinhart and Feeley (2011).

3.3.5 Making decisions

Treatment of patients occurs when information is used to inform the existing knowledge or evidence. Making decisions is based on deciding between alternatives. Coiera (2003) discusses several key points on decision-making, which include:

- Problem solving involves reasoning from facts to create alternatives and then choosing one alternative
- Hypothesis is generated by making inferences from given data
- Decision trees could be used in determining a likely outcome from several alternatives
- Most clinical decisions are based on heuristic reasoning but could be biased due to limitation in our clinical reasoning

Kannampallil et al., (2013) concluded that the physicians enhanced their information seeking process through retrieving information from various sources that they found could maximize the information required to make informed decisions.

Patient or client care is a continuous process where the handovers are on-going 'give and take processes' where one professional describes the information and the other has to conceptualize, understand and act on it. Both the sender and the receiver should identify and anticipate possible differences in handover and communication that influence the content and the style of communication (Gibson

et al, 2010). The data that is recorded at any point could be the basis of someone else's decisions on patient care in the future and should be communicated effectively.

3.4 Means of coordination

Improving maternal health requires health systems that function as an entity rather than silos with single interventions or actions by individual actors that form part of activities by a team of actors (Nyamtema, Urassa and van Roosmalen 2011). The complexity of management of perinatal care requires a variety of complex yet comprehensive interventions in order to reduce maternal mortality (Campbell and Graham 2006). The fact that complications can arise at any time and place requires single interventions which are comprehensive yet achievable. These interventions may be networked by several activities that require specific means of coordination. This therefore requires maternal health that is dependent on appropriate health systems to have policies whose objective is dependent on each intervention to be achieved while managing the complex interventions (Sanneving et al 2013).

Various factors were attributed to the expected information communication processes within the obstetric units and between the referring facilities in Cape Town MHDS. The policies, protocols and guidelines were used as a means of coordination of activities in the management of the perinatal period. The definition of a protocol according to Coiera (2003) is all steps in the management of a clinical condition that could cover the steps to develop a diagnosis or treat an illness. The protocols used in the study were used to describe the steps in diagnosis and management while describing the required processes to be followed in case of further management.

Guidelines are synonymously used with the term protocol emphasizing guidance in the clinical management rather than ordering the course of action required. The practitioners are expected to use judgment in the care (Coiera 2003). In an attempt to describe evidence-based health policy Sanneving et al., (2013) assert that knowing what is needed and facilitating those needs does not necessarily mean that health is improved. The authors (ibid) suggest rather studies are conducted on health policy process especially low and middle income settings focusing on

the current activities. This will allow for better identification of the content needed for the health policies.

Regardless of whether the content of a guideline or a protocol reflects best practice, the usefulness and the impact is reflected by the adoption rate. Consequently there is need for the developers of policies, guidelines and protocols to contemplate the best representation or the guidelines for dissemination (Coiera 2003). The study seeks to review the expected ICP according to the guidelines protocols and policies. Policies have to be contextualized in both context and place (Walt et al., 2008) meaning that the environment requiring policies is influenced by inter-organizational and network relationships. However, due to globalization healthcare policies are also influenced by global decisions but also by domestic requirements subjective to political and economic climate. The review of what is expected in this study is based on the domestic policies, protocols and the guidelines that guide the daily practices.

The documents analyzed were either available in paper based or electronic records of policies, protocols and guidelines.

3.5 Paper based versus electronic medical record

Paper based recording system has dominated the health care clinical practice over decades. Although the physical form of paper has remained unchanged the formal structure of the information contained in the record has drastically changed over years (Fawdry et al., 2011; Coiera 2003).

The use of Paper-based systems for monitoring maternal labour has revealed reduction in life-threatening complications especially in areas with limited resources (Hawley et al., 2014; Underwood, Sterling and Bennett 2012; Coiera 2003). Although useful there are many drawbacks associated with the use of paper (Underwood et al., 2012; Coiera 2003).

During the management of pregnancy, labour and delivery the woman brings along her health record at each visit and the care given documented. Use of paper held records is seen to reduce anxiety and increase the involvement of women in their

care as demonstrated in a study conducted by Iversen et al., (2015) Hawley (2014); and Philips (2001).

Shortliffe and Barnett (2006) identified the use of records as being able to provide quality and continuity of care through adequate documentation of care provided, extensive details of interventions and future treatment plans. Further the authors (*ibid*) identify weaknesses of the traditional method, which include;

- Pragmatic and Logistical Issues
- Redundancy and Inefficiency
- Influence on Clinical Research
- The Passive Nature of Paper Records

With these challenges associated with paper-based records identified there is a growing drive to replace them with electronic based records (Hawley, et al., 2014; Underwood et al., 2012; Shortliffe and Barnett 2006; Coiera 2003).

A systematic review was carried out on the data completeness, experiences of users and integration of care between women and health care providers by Hawley, et al., (2014), and revealed surprising findings contrary to the excitement of electronic health record (EHR). The review demonstrated a gap in knowledge especially on data completeness which involved both the paper based records and the electronic health records. The review reinforced the fact that paper based records were an important tool in maternal care (Hawley et al., 2014; Fawdry et al., 2011).

Solutions such as those suggested by Underwood et al., (2012) in the study evaluating the use of a digital pen for improving maternal labour in Kenya, the results revealed that the Parto-Pen system provided a bridge between paper-based systems, and electronic medical record system.

3.6 Information communication in maternal health

According to Benham-Hutchins, and Effken, (2010) and Simpson et al (2006) failures in communication are the leading causes of preventable patient injuries and death particularly when interruptions in communication occur during labour placing mothers and babies at risk for harm.

A study conducted by Simpson et al., (2006) in the multicentre qualitative study involving focus groups and in-depth interviews, revealed that midwives and physicians shared a common goal for the outcome of labour and birth: a healthy mother and baby. Therefore there was need for effective information communication a strategy to improve maternal care especially in the community settings.

Simpson et al., (2006) asserted that experienced nurses required Minimal Communication with the physicians during the management of labour and communicated on as needed basis provided they felt things were going well for the mother and the baby.

Team behaviours were shown to influence communication according to results of a multicentre study by Simpson et al., (2006) which revealed that many nurses' perceived physician behaviour as being inconsistent with what should be expected from another team member. These perceptions were based on the fact that most physicians made decisions to quicken labour and deliver the women at a convenient time.

Some of the desirable traits that emerged from the study by Simpson et al., (2006) showed that the nurses (midwives) and physicians desired respectful interdisciplinary interactions. Kindness and caring were traits that were valued by both parties as professional traits.

The nurses required understanding and patience with the less experienced colleagues by the physicians while the physicians overwhelmingly preferred working with the more experienced nurses on the grounds that they had built trust and confidence in the ability of the nurses to manage labour appropriately.

Creating a culture of effective collaboration in maternity care between professional groups is increasingly seen as an essential element in good quality and safe health care. This is especially true in the context of maternity care where women have straightforward labour and birth experiences and may require higher level care and transfer between settings in case of complications (Lyndon, Zlatnik and Wachter 2011; Downe, Finlayson and Fleming 2010).

Downe et al., (2010) discusses possible characteristics of effective collaboration

such as: appropriate components, respected clear boundaries, effective conflict resolution systems, participation opportunities and building cohesion, open and honest communication, mutual trust, acknowledgement of interdependence, shared responsibilities, Influencing factors, supportive organizational structure, available resources, history of collaboration and a positive individual attitude.

A qualitative study conducted on both nurses and doctors by Hastie and Fahy (2011) on inter-collaboration in the delivery suit demonstrated that “turf wars” between physicians and midwives occur. There is also collaboration between the professions. Most of the negative interactions according to Hastie and Fahy (2011) involved power struggles between professionals. The organizational culture within the birth environment was the main predictor of positive inter-professional collaboration.

Information communication within and between health care settings relies heavily on data collected and information communication processes that are influenced by team collaboration and communication. This study investigates the information communication processed and the complexities experienced by skilled birth attendant with the ICPs.

3.7 Chapter Summary

Accurate data collection, appropriate management of information and effective communication emerged as important factors in health care information management. The fact that various health practitioners can manage a woman in labour at different times requires accurate data collection, appropriate management of the information and effective communication of the said information.

4 CHAPTER FOUR: THEORETICAL AND PHILOSOPHICAL BACKGROUND

4.1 Introduction

In this chapter, the theoretical framework underpinning this study is discussed and its application to the study elaborated. The Activity Driven approach was used as an initial guide in data collection and analysis. The Activity Driven approach that was derived from the Activity Theory is employed in this study as the analytical lens and a further discussion on its origin and application is discussed in this chapter. The philosophical underpinnings of the research and the influence to the outcome of the study are discussed in the next chapter. Below are some of the concepts as applied to the study:

Information systems: have a variety of definitions. Pentikäinen (2013) reviews the definition of information system as not just computerized tools used by people but rather as a system to process, store and give information while supporting a work system. In my definition I view information systems as social technical entities that include people, processes and artefacts.

Information systems development: is viewed in this study as a social technical process that involves improvement of work activity. In this study it is seen as the process for developing information systems to improve work activity (Pentikäinen 2013:49; Luukkonen 2012).

The Activity Driven approach is derived from the Activity Theory which belongs to the sociotechnical ISD category. It is used as the theoretical framework for the study (Mursu, et al., 2007).

Work activity: work activity is a systemic entity of purposeful, cooperative human action with several actors working in an organized manner upon a shared object in order to transform it into an intended outcome. Different means of work, information tools, information entities and information systems are used to achieve work activity. (Pentikäinen 2013). A further explanation of the development of the

theoretical structure of work activity, which was established by Engeström, in his PHD dissertation in 1987, will be discussed further on the activity driven framework.

The existing information systems that facilitate and help work activities will be used to describe the human activity system.

4.2 Activity - Driven Approach to ISD

Luukkonen et al., (2013) have used several statements to define the activity driven approach to ISD which is the theoretical framework used in this research as indicated below:

- *The approach draws its theoretical basis from the Activity Theory, the Activity Analysis and Development framework, a socio-technical view of information systems development, and user participation.*
- *The approach is developed for the early phases of ISD (planning, data gathering, analysis, describing, and validation) with an emphasis work and information systems development.*
- *The development of Information systems begins with the study of work activities as systemic entities.*
- *All technology is seen as a tool (including computer technology) to facilitate work, embedded in the work system.*
- *Both collective and individual aspects of work are taken into account.*
- *Work systems are studied in their organizational context.*

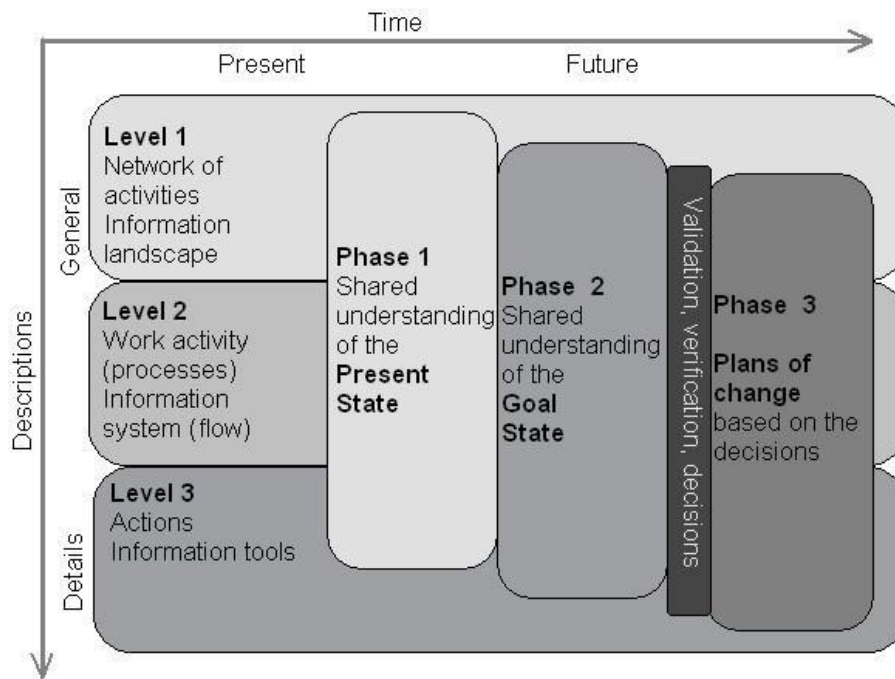


FIGURE: 4.1: AD ISD MODEL (ADOPTED FROM MURSU ET AL., 2007)

These definitions will be considered in the application of the Activity Driven (AD) approach to the research. The research is based on understanding the work activities of the skilled birth attendants that is influenced by the ICP during the management of the intrapartum period.

Luukkonen et al., (2013) identifies the three characteristics of an AD approach two of which have been used due to their relevance in the study;

- *Activity Driven Information Systems Development Model (AD ISD)* for guiding the gathering and analysis of the information, and for understanding the “as is” situation while capturing the user needs “for to be” situation; these models will be used as the lens for the research throughout the planning analysis and discussion phases.
- *Activity Analysis and Development (Act AD) framework* a tool for analysing human work activity as a systemic entity; will be used in the analysis of the work activities in the cases.
- *Participatory and cooperative methods and tools*

Due to the nature of the study participatory and cooperative methods were used during the interviews to elicit the desired ICP. Further the Activity Driven Information Systems Development Model (AD ISD) model and the Activity analysis development (Act AD) framework are discussed below in their application to the study.

4.3 Activity Driven ISD model

The Activity Driven ISD model was developed in a Zip IT project with the objective of developing a model that can be utilized to improve information systems within a health care organization that needs to improve its information (Mursu et al., 2007).

The Activity Driven Model (Figure: 4.1) is based on the Act AD framework (Figure: 4.4) and integrative levels of activity which allows information systems to be studied at the individual group and organizational points of view (Korpela, Soriyan and Olufokunbi 2001). The Act AD is a collection of different methods and tools, directed at different levels of activity in different development phases (Mursu et al 2007).

During the development of IS three phases are described in this research of which analysing for shared understanding of the present state and designing for shared understanding of the goal state will be analysed and modelled. The third phase of making plans for change will not be analysed in this study.

4.3.1 Levels of activity

The three levels are studied in the work context with different emphasis of both weaknesses, development points relating each to the present state. The three levels include: level 1 Network of activities and information landscape; level 2, Work activity processes, information systems and flows and level 3, Actions and information tools. Further, strengths and good practices need to be emphasised. In each phase work activity can be studied in three levels, each having different emphasis and granularity of description (Toivanen, Luukkonen and Mykkänen 2009).

4.3.1.1 Level 1: Network of activities and information landscape

The work activities and information systems are examined within the context. These activities could be networked within the organization or between the organizations. The connections created by these activities make up the network. In this study the network of activities involved between the MOUs and the referral hospitals were examined while examining the activities within each organization including modelling the information processes.

4.3.1.2 Level 2: Work activity processes, information systems and flows

At the level of work activities the development points are identified while modelling the work processes. The Activity Driven framework provides a direction for the elements of work activity. Work activities and processes as well as information systems and flows were studied from a perspective of collective team's perspective on work process. The work activities were modelled and the information tools and information used in the work processes mapped to the workflows. The mapping of information entities included the origin of the information, tools used to collect the information, how the information is retrieved, and communicated while identifying the constrictions that influence the information communication processes.

4.3.1.3 Level 3: Actions and information tools

A detailed analysis of individual actions including the information tools used and data items needed for central action was examined. The interaction between the actor and the tools was described. This allowed the identification of challenges with information collection and information tools that influenced the communication processes. These challenges were identified as development points.

4.3.2 Phases of activity

According to Toivanen et al., (2009) ADISD model has three main phases that form a time perspective of the processes and one sub- phase. The phases are suggestive of the milestones of the information systems development model.

4.3.2.1 Phase 1: Analysing towards shared understanding of the present state of activity

Modelling and documenting the present state of the activity included the first and second research sub questions that are describing the expected information communication and the actual information communication. This made the current situation visible enabling the weaknesses of the information communication processes to be spotted. The evaluation allowed improvement by understanding reasons behind these weaknesses. Firstly, the organizational expectations of the information communication processes were identified and described within the three levels evaluating where the goal state of an activity is described and stated,

The expected information communication processes were identified through a review of policies and protocols that would influence the ICP within and between the MOU and the referral hospitals.

Secondly, the actual information communication processes were identified through interviews, observations and document reviews. This allowed an analysis of the present state at all levels of activity. During this process the challenges identified were seen as development points and would be used in the next phase for designing for shared understanding of the goal state.

4.3.2.2 Phase 2: Designing for shared understanding of the goal state

As described by Mursu et al., (2007) an understanding of the present state of an activity is necessary prior to embarking on the second phase (Figure: 1, Phase 2) where the goal state of is described and stated. During the research process identification of the present state allowed the researcher to evaluate the desired state. Although the participants could define challenges identified especially during the interviews, the definition of the goal state as the desired ICP were not well defined.

The phase 2 was further analysed though studying the data collected from the expected ICP, the actual ICP the challenges of ICP and the desired state of ICP as described by the participants as per the research questions. With this perspective the researcher embarked on answering the fourth research sub-question by describing the desired information communication processes thus defining how the whole IC process should be arranged before development of an information communication framework for ISD.

In addition to alternative solutions in the information communication processes, effects on the work processes were deliberated by considering questions such as those indicated by Mursu et al., (2007)

- What are the realistic ways to improve IS?
- How would the improvements affect the other elements of activity?
- How does the use of new information tools change the daily work practices, duties, and roles?

- Are new rules needed to organize the activities inside the organization?

A generalized solution taking a theoretical mode was discussed and therefore the development of an information communication framework (ibid).

4.3.2.3 Validation, verification, decisions

Mursu et al., (2007), affirm that following the analysis of phase one (Analysing toward shared understanding of the present state of activity) and phase two (designing for shared understanding of the goal state) there should be a place for validation, verification and decision making based on the different options. The development of the framework was based on the empirical data. The validation and verification of the data allowed for decisions on the concepts to be included for the development of the framework to be envisioned as a solution to shift from the present to the desired goal state to making plans for change

4.3.2.4 Phase 3: Making plans for change based on decisions

Phase 3 includes descriptions of activities of the present state and of the future state. These explanations and decisions make it possible to plan for change from the present to a goal state according to Mursu et al., (2007). A recommendation is made that the interaction between the practitioners and developers allows for a successful outcome of this phase. The third phase included possible interventions such as identifying training which might be needed and how it will be organised, identifying the need for other interventions which will be evaluated using the developed framework.

4.4 Activity Analysis and Development Framework

The Activity Analysis and Development (Act AD) Framework offers a theoretical base for the description of individual work activities and group activities. Act AD views work activities as a network of activities that are organized in a certain way and aimed at a common object to achieve a common goal (Korpela et al 2000; Mursu et al., 2007; Luukkonen 2012).

The Act AD framework was developed based on the activity theory by Leontev and Engeström which can be used to analyse an activity as a systemic entity. The framework was developed by Korpela (1994) and further modified by Korpela et al

(2000, 2002; 2004). I have used the Act AD framework in this study as an analytical lens in the activity analysis.

As indicated earlier Activity Driven Framework was developed based on the activity theory. The first description by Vygotsky illustrates that all human interaction with the world is mediated by either material tools or by immaterial signs as shown in Figure: 4.2. S: stimulus, R: response, X: mediation by tools and signs.

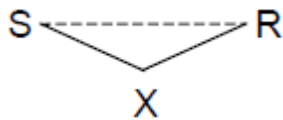


FIGURE: 4.2 VYGOTSKY'S MEDIATED ACTION ADOPTED FROM KORPELA ET AL 2000

Further, Leontiev (1978) identified a three level model (table 4.1) distinguishing between non-conscious *operation*, individual *action* and collective *activity* as compared to Vygotsky's suggestion that dealt with an *individual* subject (Korpela et al., 2000).

TABLE 4.1: LEONTIEV'S THREE LEVEL MODEL

Unit	Directing factor	Subject
Activity	Object/motive	Collective
Action	Goal	Individual or group
Operation	Conditions	Non – Consciousness

Engeström, (1987) developed Vygotsky's and Leontiev's constructs into a universal structure of human activity which illustrates the interaction of elements in an activity showing their relatedness. Table 4.2 below illustrates the relationship of the elements to the study as they were described.

TABLE 4.2: *ELEMENTS OF AN ACTIVITY SYSTEM*

Element	Description	In this study
Subject	<i>The individual or group whose point of view is taken in the analysis of the activity</i>	<i>The skilled birth attendant</i>
The object	<i>The target of the activity within the system</i>	<i>The woman in labour / intrapartum period</i>
The outcome	<i>The result of the actions taken</i>	<i>The outcome is the healthy mother and newborn baby</i>
Means of cooperation, communication and coordination	Means by which the participants in the study communicate and coordinate their work, both artifacts and immaterial means	<i>Protocols, policies, maternal guidelines</i>
Means of work	<i>Internal or external mediating tools that help to achieve the outcomes of the activity</i>	<i>Documents, telephones, verbal communication</i>
Collective actor	<i>Comprised of the people who share the activities with the subject</i>	<i>Midwives, doctors, students, anaesthetists, nurses</i>
Actor	<i>Participant within the ICP involved in an individual action</i>	<i>A midwife or A doctor</i>
The division of labour	<i>How tasks are divided horizontally between community members as well as referring to any vertical division of power and status</i>	<i>Task allocation within the MOU and between the MOU and the referral hospital</i>

In Leotiev’s model the elements of individual work are acknowledged as the subject or the actor, the means of work, the object and the outcome (fig.4.3). In the case of this study the actor is the skilled birth attendant, who uses the means of work such as telephones, documents etc., with the object of action being the woman in labour, and effective ICP assistance in achieving effective management of the intrapartum period in order to have a healthy mother and baby.

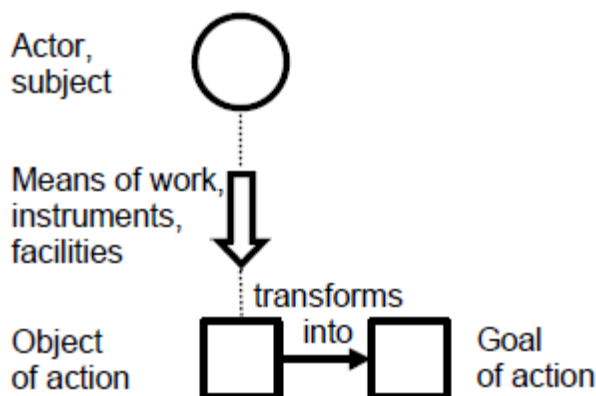


FIGURE: 4.3 INDIVIDUAL ACTION OF WORK

Engeström, (1987) describes Activity Theory (AT) as a historically evolving collective activity system, seen in its network relations to other activity systems. In

the principal unit of analysis there are goal-directed actions and instinctive operations through which these are interpreted. As illustrated in Figure: 4 the collective actors who are seen as a team through a means of coordination, guided by rules each have individual actions aimed towards the object of action for a common goal or outcome Korpela et al., (2000). The management of a woman in labour involves collaborative activities by skilled birth attendants as a team guided by means of communication whether verbal or written. They are guided by rules written in protocols and guidelines. The woman in labour being the object of action each skilled birth attendant has an individual action in the work process to achieve the desired goal of a healthy mother and baby.

Mursu (2002) modified the work of Korpela et al., (2000) to illuminate the relations with other activities mediated by the means of networking. The network of activities between the MOUs and the referral hospital will be depicted as the relations between the organizations.

Further, identifying disturbances and everyday innovations allows for analysis and questioning of existing practice and further proceed to implement a new model in practice by negotiating new forms of work organization. This collective work activity is vital in the appreciation of information communication within and between organizations.

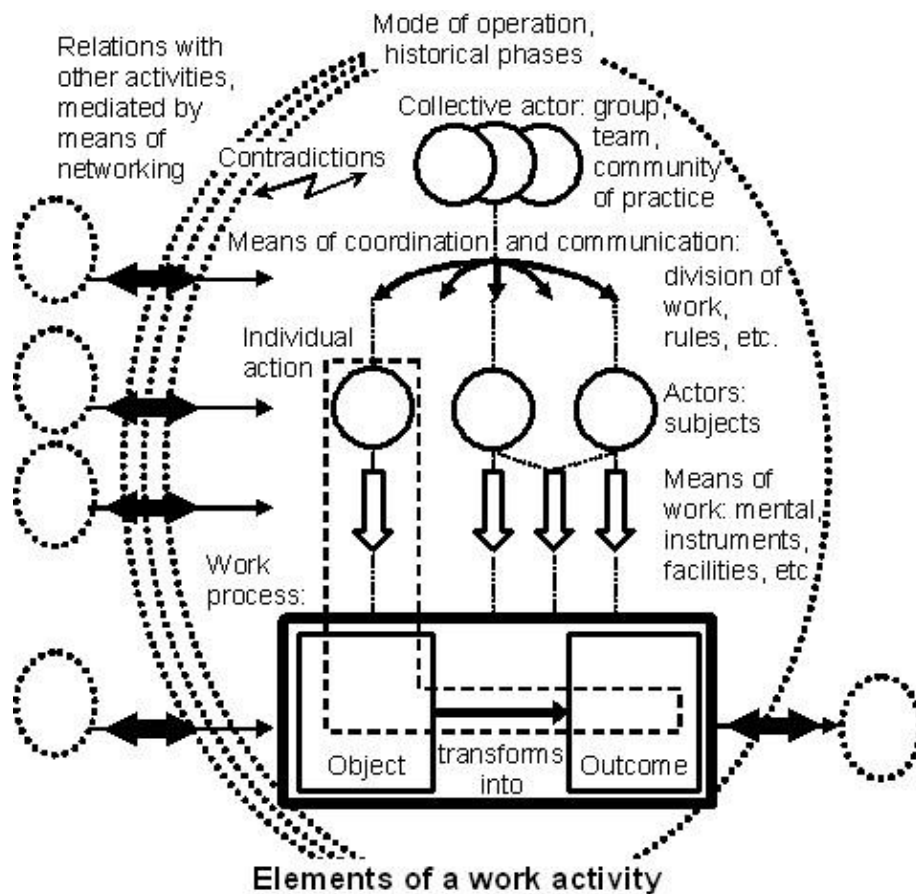


FIGURE: 4.4 THE ACT AD FRAMEWORK (MURSU 2002)

According to Engeström (1987) AT was used to provide a structure to work activity that is necessary when developing information systems. In providing a structure to a study, it becomes possible to define the activities in an organization. AT (being a work orientated approach) assists in developing information systems through an understanding of the processes involved (Korpela *et al.*, 2000).

The fact that people going about their daily duties have to carry out certain tasks means that they have an influence on information systems. While analysing these activities Korpela *et al.*, (2004) suggest that the model used needs to meet the following activities:

- The starting point must be work activity as a systemic entity. During the study the description of the work activities within the MOU and between the MOU and the referral hospitals were described from the participant's point of view.
- Another activity being technology, including computer-based technology, must be seen as a tool to facilitate work, embedded in the work system. In both the MOU and the referral systems the use of computers was purely for administrative reasons and not necessarily for client information. Fixed

telephones and fax lines were the main artefacts used for any communication in relation to the management of woman in labour.

- Both collective and individual aspects of work need to be taken into account which includes the individual activities of each midwife, doctor, student midwife and collective activities of the midwives in the MOU and between the MOU and the referral hospital.
- Work systems need to be studied in their organizational context. The work analysis and information systems in the study were observed and described in the organizational context of the sites selected.
- The analytical model must be based on a sound theoretical basis, must be applicable to both descriptive studies and practical development; and technological development by software and IS professionals and the development of work practice itself by the workers. The study will provide empirical data on the information systems and work activities identifying development areas.

During the research as described in chapter 6 the following elements of work activities were highlighted,

- The object, goal and outcome of the management of the intrapartum period were identified from both the collective and individual actions.
- The means of work tools for information communication processes during the management of the intrapartum period.
- The actors within and between the organizations were identified and their roles including scope of practice was considered.
- The means of coordination and communication and the rules that affected their daily activities including the instruments used were identified.

Further challenges within each element were identified and illuminated further as development points. The activity driven approach as indicated earlier was developed from the activity theory.

4.5 Activity Theory (AT)

Activity Theory also known as cultural-historical activity theory (CHAT) originated in the Union of Soviet Socialist Republics (USSR) and was originally developed by Russian psychologist Lev Semyonovich Vygotsky (1896-1934). AT in research emphasizes that human activity is culturally and historically formed, mediated and

defined by its object which is further goal directed towards a specific outcome (Hedegaard, Chaiklin and Jensen 1999).

The five principles of AT found in different sources e.g. Engeström (1987; Kaptelinin et al., (1995) which include: the hierarchical structure of activity, object-orientedness, internalization/externalization, mediation and development are essential features of AT.

4.5.1 Hierarchical structure of activity

While activities are goal directed actions that are performed in order to satisfy the object, the actions are conscious and are instigated by 'automatic operations'. Activity Theory therefore focuses on the fact that the elements of activity are dependent on the context/conditions (Kaptelinin & Nardi, 1997). The levels can either move up or down. Although the object remains fixed the goals, actions and operations change with context. The use of AT in this study allows a flexibility to apply it in this context (Kaptelinin et al., 1995).

In the context of the study the activities the object being the woman in labour, requires actions such as assistance during the labouring process which allows for communication by both the skilled birth attendant with the woman in labour and between skilled birth attendants.

This communication action affects the activities involving the subjects during the management of the intrapartum period. The activities for ICP involved during the management of the intrapartum period include collection of information and communication of the information to the various subjects involved in the care of the woman during labour. The actions that are specific include communication of emergencies and consultation to enhance the operations.

4.5.2 Object-orientedness (purposefulness)

Goal directed actions are aimed at satisfying the object. Whether these actions are from the group or by the organization, these actions are all aimed at ensuring the desired outcomes are achieved (Kaptelinin & Nardi, 1997). In this study the desired outcome for all actions is a healthy baby and a healthy mother. All activities are focused towards this one outcome. To achieve this outcome the effective

information communication processes allow effective management of the intrapartum period.

4.5.3 Internalization/Externalization

Although activities have an internal and external dimension they need to be analysed. Activities can be either internal or external but they need to be analysed together for a proper understanding to be achieved. Internalization relates to the human being's ability to imagine, consider alternative approaches to a problem, and perform mental simulations (Kaptelinin & Nardi, 1997). The internalization of the needs identified by the skilled birth attendants in this case is required in order to effectively communicate the activities that have an influence on the management of the intrapartum period enabling a desired outcome.

Externalization transforms an internalised action into an external one (Kaptelinin & Nardi, 1997). During the management of the intrapartum period the skilled birth attendant is required to make an appropriate diagnosis and effectively communicate the findings to other skilled birth attendant within or between the units of analysis. Any constriction in the internalization results in undesired external action therefore the need for effective internalization of the action.

Although an activity has both an internal and external side there is no gap between the two and the division of activity is rather artificial. However, while evaluating the externalization of activity it is important to realize the influence of the internalization on an activity (Kaptelinin & Nardi, 1997). In this study the internal factors such as the influence of decision making capability influences the internalization of the activity and the action taken thereafter related to the individual and group activities between the skilled birth attendants during the ICP.

4.5.4 Mediation

The fourth principle of Activity Theory is about *mediation and* according to Engeström (1996) it belongs to the first generation. It was Vygotsky who noted that action could never be direct to the object, but always mediated by some *tool* or instrument (Figure: 4.4). Those instruments can be both material and immaterial and the language is one of the most important mediators.

In this study the mediating tools which are also artefacts include the tools used by

the subjects in this case the skilled birth attendant to facilitate the ICP which is the action while managing the object in this case the woman in labour. These tools could be those that are currently constructed by the subjects or by other people, perhaps, at another time and in another culture. Within them, the artefacts consequently carry the knowledge of this people and its culture, and they are the historical evidence of its development. As the artefacts are used to carry out action, they are also constraining it, and affect both the subject and the object.

The instrument mediates the relation between the subject and the object, but the instrument is also constituted of the subject and the artefact.

4.5.5 *Development*

Development is seen to emerge as a dynamic nature of activity and the contradiction as the promoter of change (Luukkonen 2012). Development is viewed in this study as an activity for changing work practice or the flow of information. Although development can be seen as either improving the current situation or maldevelopment from stakeholder's view, in my case I view development as an improvement from the challenges faced. Being able to identify constrictions within a study gives an opportunity to view spots for development. All challenges that were identified in the study developed as desires for change that envisioned the desire for future change.

Development in this study does not refer to social economic or human development as used in development research or even educational research.

5 CHAPTER FIVE: STUDY DESIGN METHODS AND PHILOSOPHICAL INFLUENCES

5.1 Introduction

This chapter deliberates the foundation for the selected epistemological positioning while describing the research methodology that was used in responding to the research questions as highlighted in the introductory chapter at the beginning of the dissertation. The chapter describes the contextualization of the research, sources of data and the methods used for collecting the required data. Furthermore, it also delivers a transitory description of the analytical methods employed in analysing the information gathered during the various phases of the study. Similarly, the reflection of the researcher on experiences in data collection is highlighted with the research collection process. Ethical issues associated with this case study are also examined.

5.2 Contextualising Research Perspectives

To address the research questions it is essential to focus on how to obtain the data by identifying the data collection techniques along with the procedures while evaluating the most appropriate research design. Saunders, Lewis and Thornhill (2012) introduced the metaphor of the research onion to illustrate the elements of the research process. The research onion (Figure: 5.1) is associated with explicit deliberation of elements critical to the development of a suitable and comprehensible research design. The research philosophy being the outer layer, is followed by the methodological choice, research strategy, time horizon and techniques used in the study being the core or the inner layer of the research. The Figure 5.1 below shows the research onion as applied to this particular study. The research philosophy was interpretivism, with a multi-method qualitative methodology applied. A cross-sectional case study design was selected in which the data was collected within a period of 6 months between the two cases. The techniques used included in-depth interviews, field notes, document reviews and observations. The thematic analysis and activity driven approach were used for data analysis.

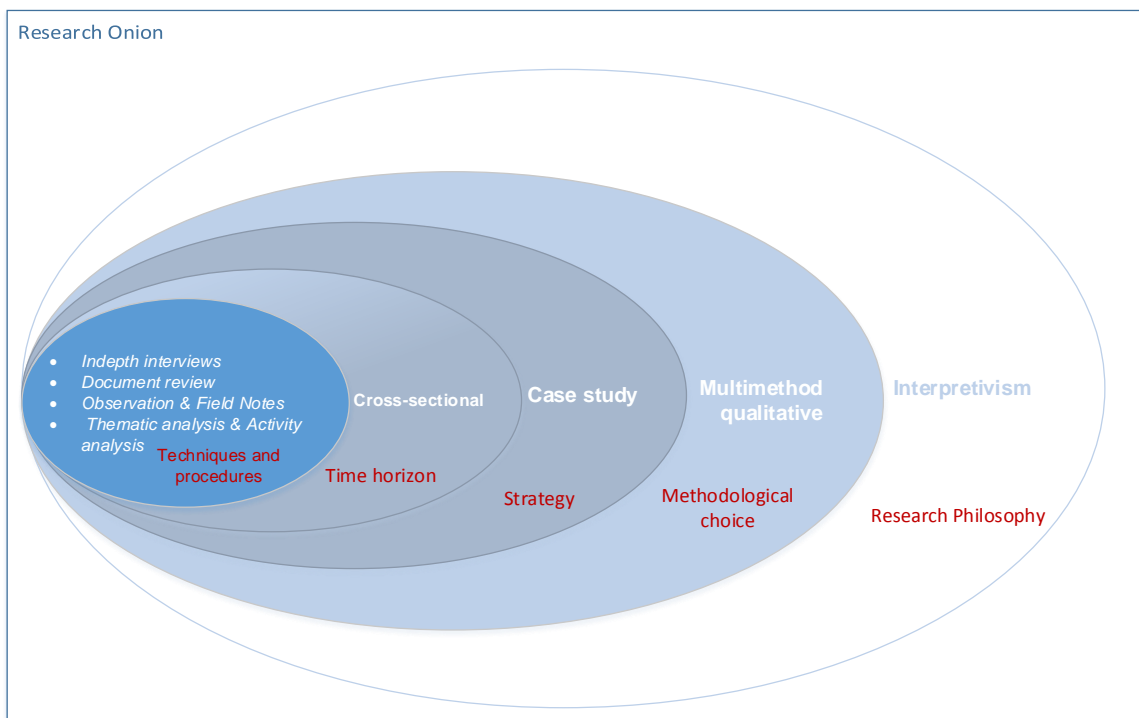


FIGURE: 5.1: RESEARCH ONION (ADAPTED FROM SAUNDERS AND TOSEY 2013)

Saunders and Tosey (2013); Jansen (2007) define research premises as “delineating [one’s] paradigmatic assumptions and perspectives”. Jansen (*ibid*) further describes research as understanding the world that is informed by the way a person views it. Further, Jansen (*ibid*) discusses three lenses that a researcher can use to examine the practice of research which include the *ontological assumptions*, *epistemological assumptions* and *methodological considerations*. How a researcher views the world shapes how a research question is understood and is associated with the research design.

I adopted the interpretivist with the intention to empathise on the participant’s social world while understanding the meaning they give it from their point of view. I consider research to be value bound and a function of a particular set of circumstances and individuals within a specific time. In order to gather rich insights into the subjective meanings of the data I was involved in the co-construction of meaning while reflecting on the participant’s viewpoint (Saunders et al., 2013).

As an interpretive study, the researcher understands/interprets the work processes and artefacts used during the intrapartum period for the information communication processes.

The fact that the information communication processes are being described through interpretivism was the assumption that language is socially constructed and the case study would achieve different social cultural interpretations of the information communication processes (Walsham 2006). Interpretive studies are suitable for the healthcare context since the researcher can interpret the construction of the information communication processes in the actual research setting of healthcare services (Dixon-Woods et al., 2006; Henderson 2005).

The fact that constructivists hold the assumption that individuals seek understanding of the environs in which they live and work, means that the experiences are subjective and directed towards certain objects or things (Creswell 2012). The participant's views were varied and multiple therefore the need to rely on these complexity of ideas to understand the differences construed. These differences were between the expected information communication processes and the actual communication processes that are both socially constructed. The subjective meaning of what information needs to be communicated is socially and historically negotiated.

Wendt (1992) acknowledges the social structures have three elements namely: *shared knowledge*, *material resources*, and *practices*. These elements establish the actors in a given state and the nature of those relationships. The skilled birth attendants not only take the approach of teamwork but also interact with the use of materials resources and share knowledge during the management of the intrapartum period. These shared understandings, expectations and knowledge, constitute the actors in a situation whether cooperative or conflictive. Providing an understanding of the information communication processes within a particular case site enables the researcher to identify and interpret the relationship between the expected information communication processes as described by policies and the actual information communication that constitutes of the social construction of information communication.

5.3 Introduction to interpretivism

The interpretive world view has its roots in the "nineteenth century and Dilthey's philosophy, Max Weber's sociology and George Herbert mead's social psychology

and can be linked to Weber's *Verstehen* approach" (Holloway and Wheeler 2013). Weber indicates in Holloway and Wheeler (2010) that understanding used by social scientists (*geisteswissenschaft*) is different from explanation used by natural scientists (*naturwissenschaft*).

Further *Verstehen* was envisioned as understanding something in its context through empathy and reflective reconstruction and interpretation of the action of others (Holloway and Wheeler 2010).

Within the social context, conventions, norms and standards of the particular person or community are crucial elements in assessing and understanding human behaviour. The experiences of people and phenomena are context bound and cannot be free from the human actor therefore the need to integrate the values and interests as part of the process because they are all socially constructed. Identifying the researcher's position in this setting allows for reflexivity, as the researcher becomes the main research tool. The researcher is the co-creator of meaning bringing her own subjective experience to the research, trying to understand how each part is connected to the whole.

Willis (2007) indicates that interpretivism is humanistic, constructivist and naturalistic research that is socially constructed activity and the reality is socially constructed. Interpretivism argues that making meaning is a group or social process rather than individual reality. This reality allows an understanding that information communication cannot be a single person's reality but rather socially constructed.

Humans in groups according to Willis (2007: 97) ...use the tools and traditions of the group (including language) to construct meaning and thus are able to share their understanding with the other members of the group.

Further members of this group will easily understand the research and non-members might find it difficult to understand and even harder to accept as reality as this is not their reality. Researchers therefore have access to a socially constructed reality.

Creswell (2012) describes qualitative inquiry as that which aims at understanding the *meaning* of human *action* and further distinguishes qualitative data (as being non-numeric data in the form of words) from quantitative data (which is essentially numeric data).

Walsham (2006) argues, “The interpretive methods of research start from the position that our knowledge of reality, including the domain of human action, is a social construction by human actors.” The fact that our theories are always aiming at making sense of the world and the shared meanings are a form of inter-subjectivity.

Our theories concerning reality are ways of making sense of the world, and the meanings that are shared become a form of inter-subjectivity – we are products of our environments. This therefore takes an axiological assumption that the researcher cannot obtain value-free data since the enquiry allows for the use of preconceptions in order to guide the process of inquiry.

Geertz’s (1973) brief description of the data collected in interpretive research studies is summarised as: *“What we call our data are really our own constructions of other people’s constructions of what they and their compatriots are up to.”* Therefore as an interpretivist I am aware of my role as a researcher with previous experiences and being able to interpret the data means I would consider my position while giving meaning to the data.

Controversies arising around positivism as a better method than interpretivism is better explained when Latour (1985) in Walsham (1995) summarises the use of interpretivism as ideal in understanding, “networks of people, and their organization through devices such as machines, as critical in understanding the process of fact construction in science, and the resolving of scientific controversies.” This remains controversial as positivism is still seen as the orthodox approach by researchers who want to influence policy and decision-making that brings us to the discussion of the methodological choice.

5.4 Methodological choice

Peeling off the second layer of the onion reveals the choice of whether to use a quantitative or qualitative approach. The multi-method qualitative design was selected as the use of more than one data collection techniques were used with associated analysis as described in Figure: 6. The qualitative method allowed the researcher to focus on conducting the research with the participants while adopting an empathetic stance to understand their social world while giving meanings to their viewpoint (Saunders et al., 2012).

“The fox knows many things but the hedgehog knows one big thing” a verse from the seventh century Greek poet Archilochus is used to provide the differences between qualitative (hedgehogs) and quantitative (foxes) researchers (Thomas and Magilvy 2011). While quantitative research focuses on gathering a variety of information (like foxes), qualitative research tends to focus on the depth of the research while identifying a single phenomenon and (like hedgehogs) burrowing deep to gain deeper understanding of the experience with a few number of participants. Therefore, being able to gain a close up holistic view of many features of the single phenomenon.

The study purposes that justify the qualitative methodology are to gain a deeper holistic understanding of the ICP and to develop better intrapartum care management through effective ICP. The multi method qualitative research by Saunders and Tosey (2013) was selected with a multiple case study approach as discussed below.

5.5 The selection of case study strategy

Various strategies were considered in the selection of an approach that was appropriate to the phenomenon that is information communication processes during the intrapartum period. Considering my professional experience and the inadequate appropriate literature focusing on ICP in the intrapartum period, I focused on edging the study in a way to gain insight and allow the understanding of the complexities involved in the ICP during the intrapartum period (Flyvgberg 2006; Maree 2007).

A case study as described by Yin (2014); Baxter and Jack (2008) as a twofold definition of “an empirical inquiry that investigates a contemporary phenomenon (the case) in-depth within its real world context especially when the boundaries between the phenomenon and the context, may not be clearly evident.” The ICP during the management of the intrapartum woman is not clearly evident providing an understanding of the case allowed and understanding of the important contextual conditions unique to the case.

Further Yin (2014) defines a case study as an inquiry that copes with the technically distinctive situation in which there will be many more variables of interest than data points allowing for the researcher to rely on multiple sources of evidence, with data needing to converge in a triangulating fashion. Further, the use of theoretical framework to guide data collection and analysis. The use of a case study on ICP allows the visualization of work activities within the management of the intrapartum period whereas understanding the influence policies and protocols would have on the actual ICP within this period. Using activity theory to guide data collection and analysis allows for focus on answering the research questions.

Swanborn (2012), describes a case study as the study of a phenomenon which he discusses the fact that ‘the researcher focuses on process tracing: the description and explanation of social processes that unfold between persons participating in the process, people with their values expectations, opinions, perceptions resources controversies decisions mutual relations and behaviour or description and explanation of processes within and between social institutions”.

The Case study approach offered a multi perspective analysis of the views of different actors and their interaction through ICP in the management of the intrapartum period within and between health service providers. This approach assisted the researcher to have a deeper understanding of the dynamics involved in ICP among skilled birth attendants during the management of the intrapartum period.

Equally, (Swaborn 2012; Lincoln and Guba 1985) accentuate that studying a phenomenon in its natural setting allows the researcher to study the social phenomenon with little disruption of the original. The fact that the phenomenon takes its meaning and depends on its context allows me to understand the communication processes involved during this period not related to any other period of pregnancy or another structural

context. Thomas (2011) relates a case to a capsule with two halves of which one half contains the subject, person or place and the other the analytical frame or object. Studying ICP within the intrapartum period in the MOUs selected offers an understanding of the communication processes derived during the work activities in these settings.

Two cases were studied – a multiple case study approach was employed since the two cases are different in setting and referral chains relating to the context are different. Additionally, a multiple case study approach facilitated a more detailed analysis within each setting and across settings (Baxter and Jack 2008). As emphasized by Thomas (2011), studying these case studies does not aim to generalize but rather get a rich depiction and gain analytical insights from each of the case studies. Each will be viewed with completeness viewing each case from different angles. The expectation from my experience is that these two cases are different socially and culturally and administrative boundaries allow each case to be structurally different.

Based on the above indicators of the phenomenon dependent on its context there is a need to understand the reality based on the world in which the phenomenon is best understood. This therefore requires a full consideration of the epistemological, ontological and methodological issues accompanying the case study especially the philosophical underpinnings of this particular case study.

5.6 Case study Design

To be able to understand case study two words that make up the phrase need to be examined. Rule and John (2011) refer to the word case as a Latin word *casus* (*cadere* = to fall), meaning fall, chance, occasion, misfortune, event or situation. Different authors as mentioned above have provided useful definitions of a case study with insightful direction as to what a case study research is and is not. Yin (2012) defines a case study as:

“That which investigates a contemporary phenomenon (the case) in its real-life context; especially when the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used.”

Rule and John (2011) view a case study as “a systematic and in-depth investigation of a particular instance in its context in order to generate knowledge.” This ties with a traditional more explicit definition by Merriam (1998) who viewed a case study as a unit, a process, and a product. Most authors as mentioned above agree that there is no formula to the choice of a case study but it solely depends on your question to seek and explain the present circumstance which the how and why a social phenomenon works.

Yin (2014) asserts that doing a case study is linear but interactive processes, which includes designing, preparing, collecting data analysing and sharing. In planning the case study Yin, indicates the need to identify the relevant situation for the case study, be able to understand the twofold definition of a case study inquiry while addressing the traditional concerns surrounding the case study research and deciding whether to do a case study.

Case studies, whether single or multiple, should follow a replication rather than sampling logic according to Yin (2014). While single case studies offer invaluable insight, multiple case studies are likely to be stronger and a worthy objective. In designing the cases, Yin asserts that five components need to be considered as vital: firstly, the case study’s questions, the how and why, secondly, its propositions within the scope of study, thirdly, unit of analysis which is the case relating to defining the case and bounding the case in order to determine the scope of data to be collected and distinguishing the phenomenon from the context.

Yin (1994) asserts that a case study design must have five components: the research question(s), its propositions, its unit(s) of analysis, and the determination of how the data was linked to the propositions and criteria to interpret the findings. Being able to operationally define the unit of analysis would assist with replication and efforts at case comparison.

The fourth component being the linking data to propositions, which include: pattern matching, explanation building, time series analysis, logic models and cross case synthesis. A fifth component emanates in the need for a criteria to interpret a case study’s findings. This requires an in-depth understanding and interpretation of rival explanations that give the case study findings a stronger stance (Yin 2014).

Further Stake (1995) proposed a similar series of necessary steps for completing the case method, which included including the posing of research questions, gathering data, data analysis and interpretation

Rosenberg and Yates (2007) in their discussion on schematic representation of case study research designs indicate that in order to understand the nature of case study research it's important to conceptualize it as an approach rather than a methodology and utilize multiple sources of data to capture this complexity. To demonstrate procedural clarity and provide structure for methodological rigour, a schematic representation is suggested demonstrating the elements of a logical process as illustrated below (Figure: 5.2). In this study a multi-method was used to collect data that was analysed using thematic and activity driven approach to analyse the data.

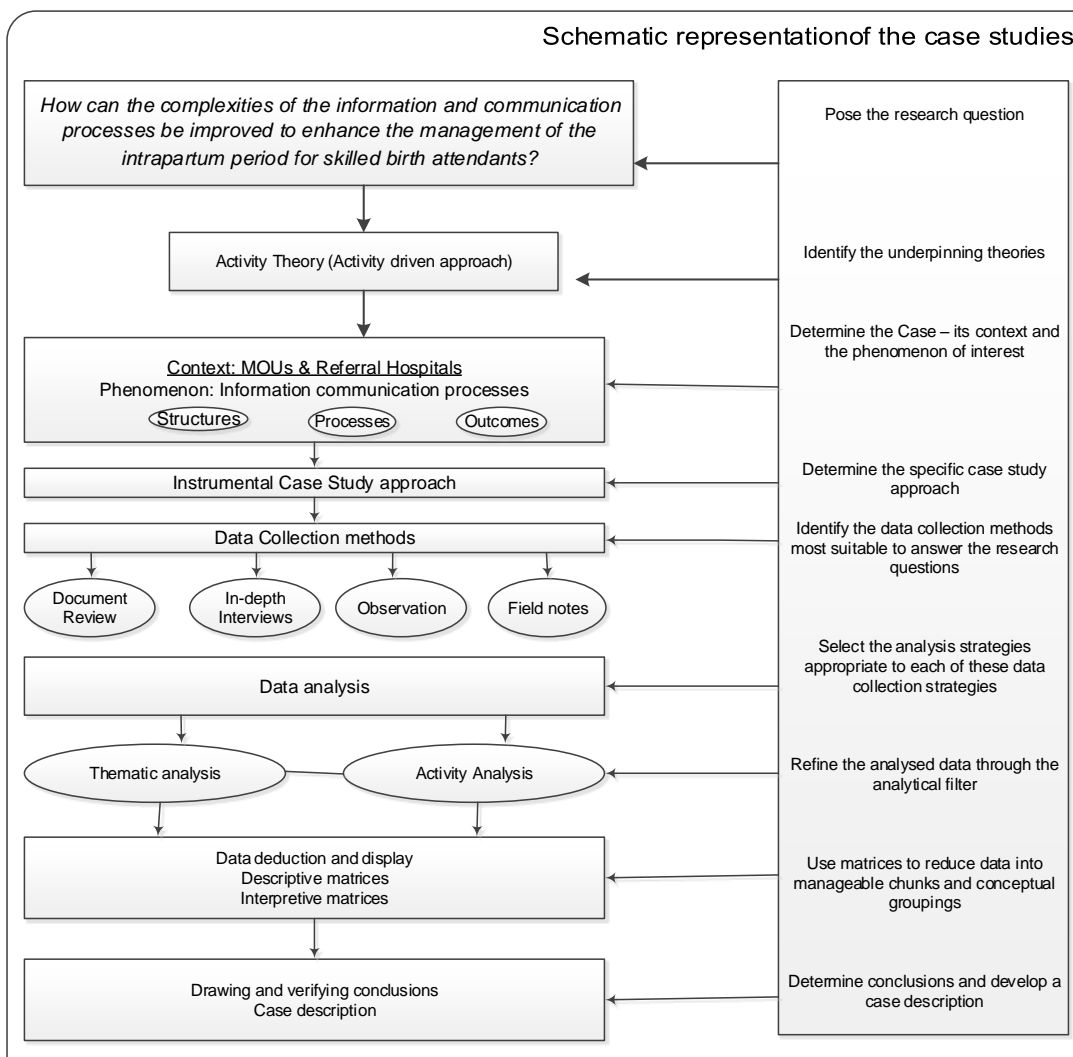


FIGURE: 5.2: SCHEMATIC REPRESENTATION ADAPTED FROM ROSENBERG AND YATES, (2007)

5.7 Challenges of case study methodology

Zainal (2007) discusses three main arguments against case study researchers shared by authors such as Yin. Firstly, case studies are identified as often lacking rigor according to Zainal (2007). Further the influence of ambiguous evidence is seen as a reason for influencing the direction of the case study findings and conclusions.

“Too many times, the case study investigator has been sloppy, and has allowed equivocal evidence to influence the direction of the findings and conclusions”. Yin (2014)

Secondly, there is an apparent inability to generalize from case studies is seen as a weakness, which influences the applicability of results. The question often asked is “how can you generalize from a single case?” (Yin 2014). Yin explains further that case studies do not allow generalization to populations and universes but rather to theoretical propositions. This allows the researcher to expand and generalize theories and not infer probabilities.

Thirdly, Zainal (2007) discusses the thought that “case studies are often labelled as being too long, difficult to conduct and producing a massive amount of documentation”. Yin, (ibid) views this as the “unmanageable level of effort.... given the way the case studies were done in the past”. However, there is no need for case studies to take long unless using methods such as ethnography, which require long periods of being in the field.

Yin (2014) further discusses two additional concerns which include the unclear comparative advantage in contrast to other research methods .The fact that randomised control trials (RCTs) are seen as the gold standards of research has caused undue emphasis and downgrading of case study research. This further elicits the understanding of not whether the intervention worked but how the intervention would work, as would be addresses in the case study research.

A further concern discussed by Yin (2014) addresses the confusion of case study research and teaching cases. While in teaching the case study material can be

altered to demonstrate a particular point, this step in case study research is forbidden. All evidence in case study research is reported fairly and precisely.

In summary Yin indicates that although these five concerns can be allayed, a good case study is still difficult to do. The issue of credibility in case study research seems a highlight raised by authors as discussed above. The points raised will be addressed in this study in the later chapter when the theory, credibility or associated concepts will be discussed.

5.8 Types of case study

Stake (1995) and Simons (2009) indicate that a case study may be intrinsic, instrumental and collective case study. This study purposely examines all three types.

The case was originally selected in this study to provide a general understanding of the phenomenon, issue or the research question. The selection of the MOUs was instrumental in exploring the ICP during the intrapartum period that influences the effective management of the intrapartum period. During the data analysis of each of the cases, intrinsic interest in the cases developed as the analysis was being done.

Baxter and Jack (2008) discuss a collective case study as that which provides understanding using a number of instrumental cases occurring on one site or multiple sites. Yin (2014) asserts the use of multiple case studies as those that provide analytical generalizations as opposed to statistical generalizations. The selected cases are unique in each aspect of information communication as they are influenced by different administrative and clinical management structures. Additionally each of the cases is geographically culturally and linguistically different.

The selection of multiple case studies allows for the companion case by allowing the possibility of the second case filling a gap left by the first or responding better to some shortcoming or criticism of the first case. The two cases will comprise a stronger case study Yin (2014).

Subsequently Yin (2014) evaluates the basic types of case studies based on a 2x2 matrix in which four types of case studies (Figure: 7 below) which include: (Type 1) single- case designs with (holistic) single unit of analysis, secondly (Type 2) single case designs with (embedded) multiple units of analysis, (Type 3) multiple case designs (holistic) single unit of analysis and Type 4 multiple case designs (embedded) multiple units of analysis.

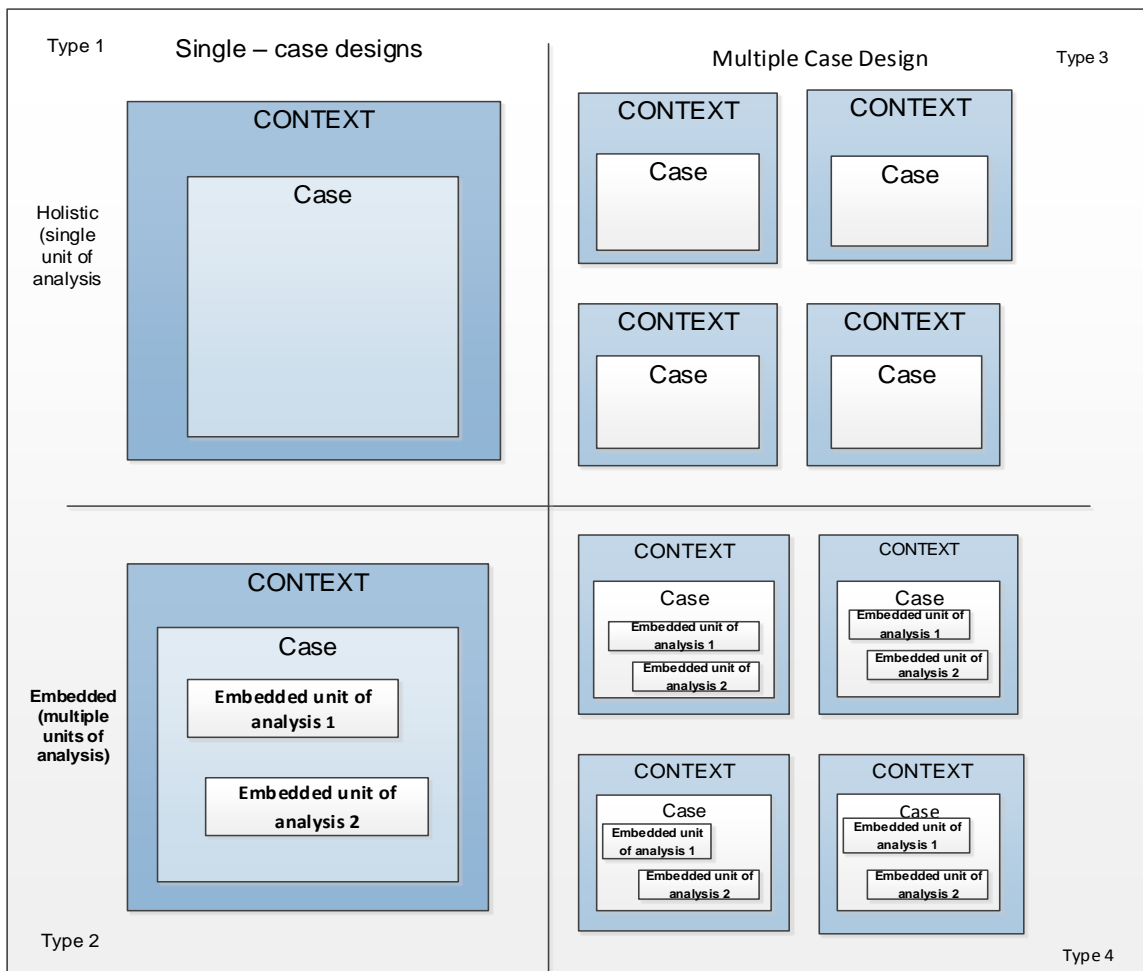


FIGURE: 5.3: *BASIC TYPES OF DESIGNS FOR CASE STUDIES SOURCE: YIN 2014:50*

For the purpose of this study a multiple case design in this case will provide a more robust study by offering an understanding of the ICP from the northern and southern drainages allowing the replication. The embedded multiple unit of analysis (Figure 5.4 below) was examined which allowed the study to examine ICP within the MOUs and between the MOU and the referral hospitals.

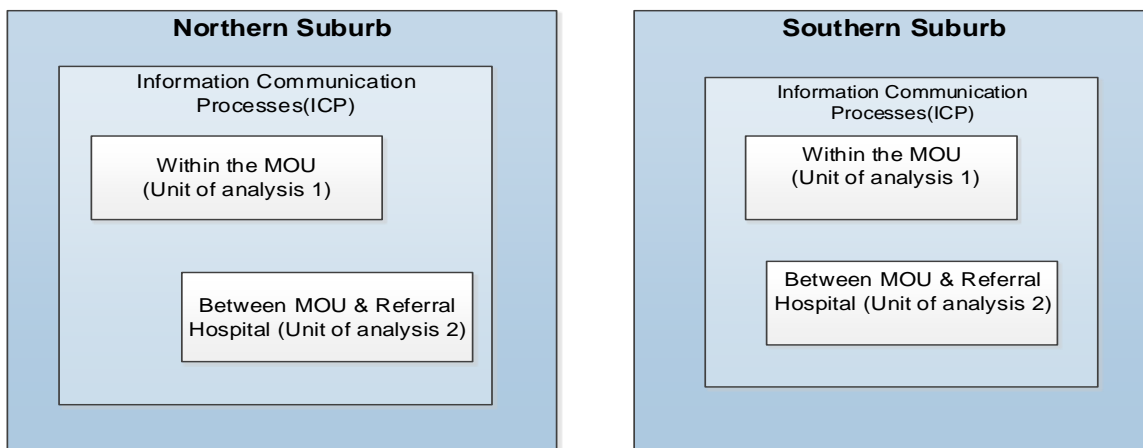


FIGURE: 5.4: *REPRESENTING CASE STUDY ONE AND TWO RESPECTIVELY EMBEDDED APPROACH (ADAPTED FROM YIN 2014)*

Each of the case studies was carefully selected to yield a literal replication or similar result as the ICP might be similar in the northern and southern suburbs. The replications approach multiple case study procedure Figure: 5.5 was utilized during this study process (Yin 2014:59; Baxter and Jack 2008:550).

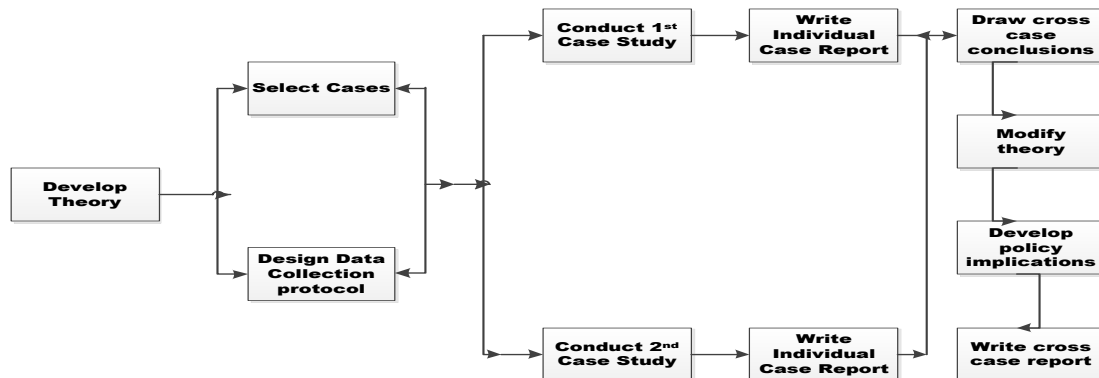


FIGURE: 5.5: *MULTIPLE CASE STUDY PROCEDURE YIN 2014*

The design of the data collection protocol was done concurrently with the careful selection of the cases. Each of the cases was investigated comprehensively at different stages while writing a report for each individual case. This prevented contamination of the cases. Thereafter the cases were examined for similarities and differences in order to draw cross case conclusions.

5.9 Defining the case

Yin (2014); Baxter and Jack (2008), refer to a case as a “unit of analysis” which in essence is the phenomenon of interest while Stake (1995) views it as a “functioning body”. Once the case has been identified the boundaries between the phenomenon and the context need to be identified. Bounding the system allows one to distinguish between features within the system (case boundaries) and other features outside the boundaries.

In defining the case to be studied the researcher focused on deciding what constitutes the bounded system by clarifying the study questions and study propositions of what the researcher is interested in studying. For the purpose of this study, ICP is the case as the process is being analysed and the ICP during the management of the intrapartum period by skilled birth attendants is the phenomenon. This study generally is bounded by the case, which in this case is the ICP within the intrapartum period. In this case the unit of analysis is within the MOUs and between the MOU & referral hospital.

Although the management of the intrapartum period involves the staff nurses, doctors, lab technician's ambulance staff and other community workers, for the purpose of this study the bounding enables the researcher to exclude these and only include the skilled birth attendants (midwives and obstetric doctors) in the management of the intrapartum period.

Baxter and Jack (2008) assert the need to identify whether the researcher is interested in analysing the individual, a program, a process or the difference between organizations. Asking these questions allows one to delineate the case and the unit of analysis considering that data can be analysed within subunits.

5.10 Theoretical framework and the place of theory in case study design

Different views have been tabled regarding the use of theory in case study research. Yin, (2014) asserts that theory development as part of the design phase is highly desired and need not be complicated but can rather be plain and simple. Stake (1995) says that theory may be absent from studies that are describing the case and the issues.

Harling (2002) indicates that the existing theory should be the starting point in giving direction and structure to the initial questions. Further when interacting with the data the researcher interrogates the questions using the theory to filter and organise the data. In this way the theory is confirmed with caution preventing the theory from predetermining the result.

The theory in this case study is used to provide direction while offering an opportunity for analytic generalization (Yin 2014) by shedding empirical light regarding theoretical principles and concepts. The use of activity theory in this study will allow the researcher in focusing the data collection process while giving direction to the data analysis.

For the purpose of this study the theoretical framework is used to give a direction to the study and add to the existing activity theory without necessarily reinventing the wheel.

5.11 Selecting the case

Thomas (2011) elaborates the influence of the question on the selection of the case study. The how and why of the process determines the choice of the case. Highlighting two principle routes that are followed in making the decision Thomas asserts that you could either choose a case because of your familiarity with it referring to it as a “local knowledge case”. A second route is one where the selection of a case is not because of the researcher’s special knowledge but because of its intrinsic interest and refers to it as a “key case”. Another perspective discussed by Thomas is that a case could also be “an outlier” which is seen as a puzzle because it is different from the norm.

The case of the MOUs was selected due to the researcher’s interaction with the skilled birth attendants during the management of the intrapartum period and the realization of the challenges of ICP during the management of the intrapartum period.

Yin (2014) indicates the need for sufficient access to the data for your potential case and the case should be able to illuminate the research questions. The cases selected in this research both have skilled birth attendants who require effective ICP and are faced with everyday challenges for effective management of the intrapartum period. My involvement as a skilled birth attendant will allow me the necessary access to the participants in the study.

Rule and John (2011) discuss the need to consider the “*purpose of your study, the class of cases which the case belongs, their relationship and the number of cases being studied*”. The issue the researcher identified of ICP influencing the management of the intrapartum period was more prevalent in the MOUs where the midwives were independently managing the women. However communication within the MOU influenced the outcome of the intrapartum period especially when there is need for consultation or referral at level one hospitals. The selected MOUs were accessible. Secondly they served the purpose of identifying if the language influenced the challenges faced in each of the cases.

Stake (1995) specifies there is no sampling in case study. A good instrumental case study does not depend on the case study but rather is used as an instrument to examine a particular issue. This means the issues such as access proximity and hospitality influence the selection of the case. The Western Cape Department of health, the heads of obstetrics in each of the drainages northern and southern were very supportive of my study. Further the participants in the study some of whom were colleagues were very enthusiastic about the study. The data collection process also led to identification of key areas that needed education on ICP that is vital to the management of the intrapartum period.

An account of the case studies is given in chapter six with limited details to maintain confidentiality of the case and the participants.

5.12 Ethical Considerations

Holloway and Wheeler (2010) identify ethical issues, as being vital for consideration in all research whether it is in qualitative or quantitative to protect the participants from harm and risk. This follows the professional rules laid down in the codes of conduct and research guidelines.

When dealing with health care issues the concern for vulnerable groups whom in this case are the women/ pregnant women, the researcher is required to consider beneficence due to the fact that the midwives are engaged in the day-to-day care of the women. This therefore requires consideration of doing interviews only when the midwives are available and not busy with women. This was a challenge in the ever-busy units.

Ethical issues related to each one of them were considered which included: Identification during transcription and report writing as - the participant, informant or subject. Further, the study uses terms such as actor, collaborator, interviewee, respondent, and the observed. All terms used during the study are also represented by the term informant (Schwandt 2001).

5.12.1 Ethical Issues Relating to Informants

Ethics in research need to be principled especially when dealing with issues of subjects involved in the study, more especially issues around vulnerable groups such as women in hospitals. During this study the issue of voluntary consent was considered with ultimate importance to ensure the study was ethical.

Holloway and Wheeler (2010) described informed voluntary consent as when the participants in the study are fully informed about the research and give voluntary agreement to take part in it without explicit or implicit pressure from researchers. An information session is given in each of the units as a group allowing the informants to ask questions regarding the study or the research methods used. This was done prior to the study giving informants ample time to decide whether or not they want to participate in the study. During the interview further information was offered and a signed consent obtained (Appendix C) as a prerequisite of the study. This meant that any informant, who chose to withdraw from the study and retract the information she/he supplied to the researcher, would be allowed to do so without prejudice. Consent was obtained for recording the interviews and informed that the material would be stored for up to 3 years locked in a safe place. Only the informed consent contained the name of the participants and the interview transcripts had participant numbers such as P1 or P2 and not the informants' names.

All information was kept confidential by the researcher who was the interviewer and all informants were reassured of confidentiality. Consent to record the interviews was also obtained prior to recording. Observation during communication was restricted to the midwives and the women in labour were not observed. As much as I was a researcher, I am a midwife and upheld professionalism throughout the study.

5.12.1.1 Ethical Issues Relating to the Researcher

During the research process the researcher was ethical in dealing with issues that included: the data collection procedure, analysis and interpretation were not biased by focusing on the informants views. Further, the appropriate methodology was employed in carrying out the study, and the results communicated correctly without bias. The informant's perspective was acknowledged and interpreted as such preventing misrepresentation of data by the researcher. The researcher upheld the required ethical principles of beneficence by ensuring the guidelines of beneficence, respect for human

dignity and justice (Holloway and Wheeler 2010). The informed obtained from the midwives before the interviews or observations.

5.12.1.2 Gaining access

Ethics approval was sought from the Department of Health. All the requirements specified by the Department of Health were adhered to. The specific heads of department in the MOU were approached and schedules organized for data collection sessions that suited the units. These schedules were revised as necessary due to fact that the labour wards were extremely busy on some days and others quiet. The required forms for gaining access are attached in appendix B.

The application to the DOH followed a review process by reviewers appointed by the government to evaluate the research proposal. The approval letter was forwarded to the specific institutions with intention to carry out the research clarified with the institutions through the operations managers as the gatekeepers.

5.13 Data sources

The research issues and questions allow the researcher to make informed choices on the data sources as recommended by Stake (1995). The nature of the phenomenon under study allows the researcher to evaluate that sources of data would answer the desired questions. Being able to identify key persons to provide the data in case study research is solely dependent on the judgment of the researcher. The data sources were the skilled birth attendants, policies, guidelines, protocols and the patient files.

Yin further describes principles to follow with six major data sources that include the documentation, archival records, interviews participant observation and artefacts. These principles were followed during the research process. Table 5.1 provides an overview of the main sources of data (Yin 2014).

TABLE 5.1: SIX SOURCES OF EVIDENCE YIN 2014

Source of Evidence	Strengths	Weaknesses
Documentation	<ul style="list-style-type: none"> ○ Stable – can be reviewed repeatedly ○ Unobtrusive- not create as a result of the case study ○ Exact contains exact names, references, and details of an event ○ Broad coverage long span of time, many events, and many settings 	Retrievability-can be low Biased selectivity, if collection is incomplete Reporting bias-reflects (unknown) bias of author Access – may be deliberately blocked
Archival Records	<ul style="list-style-type: none"> ○ (same as above) ○ Precise and quantitative 	(same as above) Accessibility due to privacy reasons
Interviews	<ul style="list-style-type: none"> ○ Targeted-focuses directly on case study topic ○ Insightful provides perceived causal inferences 	Bias due to poorly constructed questions Response bias Inaccuracies due to poor recall Reflexivity-interviewee gives what interviewer wants to hear
Direct Observations	<ul style="list-style-type: none"> ○ Reality covers events in real time ○ Contextual covers context of event 	Time-consuming Selectivity unless broad coverage Reflexivity event may proceed differently because it is being observed Cost hours needed by human observers
Participant – Observation	<ul style="list-style-type: none"> ○ (same as above) ○ Insightful into interpersonal behaviour and motives 	(same as above) Bias due to investigator’s manipulation of events
Physical Artefacts	<ul style="list-style-type: none"> ○ Insightful into cultural features ○ Insightful into technical operations 	Selectivity Availability

The use of multiple data sources in case study research is a strategy used to enhance credibility as asserted by Yin (2014); Baxter and Jack (2008). However, Yin asserts that there is no single source of evidence that is advantageous to another but are all complementary but rather a good case study according to Yin (*ibid*) will rely on as many sources as possible.

Data from multiple sources in case study research is converged when analysing rather than dealing with the data individually. This allows the researcher to understand the phenomenon as a whole. This convergence adds strength to the

findings as the various strands of data are braided together to promote a greater understanding of the case (Baxter and Jack 2008).

Although gathering multiple data sources increases the rigour required in case study research, the large amounts of data obtained require intensive management and analysis. Baxter and Jack (2008) assert that using a computerized database often helps manage the large volumes of data

In this study the researcher used in-depth interviews as the main data collection method, document review for information recorded and observation. However the observation was limited to informal observation to enhance information obtained from the documents and the interviews due to time and resource constraints. In addition to these methods a number of choices were made for each individual method. Table 5.2 below indicates data sources according to research question (Stake 1995).

TABLE 5.2: RESEARCH QUESTIONS AND METHODS

Research Question	Document review	Field notes prolonged engagement	Midwives in MOU A and B	Midwives in the RH A and B	Doctors
RQ 1	X				
RQ 2	X	X	X	X	X
RQ 3	X	X	X	X	X
RQ 4	X	X	X	X	X

RQ1: What is the *expected information communication* process during the intrapartum period described in the policies and protocols in the Cape Town MDHS?

RQ2: *How do skilled birth attendants actually communicate information within the MOU and between the MOU and referral hospital during the management of intrapartum in the Cape Town MDHS?*

RQ3: *Why do skilled birth attendants find it difficult to communicate information during the management of the intrapartum period?*

RQ4: *How do the skilled birth attendants desire to improve information communication effectively during the management of the intrapartum?*

5.14 Data collection methods

Yin (2014) describes four principles for data collection when doing high quality case study research:

- Using multiple sources of evidence;
- Creating a data base for the case study;
- Maintaining a chain of evidence
- Being cautious when using electronic evidence such as social media

In this study various data collection methods were utilized as described below with emphasis on the methods.

5.14.1 In-depth interview

Yin (2014) describes the interview as the most important source of evidence in case study research. In this particular study it was used as the main source of evidence backed up by the other methods. The line of questioning was rather fluid pursuing a conversational rather than structured questioning.

Although the researcher prepared an interview guide, the questions were asked from the consistent line of inquiry with a fluid rather than rigid stream of questions. This unstructured method of questioning allowed the participants to tell the story that elaborates their experiences. The table 5.3 below provides an overview of the participant profile.

TABLE 5.3: PARTICIPANT PROFILE

Context	Number of participants	Designation	Gender	% of Labour Ward staff establishment
MOU A	n=8	1 OM 7 Midwives	Females	80%
MOU B	n=6	1 OM 5 Midwives	Females	60%
<i>Referral Hospital A</i> Midwives	n=1	1 OM	Female	10%
Doctors	n=3	1 CO 2 MOs		80%
<i>Referral Hospital B</i> Doctors	n=4	1 Registrar 3 MOs	Male Females	70%
Midwives	n=3	3 Midwives	All Female	50%
Total views elicited	n=25			

Key: OM=Operations manager; CO= consultant Obstetrician; MO=Medical officer

When preparing the interview guide, the objectives of the study were used to ensure that the relevant information is obtained from all participants to ensure trustworthiness of the data. The interview guide was brief, clear and unambiguous in wording, and designed in simple language that the participants easily understood. The interview guide included information about experiences of ICP, characteristics/types, challenges and information pathways.

Holloway and Wheeler (2010) assert that in an unstructured interview there are experiences, feelings and knowledge questions. The researcher allowed a conversational approach to the interview while ensuring the participants expressed what they felt, and knew about the ICP. Their experiences were illuminated in the

conversation as they embarked on describing their daily activities. Spradley (1979) distinguishes between the grand tour questions which are broader and the mini-tour questions, which are more specific. The grand-tour questions were used to allow the participants to express themselves while the mini-tour questions were used to direct the interview towards the objectives as “probes”.

During the information session all the midwives working day and night in the labour ward and the antenatal clinic were in attendance. This was done the morning after their meeting that was convenient for both the researcher and the participants. The objective of the information session was to give a brief group introduction to the research objectives and allow further questions from the participants in a less intimidating environment. This also allowed the participants information so that they had time to think about participation. The information session was very engaging and it allowed me to make appointments with those in attendance for the interviews at their convenience.

During the interview a quiet room was obtained with a sign “interview in progress” on the door. The interview lasted between 30 minutes and 1 hour, which Yin refers to as shorter case study interviews Yin (2014). The participants were briefly reminded individually about the research and the informed consent given to them. Although recording interviews elicit different views Stake (1995:66) asserts that what is important in an interview is the respondent’s views not word for word responses. The interviews focused on what the informants viewed as important to information communication during the intrapartum period.

Although interviews are the main source of evidence Yin (*ibid*) asserts that when the interviews focus on actions they should be seen as verbal reports. Further these informants’ responses have bias especially due to poor recall or poor articulation. Other methods of data collection such as observation, field notes and reflective diaries were used in this study to counter the possibility of bias.

5.14.2 Field notes/ prolonged engagement

A labour ward being a place that is unpredictable has the challenge of expecting a woman to deliver at a specific time. The expectation that sometimes the labour

ward was busy while other times no woman turned up for delivery made it difficult to be on duty at specified times for several shifts. Although I would be at the facility for a specific period of time, there are times I would encounter more than adequate information for the research while other times it was quiet and only appropriate to conduct interviews.

Lincoln and Guba (1985) describe prolonged engagement as the *investment of sufficient time to achieve certain purposes: learning the culture, testing for misinformation, and building trust.*

Having spent large amounts of time in the MOUs and the Referral hospital during clinical teaching activities, I had the opportunity to work with the staff members in these departments and observe the various activities. My previous relationship as a student mentor allowed me the opportunity to make informal observations. I could also enquire about ICP and their challenges during the management of the intrapartum period. The building on existing trust relationships allowed the skilled birth attendant to provide informal interviews especially on observations that I recorded in my notes. The fact that I was viewed as being one of the skilled birth attendant, the participants tended to discuss issues that were influenced positively or negatively by the ICP and outcomes of those women involved.

Further they went on with their activities without the Hawthorne effect of being observed and I was able to make pertinent observations pertaining to information that was not discussed in interviews or that which was the opposite of what was said in the interviews. This allowed me to further interrogate these issues during the interviews for a better perspective.

5.14.3 Document Review

Document review of policies and protocols related to the information communication processes was carried out in order to inform the researcher of the perceived information communication processes. This formed part of the perspective of the existing documents guiding the health workers in their daily communication activities. A myriad of documents was collected which included protocols from the northern and southern referral drainage, national guidelines on maternal health and the protocols used by the MOU and the referral hospitals. The

documentary evidence was sought to 'corroborate and augment evidence from other sources', (Yin 2003).

The document analysis process was used to scrutinise the trends, patterns and the consistency of the information management (what was overlooked or missed in recording, storing and transferring the information), from the policies and protocols. Further it was used to describe the consistency of recorded information in the maternal health records during the management of the intrapartum period. Document analysis was used in describing both the perceived information communication processes and to elicit what information was actually communicated during the management of the intrapartum period.

Once the information was mined, the researcher explored the critical features of practice that have emanated from what is perceived as required IC process, what is required by policy and what is actually being practiced (Rule and John 2011). Such information assisted in informing interviews with the skilled birth attendants.

Further the document analysis allowed the researcher to evaluate which models, programs, policy or practice have been successful in changing the management of information communication processes. Issues such as successful information communication frameworks, and reasons these are successful, policies and procedures used to implement them, barriers that could be identified and removed. A summary of the retrieved documents, which includes an elaboration of the theoretical perspective, conceptual framework, and description of the methodology and a statement of major findings, will be drawn (Rasmussen, Muir- Cochrane and Henderson 2012).

Thematic content analysis was used for documents in the same way as for interview transcripts in qualitative research. Holloway and Wheeler (2013) assert that the reliability of document study may be checked either by looking at similar documents at two or more points in time (instrument reliability) or by comparing the results of two or more researchers at the same point in time (analysts' reliability).

5.14.4 Observations: Observer- as –participant

It is difficult to find literature that agrees with a specific definition of observation. It is either broadly defined as in the context of ethnography which according to Spradley (1980) “*work of describing a culture*” with the central aim of understanding “*another way of life from the native point of view*” or in a narrower sense as participant observation.

I take the perspective of Baker (2006) who describes observation method as allowing researchers to study people in their own environment from their perspective. This requires a researcher to spend a vast amount of time in the field gaining a comprehensive understanding of the context.

When the observer – as - participant role Baker (2006) was adopted during the observation the researcher needs to remain detached enough to collect and analyse the relevant data. Further, Baker (2006); Waltz, Strickland, and Lenz, (2010) describe observation as the systemic process of recording the behaviour patterns of participants without questioning and communicating with them.

Observation enabled the researcher to gain deeper insight and understanding of the actual information communication processes. The consideration of gaining access to the group and leaving the field were two factors that were considered (Baker 2006; Waltz et al., 2010). The researcher’s role during observation included more unstructured observation than participation that involved observing and conducting short interviews to confirm the observation. The role of the researcher’s identity became overt, as the insiders were well aware of the researcher’s role. The researcher immersed herself in the research situation and did not cross the friendship domain while remaining research oriented. This was due to the fact that the insiders were willing to talk to attentive strangers as they would to familiar people (Baker 2006).

Spradley (1980) suggested that the researcher takes notes in a “condensed version” while the expanded version is written after each field session. The data recording was done in an open-ended format with the researcher taking notes of all behaviour or action relevant to information communication during the intrapartum period (Rule and John 2011). Although brief encounters with insiders limit opportunities to gain knowledge of total situations, other methods such as interviews were used to inform data collected

during the observation and correct any misconceptions or misunderstandings collected during the short interviews.

The tool used for the observation was semi-structured in that there were various items that the researcher was looking for which included tools used for communication actors involved in communication and the processes. Most of the actual data collected was all information that emanated during the information processes. Further as indicated earlier data around the cases that allowed a better understanding of the case was observed with short interviews from the participants as recommended by Baker (2006).

Gaining access was not an issue for the researcher. As a midwife the participants viewed the researcher as a member of the group as I was familiar with most of the participants as colleagues. The only difference that the researcher was not a participant as observer is she doesn't work in the unit but rather relates on the ground of being a midwife in the same province. Returning to the field was done frequently to answer questions arising or to do in-depth interviews. This therefore allowed disengagement over a period of time by doing other required roles.

The length of time in the field according to Baker (2004) depends on the research problem and the role assumed by the researcher. Observation was one of the methods used to inform the data in this study. Therefore a period of time was allocated to the shifts of the midwives who were being interviewed during the in-depth interviews.

Sampling involved both a molar and molecular categories. The researcher began by observing large units of activity as a whole looking at the case as a whole (Baker 2004). Further the molecular approach involved looking at the individual units of analysis in their context. The observation was especially done during handovers and telephonic conversations between the MOU and the referral hospitals.

The data collection techniques included the observational notes such as what the researcher actually saw in a condensed manner while the expanded version after the field session allowed the researcher to describe and interpret the data. The researcher was the observer therefore the transcription and the interpretation of the data remained consistent (Baker 2006). Photos were used as an instrumental extension of the observation.

Ethical issues involved during the data collection included avoiding observing the woman during the intrapartum period but only observing how the skilled birth attendants communicated information from the observation was validated during interviews to confirm observations.

Selective observation could have been a challenge due to the fact that the observer was the only one observing. However the study embarked on an interpretivist approach that allowed the researcher to have subjective interpretation of situations (Baker 2006).

5.14.5 Reflective diaries

Several authors advocate reflective diaries as rigorous documentary tools for example: (Glaser and Strauss 1967; Janesick 2002; Stake 1995). Apart from the reflective diary and log notes made during the observation that were non reflective, the researcher maintained a reflective diary of the research process. This personal journal was used for emergent ideas, results reflections, and ongoing personal attitude examination especially useful during the data analysis process.

Reflective diaries were also used for additional information that the participants could include as a reflection to the daily ICP not captured in the interviews and observations. The researcher purchased diaries that had a word of encouragement per day to encourage the participants to make entries. Instructions on what to include during the journaling was pasted at the front of the diaries for reference on what to include in the diary. The researcher's contact was also pasted for any questions that the participants could have. Every journal had a number allocated correlating to the interview carried out. The diaries were given after the interview session that assisted the participants to have an idea of what the study was about.

The participants were informed that they could make 10 entries or more. The researcher got in touch with the participants after one month to gain insight into their experiences on entries in the diary. None of the participants had made any entry into the diary sighting long working hours and no time to write. They were left with the journals and encouraged to complete expressing themselves of their IC experiences. Two months later only one midwife had made one entry into the diary

and all the others, although they indicated they were willing, they did not make entries.

The reason given for not writing in the diaries was that they did not have time to write during their shift and when they got home they were too tired to make any entries. Further, the midwives indicated that they do not like writing a lot after spending all their time at work writing, they would rather just tell me what they experienced.

5.15 Data analysis

According to Yin (2014), data analysis involves examining, categorizing, tabulating, or recombining evidence to produce empirical evidence. It is an interactive process in which the researcher moves to and fro in qualitative research from data collection to analysis and back to data collection (Holloway and Wheeler (2010). The interaction begins even as early as when recording or transcribing through reflection. The researcher as mentioned above will focus on collecting data and analysing through an interactive process.

5.15.1 Process of analysis

The process of analysis commenced with the researcher gaining an overview of the data by listening to audiotapes several times while reading the transcripts to make sense of the data as a whole consecutively with the field notes. The data was transcribed from the in-depth interviews and uploaded to the analysis software, the Atlas TI that was used for further coding, categorizing and developing themes.

The theoretical framework was used to guide the data analysis although initially all the data was analysed inductively. Data was open coded irrespective of the framework by identifying preliminary properties.

Each transcript was coded individually by creating codes with the Atlas TI. The identified codes were further merged with similar codes within each transcript. Further, document analysis was done and all the generated codes were eventually aggregated into family codes. In generating the family codes the theoretical

framework was used to predetermine codes and families such as tools used, actors, and desired ICP. The understanding of the theoretical framework prior to data collection allowed for data collected to emerge and suitably answer the questions appropriately by being intentionally sought after. Other properties such as required information had not been predetermined but emerged which allowed for categories to be developed to accommodate the new categories.

After developing the categories, these were then subsumed into two overarching themes deduced from the theoretical framework. Firstly the theme 'analysing towards a shared understanding of the present state' comprised of the issues of the expected ICP and the actual information communication process within and between the primary health care services and the referral hospitals. The categories were developed that fitted into subthemes that emerged according to the research method used.

The second theme, named 'designing towards a shared understanding of the goal state' emerged from categories that described the need for improvement of the current state. Although the themes were predetermined the subthemes that emerged were more from an interpretative perspective and were unanticipated which made this process more inductive.

The analysis of the interviews required a perspective of each unit of analysis individually analysed and a comparative approach of themes into subthemes that fitted into the two overarching themes

The analysis of the documents was done in a similar manner where the information documented, the field notes and the observation data were examined for information flow, information processes and observed behaviours'. Triangulation of the data from other sources allowed for similar categories to be merged and look at meaning in the emerging categories.

As part of the process to ensure rigour, the strategies used to generate meaning from the data were guided by Zucker (2009) as adapted from Miles and Huberman in (1994) as indicated by the table 5.4 below;

TABLE 5.4: STRATEGIES USED TO GENERATE MEANING ZUCKER 2009

<p>What Goes with What</p> <ul style="list-style-type: none"> • Noting patterns • Clustering • Seeing plausibility 	<p>Integration Among Diverse Pieces of Data</p> <ul style="list-style-type: none"> • <i>Making Metaphors</i>
<p>What's There</p> <ul style="list-style-type: none"> • Counting 	<p>Sharpen our Understanding</p> <ul style="list-style-type: none"> • <i>Making Comparisons</i> • Partitioning Variables
<p>See Things and Their Relationships More Abstractly</p> <ul style="list-style-type: none"> • Subsuming Particulars Into the General • Factoring • <i>Noting Relations Between Variables</i> • Finding Intervening Variables 	<p>Assemble a Coherent Understanding of the Data</p> <ul style="list-style-type: none"> • <i>Building a Logical Chain of Evidence</i> <i>Making Conceptual/Theoretical Coherence</i>

According to Zucker (2009) interpretivist within the constructivist paradigm such as that used in case study approach attempt to reconstruct participants' understanding of the social world therefore rigor to ensure trustworthiness of the data should be a main focus. Being able to read and listen to audiotapes while confirming observations with the participants allowed for a thorough data analysis process. Confirming with participants and filling gaps found in the interviews also allowed for a rigorous process in the data collection and analysis.

5.15.2 Coding Framework

The individual Interviews and the responses were tape recorded, transcribed, coded and analysed. The themes that emerged through coding and the analysis were used in this research. The properties allocated, codes, descriptions, interpretation and examples from interview transcripts are highlighted. The final related data is described in the data analysis chapter below in the dissertation.

5.16 Conclusion

This chapter discusses in detail the methodological and philosophical underpinnings of the study. It details how the case study was selected with specific strategies such as selection of data sources data collection process and an outline of the data analysis processes. The discussion on data analysis and the findings of the data are outlined in the next chapter.

6 CHAPTER SIX: STUDY FINDINGS

6.1 Introduction

This chapter provides a detailed description of the findings of the cases. A brief overview of the cases is provided in order to describe the essence of the case. The review of the various themes and categories from each unit of analysis are described showing a brief overview of all categories in each unit of analysis. The findings from the various data sources are integrated throughout during the development of codes and the categories. A detailed discussion of the findings is commenced in this chapter.

6.2 Case description

South Africa is divided into provinces as shown in table 6.1 (Eastern Cape, Free State, Gauteng, Kwazulu Natal, Limpopo, Mpumalanga, North West, Northern Cape and the Western Cape). These provinces are further divided into municipalities. In the Western Cape as shown in table 6.1 has 6 district municipalities and one metropolitan municipality. The City of Cape Town Metropolitan Municipality in its own capacity is a district and a local municipality covering an area of 2,460square kilometres and a population of approximately 3,740,026 (Census 2011).

The study was conducted in the Cape Town MHDS where there are 11 Midwifery Obstetric Units (MOUs). The Cape Town MDHS is one of the municipalities in South Africa with MOUs managed solely by midwives for low risk patients. These midwives consult with obstetricians in level one, two or three hospitals in case of any emergencies or a high-risk patient needing referral to level two or three hospitals. The district or regional hospitals are where the moderate risk patients are managed and low risk patients from MOUs are referred to for further management during complications. The tertiary or national referral hospitals manage high-risk patients while receiving referrals from secondary or primary level of care. (Department of Health, 2011).

TABLE 6.1: LIST OF HOSPITALS; ADAPTED FROM (DOH 2011)

<i>Province</i>	<i>Number of National Central Hospitals</i>	<i>Number of Specialised Hospitals</i>	<i>Number of Provincial Tertiary Hospitals</i>	<i>Number of Regional Hospitals</i>	<i>Number of District Hospitals</i>
Eastern Cape	0	12	0	8	64
Free State	0	2	2	5	24
Gauteng	4	6	0	12	7
Kwa-Zulu Natal	2	8	2	12	36
Limpopo	0	3	2	5	38
Mpumalanga	0	1	1	4	17
North West	0	2	0	4	22
Northern Cape	0	3	0	1	23
Western Cape	3	12	0	7	23

The Western Cape as indicated by table 6.1 has 3 national referral hospitals, 12 specialized hospitals, 7 regional hospitals and 23 district hospitals. All midwifery units function as primary level maternal and neonatal facilities in the health system and are funded from the provincial health budget. As indicated by the referral chain on table 6.2, the MOUs are categorized as primary level of care and always attend to low risk women during the intrapartum period. In case of obstetric emergencies the patients are referred to a secondary or tertiary level of care depending on the 'categorised risk' of emergency.

TABLE 6.2: REFERRAL CHAIN FROM MOU'S; ADAPTED FROM PGWC POLICY 2011

Referral Hospital high risk patients	Referral hospital moderate risk patients	Primary healthcare low risk patients
Groote Schuur Hospital (National Central Hospital) PMNS referral chain bed capacity 945, Western sub-district	New Somerset Hospital (Regional Hospital) 334	Hanover Park MOU
		Vanguard MOU
		Falsebay MOU
	Mowbray Maternity Hospital (Specialized Hospital) bed capacity 205	Retreat MOU
		Gugulethu MOU
		Mitchells plain MOU
Tygerberg Hospital (National Central Hospital) Hospital bed capacity 1310 Metro East Services Tygerberg sub-district	Karl Bremer Hospital District Hospital bed capacity 372	Kraaifontuin MOU
		Bishop Lavis MOU
		Elsies River MOU
	Khayelitsha Hospital (New District Hospital) bed capacity 372	Michael Mapongwana
		Khayelitsha Site-B MOU

6.3 Motivation of Cases

In the Cape Town MDHS there are three National Central hospitals – Groote Schuur Hospital (GSH), Tygerberg Hospital (TBH) and Red Cross Children’s Hospital (RCCH). Only GSH and TBH offer obstetric services at the tertiary level thus RCCH was excluded. For the sake of anonymity the cases described will be referred to as MOU A and B for the MOUs and referral hospital (RH) A and B for the referral hospitals.

MOU B manages low risk patients and refers intermediate to high-risk women to RH B under specialised hospital category that offers the secondary level of care in the southern drainage referring to GSH. RH A as a district hospital manages the secondary level of care referring high-risk women from MOU A to TBH. Cape Town MDHS has 11 MOUs and one MOU was selected purposively from each drainage (northern and southern) as indicated in figure 6.1.

MOU B has a large number of patients seen in the southern suburbs as compared to the other MOUs and the information communication processes deemed challenging due to vicinity of the MOU from the referral hospital. Although MOU A was one of the largest MOU in the Northern Suburb, the opening of another MOU in the northern drainage during the course of the study reduced the number of women in labour ward. The size of the MOU was anticipated to influence the ICP but would also show similarities or differences if one MOU was larger than the other.

However, the MOU was studied as a unit of analysis and the referral hospitals to which they refer were selected. Tertiary hospitals were not included in this study due to the size of the study and time constraint although the researcher does not envision any influence of the exclusion on the study. Two MOUs from each suburb were purposely selected for the case study due to their complexity and both cases had a diverse representation of the population under study with each of the cases able to show diversity for both language and the social cultural contexts of the skilled birth attendants.

MOU B refers all the moderate risk patients to RH B and the high-risk patients to GSH (which was not part of the study) while MOU A refers the Moderate clients to RH A and high-risk patients to TBH (which was not part of the study). The Figure 6.1 below shows the location of the case sites, Cape Town Metro-pole. The data analysis was done using thematic analysis and the activity driven approach as the theoretical lens. The thematic analysis is described below.

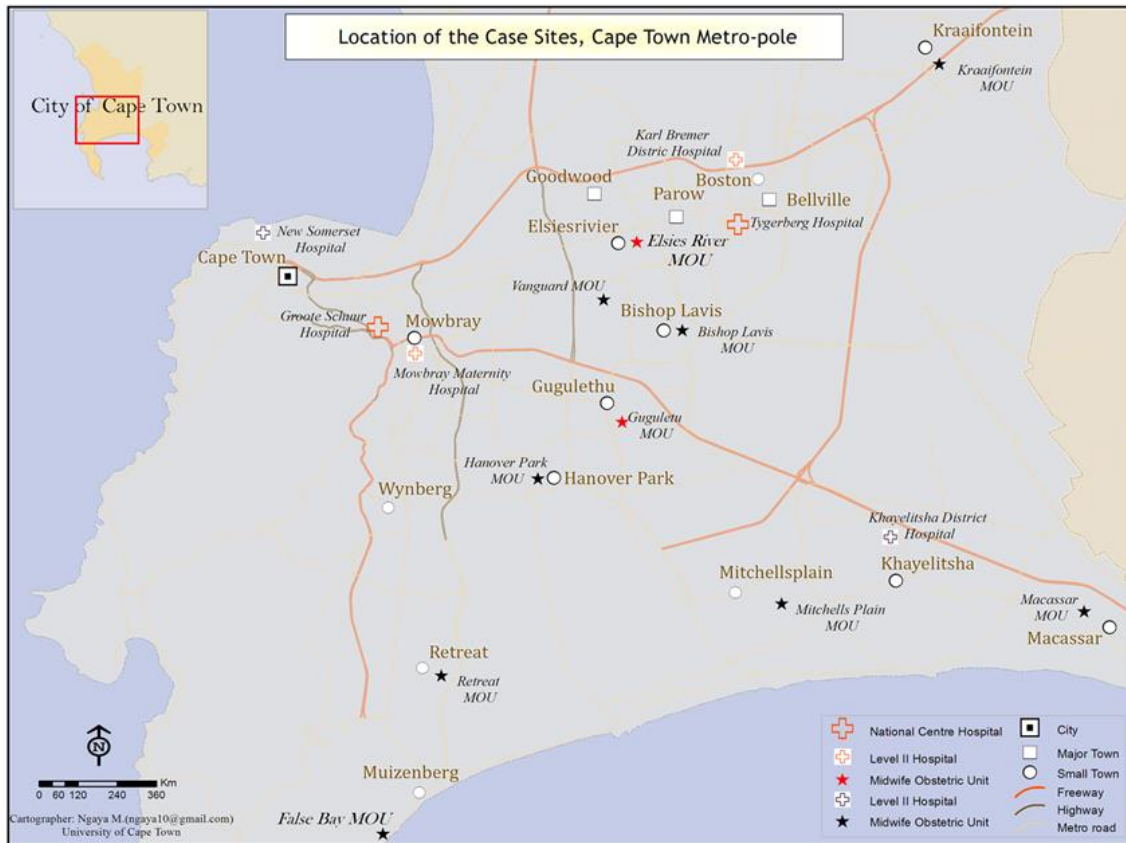


FIGURE: 6.1 LOCATION OF CASE SITES

6.4 Thematic Overview

The data analysis was done both inductively and deductively. The Act AD ISD model was used as a lens to inform the two principal themes while the subthemes were informed by the research questions and the categories emerged from the coded data. The emerging of the data was specific, as there seemed to be interest in two specific directions focusing on the current and a need for an envisioned future. This produced a clear dichotomy between types of data.

Firstly, there was data that focused on what is expected and the actual IC processes which described what is currently happening. Secondly, the other data described precisely the desire for future changes to accommodate the needs identified. The two themes mirror the phases in Act AD ISD model (shared understanding of the present state and designing toward shared understanding of the goal state) these two themes having been deductively constituted to fit the case objectives. They further constitute the case as indicated in the table 6.3 below with the various categorical aggregates that emanated from each of the themes.

As suggested by Yin (2012) and Stake (1995) the principle of each data source was examined. The result from each data source was presented examining the relevance of the data to the case study. Although the length and depth of the data varied due to the data collection method used, the meaning of data was examined on the perspective that it added meaning to the case study from a different perspective. The different contexts of the case are discussed separately and finally a comparative analysis on the study as a whole evaluating the similarities reflected by the data. The use of the Atlas Ti software made the identification of codes easier. Although it was quite challenging to reduce the huge amounts of data into meaningful categories, developing coding families and using network of codes, which were further highlighted on a table, made the process easier. Being able to identify similarities and differences without losing the 'golden nuggets' of the data while creating the themes was made easier by displaying them on a table and using colours to visualize the emerging themes. The table 6.3 provides a perspective on the various categories that emanated from the data.

TAB LE 6.3: TABLE OF THEMES AND SUBTHEMES

Principle theme	Theme	Unit of analysis	Categories
Understanding of the present state	Expected ICP	Expected ICP	<ul style="list-style-type: none"> • Accessibility of obstetric services • Recommended tools • Expected communication • Expected documentation • Expected referral
	Actual ICP	Actual ICP MOU	<ul style="list-style-type: none"> • The handover process • Collaborative information seeking
		Actual ICP RH	<ul style="list-style-type: none"> • Information communicated • Referral process
	Challenges of ICP	Challenges to ICP MOU	<ul style="list-style-type: none"> • Challenges with information • Communication Challenges
		Challenges to ICP RH	<ul style="list-style-type: none"> • Communication Challenges • Challenges with information
Designing towards a desired goal state	Desired ICP	Desired ICP MOU A	<ul style="list-style-type: none"> • Effective documentation • Preferred mode of communication • Desired communication process
		Desired ICP MOU B	<ul style="list-style-type: none"> • Effective information communication • Effective communication
		Desired ICP RH A	<ul style="list-style-type: none"> • Desired ICP • Effective information communication • Preferred mode of communication • Effective documentation
		Desired ICP RH B	<ul style="list-style-type: none"> • Effective communication • Adequate information collection • Effective information communication

6.5 Principle theme; understanding of the present state

In order to make an analysis of understanding of the present state, the weaknesses in the present state, the spots for development, are acknowledged and related with each other in the present state explanation. The identification of strengths is as important as weaknesses that allow looking out for good practices. Several categories are related to this principle theme from the different unit of analysis. Firstly, the principle theme understanding of the present state is correlated with the categorical aggregates emanating from the data coded from the various research methods. These categories were synthesized and analysed into subthemes as discussed below. The subthemes are discussed according to each embedded unit analysis whether ICP within each MOU, within each referral hospital or between the MOU and the referral hospital. The subthemes include: expected ICP, actual ICP and the challenges of ICP.

6.5.1 Subtheme: Expected ICP

The expected ICP is in this study understood as the expectations for information communication by the policy makers. The document review which was done included the national and provincial obstetric protocols: the recommendations from the interim summary NCCEMD (2008-2010), the national maternal guidelines (2007), referral drainage guidelines Metro East (2012), metro west (2011) Saving mothers (2005-2007) and the documents in the MOU utilized as rules or means of coordination of the ICP within and between the MOU and referral hospitals. Most of the documents were retrieved either from the internet, and others were available in the setting. The heads of the obstetric services were requested for protocols used (metro west & metro east). The process involved identifying information in the policies and protocols, which was related to the ICP process within the MOUs and between the MOUs and the referral hospitals. Atlas Ti software was used for identification of codes and categories developed related to ICP. Five categories that emerged from the data analysis included; accessibility of obstetric services, recommended communication tools, expected communication, expected documentation and expected referral.

6.5.1.1 Accessibility of obstetric services

The need to ensure a 24-hour access to functioning emergency obstetric care (both basic and comprehensive) was highlighted in the policy. This was to ensure that every pregnant woman could be able to seek care whenever necessary as indicated in one of the protocols. The skilled birth attendants are required to ensure that women are able to access appropriate care “24 hours a day, 7 days a week.”

“Ensure 24-hour access to functioning emergency obstetric care (both basic and comprehensive.” (P39)

The expected level of care included the access to a 24-hour labour and delivery units from low and intermediate to high-risk levels. Referral systems with adequate support for lower level units are recommended with appropriate supervision and policies for the management of the extremely ill and high-risk women are required.

“Referral centre for clinics and community health centres in the district; referral centre for level 1 hospital in the region; and management of extremely ill or difficult obstetric patients which includes, supervision and support for level 1 and level 2 hospitals and responsibility for policy and protocols in the regions served” (P32)

The accessibility to emergency obstetric services ensures that the women who are managed as low risk women have an opportunity for survival in case they become high risk at any stage of labour. In order to have appropriate ICP when the need arises, requires effective information systems for the skilled birth attendants whether it's appropriate protocols for care or maternal guidelines

6.5.1.2 Recommended tools

Various tools emerged in the policy requirements as recommended for use during the management of the intrapartum. Early warning Chart is a tool that was required to be used by skilled birth attendant in identifying early the women at risk and promptly referring them for further management

"Introduce early warning chart." (P39)

"Poor response to abnormal observations prompts an urgent need for the routine use of a national obstetric early warning chart used for all obstetric women which will result in more timely recognition, treatment and referral of women who have, or are developing, a critical complication." (P39)

SBAR tool was recommended for monitoring abnormal observations and should be used for all women in order to prompt an urgent need for referral. It is defined as;

"...the SBAR communication format refers to the Situation, Background, and Assessment and Recommendation format. It is important that the health care workers formulate an appropriate request and clearly document the response" (P39)

This tool (skilled birth attendants is recommended for use by the skilled birth attendants during the management of the intrapartum. It should also be used for communication with the referral hospitals during consultation with the doctors and request for referrals in case of emergencies. There was emphasis in the policies regarding the SBAR training of the skilled birth attendants for effective use of the tool.

"Ensure training in the early warning charts and SBAR referral system is provided." (P39)

All skilled birth attendants are expected to use the maternal SBAR for communication to ensure appropriate information is recorded while keeping a record of the communication.

"To facilitate communication, especially telephonically, it is advised that all professionals make use of the maternal SBAR communication format to ensure that appropriate information is provided and to keep a record of the communication." (P39)

Further, effective means of communication requires effective communication tools. The policies recommend dedicated telephone linkages for consultation and emergencies between the referral site and referring centres. This is linked to reliable 24-hour transport services for emergencies.

“Effective communication system (radio or telephone) and reliable 24 hour transport service for emergency transfer to hospital.” (P32)

“Ensure dedicated telephonic linkages for consultation for emergencies between referring and referral site are available. (SBAR charts).” (P39)

The emergency calls are expected to be received directly by the consulting doctors to avoid time wasting.

“Calls regarding advice should be taken by the doctor on doctor.” (P40)

Communication tools recommended whether manual or computer based have an influence one way or another in the communication processes. The effectiveness of the tools used in the communication needs to be a consideration to improve communication.

6.5.1.3 Expected communication

The expectations of collegial behaviour during communication and communication channels emerged in the policies and protocols to ensure adequate information communication. The recommendation was that,

“Intercollegial interactions should always be conducted in a respectful and professional manner.” (P40)

The expected consultation communication was also outlined with the need for clarity in consultation beginning with the reason why you called.

“When communicating with the more senior practitioner, clearly outline your need, whether you need advice, support or need the practitioner to take over further management.” (P39)

The need for adequate staffing to avoid overwhelmed skilled birth attendants emerged in the policies as;

“Ensure adequate staffing levels for 24-hour acute care in labour and postpartum. Until norms are provided use the WHO labour ward norm of one midwife in labour ward per 175 deliveries per year.” (P39)

The use of technology emerged as a recommendation for improving the care of women. The technology was required to be used in an efficient cost-effective manner. However the particular technology that was recommended was not specifically indicated.

“...just function in an efficient and cost-effective manner. Midwives and doctors are the best equipped to provide technologically appropriate care to women during their reproductive lives.” (P32)

The specific information to be communicated was highlighted as the information documented in the SBAR that was the tool recommended for communication. However, the specifics for what to communicate when to communicate and how to communicate were described in a scanty manner.

6.5.1.4 Expected Documentation

The partogram emerged as the recommended document for use during the management of the intrapartum period. It is defined as;

“A graphical illustration of the progress of labour. It is a tool for monitoring labour, specifically the dilation of the cervix during labour.”P29

Specific aspects emerged as required to be documented in the partogram to ensure appropriate information communication;

“Use a partogram to note all observations; enter all observations, fluid intake and output, and medications on the partogram; identified problems, proposed management, all medications, all fluids administered, by whatever route; record all findings of maternal and foetal condition, and of progress in labour; the action line is drawn 2 hours to the right and parallel to the alert line, and represents the extreme of poor progress where ‘Action’ is mandatory (e.g. transfer from a clinic to hospital, oxytocin infusion or caesarean section).” (P32)

“All observations pertinent to the progress of labour and the condition of the mother and the foetus during labour must be recorded on the partogram in the prescribed manner and intervals.” (P29)

The partogram was recommended for mothers whether in suspected or true labour and should accompany the women during the transfers. All health workers are required to know how to use the partogram and interpret it accordingly.

“The partogram must be used for all mothers in true or suspected latent or active phases of labour; the partogram must always accompany labouring mother during transfers (from antenatal ward to labour ward, from MOU to hospital) and must be kept in the mother’s records after delivery; all health-care workers attending pregnant mothers must know how to use the partogram and how to graphically record several labour data on the partogram.” (P29)

In case of a referral appropriate documentation of the process emerged as a requirement with the specific information required to be documented.

“The professional taking action or phoning the next level of health management, must clearly document the actions on the reverse side of the observation chart. This should include the date, time and if consulting another level, the name of the practitioner consulted and his verbal command.” (P39)

The information that requires to be documented in the SBAR was specifically outlined as;

“Under the situation analysis there should be a clear reference to the vital signs as well as to what the problem or concern is about. The form will assist any person to document the

information that will be required for communicating with the next level of care or management; under background information relating to the maternal period needs to be captured where relevant.” (P39)

The expected documentation relied on the fact that all parties are familiar with what is expected to be documented on the partogram and what is required to be communicated whether it's during the consultation or the referral.

6.5.1.5 Expected referral

The recommended referral processes also emerged with suggested referral criteria being outlined and mode of transport as expected. A well-coordinated referral system was preferred with access to emergency obstetric services with clear referral protocols.

“A well-coordinated referral system, with access to transport and facilities, is essential for the provision of optimal care to all pregnant women in the district; it is essential to have in place a referral system with clear protocols of management, referral, transport and responsibility. (P32)

“Women are referred from primary care (BANC) to a doctor/ experienced midwife at the level 1 / district hospital as per protocol, but can be referred back for antenatal care to the MOU/clinic once the problem is sorted out to deliver at level 1. Intermediate risk women should preferably not deliver in a MOU but in a level 1.” (P40)

The mode of transport is determined and arranged by the registrar in the referral hospital as per expectation and the flying squad is expected to be arranged by the base hospital. All admissions are expected to be arranged through the doctor at the referral hospital.

“The mode of transport (ordinary, urgent or Flying Squad) should be determined: by the registrar at the referral hospital. If Flying Squad is required, this must be arranged by the base hospital doctor or sister; admissions must be arranged with the Registrar on call for the particular referral hospital.” P29

Expected solution for mistakes during referrals was also suggested as the responsibility of the doctor at the referring level of care to contact the consultant at the next level of care and communicate that information with the referring midwife. It is also recommended that the consultant in the highest level of care should resolve any disputes that arise during the referrals.

“If the receiving doctor is of the conviction that the patient has not been referred to the correct level of care, it is the responsibility of the receiving doctor to contact the next level of care, and inform the referring midwife of the rerouting of the patient. If the conclusion cannot be reached between the receiving doctor and the next level of care a consultant opinion should be sought to resolve the issue.” (P40)

Monitoring of the referral routes and criteria was essential for effective functioning of the referral processes to ensure appropriate use and allow accessibility.

“Monitor and where necessary ensure criteria for referral and referral routes are established and utilized appropriately to functional emergency maternity facilities.” (P39)

6.5.1.6 Conclusions, reflections and best practices

In summary, the expected ICP requires appropriate access to obstetric care with recommended referral routes and referral processes. Effective communication processes with appropriate tools for communication are also recommended for the efficient management of the woman during the intrapartum period.

However, in the accessibility of services there is recommendation of using telephone linkages for communication although the actual communication process is not outlined. Further the recommendation that the calls should be directly between doctors does not speak to how midwives in the community health centres should communicate to allow consultation and referrals.

The information regarding communication in the policies was scanty and required looking for linkages in order to make sense of the expectations of the ICP. Many tools were recommended for use (SBAR, early warning chart and the partogram). All information in these documents was deemed important for communication during referral and consultation and information was required to be completed in all three by the skilled birth attendants. Most of the information in these documents seemed duplicated. With these expectations emerging from the protocols and policies the actual ICP was analysed.

6.5.2 Subtheme: Actual ICP

The subtheme actual ICP as illustrated on the table 6.4 was analysed in each unit of analysis and discussed further under each perspective. The subcategories that emerged were further analysed as major categories for a better description of each of the unit of analysis. The similarities and differences were illuminated for better understanding of the cases as a whole and the individual units of analysis.

The actual ICP seemed to be unique to each of the unit of analysis with none of the categories being similar in all four. However, the MOUs seemed to have similarities in the categories that emerged. The workflow, the handover process,

collaborative information seeking behaviour, the team communication, experience influencing communication and the languages used were described.

TABLE 6.4: ACTUAL ICP EMERGING CATEGORIES

		MIDWIFERY OBSTETRIC UNITS (MOU)		REFERRAL HOSPITAL (RH)	
Principle theme	Sub themes	MOU A (n=13)	MOU B (n=10)	RH A (n=6)	RH B (n=7)
Shared understanding the present state	Actual ICP	Work flow (n=45) Documents quality assurance (n=43) Handing over process (n=40) Referral processes (n=37) Collaborative information seeking (n=33) Source of information (n=33) Information entity-types (n=24) Team communication (13) Experience to know expected information (n=13) Communication influenced by personality (n=12) Languages involved (n=9) Reason for communication (n=5) Staffing (n=4)	Information seeking behaviour (n=27) Information flow in MOU (n=26) We work as a team (n=23) Handover process (n=19) Documents used (n=16) Feedback given by drs (n=15) Languages used (n=14) Experience influencing documentation (n=9) Use of computers (n=5) Use of cell phones (n=2)	Information communicated during referral (n=70) Referral process (n=37) Consultation with the doctors (n=25) Doctors on call workload (n=10) Use of computers in referral A (n=1)	Flow of phone call information referral hospital (n=33) Standard document used (n=27) Doctors can be anywhere in the hospital (n=25) Information communicated to referral hospital (17) Referral drainage area (n=16) Phone call process to referral hospital (n=13) Registrars have a different role (n=6)
Principle theme	Sub themes	MOU A	MOU B	RH A	RH B
		Handover processes ✓ <i>Handover,</i> ✓ <i>Workflow processes</i> ✓ <i>Referral processes</i> ✓ <i>Team communication</i> Collaborative information seeking behaviour; ✓ <i>Documents quality assurance</i> ✓ <i>Information entities</i> ✓ <i>Sources of information</i> ✓ <i>Document completion</i> ✓ Experience to know expected information ✓ Languages involved (n=9)	Handover processes ✓ Handover ✓ Information flow ✓ Team communication Collaborative information seeking behaviour; ✓ Documents used ✓ Languages used ✓ Feedback given by drs ✓ Experience influencing documentation ✓ Use of computers ✓ Use of cell phones	Information communicated Referral process ✓ Consultation ✓ Doctors workload ✓ Use of computers	Information communicated ✓ Standard document used Referral process ✓ Flow of phone call information ✓ Doctors can be anywhere in the hospital ✓ Referral drainage area ✓ Phone call process to referral hospital ✓ Registrars have a different role

6.5.3 Subtheme: Actual ICP MOU A

The subthemes that were informed by the research questions from MOU A midwives perspectives included the ICP within the midwifery obstetric unit, the challenges to the ICP and the desired ICP. The categories that fitted the subthemes emerged from the open coding process and the categorizing of data.

In the analysis of the midwives' responses on information communication processes, the three main categories that emerged in their order of occurrence were those related to the handing over process, workflow, and the referral processes. The other categories that seemed to be of equal importance included; collaborative information seeking, documents quality assurance, Information entities, sources of information and documents completed at convenient time.

These categories were further analysed and discussed as the following;

- Handing over processes were integrated to include *the handover, workflow processes, referral processes and team communication*
- Collaborative information seeking was interpreted to include the: *Documents quality assurance, Information entities, sources of information, document completion, experience to know expected information and languages involved* as discussed below.

6.5.3.1 The handover process

The critical role of the handover process in the management of women during the intrapartum period was mostly the first statement expressed by midwives when asked about a day while on duty. The handover process involved the entry point for information exchange between shifts that enabled midwives to gain insight to the women already in the labour ward.

We go from bed to bed we discuss in detail if it's a post-partum woman, what has happened from when she came in through the labour, if there were any difficulties, focus on that, and when they leave you take over the woman and you go on (P 1:3)"

"It was observed that the handover process includes only patient information postnatal but not antenatal and intranatal information. Midwife is expected to read the information from the file. Midwife retrieves maternal case record and reads the information while other midwives discuss personal issues (P43:3)."

All midwives and students are usually present during the handover process, as they are required to have information about each woman as they go through the day.

“...Ok in the mornings I take over with the rest of the staff so everybody, irrespective of whether you are working in the ante-natal clinic, we all take over in the labour ward. The reason why I do that is because I always feel that everybody should know what is going on you see because it might just happen that I need to call somebody for them to help me in the labour ward then they know what is going on in the labour ward. So we all take over in the labour ward at 7.....”
(P 2:10)

“..Ok in the mornings I take over... (P2:10)

“...The talking is more or less the same as a hand-over that we have in the morning because she is going to tell you the same things. Now we are just up to date. (P 2:197)

“...but when you come on duty, we take over from the other staff and then you just have to get into it, if they are like busy with something and just go on with it because they have to go home....”
(P 5:1)

The information exchange also referred to by midwives as takeover also happened as the women came in and were moved between stages of labour. Being a midwifery led unit, which manages low risk women, the midwives relied on phone calls for consultation because there are no doctors in the MOU to consult when the midwives are unsure. The referral hospital is about 10km away and in case of need for consultation they will use telephones to call the hospital where the obstetric and paediatric specialists are located.

The main tool for communication is the phone [P1:6; P2:43; P3:42; P5:55]. The phone was used in case a woman complicates during the intrapartum period then they would call the referral hospital for a doctor's advice and referral of the woman. The high risk women are sent to the Tertiary/ national referral hospital while the intermediate risk women are referred to the District hospital (RH A).

“...No we don't have doctors in the MOU, we phone according to, say we have our whole criteria on where the woman needs to go, depending on the problem. Say if we find that the woman needs to go to RH A or to Tygerberg – which is mostly for the high-risk people. I consider level I as an intermediate that means the woman can be seen there and here. (P1:9)

The midwives are familiar with referral processes as they affirm they are aware of where to send the woman with complications. The doctor in the referral hospital however has to make the decisions on the referral and informs the midwives.

Then we discuss it with the doctor but we know already what kind of problem goes where. But then there are cases when the hospitals are full – say the woman needs to go to RH A but RH A is over-full then we need to discuss that with the doctor at Tygerberg and the doctor will then phone RH A's doctor to confirm if the RH A really is full and why they can't take the woman. He will then phone us back to say OK you can send the woman that side. (P1:9)

“And then I will phone and speak to the same doctor and I will say that Doctor I have this woman here, she has got a high blood pressure I am sending her in.” (P 2:215)

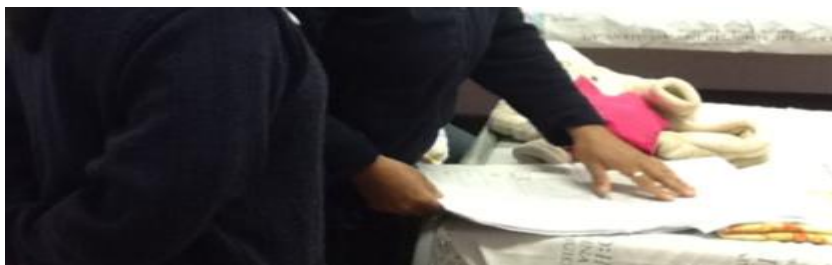
Protocols are used during the referrals to determine the type of woman (whether high risk or low risk and the required referral route.

“Okay referrals you work according to your protocol. You phone the doctor either if it’s a protocol you have for RH A or TBH. So you phone the doctor by one of the hospitals – the protocols as to which hospital it is.” (P 3:35)

“If there is any abnormality they will probably tell us the doctor needs to be phoned to re-evaluate the woman again for certain problems. (P 4:14)

“Ok you first have to check the protocols to see which hospital you have to refer to. Whether it’s RH A or TBH hospitals.” (P 5:30; P6:38)

The handover is usually done on the bedside with the woman listening and the other midwives can ask questions if needed. The maternal case record is used to describe the information provided while all the midwives can see what is happening and can confirm the information provided.



P37:1

In summary, the handing over processes included receiving the woman during the intrapartum period, communicating with other midwives, regarding new clients and consultation with the doctors at the referral hospitals. The handover process is not prescribed in the expected ICP as to the specific requirements although mostly the maternal case record (MCR) is used for this purpose.

6.5.3.2 Collaborative information seeking

The midwives identified with specific information entities required and the sources of information for the management of the women in labour that they communicated during the shift, consultation and the referral process. This information was retrieved from maternal case records used throughout the period of pregnancy.

“We have got maternity case records and there are still the partogram admission notes. That book is actually nice because it has all the papers that you need. When the woman is un-booked we have got our own partogram – it is still the same as in the book - the green and white ones. We use them, admission notes, we have got a few resources (P1:34) “

“...When the sister is handing over, most of our women that are in the labour ward are on the partogram so we make use of the partogram for hand-over. (P 2:10)

“it was observed that the midwives receiving the clients at night started reading the patients case record as the handing over midwife continued to hand over. She indicated after the handover the midwives returned to the desk to discuss other issues (P44:10)

The midwives indicated that the women who are seen in MOU A are booked in the MOU antenatal clinic from the first time they report to the clinic until delivery. However, some of the women are received from other Basic Antenatal clinics (BANC) from 36 weeks of pregnancy and managed in the MOU A until Delivery. The information collected during the antenatal period becomes useful for reference during the intranatal period and is handed over during each communication. Further the information communicated at handovers differs depending on the type of women in the labour ward.

“... The handing over that they also need to give me all the ante-natal history. So I need to know the name, surname, gravid/parity of this woman and all the blood results – that is also part of it for each woman, irrespective of whether she is ante-natal or intra-partum or post-partum.” (P 2:10)

“...So that will give me all the information on this partogram as we take it to include when the last vaginal examination was, if one wasn't done recently as well as the observations but this will also tell me what was the condition of the woman when she was admitted. (P 2:10)

“...if something happened the previous day I need to inform the night staff. (P 2:11)

“...We usually give the age, the gravida, the gestation or if the woman is 4-hourly, or ruptured membranes or if she is there just for cervical changes – 4-hourly also. Or, if she is in active labour “ (P 4:14)

“...handing over this woman – which she came in with this but I am going to keep her stable for four hours to see if there is any change or cervical changes” (P 8:65)

“...Then we start with the woman, the woman is so old, time of delivery, what type of delivery, what type of baby, head girth of the baby, the vitals – then you give the mothers vitals, the vitals of the baby. You say if there are any problems during delivery or problems after the delivery and anything that needed to be done. If there was any problem after delivery – what time they are supposed to be discharged. (P 3:13)

The information provided during the handovers starts from the information collected from the woman during pregnancy. This is to give an overview history of the pregnancy.

“She would say the woman's age, gravity/parity, if she was post natal, the type of woman delivery, if she was checked, blood loss, something like that – anything that is relevant for us to know. (P 7:4)

“... Any ante natal women not delivered yet it will be said she is how many centimetres, how the woman was handling pain, if the woman was mobile or that the woman was not uncooperative. Or that we must watch out for this or for that with the woman. Give the vital signs. If it comes here and the woman needs to go to hospital also, it still gets handed over as if the woman is going to be here for a long time as we say that the woman is booked for hospital and that this is the problem. (P 7:5)

“It was observed that verbal handover is given to midwife B and the student midwife on the patient who arrives in the ward. Student midwife is requested to do observations of the vital signs by midwife B (P45:5)

Apart from the handover process collaborative information seeking was noted during the management of the intrapartum women. The midwives counterchecked information that was given to be sure of the accuracy. Further, as much as there was no specific allocation of midwives per woman they worked as a team and informed each other of any new information regarding women including the woman's progress. This would happen in between the breaks for tea and lunches and also as they managed different women.

"The midwives receiving the clients at night started reading the patients case record as the handing over midwife continued to hand over. She indicated after the handover the midwives returned to the desk to discuss other issues P44:10."

"...Well I go and see and I check because there are times when the FHR is there and the progress is going slowly. The membranes are still intact and we need to see in 2 hours if this woman is dilated further or she stayed like that..." (P 8:23)

".... like when I am not sure I go to Sister most of the time I can ask and if this is not something I know I will ask her or if I say to her..." (P 8:29)

"...Yes its always written down but most of the times when we are working together I will come down from lunch and Sister will tell me this is what she is going in for, she complains of this and this is what I have done so far...." (P 8:64)

"...two midwives in the ward and two observing students. While the ward was busy all midwives kept each other informed of each woman progress. Each woman had a midwife at one point or another." (P43:2)

The midwives indicated that the information given during the consultation with the doctors, whether it's for referral or for advice will include information collected during the management of the antenatal and intrapartum period. This is the information collected in the maternal case records especially the partogram used for women in labour. The feedback given by the doctors includes referral of the woman or further management information on the woman.

"...The whole information! From the age, gravida/parity of the woman, gestational age, with whatever the woman comes in with, what we did to manage the problem and why we want to refer the woman." (P1:10)

"You discuss your woman, you usually start with Doctor, I have a 24 year old, Gravida ...what, so many weeks gestation, and you give your complaint, what is the complaint about ok? Then the doctor will say ok, you do this and this and you may refer your woman. (P3:35)

"...So we call the obstetrician on call and discuss the woman with him. We'll say when the woman came in and what the problem is and how were the observations. (P6:27)

In summary the handing over processes and the collaborative information seeking behaviour were separated as subcategories a lot of information provided in these two categories seemed to be intertwined in the description of the processes as they occurred.

6.5.4 Subtheme: Actual ICP MOU B

The sub theme of ICP in MOU B brought about similarities in terms of the categories that had emerged from MOU A. However the information that was analysed presented a few differences either due to interpretation or presentation by the participants, for example experience influencing documentation and experience to know what is expected. These codes developed differently yet have some similarities in the description.

The categories that emerged strongly within this subtheme were: information seeking behaviour, information flow in MOU, and team work; the handing over processes, documents used, feedback given by doctors and midwives expressed languages used as factors influencing communication during the ICP.

A further analysis of the categories that emerged allowed the researcher to categorize them into two main categories that arose as similar to those evaluated in MOU A that included;

- Collaborative information seeking which embraced: the documents used, languages used, feedback given by drs, experience influencing documentation, use of computers use of cell phones.
- The handover processes were analysed to include: handover, information flow and team communication.

6.5.4.1 Collaborative information seeking

When asked to describe a typical day at work while managing an intrapartum woman, information seeking behaviour of midwives emerged as an important theme where they expressed how they seek information during the management of women in labour. The MOU B being the midwifery led unit managing low risk women, required midwives to be competent and skilled in the management of intrapartum and be able to seek information from each other or available protocols when necessary.

“We have a protocol book so it states nicely there that women who are having this problem – and then the problem is listed down.So in that protocol form there is a section where it says if women had a previous history of blood pressure or anything – so if any information is written down there they should be seen immediately.” (P1:32)

“... then do the blood pressure – “you don’t look right – discuss it with another Sister – ask her go and have another look – she doesn’t look well and I don’t know why.” (P3:4)

“No, there is a good communication among us – it is good because if we see a woman and we are not sure, we will ask somebody else – “please come and check this woman for me”. Because you cannot be 100% - some of the PVs you will find they say “I don’t know what I am feeling” sometimes like a breech or what then you will call the second Sister and as a result it will be so easy to solve that problem. (P5:15)

“If someone is there and there is a difficult delivery you ask – you shout for help. Let’s say the child comes out fast or the woman does not want to push, you always shout for help. (P5:36)

Utilizing colleagues to record information when the midwife is busy allows the midwife to write information immediately preventing loss of data required. The utilization of non-medical personnel such as the general assistants (GA) who can write down information was raised by the midwives. However the question of whether the general assistant writes the correct information or not was not considered. The GAs were unskilled staff that included cleaners, or administrative assistants. The GAs would document the information on a piece of paper which the midwife may end up putting in the pocket in order to transfer the information later into the maternal case record later.

“If it’s so hectic as it does become so at times, so I would ask the next person to record for me while I am standing in front of the woman and ask her to just write on a piece of paper for me if I feel I am unable to do it. I will ask somebody to take it even a person who is just going past here, I would say please take a piece of paper and write this and that. Even the GAs, we also utilise them because at least they can write them and I will tell them please write for me on a piece of paper and then I will put it in my pocket and when I am done with whatever I am doing, then I will record it.” (P2:64)

“But when we don’t have students, we call out “weight” and someone will write it down but maybe she is busy while you are doing that and you ask her please to write it down on a piece of paper and will write 39, 47, blah blah blah.” (P3:8)

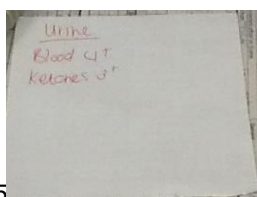
“If she is busy I will find a piece of paper where I will write it on – my weights and all that I have done and then come after doing all that and making the woman comfortable and then I can write my story.” (P4:7)

“ut when we don’t have students, we call out “weight” and someone will write it down but maybe she is busy while you are doing that and you ask her please to write it down on a piece of paper and will write 39, 47, blah blah blah.” (P3:39)

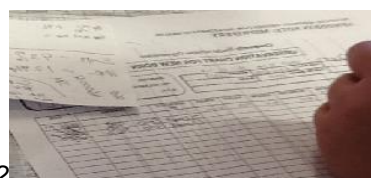
Pieces of paper were utilized for recording data (P33:5, P33:2, P36:2) mostly to be transcribed at a later stage. The midwives relied on memory to transcribe the annotated pieces of paper (P36:2). The pieces of paper with observations next to a maternal case record were later used to transcribe the information into the maternal case record.



P33:5



P33:2



P36:2

“It was observed that the baby was delivered at 08H40 (according to clock in the LW), syntocinon given at 08:42, placenta delivered at 08:50 and examined and this information not recorded immediately. Patient stitched at 08:55 and given lignocaine 1% after letting a first-degree tear. Baby was put on moms’ chest. At 11:30 the midwife sat to write notes on the delivery of the patient and wrote one paragraph excluding all the other information collected at 08H40 (P42:3).”

In describing their day while working with women in labour the flow of information emerged as part of the management. The collection of information began with the assessment of the woman to determine she was in labour.

“In the ante natal ward when our women come in we observe them, do all the observations and see if they are in early labour, maybe going under with lower abdominal pain but not contracting, we keep them for four hours and if there is nothing happening then we send them home.” (P1:11)

“Ok every admission that walks in here, we have got an admission bed and we do tests and urine, it’s a routine we do for blood pressure, pulse, temperature and the h/b on admission. Then we do palpations and stretching of the abdomen, we palpate, we monitor the contractions, whether she is having contractions or not, as long as there no history of spontaneous rupture of membranes or if it’s just a history of pains, even if you can’t feel those pains we do the vaginal examinations so as to know where we stand.” (P2:26)

The women were kept in the antenatal ward for four hours and if diagnosed in labour they would be admitted and managed in the antenatal ward during the latent phase of labour. During this time the progress of labour was recorded in the maternal case record on the partogram. Those women who progressed to active phase >4cm dilated would be transferred to a labour bed and allowed to be mobile until delivery. All information collected during the management of labour was documented.

“In the ante natal ward you have got your contracting women who are closed – less than 4 cms but from 4 cms they go to the labour ward but it depends on the station of the head.” (P4:5)

“And when they are in active phase we prefer our women to walk around in the ante natal ward until they have the urge to bear down and when they reach the stage that they can’t take the pain then we transfer them to the labour ward and then our trays are prepared in advance so that even if we don’t have women that are in labour, whoever comes in with their head on the perineum, we have got a tray ready.” (P3:24)

Women are informed of stages of labour and while the ward is busy the women would keep the midwives informed of their progress of labour, especially when they are ready to deliver the baby as indicated by participant 1;

“Unless of course you get those women that progress very fast and then they come and tell you – Sister I feel this and that this is happening and I feel I want to push – if I am very busy with that woman I would just dress her to come to the other bed in the labour ward.” (P1:11)

The midwives indicated that they worked as a team within the MOU. Even though the ward was busy everyone was aware of what was happening in the ward as they would inform each other or the midwife would go and examine the women to

evaluate how far they would be in labour. Sharing tasks was also common among the midwives in order to deal with the busy wards.

“So if the woman is in the latent phase we do 2 hourly PVs but only hourly observations. So we know if I am busy in the labour ward delivering a woman and I know that there are three other women and that other one is due in the next hour and there are others going to be due in the next 2 hours, we actually know what is happening - the time period that we going to see our women now.” (P1:11)

“We make time. Sometimes we don’t but we make time because there are three of us – one of us can do the history, one can do the observations and the one can be on the phone or can also put up the drips etc. and all that (P3:36).”

“It was observed that the student midwife on day duty prepared for the delivery of the baby with assistance of the skilled midwife. BP FHR, Temp done 1/2 hourly not recorded as the delivery room is away from nurse’s desk. The midwife wrote the information given by the student on a small piece of paper which she will transfer to the maternal record later. The membranes ruptured at 08h00 o’clock according to clock in the unit which is 15 minutes ahead. Clear liquor and no cord felt after rupture of membranes. Information not yet recorded (P42:2).”

The division of tasks required the midwives to inform each other of the findings and these are data entered into the maternal case record.

6.5.4.2 Handing over process

The handing over process was indicated as part of the practices during the management of the intrapartum period. Midwives indicated that they handover at every shift change including when a midwife has to leave the ward for lunch or tea break. Although this is expected to be a common practice the midwives did not find time to leave the wards for their lunches as they were short staffed (3 midwives per shift) and busy most of the time. They would have their lunches and tea breaks at the nurse’s desk, as they are not able to leave the wards to the tearoom for tea as the women can deliver any time.

“Now we are 3 in a group – three midwives in a group and one nurse or staff nurse.” (P4:42)

“We don’t really go out for tea or lunch we normally if we are hungry stay and if say someone has got diabetes they will say Oh – I didn’t have a bite this morning let me quickly have something to eat. I haven’t had my tablets this morning and after this I am going to take them.” (P3:28)

“....So I came in as she was almost finished. She did give me all the information about the rest of the women.” (P1:4)

The handover process is interactive as the midwives ask questions for clarifications while suggesting their own interventions during the process. The midwives give information on the management of the women in labour.

“Well we hand-over across – we do the hand-over to the night staff and we tell them what has happened, that this doctor said this and this and then the others would say “No, I am calling the doctor again and then the other time we speak, we handed over to the sisters and the sister said “No I am going to call again”. (P1:47)

“Ok I take over from the night staff – like woman-wise, ante natal and post natal and then check

the drugs and do the resus trolley – the baby one and the adult one. Then I check if the bowls are clean. If there are admissions then we will do the admissions as they come and then do the observations from the ante natal wards. If there are clients there to assess then it gives me the baseline for the day. (P3:23)

“It’s a continuation of communication so I will write in as taken over because I have taken over those women from them and then wait for the next one who will come in to write in the book.” (P2:21)

The documents used during the ICP included the admission register (P: 2: 20; P4:6) and the maternal case record (P: 3:35; P2:59) which was used throughout the management of pregnancy. The history of the woman in previous pregnancies including reproductive history was included in the maternal case record and the continuation of the assessment of labour was entered into the same document.

6.5.5 Subtheme: Actual ICP in RH A

The RH A has both doctors and midwives although only doctors decide on consultation and referral from MOU A. The subthemes that informed the understanding of the present state were developed from the question of the actual ICP.

The main categories that emerged strongly under the subtheme ICP in referral hospital included: the information communicated during the referral, referral processes followed and the consultation with the doctor. Doctors on call workload and the different management by the doctors also revealed a significant response. These categories were further analysed into two categories that included the information communicated which was alluded to by the participants. The referral process was described with merged codes (consultation, doctor’s workload, use of computers) which was according to the perception of the doctors in the referral hospital A. Midwives in RH A were not involved with the referral process only the operations manager who was the lead midwife who had an input in the referral process and was interviewed.

6.5.5.1 Information communicated

The information communicated in the referral hospital is usually done quickly especially during emergency situations. The midwives from the MOU A would give the information to the doctors in order for them to decide whether to refer the woman to an intermediate risk or high risk hospital. The midwives immediately

embark on saying what they are worried about including the history of the woman.

“Sisters give me the whole information and what is the history of the woman?” (P8:59)

“...give us the meaty information so we can decide whether they need to come in or go there, can they stay there or do they need to go to RH C” (P10:10)

Disparities on which information was given and prioritizing the information differed between the expectations of the doctors and what the midwives would give.

The specific information that is required to be communicated is important to prevent wasting of time and giving inappropriate information. The age, gravidity, the parity, and the reason for calling the referral hospital was deemed as important. The order to whom the information was given differed from one midwife to another and the doctors preferred the reason for calling as the most important information.

“You need to say the background history of the woman, but they are very good at that – they will tell you the age, the gravidy/parity and how far the woman is, they are very good at that presentation but the important part is why you re phoning! Laughs.” (P10:36)

“ I first tell him this is a matter of this and this and if a woman go for post-partum, or if it’s a pre-eclampsia woman and if it’s a pre-eclampsia woman her name is blah, how many children she had and what is her gestation and what is she presenting with now and all that.” (P8:51)

“You must tell the doctor you present the woman, so you start from the woman’s age and how many children that they had. Then the doctor would like the gestation of the woman. Then if it was by ultrasound or if it was by dates or by s/f and then you must tell the woman’s vital signs.” (P7:50)

“...the name, age, gravida parity, gestation – this is what the blood result is, last observations were that she is now fully dilated and she has been pushing for an hour, I want to send her in for prolonged second stage. He has forgotten the first part.” (P2:29)

The age, gravidity, parity, investigations and the reason for calling especially current history, was information required to be communicated by doctors.

6.5.5.2 Referral process

The referral process was emphasised as understood by both midwives and the doctors in the referral hospital. If a woman changes condition while in labour and becomes either high risk or intermediate risk they are expected to refer her in labour. Protocols for the Metro East are used to determine the types of women and where they are supposed to be referred. When the midwives in MOU A phone the referral hospital they will use the required criteria (in the protocol) to determine where they will send the woman. The protocols are adjusted according to the hospital capacity to accommodate the woman in labour.

“... we phone according to, say we have our whole criteria on where the woman needs to go, depending on the problem. Say if we find that the woman needs to go to RH A or to or RH C which is mostly for the high risk people. I consider level I as an intermediate which means the woman can be seen there and here. Then we discuss it with the doctor but we know already what kind of problem goes where. But then there are cases when the hospitals are full – say the woman needs to go to RH A but RH A is over-full then we need to discuss that with the doctor at RH C and the doctor will then phone RH A’s doctor to confirm if it is really full and why they can’t take the woman. He will then phone us back to say OK you can send the woman that side.”

(P1:9)

When the MOU’s call the referral hospital there are four MOU’s (P12:7; P11:10) that refer to RH A. the phone calls go through the switchboard and the doctors are contacted via intercom then they call back the MOU. The doctors do not sit and wait for the phone calls from the MOU as they have other tasks elsewhere in the hospital. The doctors prefer a hot line, as the MOUs would directly contact the hospital.

“They do but they from the MOUs don’t get hold of us on our cell-phones because they have got to go through our switchboard – our switchboard contacts us and they will say on the intercom that they will call them and put the call through to us. So that’s the way we get to talk to them but obviously there is just no way logistically that we would be able to sit and answer the phone because there is just too much to do and there are only two of us but if it was ideal that would be nice – a hotline would be nice.”

(P10:67)

“You can put it down to switchboard and say they can broadcast the call but they will put it through to their cell phone if it’s after hours because after 10 pm there is no broadcasting of calls.”

(P11:32)

The consultation process requires the midwife in MOU A to give enough information for the doctor to make an informed decision. This happens when midwives encounter problems they are not sure of the management required.

“...I prefer them phoning if they need advice than sitting at that side not knowing what to do without a doctor that side, so I don’t mind them doing that but not all doctors feel the same way.”

(P10:19)

“There are other situations where we can manage them telephonically often then the midwives will say to you “ Doctor I just want to discuss a case with you – are you ok for me to rupture the membranes and re-evaluate in 2 hours or are you ok for me to give the woman pethidine? In which case I will say “Sister if you are happy to do that then go ahead. Call me if there are any further problems.”

(P12:35)

The doctors work load in the referral hospital emerged as influencing the ICP. There is no specific doctor allocated to answer to the phone calls in the MOU but rather the doctors on call, mainly two at a time, will answer and deal with the consultations and referrals as they come in. This means that the MOU A has to wait for the referral hospital to get hold of the doctors whether it’s in an emergency or just for consultation purposes.

“Yes there are two people we are two of us on call and we will be taking calls and we will

be seeing all the gynae women and all the obstetrics women, doing all the surgery as well. So there isn't a way for them to communicate with us other than the way that it is because as I said, it's not always us sitting in one place.” (P10:64)

“There are 2 and they go into theatre and after hours as well. We used to have one but that was very hectic as they used to see the gynae women as well. But now we have two doctors day and night and that's just in the labour ward.” (P11:28)

“We have to manage the entire labour ward including the emergency caesarean sections which we do ourselves, or any obstetric complications like manual removal of the placenta, tear repairs or vacuum deliveries or any assisted deliveries. We also evaluate any of the deliveries that came in from the MOU and any high risk women that come in or women who are referred from the MOU.” (P12:3)

The fact that doctors can be anywhere in the hospital influences the flow of phone calls where the anaesthetist can receive calls and pass the information verbally to the doctor who would be scrubbed up in theatre. However the anaesthetist might not have the obstetrics language in order to communicate effectively the message being delivered by the midwives to the doctors.

“If we are operating, scrubbed up or the anaesthetist needs to be our receptionist to convey the message, I think it's very frustrating for them as they mention it multiple times.” (P10:5)

“So if it's an anaesthetist who has obstetrics knowledge she can present it logically but some of them don't and some of them present it to you in a way that doesn't make sense.” (P12:24)

The doctors indicated that they mostly used the protocols to decide on woman management and referral. Although there are protocols in place for the management of the intrapartum women different doctors seemed to have different ways of managing the referrals and the consultation of the women.

“Having said that I know that I am particularly low threshold for accepting women but some of my colleagues might differ and feel that some of the women come through unnecessarily which could be managed telephonically but my personal view is that if the sister is calling – unless she is completely happy to manage the women telephonically, if she is uneasy – sounds hesitant or if she unsure to do what we will advise her to do, I would rather accept that woman.” (P12: 55)

In summary, the influence of information communicated on the referral process seemed to influence the management of the clients in labour and more importantly the decision making process as alluded to by the doctors. This therefore meant that a swift and precise information communication process was much appreciated.

6.5.6 Subtheme: Actual ICP in RH B

The midwives and the doctors from RH B admissions suite dealt with the consultation and referral processes from MOU B. This is a triage area-receiving women from four MOUs as discussed above. Their description of their

understanding of the present state is described in the subthemes with respective categories, which include ICP within RH B, and the challenges faced with the ICP as discussed in detail below. Unlike RH A, the RH B had doctors and midwives receiving calls from a hotline and providing feedback to the MOUs

The categories that emerged strongly were the flow of phone call information referral hospital, use of a standard document for ICP, doctors being anywhere in the hospital. Other categories that emerged included Information communicated to referral hospital, referral drainage area activities, phone call process to referral hospital and the fact that the registrars had different roles within the hospital.

The categories were further analysed to include the Information communicated which comprised: the standard document used and the referral process which comprised of flow of phone call information, doctors can be anywhere in the hospital referral drainage area, phone call process to referral hospital and registrars having a different role.

6.5.6.1 Referral process

The doctors and midwives described the flow of phone calls as being received in the admissions suit where all the women from the referral hospital are examined and necessary action taken. There are two lines and a hot line in the admissions suit, which were utilized by the four MOUs and two other hospitals.

“.... Retreat, Gugulethu , Mitchells Plain we get referrals from False Bay also private doctors, day hospitals as well – e.g. most of the referrals come from hospitals like Victoria Hospital..... Also from the BANC sites as well – like Nyanga BANC and Woodstock BANC – they also refer to us...” (P24: 2)

“Normally we start taking the information that the person is giving. We have got two lines that we receive calls on and we have got a hot line and then we have got the ordinary admissions suite line and they can present a woman on both those extensions.” (P24:44)

The MOUs call and present a case to the doctor or a midwife. The midwife and the doctor are allowed to receive the calls and information but anyone else who picks up the call needs to pass on the phone to the midwife or the doctor in the referral hospital. If the midwife in the admission suit needs to find a doctor they can either walk to them or use the intercom hoping the doctor could hear and respond from whenever they are.

“Mostly they are going to phone in – they are going to present a case, it could be from the midwife

or the doctor. Usually we can also receive the cases where you don't need the doctor's input here but afterwards we will go back to the doctor...." (P23: 1)

"...those two phones - all of us answer the phones. Like there is a sister and there is a nurse and there is us also there so anybody who answers the phone can answer the phone." (P26:17)

"There is the intercom that they can use to call you and ask where you are and they can phone you or they just walk in and ask." (P26:59)

There is usually only one midwife in the admissions suite who manages the women and could give feedback to the MOUs calling in including looking for the doctors when necessary. Anyone in the RH A admissions suite can pick up the call when the phone rings. There is only one midwife working in the admissions suite and she could be busy with the other patients who have been received in the referral hospital. Although anyone can pick up the phone only midwives and doctors can provide feedback.

"....only one midwife in admissions..." (P24:12)

"So it's two phones that can receive the referrals wherever so what we normally do – we immediately start taking the details unless you have a dire emergency as ENAs answer the call and the clerks answer the calls and normally they will normally call the sister and say "sister its MOU B and they want to present a woman". That kind of thing – you take the call and take the necessary details identify yourself and then you take the necessary information." (P24:45)

"Although anyone can pick up the phone, only Midwives and doctors can provide feedback or discuss the woman with the midwives in the MOU B. If it's a straight forward kind of referral she will say "yes sister we will accept the woman" if it's not she will find the doctor if we are not there at the moment so that takes a little bit of time. (P25:12)

"There are cases that need doctors – you know the input from doctors – how must this woman arrive at Mowbray? Must they come to Mowbray – e.g. premature labour – at which gestation do we allow them to go to GSH or to RH B? If they are in labour – that kind of thing and we discuss them with the doctors but most of the time it's midwife to midwife." (P24:30)

The doctors indicated that they are short staffed in the referral hospital and are expected to work in all areas of the maternity hospital. This means that when the phone calls are received in the referral hospital the doctor can then be anywhere in the hospital. They could then be reached by calling them on the intercom or physically walking to look for them or the calls are transferred to wherever they are in the hospital.

"They normally are in theatre, assisting in theatre or with second stage of labour or first stage or in the C ward or in B ward for that matter. So they can be anywhere in this hospital so that is sometimes problematic because your second line might also be a call from the MOU and that is sometimes problematic." (P24: 62)

"But you do – yes you are everywhere, you are in the admissions suite, in theatre, in the labour ward, sometimes you will go to special care, sometimes yes, first stage, you have seen our labour wards? First stage section so you are everywhere ah yes. (P25: 5)

"The sister has to come looking for you. They can either phone – the sister in admissions would say "it's me" if I am in theatre then I am in theatre and there isn't much that can be done until

that case is done.” (P26: 53)

There are medical officers working in the RH B who report to the registrar on duty. The registrar will allocate the doctors where they can be in the hospital and is the team leader for the shift reporting to the consultant. The allocation of the doctors is transcribed on a notice board at the admissions suite where if necessary they would know where the doctors are.

“But then the registrar would be in charge of first stage, the admissions suite and then second stage and then special care so that our registrar will be more like the team leader before the consultant. (P26: 10)

“So we should have in admissions – well there is a white board and we should write on the board and the sister knows who to call and which unit but when there is nothing happening anywhere else, we all sit in admissions suite and then we would call from there. So it’s sort of an unwritten rule of who is doing what. (P 26:13)

This makes it easy for the midwives who sometimes are required to walk to look for the doctor on duty in order to get consultation or referral decision. Once consulted the midwives have to relay the message to the midwife waiting on the line.

6.5.6.2 Information communicated

Information received from the phone calls, is communicated verbally to the other members of the team or written down on a piece of paper. This is used as handover in case the person who received the woman is not in the unit when the woman arrives as indicated by the participant below. A standard form is used in RH B when receiving phone calls to know the information expected when receiving calls.

“I just tell the sister who is there that we are expecting so and so and then it’s written on a paper that we are expecting someone but you maybe give a verbal report that we are expecting someone like this and this so that the other two members know how to schedule themselves in case somebody needs to go to lunch or their break.” (P26: 24.)

When asked about the referral drainage area, the skilled birth attendants indicated that they received women from five MOUs. The referral hospital also has a MOU of its own which refers the intermediate risk women to them. All women coming from MOUs are required to have adequate information documented about the intrapartum to make informed decisions.

“We, at the moment, we receive from Gugulethu, Mitchells Plain, Retreat, False Bay – what else? Hanover Park as well. Although it is not under us, when Somerset is full then we receive women. From our own areas they normally go to level one or two – LABU and you have got those areas that maybe become our areas – we get them and they cover from Salt River to, I think, Wynberg – those women, then we have women from OPD.” (P23: 21)

The admissions suite is an area where the women are sorted out on arrival with the various referring ambulances. A triage criterion is used in the admissions suite to sort out the women according to the information given on the acuity of the woman in labour. Sometimes when the doctors receive more than one phone call, at a time they have to prioritize and give feedback according to the urgency of the call. This also applies to when the women arrive at the admissions suite.

“Normally it’s sorting out the women that are there already and receiving phone calls from outside whether it’s an MOU or whether it’s private doctors.” (P24: 25)

“Yes – that we both can use – e.g. like we have the triage criteria in the admission suite like if it’s bleeding what kind of bleeding is it? You know? Is that woman going to be a code red?” (P24: 75)

“If you have two phones it depends if you are the only one there and the phone is ringing. Maybe somebody said hold this one. The important thing is to just prioritise because you listen to the story and they say “I am sending this and this” and you tell them “ok “ and then you listen to the other one – what are you sending? Depending on the urgency on what you think it is as an individual is very important then you say “let me take care of this call I am going to call you back”. (P26: 51)

Receiving more than one phone call requires the doctor or midwife to be attentive enough to prioritize the call.

Women who arrive in active labour from the MOU go directly to the labour ward rather than in the admissions suite although the admissions suite received them telephonically. The information received during the telephonic conversation is required to be transmitted to the labour ward once the woman arrives. Most of the time the midwives and doctors in the admission suite might not see the patients they received as they go straight to the labour ward.

“ You will find those ladies in active labour and they will be in second stage so most of the time you, as the Sister in the admissions suite won’t see that folder because they go directly to second stage of labour – e.g. they are 5 cm dilated with meconium – they won’t come to admissions they will go straight to second stage labour so yes, you don’t see those documents most of the time – you don’t even see most of the women – you have accepted that they might go to those other areas”. (P24:70)

When the information is received there is a standard document that the skilled birth attendants indicated as being used. The form is used for writing down information regarding any consultation and referrals from the MOU’s. The standard document is kept at the RH B until the woman arrives and is put in the woman’s folder. The standard tool seems to reduce the loss of information while ensuring the skilled birth attendants keep track of the women being referred. The skilled birth

attendants felt that the tool was a guide to the relevant information they would want to ask during the ICP.

“Yes I think so – for all the years that I have been here – because we are using that tool. In the beginning there was a bit of a problem but ever since we are having a tool, they know the relevant information that we want – we don’t have problems.” (P24:6)

“In the admissions we have a standard document that we use – it’s a tool that guides us – just to get the appropriate information from whoever is referring and whatever the problem of the woman is.” (P24:35)

“If it is the sister answering the phone the thing that I have been encouraging the MOUs to say – there is a form in admissions suite where they write the story that they getting about the woman but then it would be quicker – I have.” (P26:18)

“Yes the nice thing about that page – that page stays next to the phone and then sister will know about it and usually if I take the call I will tell sister there’s an eclamptic at the MOU to be transferred and I will tell my colleagues as well.” (P27:66)

“...yes during the call the sister takes the message – she transcribes it on the referral sheet and then she approaches me and she tells me about the woman and then asks me if I have an opinion then I speak to the sister directly or sometimes I take the call directly and I transcribe the information onto the referral sheet so this is how it works ok? It is not necessarily that I work in admissions suite.” (P28:1; 2)

When the midwives call from MOU B they call for consultation or request to transfer the woman to the RH B. The information communicated is specific to woman in labour and may differ at different times depending on the person communication or requesting information. The general information given would include the past obstetric history, present obstetric history and current complains in brief. The age, gravidity, parity and gestational age are seen as necessary.

“They normally ask for advice or they ask you what they can do and normally we are able to assist them – the midwives on the other side. (P24:29)

“So what happens sometimes is the sister says on the phone “I want to present a woman” and if she says “I want to present a woman” then she starts saying this - “Mrs Duvenage - she is 36 years old, gravida 2, parity 1 – she is 35 weeks by the ultrasound and she is 37 weeks by b/v page and she came at 2 o clock and was 4 cms dilated and then after a while she then says.” (P 26:28)

In summary the actual ICP in RH B was influenced by: the phone call process within the referral hospital, the availability of the doctors within the referral hospital, the adequacy of the information received and the time between receiving the calls and locating the decision maker.

6.5.6.3 Conclusions, reflections and best practices

The information communication processes in the MOU and RH hospitals derived four main categories. The handover process was seen as an important aspect of means of verbal communication by the skilled birth attendants in the MOU. The

description of workflow indicated particular activities the skilled birth attendants are involved in during the management of the intrapartum period.

The handover process, which was verbal, was based on MCR although there was no structured way the communication that was expected to be delivered. Every skilled birth attendant ensured that at least some handover of the woman in labour was done. The adequacy and effectiveness of the handover was relied on the culture of the particular unit, which was not evaluated. The handover process was a best practice for passing information at the beginning of each shift and during the shift. This allowed all the team members to be aware of what is happening with each woman who is in labour. However, there is need to streamline the documentation of the information especially when more than one team member is involved in the care of the woman in labour

Collaborative information seeking was seen as a trait between the skilled birth attendant to gain information while working as a team. This was regarded as respect for experience or position when one individual sought information from another. Guidelines and protocols were also often referred to as a source of evidence for the management of women and also on rules for referral processes. The skilled birth attendant seemed to pay attention on the need for effective processes.

Documentation of data was done retrospectively and the care of the client was seen as a priority mostly at the end of the shift. The information communicated, whether to the midwives at the MOU or the referral hospital, seemed to be influenced by the information documented. The required information during consultation, emergency referrals or handovers was not structured but rather depended on the sender and receiver and the channels of communication

Although there were expectations from the policies such as use of tools such as SBAR and an early warning chart, there was no mention of use of these documents either in the MOU or the referral hospitals. The MOUs and the RHs had their own culture of what was required to be communicated and the documents often used such as pieces of paper, the standard form developed by the specific RHs or modifications of documents by the MOUs to suit their requirements.

The referral process was affected by the systems such as the flow of phone calls where several people answered the calls before reaching the decision maker as discussed above. The flow of phone calls at the referral hospital and the flow of information seemed to influence each other. RH B had a better flow of phone calls and information by reducing the number of people involved and having a structured document, which was used.

The information flows from the MOU to the referral hospital when needed for consultation or referrals. Therefore the data collection processes within the MOU have an effect on the information communicated to RH, the decision made and the feedback given to the MOU. Further the data collection at the point of care also influences the documentation which influences the care provided to the woman during the intrapartum period.

Whereas the RH A faced challenges, lack of a hotline to receive calls from MOU A the RH B had the best practice of having two phones and a hotline to improve accessibility. Further, the practice of midwives being allowed to receive calls allowed more accessibility to the referral hospital. Having a standard document to write information regarding all the calls in RH B allowed streamlining of information while at the same time increasing the fragmentation of documents used for the care of patients. It would require streamlining of information communicated by having one standard document at the MOU and the RH which will always accompany the client on transit.

6.5.7 Subtheme: Challenges of ICP

The ICP during the intrapartum period was not without challenges. The categories illustrated in the table below emerged from the various data collection methods used. Although these challenges were not directly expressed as desired for a change, they illuminated a desire for a better ICP within the MOUs and between the MOUs and the RH. Table 6.5 illustrates the challenges emerging from the data as categorised and analysed.

TABLE 6.5: ON CHALLENGES OF ICP

THEMES		MIDWIFERY OBSTETRIC UNITS (MOU)		REFERRAL HOSPITAL (RH)	
Principle theme	Sub themes	MOU A (n=10)	MOU B (n=7)	RH A(n=6)	RH B(n=6)
Shared understanding the present state	Challenges to ICP	<p>Inadequate information documentation (n=46) Mistakes (n=31) Frustration with phone calls (n=24) Challenge with information to be communicated by doctors (n=21) Frustration with doctors (n=17) Inadequate information communicated (n=16) Inconsistence protocol communication (n=13) Communication influenced by personality (n=12) Frustration with the system (n=10) Undesired Feedback (n=6) Computers not used (n=4)</p>	<p>Frustration with phone calls (n=52) Inappropriate information collection (n=41) Frustration with IC process (n=15) Mistrust of MOU midwives (n=10) Personality a challenge (n=9) Not familiar with SBAR (n=6) Frustration with feedback (n=6)</p>	<p>Inadequate Information communicated with doctors (n=32) Frustration with referrals (n=29) Frustration with information communicated (n=28) Frustration with phone calls (n=27) Frustration with the system(n=10) Feedback in referral (n=6)</p>	<p>Frustration with phone calls (n=52) Poor communication wastes time (26) The doctor shortages (n=25) Mistrust by MOU midwives (15) Inappropriate referrals (n=12) Frustration with IC (n=12)</p>
		<p>Challenges with information</p> <ul style="list-style-type: none"> ✓ Inadequate information documentation ✓ Mistakes ✓ Challenge with information to be communicated by doctors ✓ Computers not used <p>Communication challenges</p> <ul style="list-style-type: none"> ✓ Frustration with phone calls ✓ Inadequate information communicated ✓ Inconsistence protocol communication ✓ Undesired Feedback ✓ Communication influenced by personality ✓ Frustration with the system ✓ Frustration with doctors 	<p>Challenges with information</p> <ul style="list-style-type: none"> ✓ Inappropriate information collection ✓ Not familiar with SBAR <p>Communication challenges</p> <ul style="list-style-type: none"> ✓ Frustration with phone calls ✓ Frustration with IC process ✓ Frustration with feedback ✓ Mistrust of MOU midwives ✓ Personality a challenge 	<p>Challenges with information</p> <ul style="list-style-type: none"> ✓ Inadequate Information communicated ✓ Frustration with phone calls <p>Communication challenges</p> <ul style="list-style-type: none"> ✓ Frustration with referrals ✓ Frustration with information communicated ✓ Frustration with the system ✓ Feedback in referral 	<p>Challenges with information</p> <ul style="list-style-type: none"> ✓ Poor communication wastes time ✓ The doctor shortages ✓ Mistrust by MOU midwives ✓ Inappropriate referrals ✓ Frustration with IC ✓ Frustration with phone calls

Frustration with phone calls, frustration with information communicated, communication influenced by personality, inappropriate information collection.

The table above demonstrates challenges faced by the four units of analysis. The category frustration with the phone calls emerged strongly in all four units of analysis that are within two different referral drainages (MOU A and RH A and MOU B and RH B).

Categories such as inadequate information collection and documentation emerged in the MOUs. This could be due to the fact that the MOUs were seen as the source of information that was communicated. This information involved assessment of the women's history taken and investigations that were relayed to the referral hospital in cases of consultation or referral. Further the category of communication being influenced by personality also emerged in the MOUs, as they often were the initiators of the ICP as opposed to the RHs who were the receivers. The experience of the midwife communicating from the MOU would most likely influence the assertiveness with which she would communicate.

The doctors often gave feedback and the category of undesired feedback emerged at the MOUs that had to deal with the feedback given by the referral hospital.

The referral drainage A (MOU A and RH A) had a category of inadequate information communicated to the doctors which inherently showed a concern on the uninformed decisions made due to inadequate information given. This tied to the category of frustration with the information given which also emerged in this referral drainage.

Frustration with the information communicated was the only category that emerged in MOU B and RH B indicating that the two units of analysis faced different challenges in terms of the information communication process except for the challenge with phone calls that emerged in all units of analysis.

Below are the specific challenges discussed according to the different units of analysis under the subtheme challenges of ICP:

6.5.8 Subtheme: Challenges of ICP MOU A

During the ICP the midwives were asked about the challenges faced during the ICP. The concerns that emerged included inadequate information documentation, mistakes made in documenting information, consequences for these mistakes and frustration with phone calls. Other challenges which were of similar importance, included information to be communicated by doctors, frustration with doctors, inconsistency protocol communication and communication being influenced by personalities.

The ICP such as the handover, consultation and referral processes required communicating the information collected during the management of the intrapartum period. Further analysis from all units of analysis revealed two major categories that were either challenges with the information or challenges with communication. These categories will be elaborated with the subcategories that fall under the emerged major categories.

6.5.8.1 Challenges with information

The challenges with information emerged from the subcategories that included inadequate information documentation, mistakes made during the documentation, challenges with information to be communicated to the doctors and the fact that the computers were not used.

The midwives asserted that inadequate information communication influenced the management of women during the intrapartum period. These challenges included use of pieces of paper with the intention to transfer the information at a later stage and not being able to transfer the same information either in time before referral of the client or even transfer the information at all. This led to incomplete documentation even if the actions were carried out. The result of such omissions cascade to inadequate communication when the necessary information is required. Other times the data collected was not seen as useful for management of the woman but to ensure completeness of information for auditing purposes.

“..the one writes the name in there, the woman delivers then that sister doesn’t complete the rest of the form so then I just have a quick glance and see if all the columns have been completed so I would also write a note for that sister to please complete so that by the end of the month I just need it add it up” (P2:82)

“...Maybe that was someone’s surname – one thing or so that was not written in. Maybe a witness didn’t sign the application or something like that.” (P6:22)

“Yes lots of times! I say “where did I put that paper now – someone took it and chucked it in the bin and I have to go and find it again” (P8:81)

“...Not always – as you get too busy and you have to jot it down on, like a piece of paper maybe and then record it afterwards. (P4:31)

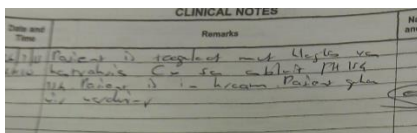
“...I take my gloves off, I take the inside paper and I jot down you must also write time of baby’s birth, placenta time, time for oxytocin etc – what – as long as you note the time things were done – that is important.” (P8:79)

The midwives acknowledge mistakes that were made during the information communication that had consequences to the care of the pregnant woman such as below where the doctor did not make an informed decision and the woman ended up dead.

“.... The doctor said we should discharge the woman. So I said no man, this woman must stay here, keep her here and reassess her again and then I was busy at 1 o’clock She comes back and says I think the woman is dead. (P2:232)

“...it’s because information was given from one person to another person before the information gets there and that is a challenge – it’s a big challenge.” (P2:233)

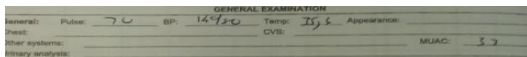
Inadequate time was seen as the reason for incomplete data (P24:1, P22:1, P20:1, P14:1).



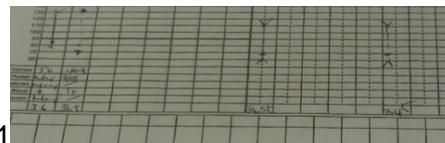
P24:1



P22:1



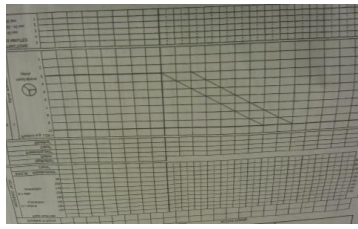
P20:1



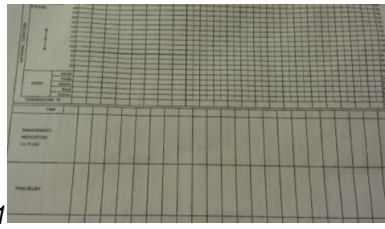
P14:1

When an action was not taken such as examining the client there was no information written and sometimes the required space in a structured partogram was left empty. Sometimes a client could also be referred with a completely empty partogram when there was no time to transcribe information which could be elsewhere (P28:1).

“You didn’t get time to do the PV then. If you are not going to write in there that you were busy then the PV progress won’t be in line you have to write 1 o clock busy in the ward because if that line is open you do the PV an hour later and its higher then you know the progress is in line. You say this woman is progressing very nicely but you forgot you didn’t do the observation that time so you can say exactly where the progress is supposed to be.” (P3:82)



P28:1



P29:1

The frustration encountered with information to be communicated with the doctors includes the midwives not being able to appropriately address the issues they are facing directly as encountered. The lack of computers to enter the information and communicate this information without having to read it for a doctor who is 10km away compounds the issue.

6.5.8.2 Communication challenge

Other challenges, which emerged in the subcategories, were; frustration with phone calls, inadequate information communicated, Inconsistence protocol communication, undesired feedback, communication influenced by personality, frustration with the system and frustration with doctors.

The consultation with doctors in the referral hospital required the use of telephones and midwives identified that as a major challenge. The phones were identified as unreliable, especially during emergencies in the intrapartum period as indicated by the midwives below.

“...So that’s the only challenge we have is getting hold of the doctor.” (P2:253)

“...at RH A there is usually one doctor and sometimes the doctor is busy in theatre.” (P5:45)

In cases of an emergency the waiting times for the doctor to respond was seen as unacceptable especially when the doctors were busy at the referral hospital.

“.... Sometimes they take long to pick up because they are maybe busy or they were just in the ward and then they left or on their way to theatre or wherever and the first time I phone theatre I get “No they are not there. (P 8:40)

“..At the time you still have the stress factor, you speak to the doctor you still have to do things, you forget like you are the advocate for your woman and you see the Dr So and So says you must wait.” (P8: 47)

The unreliability of phone calls was coupled with the information communicated to doctors being inadequate, delayed or misrepresented. This was caused by inadequate information collection that influenced the decisions made by the doctors using the information provided. There was no structured expected

information required so the midwives used their experience with different doctors to determine which information was relevant.

"...It is a lot of information we are giving so anything can be missed." (P: 243)

".... So most of the doctors are fine and start off by saying why do you want to refer the woman and then giving all the other information. Where others want you to start from the top down and then say why you want to send the woman! (P2:211)

".... when you are not getting hold of the doctors at all and then either the information being delayed to the doctor rather than speaking to the doctor." (P2:237)

Frustration with feedback given by doctors or the lack of it influenced relationships with the midwives. The experienced midwives seemed to be more assertive during communication that improved decision making from the doctors, while the less experienced midwives and doctors seemed to have challenges with assertiveness according to the midwives.

"Dr So and So says you must wait and that kind of thing but now I have learnt, and you see the woman one on one and you see to the attention of the woman and you say to the doctor that there is no time to wait ten minutes and you must send the ambulance now." (P8:48)

"... What I have noticed is that if you don't have good interpersonal skills you will never make it here. Not here – because there are different characters you are working with. One will be forceful, the other will be timid – another one will be straight to the point and another will go a long way around to tell you something. One behaves one way and the other one's face is one way – there are different characters working here." (P7:42)

"...so it's about who you are and who you are speaking to because the junior doctors want the long story where the more senior ones - because they know the facility they know the sisters, they feel confident that the sisters are giving them the correct information and that they would not send a woman who doesn't need to be there." (P2:215)

In summary, some of the challenges were addressed as desires for change to a goal state that a sense of need for change for better intranatal care.

6.5.9 Subtheme: Challenges of ICP MOU B

The challenges within the MOU B derived subcategories within which two of these came strongly discussed; frustration with phone calls seemed to be the main challenge and inappropriate information collection. Other subcategories included frustration with the information communication processes, mistrust of MOU midwives and mistrust by MOU midwives. These subcategories were further analysed as two categories which were the challenges with information: inappropriate information collection, not familiar with ISBAR inappropriate information collection and not familiar with ISBAR. The communication challenges that were identified included frustration with phone calls, frustration with IC

process, frustration with feedback, mistrust of MOU midwives and personality challenges.

6.5.9.1 Communication challenge

When asked about the challenges the midwives faced during the ICP, frustration with phones and phone calls emerged strongly. This included phones that do not work and the midwives are expected to call the referral hospital during emergencies.

“Sometimes when we use the public phone across we use our own money you know – we use the public phone.” (P4:36)

“...Imagine? We are just stressed here because that woman won't go there without them phoning the flying squad or whatever. Only a week or so ago we had a problem with the phones.... there were no lines – the lines were dead then we had to come through to trauma to present the woman.” (P4:21)

“...last week when we had a problem with the phones – I don't know what was going on with phones but they were all – you know? So we had to stop at the Day Hospital and go and phone from there.” (P5:16)

“The telephone something must be done about the telephone because we need more than one line in the labour ward.....because at times if you are having an emergency it means it's a standstill for the others to use the phone if they are having problems also.” (P2:53)

Although the phones and calls were a problem inappropriate information collection influenced communication during consultation processes or referrals.

“Yes but it's getting difficult for you now – the partogram that has not been done properly – it's always difficult for you now because there is this space but we have to start where we have taken over and first report to the doctor that this woman was due but that they were busy and didn't have time to do that – just because of business but we usually write down the word business and why they didn't do it.” (P5:2)

Frustration with the information communication emerged as a major challenge especially during consultation with the referral hospital. The midwives felt misunderstood by the doctors and midwives at the referral hospital. This came across as aggression towards each other during the communication processes, influencing the message provided by the midwives.

“When you call RH B sometimes they are nice sometimes they are nasty and you have to put your foot down when they are nasty and say that no, you are sending this woman – I am sending this woman because of 1, 2 and 3. I am not going to keep this woman.” (P3:1)

*“... Some of the doctors and the sisters there they usually undermine us but not always.” P5:9
“.....They don't trust the findings...” (P2:38)*

“We always get them when they are busy but they think that we must not be busy. If you are busy and they are busy and then we keep on phoning and when they pick up they say “Oh MOU B!” before we say anything they are already tired you see so that whatever decision they may give you they are already tired.” (P4:16)

The lack of trust or feelings of not being trusted influenced the communication process from both the sender and the receiver. Inappropriate information collection which included not being familiar with the ISBAR (tool for referral) compounded the inadequacy.

6.5.9.2 Challenges with information

The challenges with information were expressed as inappropriate information collection and not being familiar with the ISBAR which was introduced as a tool for referrals. Although the ISBAR was introduced to improve documentation and IC processes most of the midwives in the MOU were either not familiar with it or had not ever heard of the document. When asked if they are using the ISBAR the response included;

No! (P1:23)

No what is it? (P 3:44)

The feedback given by the doctors also seemed frustrating as the midwives expressed they were not always satisfied with what they were told to do or the decision made by the referral hospital on the women they were consulting about. Sometimes there was no feedback given after the phone call as expressed below;

"...they don't always give feedback." (P5:12)

"... they don't know their story as I say, maybe by having those interns but you know, when you are frustrated you feel like you need to get a straight answer when you are really having a problem you feel that whoever gets that call should give you an answer and not panic." (P2: 57)

In summary, some of the challenges were expressed as solutions to the existing problems, which the midwives envisioned as the desired solutions. These will be discussed under the desired ICP.

6.5.10 Subtheme: Challenges to ICP in RH A

The challenges that evolved strongly in RH A included; inadequate information communication, frustration with referrals, and challenges with information communicated with the doctors. The other subcategories that had a high response included frustration with phone calls, frustration with the system and feedback in referral.

These subcategories were analysed and included in the categories of Challenges

with information which embodied inadequate information communicated and frustration with phone calls. The Communication challenges included the frustration with referrals, frustration with information communicated, frustration with the system and feedback from the referral. Each of these categories are discussed below.

6.5.10.1 Communication challenges

Frustration with phone calls by the doctors was also a big issue as the doctors acknowledged the fact that the midwives from the MOU's found it difficult to get hold of them in an emergency. Even when the phone went through to the doctors, the doctors acknowledged that they were in a hurry to give feedback as they were overwhelmed by work. The doctors found it frustrating as they gave the midwives the impression that they were not willing to assist.

"...the sisters struggle enormously to get hold of us because we are so busy all the time." (P10:3)

"So we could go over the conversation as quickly as possible and I think that they might not understand that we are working under pressure on this side." (P10:11)

"....it's not personalso we get a lot of resistance from the MOUs because they think we are quite nasty to them but it's because we are under pressure and we want to get to the story quickly." (P10:13)

"..Here is quite a lot to do and often you find yourself scurrying around to do everything and in between we take phone calls from the MOUs." (P12:22)

The fact that the switchboard only operated until 10:00pm was a challenge as the cell phones were relied on at night for reaching the doctors in the RH.

"Our switchboard also finishes broadcasting at 10 at night as they stop broadcasting by then and have to get hold of us via our cell-phones so we carry our cell-phones around with us or they just maybe phone the labour ward or the gynae ward and try and see if we are there." (P12:30)

During emergencies the MOU does not have permission to call the flying squad so they rely on waiting for the doctor to call the ambulances. This becomes an added task to the already overwhelmed RH A service. The doctors and midwives in referral hospital are stuck with the fact that they will need to call an ambulance service for the MOU A sometimes in vain.

"We call the flying squad. It's an enormous irritation as well as we have got other things to do and the flying squad take long and I don't understand why the flying squad or rather the MOU doesn't have permission to phone the flying squad." (P10:22)

The doctors expressed frustration with the referrals apart from phone calls where the wrong women were referred, or the women who did not need being transferred

which caused an overload of women in the referral hospital thus overwhelming the service.

“...So that is majorly frustrating for us because the woman comes here and when we figure out that they didn't need to come here at all, whereas we could have saved that person the money and time if someone had just picked up the phone and spoken to us. I don't think they realise that we are approachable.....” (P10:30)

“...a lot of time you will speak to certain sisters and you can hear that they don't know what they are doing and then we just accept the woman because it's like better that we accept this woman here rather than that person be there with them not knowing what they doing!” (P10:39)

The already overwhelmed doctors felt the frustration of unnecessary work overload with patients who could be otherwise managed at the MOU. This was brought about by either inaccurate assessments leading to incorrect referrals as alluded to earlier or even as indicated the midwives were not sure of the management and ended up referring the patient just to be sure. Inexperience with the referral system or patient management causes the confusion of which patients need to be accepted and leads to a cycle of overwhelmed and frustrated skilled birth attendants.

6.5.10.2 Challenges with information

The information communicated to the doctors was also a challenge or the lack of information to make an informed decision. Some of the documents were said to be incomplete while the maternal case record was not always received with the woman on referral. Incomplete documentation such as the partogram during the management of labour has implications in the accuracy of progress of labour.

“... seldom complete. What is also frustrating is when they do refer a woman and they keep the book on that side and they give us no information on this side and that's an enormous frustration for me as it will be a booked woman maybe she is coming here for a sterilisation or something and they leave out what the book-in bloods are. Then we have to ask our sisters to repeat the book-in bloods. I mean it doesn't take a lot, all you do is write what it is and the background history of the woman; it saves us a lot of time and effort and I wish that they would do the book-in bloods but they often forget to do it. Not always but a lot of the time they do and we just need to do it here and it's irritating.” (P10:51)

In order for a doctor to give accurate feedback, adequate information is required both during a consultation and referral processes. The doctors expressed challenges with the information communicated.

Language was also a factor where the midwives in MOU A mostly spoke Afrikaans and the doctors in referral hospital A could speak Afrikaans although most of them

were English speaking. This influenced certain communication during the referral processes. There were French speaking doctors in RH A that found it difficult to understand the English spoken by the Afrikaans speaking midwives in MOU A. This sometimes influenced feedback provided to the midwives or even the information received by the doctors to make informed decisions.

“I think our French-speaking locum doctors would find it a challenge because most of the sisters - fortunately the Xhosa-speaking sisters also speak English – but the Afrikaans sisters well their English is perhaps not as comfortable as they would like so maybe that is a little bit difficult and often our French-speaking doctors they have a stronger accent so maybe the sister struggles a bit to understand them. But I think that is the only situation where I think language might be difficult.” (P12:46)

Miscommunication did not only influence the decision making capability but caused fatal errors in the feedback provided by the doctors who were supposed to be providing guidance in management of the patient. If incorrect information was relayed or misunderstood by the doctors then the feedback given could cost the life of the patient. If the midwife on the receiving end of the feedback was not assertive enough to question the feedback then the management given to the patient would be inappropriate at all levels such as the example below.

“... the sister phoned the doctors one night and said “ the woman feeds” so the doctor said if the woman is eating she must continue eating. But she was fitting, but the way they said it the woman died and the way they said “feeds” was supposed to be “fits” on the phone and so the way you pronounce the words – “feeds” and “eats” v. Fit’s? (P11:43)

In summary, the challenges faced by the referral hospital during the ICP were similar to those expressed by midwives. However, different versions of what they perceived as reasons emerged without a common understanding of who was responsible for the challenges.

6.5.11 Subtheme: Challenges to ICP in RH B

When asked about the challenges they experienced with the ICP at the RH B, the skilled birth attendants felt strongly that the challenges influenced the information communication processes. Several categories emerged from the data from the various data collection methods; frustration with phone calls, poor communication, which wastes time, doctor’s shortages, the frustration with ICP, mistrust by MOU midwives and the inappropriate referrals. A further analysis allowed the subcategories to be illuminated within two subcategories which included challenges with information and challenges with communication which were highlighted by the subcategories: frustration with phone calls, poor communication

wasting time, the doctor shortages, and mistrust by MOU midwives, inappropriate referrals and frustration with IC.

6.5.11.1 Challenges with communication

The frustration with the phone calls was described as influencing the effective management of the women in labour at the MOU as this was the only method used for communication between the midwives in MOU B and the doctors in RH B. Sometimes a doctor can be responding to three urgent phone calls at once in response to requests from the referring MOUs.

“Sometimes it’s difficult getting to the phone calls.” (P24:57)

“... at admissions suite sometimes it’s crazy busy and three phones at once and then trying to figure: out which one you are talking about.” (P27:55)

Trying to give feedback to more than one person at a time causes confusion mistakes and possible frustration to the person the doctors are responding to. Even with the doctors trying to prioritize calls makes the midwives in the MOU waiting for feedback feel frustrated by the long waits. The wait could cause the midwife on the other side of the line to develop an emergency which would have otherwise been sorted out if the issue was dealt with immediately.

“You can’t, so sometimes I feel that we are making them wait too long if you are busy with an emergency for example and then it’s 5 minutes that is wasted as sometimes there is that big challenge that we sometimes have.” (P24:59)

Further one doctor dealing with more than one emergency at a time does not give the person ample time and space to make an informed decision which ends up accepting patients who would have been otherwise managed in the MOU with a bit of a direction from the doctors. Sometimes the doctors acknowledged that they could not deal with the emergency immediately and that ended up indicating that they would call back the midwife in question. In case of an emergency it is rather difficult for the midwife to wait for a call back.

“If you have two phones it depends if you are the only one there and the phone is ringing. Maybe somebody said hold this one. The important thing is to just prioritise because you listen to the story and they say “I am sending this and this” and you tell them “ ok “ and then you listen to the other one – what are you sending? Depending on the urgency on what you think it is as an individual is very important then you say “let me take care of this call I am going to call you back”. (P26:51)

When the doctors make a decision to refer the woman, they have to call the ambulance station that is at the tertiary hospital and the phone process becomes difficult further. Mostly it took time for the doctors who have to wait in line to book

the ambulance for the emergency in order to send the ambulance to the patient who is 15 kilometres away.

“And sometimes recently also we are having issues with GSH getting through to them to book the flying squad because they have the same kind of issues because there is only one midwife to answer that phone so sometimes there is those small things that can make a huge difference. (P24:63)

“It was observed that while the doctor C is on the phone with the flying squad the phone rings and another MOU (observation C) and another woman walks in with the flying squad and the midwife receives the woman the doctor takes over the woman and the midwife take the Mitchel’s plain call. Doctor C puts down the flying squad call and continues to discuss the new woman with doctor B.” (P.30:11)

Information given during the phone calls is also a challenge, as either the midwives do not provide the information with the urgency required or they do not give adequate information for the doctor to make an informed decision.

“...they would start with information about what happened when the woman came maybe two days ago they were starting but sometimes the doctor just wanted to know just the important information and they will start and maybe sometimes skip the most important information and then they will come with that, that and that.” (P23:26)

“The information they give us? I think sometimes it’s not given succinctly so yes. Like you go around the bush and then the other bush and we try to get to them to the point so that’s probably the challenge and it’s an issue when it’s busy and sister would say “I have got this woman and she is booked in January – she had 8 visits, she had a scan and you are trying to hear now what was she sending.” (P27:27)

The skilled birth attendants expressed concern over the lack of internet and phones that are working which is frustrating for the midwives when they need to contact the referral hospital for consultation or referral of women. Although the communication was difficult, getting through to the midwives or the doctors was an issue of concern as the phones that were relied on by the skilled birth attendants were not always available or working when needed. The doctors found it difficult to get hold of the MOU midwives when they needed to follow up on a patient or give necessary feedback regarding a patient.

“So it would be nice if the phones worked, it would be nice if we had internet access all the time. You know what I mean? Exactly so it’s also where the system has been let down because then the midwife can’t do her job properly and then when we get a woman there is inadequate information and then we get frustrated and then we go back and say “groan there is nothing - why?” “They are not doing anything!” (P25:54)

“I mean there could be frustration at their side as it takes long to come through – there is definitely frustration on our part because I think we find it difficult to get hold of the MOU sister – there are certain MOUs where the phone just rings or it’s hard to get through to them so if you forget to tell a sister about a woman or that woman we said to keep another four hours and you are phoning back – that’s when I find that I am holding on forever or the phones are not working and that’s a frustration for us.” (P27:57)

The skilled birth attendants in the RH B raised concerns over poor communication, which was seen as wasting time for the woman who is in an emergency and for the busy skilled birth attendants who could be doing other things in their units. The doctors preferred that the MOU B midwives rather present a woman starting with the reason for concern then followed by the other details in order to enable the doctors to make decisions quickly.

“oh now she is having prolonged second stage” so you have already wasted two minutes on an answer that was not necessary whereas if she had started by presenting her woman with prolonged second stage then I would know if I am doing something I need to leave it because that woman needs to come in urgently but if she said I am presenting a woman with ruptured membranes then I know the sister can take that call – she can go through all that presentation – it’s fine. (P26:29)

“Doctor I have a woman” and then a long story and “then she came in at 8 o clock last night and she was 2 cms and then at 12 o clock she was 2 cms and now she is 4 cms. So okay, “what’s the problem sister?” “Dr I am worried about the heartbeat”. You know what I mean? It’s taken all this time to say actually I am worried that the baby is in distress and to say there is foetal distress and I am worried because the heart is decelerating you know? So that then is sometimes but if you are not busy you can listen to the story, write it down and at the end you kind of go “oh that’s the problem” but it doesn’t start with that problem at the time. (P25:21)

“....and in the end she is sending someone who is delayed second stage and that – I mean that’s an example - or she is severe pre-eclampsia, she needs magnesium sulphate so I think that we are trying to tell the sisters rather give us the opening line and then you can go to the details.” (P27:28)

The shortage of doctors in referral hospital B emerged strongly as a challenge to the ICP during the management of the intrapartum women. When the midwives receive calls in the admissions suite they are forced to walk around looking for the doctor if they cannot get hold of them on the intercom.

“....not always but most of the time. They are also short staffed then you must liaise through e.g. there is nobody in admissions, the one is maybe in “C” doing a discharge, the other one is in labour ward or maybe not even in the labour ward – there is no-one in labour ward and is in theatre then you must phone to the theatre and liaise via a nurse or one who will say “Sister that is too much” sometimes these are the challenges.” (P23:36)

Engaging with other members from other wards to transfer information also causes friction between the midwives.

6.5.11.2 Challenge with information

Challenges with poor ICP apart from the frustrations faced by the skilled birth attendant were discussed by the doctors as having adverse effects to the women

in labour including the outcome of the babies including being fatal. This causes a cycle of frustration with all parties involved. The information provided allows the doctors to make informed decisions and inadequate information leads to mortalities such as one described below.

“I can remember there was a case of meconium stain with a big baby and they must come to us but the normal procedure is to make sure the person is fully (dilated) and you communicate that to the doctors before referral. In this case the baby delivered in the ambulance and the baby died – a very healthy 4 kg baby.” (P23:45)

Listening to information communicated from the midwife allows both the sender of the information and the receiver to respect and trust the information communicated. The shortage of staff and the overwhelming system causes mistrust of information communicated as all the parties communicating are overwhelmed by the work load as asserted below.

“So it’s hard to be there and you can hear it and you get the doctor this side who thinks they are just sending nonsense and they get upset. They get frustrated you know and then the doctors don’t want to take our women and then it’s the midwife who could be sending us nonsense you know it’s a case of nobody understands where the other one is coming from and I think it’s because we are overworked – both systems are stretched.” (P25:49)

Inadequate information collection led to inadequate information communication by the midwives especially during the referrals. When information is communicated and the doctor receiving the information requests for more information a lot of times the time wasted causes frustration on the part of the doctor and that of the midwife who has at that point to go to and fro for information needed in order to acquire the appropriate information.

“ That’s what the doctor thought but the doctor needed a little more information to decide was she ok to come to RH B or go to GSH. When she tried to get that information it was very difficult to get it so when she asked for Lasix she was told there is no Lasix in that ward. When she asked for a SATS monitor for the respiratory rate – no she can’t count the respiratory rate because the woman is too restless. Those sorts of things so that was very frustrating on our side as if the woman had been really ill she shouldn’t have come here but she should have gone straight with the flying squad to GSH and you are needing all the information to make a proper decision for a woman. (P26:63)

The midwives from MOU B felt mistrusted as indicated above. Another similar frustration that was raised by the skilled birth attendant in RH A was the fact that they felt mistrusted by the midwives in the MOU. The doctors felt that the midwives are in a hurry to get rid of the women without paying proper attention to the information required because they are afraid the doctors will willingly refuse women.

“The challenges with them as I said, too sketchy information they are too in a hurry to get rid of the woman. Sometimes they are so anxious I think to get rid of the woman and they leave out very important information. It can be detrimental for a woman and I think that maybe they are

scared we are going to refuse a woman but need more information on their side – is it an emergency? Is it the flying squad you see?” (P23:7)

Inadequate information communication seemed to increase mistrust between the doctors and the midwives. The issue of suspicion or dishonesty by the midwives was due to gaps in information when referring the patient and which later led to patients being received without the symptoms which were referred to during the telephonic conversations.

“There are situations where the woman is referred wrongly and there are suspicions that some sisters are dishonest so they refer the woman and are kind of pulling them under the umbrella of protocol in other words she adjusts the symptoms to fit the criteria of the protocol and so the woman arrives and actually doesn’t have the symptoms or those signs that she was talking about – that’s irritates the doctors and that is not nice ok?” (P28:5)

Inappropriate referrals were also seen as a waste of resources and women time. This is due to poor assessment at the MOU or inaccurate information communication during the consultation, which influenced the decision made by the doctors.

“...sometimes but not always you will find that the woman gets there and it’s an incorrect gestation or you will find that they documented a blood pressure but when the woman gets there the blood pressure is completely normal.” (P25:25)

“Alternatively the women come in with latent labour and they have been plotting them forever and ever and maybe she wasn’t even in labour so you know these are the extremes – not using the appropriate lines, yes.” (P25:36)

The feedback regarding communication processes is communicated during the perinatal audit meetings with the MOUs. The challenges expressed by the skilled birth attendant in RH B emerged as mainly due to poor communication, failure of referral systems or even the shortage of personnel to manage the number of women flowing through the hospital. This further influenced the communication skills and more importantly caused frustrations among the skilled birth attendants whether it’s at the MOU B or the RH B.

In summary the challenges to ICP influenced the management of the intrapartum period through the information collected or the communication of that information. The skilled birth attendants raised concerns over challenges with data collection that often was inadequate or inappropriate. The tools used for the data collection such as the maternal case record were often incomplete and the skilled birth attendants were often unable to make informed decisions due to the inadequate information.

6.5.11.3 *Conclusions and reflections*

As illustrated in Figure: 6.2 inadequate data collection influenced communication of the collected information either during handovers or consultation processes. Inappropriate information communication systems such as the flow of phone calls, unavailability of the referral doctors and unreliable tools for communication such as telephones resulted in ineffective communication. The attitude and the experience of the sender or the receiver of information also influenced the information communication processes. Further the effectiveness of the messages sent or received was influenced by the state of mind of the receiver or the sender and the language used which caused inappropriate referral and consultation processes. These in appropriate referrals and consultation processes caused frustration of the skilled birth attendants leading to mistrust and disillusioned skilled birth attendants and further causing incomplete data collection and information communication. Further, indication was that the experience and state of mind of the communicator and receiver often influenced the communication of the information or the receiving of the message communicated and documented after communication.

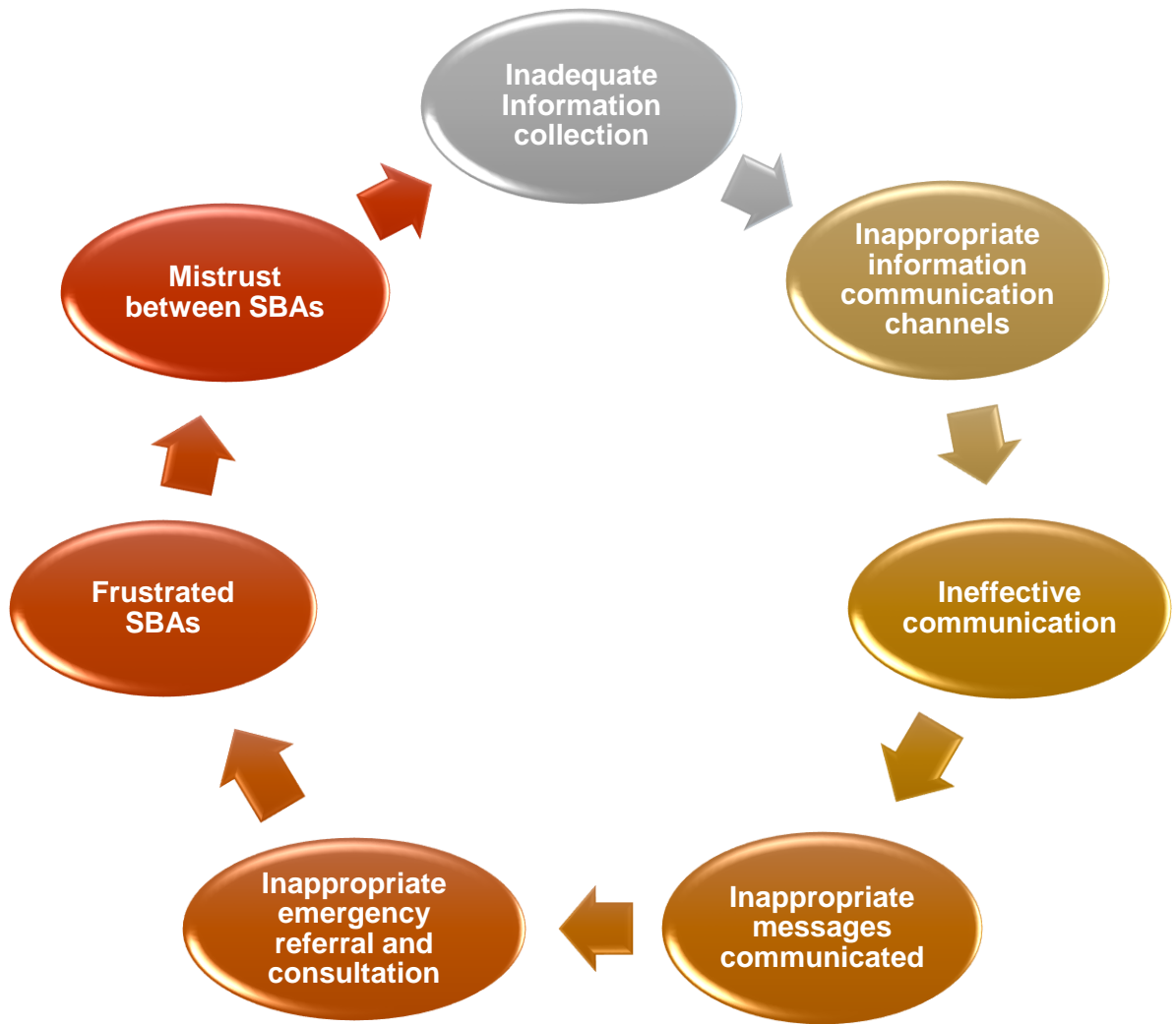


FIGURE: 6.2: *CYCLE OF FRUSTRATION DURING ICP*

6.6 Principle theme: The desired goal state

The designing of the desired goal state includes consideration for alternative solutions and also consideration of their effects when changes in work processes are involved. Envisioning the effect of these solutions on the daily work practices, duties and roles allows an understanding of realistic ways to improve any information ICP. The subtheme of the desired ICP is discussed below according to the assertions by the skilled birth attendant with a better understanding of the desired goal state.

6.6.1 *Subtheme: Desired ICP*

Several categorical aggregates emanated from each of the embedded unit of analysis providing a perspective of what is desired by the skilled birth attendants in designing shared understanding of the goal state in each of the unit of analysis.

TABLE 6.6: DESIRED GOAL STATE

THEMES		MIDWIFERY OBSTETRIC UNITS (MOU)		REFERRAL HOSPITAL (RH)	
Principle theme	Sub theme	MOU A (n=5)	MOU B (n=3)	RH A(n=4)	RH B (n=5)
Designing towards a shared understanding of the goal	Desired ICP	Solution to effective documentation (n=8) Preferred mode of communication (n=7) Desired information communication by midwives (n=3) Preferred phone call process (n=3)	Desired phone communication (n=10) Desired information during phone calls (n=10) Assertiveness with communication required (n=8)	Desired information communication by doctors (n=43) Solution for effective documentation (n=8) Preferred mode of communication (n=7) Preferred phone call process(n=1)	Desired phone communication (n=10) Desired solution for IC (n=25) Desired information during phone calls (n=6) Team work preferred (n=10) Assertiveness with communication preferred (n=6)
		<ul style="list-style-type: none"> ✓ Effective documentation ✓ Preferred mode of communication ✓ Desired information communication 	<ul style="list-style-type: none"> Desired phone call process ✓ Desired information during phone calls Effective information communication ✓ Desired phone communication ✓ Assertiveness with communication required 	<ul style="list-style-type: none"> Effective information communication ✓ Effective documentation Desired phone call process ✓ Preferred mode of communication 	<ul style="list-style-type: none"> Effective information communication ✓ Desired information during phone calls ✓ Effective communication ✓ Assertiveness with communication required ✓ Team work preferred Adequate information collection

The table above (table 6.6) highlights categories that emerged from the coded data of the desired ICP by skilled birth attendants. The desire for a solution to effective documentation, preferred mode of communication and preferred phone call process emerged in MOU A and RH A. This could be due to these units of analysis being in the same referral drainage and facing similar challenges and thus similar desires for change. Midwives and doctors seemed to express different and similar IC communication desires.

None of the categories seemed to be repeated in both MOUs, which could be due to the fact that they fall under different areas, and have different management cycles. However, desired phone communication, desired information during phone calls and assertiveness with communication required as expressed in MOU B seemed of interest in the RH B. The fact that these units of analysis are in the same referral chain and were analysed as one case could have resulted in the similarity of the desires. Further, the challenges and desires faced by MOU B remain similar desires as RH B.

The specific categories are discussed with each unit of analysis as indicated below.

6.6.2 Subtheme: Desired ICP MOU A

When asked how they would like to improve the ICP the midwives desired to see a change in the challenges faced but also specifically spoke about the desired ICP. The subtheme desired ICP is informed by categories such as the desire for a solution to effective documentation, preferred mode of communication, and desired information communication, which included the preferred phone call process.

6.6.2.1 Effective documentation

Midwives discussed effective documentation as the need for a reliable tool for documentation. The tools that existed either required being changed to make them reliable or frequent auditing to ensure proper documentation.

“We have previously had a document that looked like this but our breast feeding counsellor attends regular meetings – those are the breast feeding meetings and she came back with this document – this particular page and I had a look at it and said No, we can’t work this way! So I changed it to look like this.” (P 2:45)

“I am actually going to change that sheet by asking them now to write on there who their birth companion is going to be thereby also explaining to them that they can only have one person with them during labour.” (P2: 130)

Midwives in MOU A mostly used paper and pen as a mode of documentation although some of the papers used were not standard documents. The desire for a standardized tool for documentation emerged with the need for midwives to be included in the development of the tool to make it acceptable. The need for flexibility of a tool to make it suitable for the particular environment was raised as indicated below,

“... Because I was not aware of this and when I saw it and I said what is this? I had a look at it and said, No Man, why are you doing that? I told them No, I am going to change it and make it a bit better. This one was also labelled RH A so now it's labelled MOU A and it's just neater. So I think it's a nice thing with community obstetrics that at this level we can change things – I don't need to go through this channel and that channel – all that red tape!” (P2:70)

Effective documentation requires accurate data collection and acceptable tools for documentation as well as input from the users of these documents when standardising the documents used.

6.6.2.2 Desired information communication

Effective information communication processes required the midwives being able to know what is expected and communicated. In service training was established so that all midwives was aware of what was expected to be communicated regarding woman management as indicated below;

“Not really – if we are in, like one on one with a woman, there is this in-service training that we have so that we can speak – everybody speaks the same language about the woman, the problems and how to deal with them better so we can work the same thing and if something has been established then they will put up something that this is how you do it or how you work with it.” (P8: 70)

Being able to understand each other is part of the communication required whether it's written or verbal as referred to by the above statement. Standard operating procedures in MOUs are seen as a solution and in-service training for each of them.

Reliable phone call process either during consultation or referral emerged as a category desired to improve in order to streamline communication during the management of the intrapartum period. The need for effective phone call process during the management of the intrapartum period was asserted as necessary especially in case of an emergency.

“If it’s an emergency I cannot wait for more than ten minutes for the doctor to answer the phone. I have followed the regime – I send the woman and the woman is getting there. Then I phone the ward and no, they just left so I have to like wait.....” (P8:21)

Verbal communication, access to computers and telephones were the preferred modes of communication. Information communicated verbally included handing over processes and team communication as part of collaborative information seeking behaviour. Phones were mostly used when calling the referral hospital A for consultation or referral of the woman. The computers were preferred for use in retrieving the results from the referral hospital.

“I prefer her tell me this woman is 4cm dilated and this is her observations now.” (P2:188)
“...If we could have access of a computer so we look for the results.” (P1: 72)

The desire for effective ICP also emerged as the midwives expressed the challenges they faced in the communication processes as discussed above and not necessarily when asked about desire for change.

6.6.3 Subtheme: Desired ICP MOU B

In view of the challenges faced the midwives were asked to express their desired goal state in improving the ICP. Other data collection methods also contributed to the emerging categories that included: desired phone communication, desired information during phone calls and assertiveness with communication being desired.

6.6.3.1 Desired phone call process

The desired phone communication emerged as the midwives expressed the need to have consistency in protocol communication in order to avoid the doctors communicating a different management to what the midwives understood according to the standard protocol. This would avoid the discomfort from midwives regarding the feedback given as expressed below;

“I think it would be easier if the staff or the doctors in a particular institution would have the same protocol because similarly they do not have it if you are having a problem – well okay let

me talk about the woman with the h/b problem earlier – then they would tell you its fine, bring in the woman with a normal ambulance but then if they would have the same information or the same protocol to follow it would be easier for us you know because it's difficult to keep that woman especially when you are going to be off duty and then the doctor says “keep the woman” so then your own gut is telling you “ No man, we are not supposed to keep this woman according to the protocol and they are supposed to go to hospital and you worried about the other stuff.” (P1:46)

The need for a direct line with the information communication processes would reduce the time wasted when the phone calls go through the reception before they are transferred to the labour ward.

“I think if the response would come direct to the labour ward not via because sometimes it's via reception then it's the reception who must transfer that call to you.” (P2:18)

After the referral of the woman the midwives expressed the need to receive feedback regarding the progress of the woman especially whether the management they gave the woman was appropriate or not. This was expressed as a learning process for future cases and an opportunity to debrief.

“... When we refer the women they don't always give feedback. We did have a Dr. X – he was always very good because when we sent a woman with a referral form he would answer that referral form and send it back to us. He also gave us a percentage on how we managed the women but now these doctors I ask them when they will give us feedback about the women or the baby that we have sent in because that form we have sent there is a space for them to reply on. “I have sent this woman and what, what, what – and how the management was etc. but they do give feedback.” (P5:13)

In summary the solution to the phone call process was revealed as not one way communication but requiring feedback.

6.6.3.2 Effective information communication

Although the desire for change was expressed as challenges during the phone call process, streamlining of the phone communication between the midwives and the referral hospital was strongly emphasized. Specific information communication was desired especially by the referral hospitals during phone calls in order to make decisions on the information communicated, whereas the midwives indicated that they recorded everything regarding an intrapartum woman illuminating the importance of all information. The information documented was expressed as information entity in the ICP

“...We record everything – we record absolutely everything.” (P1: 34)

The midwives expressed the need for assertiveness during the ICP in order to advocate for the woman. The need to provide a rationale on the reasons for asserting their position was seen necessary for an informed decision making process. As asserted by P2 below;

“Like if the doctor on the other side doesn’t want to take a woman and yet I feel that I am not comfortable I will tell him straight on that – I will not keep this woman because I am not comfortable with it because it is A B or C.” (P2: 37)

“When you call Mowbray sometimes they are nice sometimes they are nasty and you have to put your foot down when they are nasty and say that no, you are sending this woman – I am sending this woman because of 1. 2 and 3. I am not going to keep this woman.” (P3:1)

“So it was very high and I said no Doctor you are wrong you must check with your seniors. This woman needs to go – its way up above the levels. So you do challenge the doctor if there is a need for that. (P3:19)

As expressed in the subtheme ICP the more experienced a midwife is the more likely she/he will assert herself during information communication when need arises. Workload influences information communication and further influences the decision making capability of the doctor which the midwife needs to be in a position to understand and advocate for the woman as required by her scope of practice.

“But if you insist saying Doctor I am going to send this woman because I am not happy” she will then say Ok you can send her. But you must be firm and you must stand on your own. P5:8

“Doctors when they are busy in the ward they panic and they think they are not going to go over this and they think we at the MOU are just sending women because we don’t want to work ok? So they become funny at times and you just put your foot down and say I am sending the woman – must I call the urgent ambulance or are you going to organize the flying squad? (P3: 3)

Adequate information collection, adequate information communication and streamlined effective information communication processes were viewed as necessary in improving the information communication processes. Further, the streamlining of these aspects was seen as improving not only patient care but working relationships, which were the broken trust among the skilled birth attendants.

6.6.4 Subtheme: desired ICP RH A

Five subcategories emerged under the theme desired ICP as the doctors reflected on the challenges faced and the need for improvement during the ICP. Referral

and consultation in RH A was entirely managed by the doctors and the midwives were not part of the process. The doctors in RH A expressed the desired information communication by the doctors, preferred mode of communication and the preferred phone call process. Further the subcategories were included to embrace the effective information communication, effective documentation, preferred mode of communication, and desired IC, which included the preferred phone call process.

6.6.4.1 Desired phone call process

The category desired IC by the doctors emerged as the doctors expressed empathy with the midwives as they felt with the current ICP they were not always available when needed. They suggested use of cell phones instead of landlines that would make it easier to direct the calls as asserted by participant 10.

“So I think that’s a big issue that we are not always available...” (P10:6)

“I wish there was an easier way for them to get hold of us. Perhaps they could get hold of us on our cell-phones but we are not always able to answer them so I think it’s very frustrating for them that they can’t get hold of us.” (P10:18)

The use of mobile phones was perceived as a solution to a quicker communication process. Short message services (SMS) were referred to a desirable solution.

“...that would be great and it gives you a message, like a sms to say whatever – that would be awesome. That would be better than what we are doing now if we could get something like a “ping” that this MOU needs something and I can send a message back and they can also get a “ping” and then they can refer the woman.” (P10: 70)

The category preferred mode of communication emerged from the need to have a reliable form of communication between the MOU A and RH A. The doctors expressed the fact that they are not able to sit in one place and wait for phone calls due to the other duties at hand. A suggestion to have talkies was made with the impression that they needed instant precise communication. Further a solution to enable the doctors to call back the MOU in case they are not in a position to answer the phone call was suggested as a solution.

“We need walkie-talkies – yes? Maybe that’s the best way – laughs.” (P10:59)

“So it is preferable if it’s an emergency to then maybe take the name of the MOU and call them

back. (P12:25)

Other desires were expressed as a need for change as the doctors articulated the challenges faced above. When the phone calls were received at the referral hospital the doctors had a preferred phone call process which included calling back the midwives especially in cases where they were scrubbed up in theatre or accepting the women through a third party such as an anaesthetist.

“So it is preferable if it’s an emergency to then maybe take the name of the MOU and call them back. If it’s something simple we just accept the woman through the anaesthetist or we ask them to call us back if it’s something not urgent or we call them back.” (P12: 26)

Although the length of time taken to provide feedback was not indicated as a priority solution the midwives provided the length of time as solution.

6.6.4.2 Effective information communication

The doctors at the RH A preferred information to be delivered quickly and precisely especially during emergencies. This is to enable them to make informed decisions quickly and get back to the other tasks, as they felt overwhelmed by the other activities at hand.

“I just wish they would give me the information that I need and when we get snappy about it, I think they get offended but it is important because we need to be somewhere else. We want to help you but don’t throw long stories.” (P10: 48.)

They felt that the midwives provided a lot of unnecessary information that seemed to cause conflict because the doctors were anxious when receiving the information causing uneasiness with the midwives who felt offended as expressed earlier in the challenges. The midwives preferred to speak to a doctor who was friendly and approachable.

“...because he teaches his doctors to communicate and then you are going to want to discuss the woman with the doctor. When the doctor sounds friendly on the phone you immediately want to discuss the woman with the doctor but if the doctor is caught off-guard, short-tempered and stuff then you can hear he is annoyed and worked up. People are not interested to speak to this doctor.” (P 7:29)

Having a third person on call was a suggestion that would allow one person allocated to deal with the consultations and referral cases from the MOUs.

“I think a third person on call would be useful because then there would be a higher likelihood – even if 2 people are in theatre, that there is someone else to take the call.” (P12: 48)

The MOUs according to protocol can also make decisions regarding transfer in cases where they cannot get hold of the doctors. They have the option to call on the consultant for advice or just refer the woman and indicate they could not get hold of the doctors as indicated below.

“So it can happen that they struggle to get hold of us but I think the MOUs do have the allowance from our consultant that if they can’t get hold of us and they feel the woman must come over that they can send the woman without discussing it but obviously it’s preferable to discuss the woman so we do want them at least to make an attempt at contacting us.” (P12: 31)

“This is the time when they take a while to pick up but there is such a thing as protocol that you can follow and you can do those things, phone the ambulance, transfer this woman and there is this paper that says “did the doctor answer your call?” and you say yes or no because I was on the phone. If it’s an emergency I cannot wait for more than ten minutes for the doctor to answer the phone. I have followed the regime – I send the woman and the woman is getting there. Then I phone the ward and no, they just left so I have to like wait.” (P8:41)

The protocols are relied on profoundly by the skilled birth attendant to make informed decisions regarding the management of women either within the MOU or during the referral of women.

6.6.5 Subtheme: desired ICP RH B

The doctors and midwives in referral hospital B were the key actors in the ICP and made decisions regarding the consultation and referral of pregnant women in MOU B. The theme desired ICP derived several subcategories of expressed goal state. The subcategories that emerged included the desired phone communication, desired IC solution, and desired information during phone calls, teamwork preferred and assertiveness during communication desired. Three of these categories emerged both in MOU B and RH B with the exception of desired solution for IC and teamwork as being preferred. The categories were further analysed to include them as effective information communication, desired information during phone calls, desired IC, and effective communication which included assertiveness with communication required and team work preferred during the communication processes.

6.6.5.1 Adequate information collection

Effective ICP should not lead to unnecessary referrals that cause congestion in the

level two hospitals. Adequate information collection also avoids inappropriate communications during consultation and referral.

“The thing I would like to improve is when the sisters are sending a woman where first of all it was not necessary because we are a second level woman hospital.” (P23:41)

“The craziness in admissions suite – I don’t know. I think probably it would be better if we didn’t get unnecessary referrals – that would make a difference just with the flow at admissions suite.” (P25:45)

Having a standardized tool for collecting information required during the ICP was expressed by RH B, which uses a standard tool to record the information communicated from MOU B

“If they know what to use or if they can use a similar tool – say for example this is an admission and this is the things I need to present, maybe they can have a similar tool as ours and if there is an abnormality they have got everything right in front of them to present.” (P 24:73)

“Normally I say it’s easier keeping the referral letter so when they come in for Mrs. so and so, you grab the referral letter for Mrs. so and so and then you have an idea of what is going on because mostly they will say “ruptured membranes” you know that kind of thing and then it’s something else” (P24:74)

6.6.5.2 Effective information communication

Further the need for attitude change and better communication was seen as requirement for improvement of the ICP.

“So I think that will improve things – attitude and how to speak to people and also an understanding of what is happening and that would facilitate the communication and that in itself will improve. (P27: 77)

The desired information during phone calls emerged as the information that would enable the doctors to make informed decisions as expressed below. This information was referred to as critical information needed and if the doctor required more information they would enquire for it.

“Information is mostly like I said previously, the vital signs of the woman they are presenting, the foetal heart obviously and the booking information of this lady. Gravidy/parity, the gestational age at that moment and the problem that she is presenting with, what they are worried about – what they are referring this woman for or worried about. You know, ruptured membranes – that kind of thing – that they will give to us. (P24: 52)

The information required by the doctors during phone calls sometimes differs as to what should be presented first during a phone call. Some doctors require the biographical and obstetric history, in order to ascertain whether the patient had previous medical obstetric issues.

“Yes and then if I need more details I will ask for them depending on what the details of the scenario she has presented.” (P25: 24)

“I am trying to think – I think maybe we just say to the sister before she presents a woman – just maybe we need to say “these are the important things we need to know. We want to know age, gravida/parity, gestation, we want to know has this been a normal pregnancy and then we want to know what the problem is now.” (P25:70)

The information that was viewed as standard for presentation included the obstetric risks, current problems and more importantly the foetal heart rate.

“Well standard information about the woman – you know – it’s what the gravida/parity is, you usually ask about that and obstetric risks from the past ok and what is the current problem? Ok so what the vitals are about the woman, you give the blood pressure, pulse rate – what is the foetal heart rate – ok? The progress of labour, standard data how much is she dilated – at what stage of labour is she – of course how far is she pregnant and so on?” (P25:18)

“Information given to the flying squad include that the woman at retreat is a gravida 1 para 0 at 40 weeks with history of per- vaginal bleeding, BP 128/69mmhg pulse 68, temperature 35.9° c, HB 12.3, FHR 147bpm. She has a urine catheter inserted.” (P30:6)

As expressed earlier assertiveness with communication is required at the RH B. The midwives who are part of the communication process in RH B play a role in advocating for women when there is a disagreement about a woman in MOUB.

“Sometimes, at the MOU level, if I can just make an example, with latent labours if they have so many visits to them as a latent labour – if you discuss this with a doctor that the midwife feels that this woman must come in now, and your colleague on the other side presenting this woman also feels that “listen this woman will be better off at RH B” not all the doctors agree with you and then there is obviously a communication issue and like I said, there is a problem – there is other ways of bridging that problem Like normally we talk to the doctor and we tell him “listen this is the history, this midwife is very concerned about this woman being at her level, let’s take her and then we have a plan for her” and doing that we don’t have a problem – at least that’s my experience. (P24: 56)

Task allocation and teamwork between doctors and midwives allowed better communication where the midwives in the admissions suit could receive the women and give feedback where they could when the doctors were not available.

"We are working everywhere and we all help each other out but we find it easier to divide the work up so I concentrate on the labour ward if I need to be there and so people working in that department – labour ward will accept that woman so it's not just the MOU sister to Mowbray the end point people waiting for the woman. (P27: 70)

The desired phone communication according to doctors in the referral hospital included communication during consultation or during referral processes. The need to communicate information quickly and precisely would allow feedback of decisions without a waste of time.

"I think it's easier to pass through treatment for them or the appropriate referral for this lady instead of asking unnecessary things – you ask to the point the information that you need." (P24: 43)

"Sister when you want to present a woman can you tell me that in like 2 or 3 sentences and then if I feel I need more detail then I will say "ok tell me more about the foetal heart or tell me about the blood pressure or whatever". But if you got just a core kind of summary that they could give we could flesh it out more I think. It might be useful actually." (P25: 71)

The preferred information as an opening statement included the reason you are calling the doctor. Most midwives seemed to present the biographic data of the patient then indicate the problem later. This was not acceptable with the doctors who preferred to immediately know what the problem was then request for the rest of the information once they were sure they needed it as indicated in the examples below.

"if they are sending a woman – "what is the presenting problem?" ... they must say, "I am sending a woman with prolonged second stage "because I might be in the room but not the one answering the phone so if they start telling me the woman is in prolonged second stage I know that it's an urgent referral and I need to take down the details quickly." (P26: 19)

"And in the end she is sending someone who is delayed second stage and that – I mean that's an example - or she is severe pre-eclampsia, she needs magnesium sulphate so I think that we are trying to tell the sisters rather give us the opening line and then you can go to the details." (P27:28)

The opening line by the messenger (midwife) in MOU B when a phone call is answered is important to set the mood for the receiver in order to indicate whether it's an emergency or not. Further, the referral hospital B prefers that the midwife

who has examined the woman indicates a suggested solution to the management of the intrapartum woman since she examined the individual.

“However when it comes to a consultation when the sister calls me and she says “ look I have a woman with those and those symptoms or size or I would like to give her this or that am I correct?” Ok that’s sufficient but rarely I will tell her ok do this and do that and that’s fine. I usually want to see the woman since the sister is concerned.” (P28: 9)

Doctors at times prefer to see the patient rather than give advice over the phone and will request for the patient when unsure. This is to avoid mismanagement of the patients and allow for proper assessment and management at a higher level of care.

A portable phone for referrals was also a suggested solution. This would allow the doctors to pick up phones while anywhere in the hospital. This would go along with the responsibility allocated to certain doctors who would deal with specific emergencies.

“The other thing – and we have spoken about it sometimes – we have said that is it maybe something to consider a doctor having a phone on them like a mobile/portable phone that is just for referrals and you know so you can use it at any point at the hospital and you are the one responsible for that you know which is something that we can consider doing and then if you cannot be that person then you hand it over to the next doctor – whoever is holding it is the person responsible for calls – that kind of thing. (P25:43)

In summary the skilled birth attendants preferred an effective information communication process. The management of the intrapartum period is a delicate yet intense period where mistakes very often proved disabling or fatal. A mother who is not adequately managed may be disabled or even die.

6.6.5.3 Conclusions, reflections and best practices

The desires for effective information communication were illuminated by the need for effective documentation, effective mode of communication and an effective information communication process. Although the skilled birth attendant had highlighted a whole range of challenges, these were not reflected as desires for change. However, the lack of understanding of the expected communication tools such as SBAR, and early warning charts were not seen as tools, which already existed. Although the effort of every skilled birth attendant was to ensure the best practice, an individual evaluation of the best practice was masked by the need to

complete tasks and not necessarily effectively do so. Document completeness was an action fulfilling the rules such as auditing but not seen as useful for use by the skilled birth attendants. The skilled birth attendants did not necessarily discuss what they needed to change the situation, it was dependent on whether they were optimists who discussed their desires for change rather than challenges.

6.7 Findings

The need for team communication to be improved was without a doubt one of the urgent requirements for the effective management of the intrapartum period. Improvement in the information collection and documentation was necessary by ensuring the sources of information were reliable, having effective data collection processes affordable and reliable tools. In order to improve communication the communication channels required being more reliable with acceptable messages. The need for experienced communicators was vital in order to create a milieu for a better ICP.

A few concepts were noted during the analysis and viewed with importance by the skilled birth attendants include;

- That effective data collection influences effective documentation, which is manifested by effective information retrieval and communication.
- The state of mind of the sender and the receiver also influences the ICP as the internalization of the situation impacts on the action taken.
- Further the tools used for data collection influence the data collected and further the adequacy of the information communicated.
- The mode of communication also influences the delivery of the message communicated. The message that the sender communicates might not be the message received and this influences the decision making process.
- The language used during communication also influenced the reception of the message and the information communicated that the sender and receiver needed to speak the same language whether it is professional language or actual ethnic language especially the words used.

- Time factor was viewed as important during data collection. Retrospective data collection influenced the accuracy of the data entered into the documents and further influencing the information communicated.
- The information entities and format of vital information communication were viewed as important during the communication process. There was need for the sender to provide precise information timeously on the reason for calling. Also it was necessary to communicate precise information to the receiver.
- Feedback was important to the skilled birth attendants too. This was seen as the completeness of the message if the receiver provided accurate feedback to the sender.
- Reception of feedback communicated and the action taken was an important aspect to be communicated with the person who made the decision for the action. This was to ensure that the decision maker knew exactly the action taken after the decision and the effect of the action.

In summary this chapter focused on the findings as illuminated in the analysis. The activities and context are discussed in the next chapter illuminating the Act AD framework as per the researcher interpretation of the fit in the study.

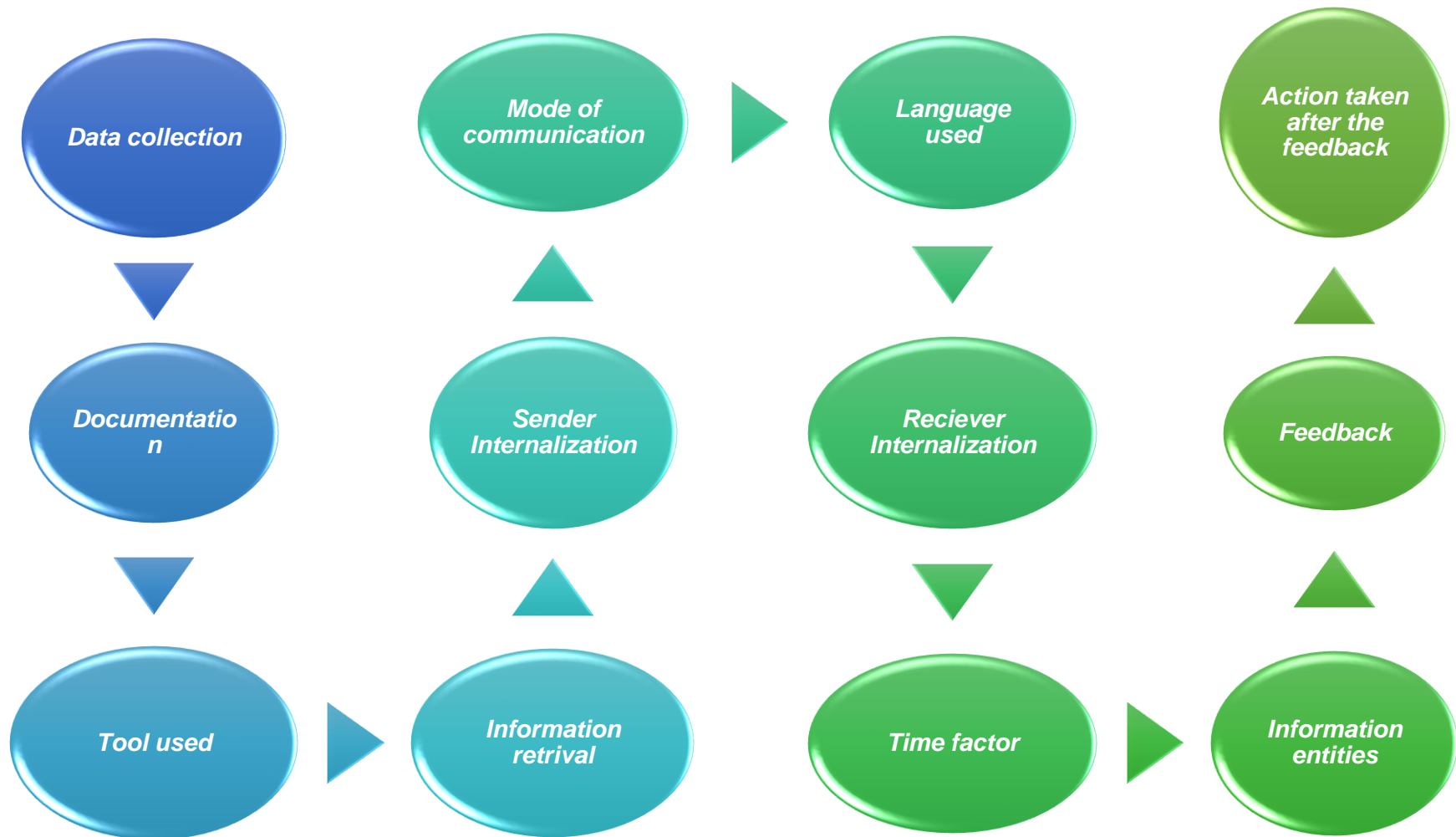


FIGURE: 6.3 CONCEPTS EMERGING FROM THE FINDINGS

7 CHAPTER SEVEN: ACTIVITY ANALYSIS

7.1 Introduction

This chapter introduces activity analysis according to the study findings while elaborating the relationships between the various actors involved in the information communication processes within and between the MOU and the referral hospital. The skilled birth attendants who included the midwives and doctors/obstetricians are the actors. In-depth interviews document review, photos and observations were open coded, and categories developed both inductively. The themes were developed deductively using the Activity theory model, and the subthemes were established from the research questions.

Perspectives as interpreted by a researcher are important in case study research to be able to tell a story. As much as certain aspects are important to be included in a case study, it is important to realize that there are issues that are beyond the focus of a case study which require the researcher to focus the attention according to the phenomenon of interest.

According to Stake (1995) the case study researcher cannot tell 'the' story but rather tell 'a' story as the researcher interprets it from the data. This means that the researcher has the potential to interpret the data with the perspectives limited to how the researcher views aspects of the data or due to the fact that certain aspects are beyond the focus of the case. Further, as the story is interpreted in the data the researcher should seek to give an accurate understanding with multiple perspectives of issues and activities of information that the researcher is seeking through the study (p.134)

In the presentation of the data the findings are presented as the data presents itself with an accurate understanding and interpretation indicating the combination between the sources of data and the various units of analysis. Data from one case is used to illuminate the similarities in the other case. Further data from documents, observations, field notes and reflective dairying is related to the in-depth interviews to support the various challenges raised by participants.

The data remained focused on constructs that described specifics rather than being transformed such as information communicated not viewed as information collected which was not necessarily the vital information required. This way the analysis of data was consistent with the focus of the case study. The description of the case as below is described to illuminate the context within which the case was described.

7.2 Activity analysis: IC within MOU A

The Midwifery Obstetric Unit (MOU A) is a 24-hour care centre that offers various services to pregnant women that include antepartum, Intrapartum and post- partum services. It is located within a Community Health Centre (CHC), which offers primary health care services, which include community health and mental health services. Although located within a CHC as part of the primary health care services, the MOU functions independent of the CHC as indicated in (Figure: 7.1) Midwives in MOU A manage all low risk women in the clinic identifying moderate and high risk women and referring them appropriately. The midwifery unit also caters for pregnant women in Elsie's River municipality with approximately 90 to 120 deliveries every month. The number was higher (>200) up until 2012 when a second MOU was built. Women are booked and seen at this MOU A from diagnosis of pregnancy until 7 days post-delivery.

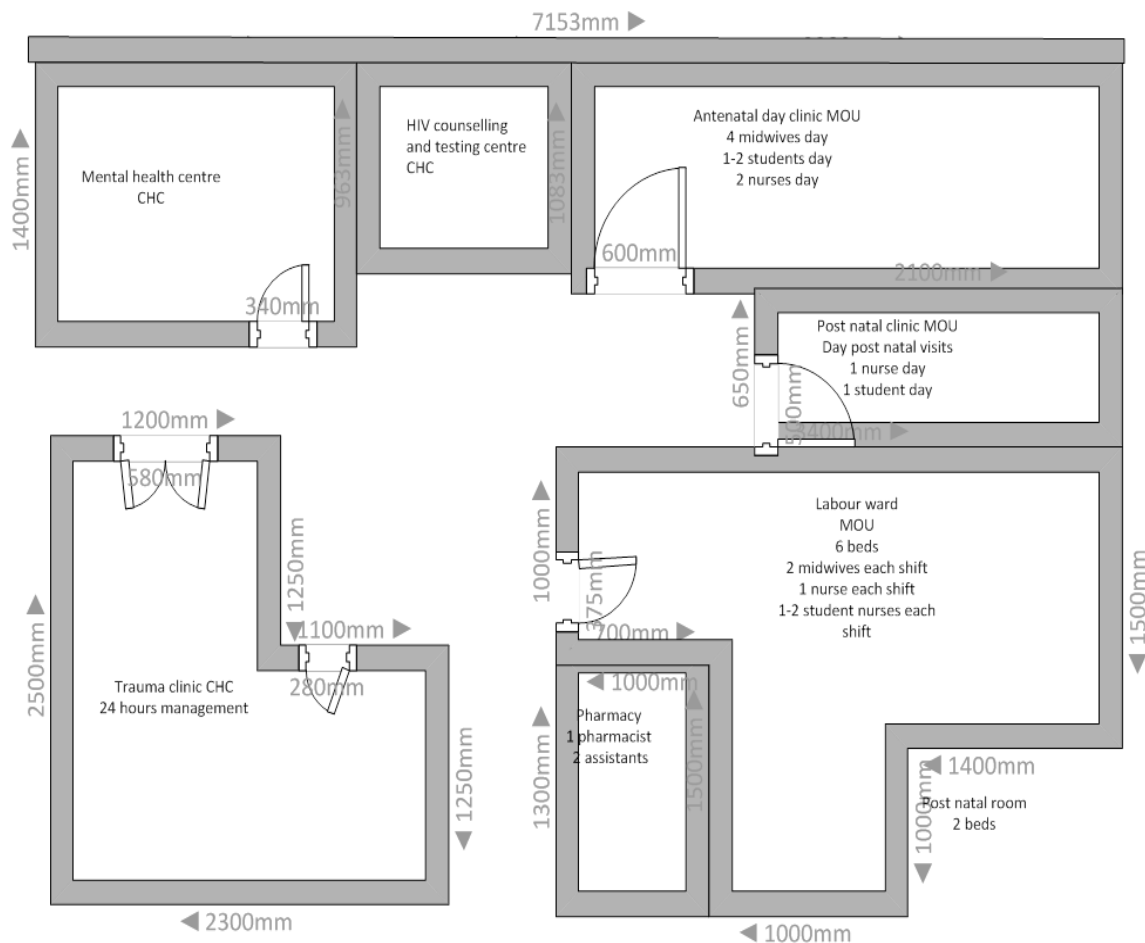


FIGURE: 7.1: **MOU A WITHIN THE COMMUNITY HEALTH CENTRE**

7.2.1 Antepartum care

All antenatal patients are seen by appointment in the MOU with up to 75 new appointments per week and 100 follow ups per week. The centre also has a mobile clinic on a Thursday where up to 50 patients are seen for the first time and 100 follow-ups. MOU A is also a referral centre for other Basic Antenatal Care (BANC) sites which are not 24-hour centres. The women are seen in the BANC sites from the first diagnosis of pregnancy/ booking until 36 weeks of pregnancy when the low risk women are referred to MOU A for further management and delivery. The intermediate and high-risk women are referred to the hospitals for delivery from the BANC clinics. During this process all information regarding the pregnant woman is collected and recorded in the maternal case record which the woman carries with her throughout the pregnancy birth and motherhood as illustrated in (Figure: 7.2). The information collected and documented in maternal case record (Gravidogram) is very important in the management of the woman during the intrapartum period.

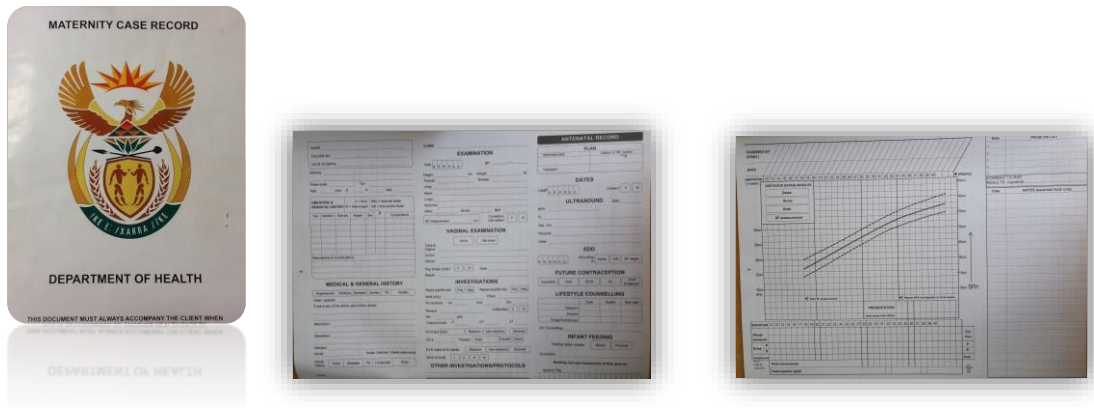
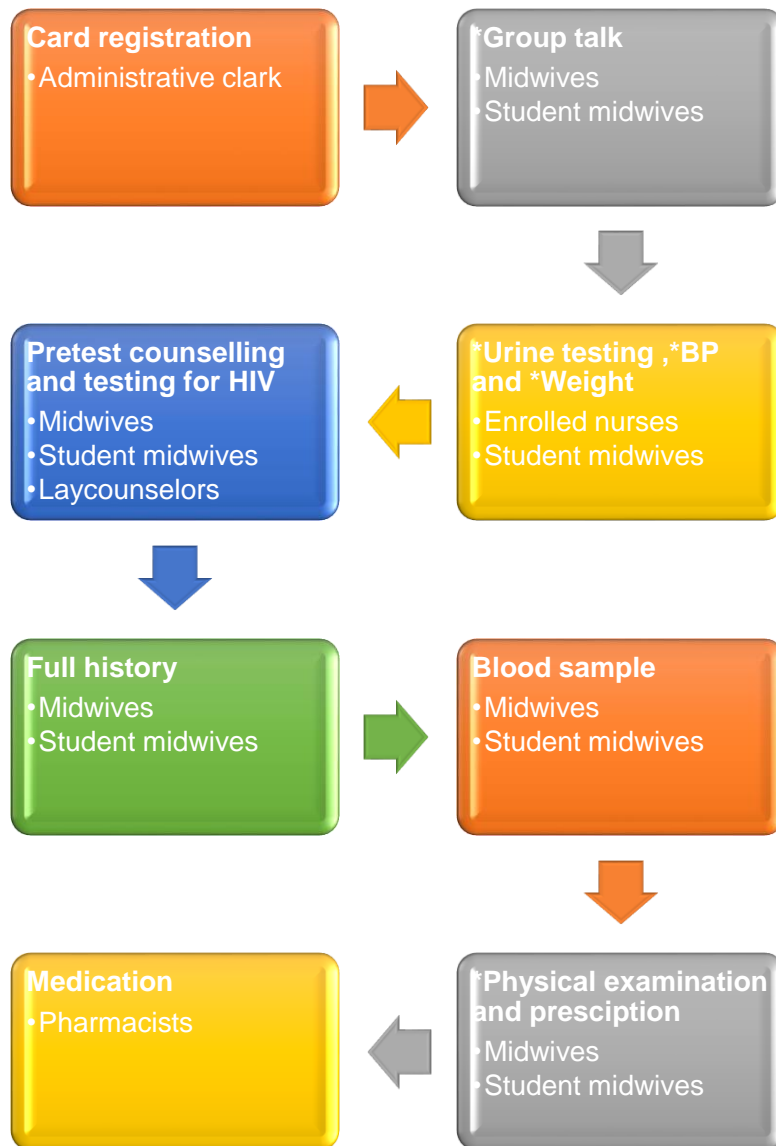


FIGURE: 7.2: THE GRAVIDOGRAM

The routine procedures in the antenatal clinic includes card registration by the administrative clerk, group talk given by one of the midwives, urine testing, BP and weight monitoring done by the enrolled nurses, pre-test counselling for and testing done by nurses or midwives, history taking by the midwives, blood sample taken physical examinations and medication done by the midwives. These procedures are done on the first visit whereas other procedures are repeated on subsequent visits such as group talk, urine testing, BP and weight monitoring and physical examinations as indicated in Figure: 7.3. The information collected during the first antenatal visit and consequent visits are documented in the MCR for future references.



Key: *Procedure repeated at subsequent visits

FIGURE: 7.3: ROUTINE PROCEDURE FOR ANTENATAL CARE IN MOU A

Although the midwife is in charge of the management of the woman, enrolled nurses work alongside the midwives assisting with meeting the requirements of the woman. Any findings by the student midwife or the nurse are communicated to the midwife who makes informed decisions regarding the management of the pregnant woman. Further student midwives are allocated with a midwife who mentors and coaches the student in the antenatal management of the pregnant woman.

7.2.2 Intrapartum

When the women go into normal labour after 37 weeks gestation, they are admitted into the labour ward in MOU A and managed until 6 hours post-delivery. Women who go into labour below 37 weeks gestation are referred to a moderate or low risk hospital for further management. On presentation to the labour ward, every woman is observed for a diagnosis of which when confirmed as true labour, she is admitted into the labour ward. On admission, the maternal case record is reviewed, labour history is taken, which includes nature of labour pains, vaginal bleeding, foetal condition and any other relevant information.

In case a woman presents in labour without the maternal case record or referred to as un-booked patients, all investigations are carried out at the labour ward delivery site if she is in the early phase of labour. The woman is then monitored until delivery unless there are complications when she is then referred to the referral hospital according to protocol. The layout of MOU A below shows the flow of patients

A partogram (Figure: 7.4) that is in the MCR is used to document all observations by the midwives while monitoring the intrapartum period after diagnosis of labour during all the four phases of labour. The midwives document the progress of labour and communicate findings to other midwives in different shifts or the same shift for continuation of care. The Figure: illustrates the flow of women in labour from diagnosis until 6 hours post-delivery; room 1 being the assessment room, 2 labouring beds and room 3 being the 6 hour observation room.

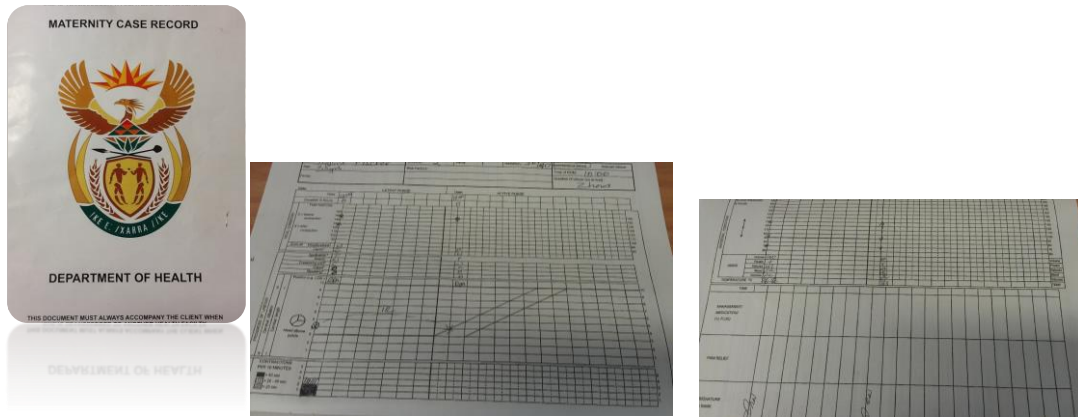
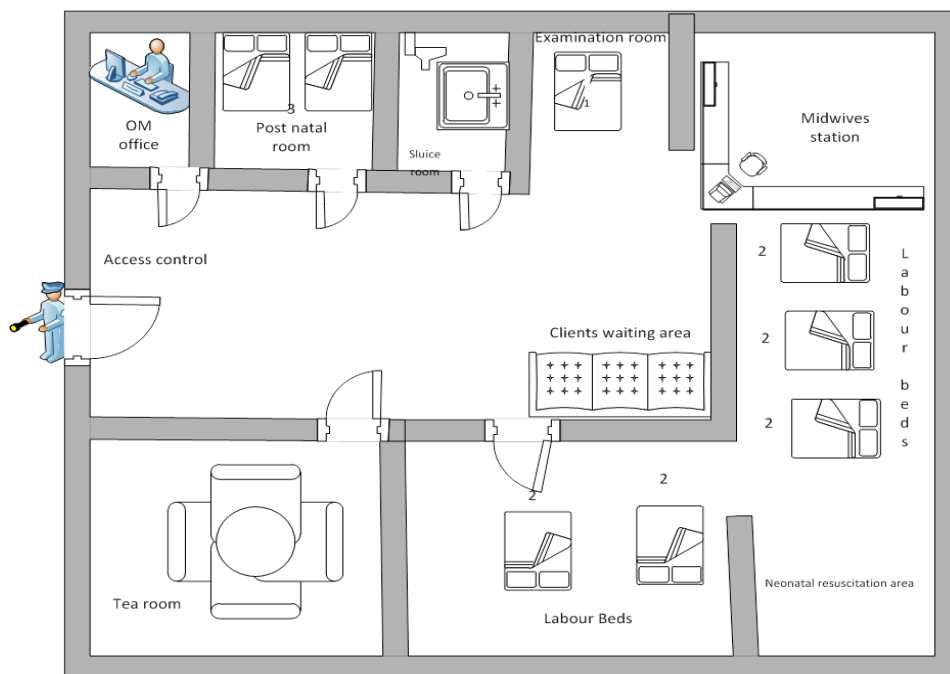


FIGURE: 7.4: THE PARTOGRAM



OM= operations manager

FIGURE: 7.5 *DIAGRAM OF FLOW OF THE CLIENT DURING PREGNANCY, LABOUR AND DELIVERY*

7.2.3 Individual work activity

At the individual level there are a number of actors who play different roles within the labour ward during the intrapartum period in MOU A. The communication processes between the actors have an influence on the management of the woman during the intrapartum period and influence the outcome of labour. The means of work includes the use of phones, MCR and the verbal handover processes as illustrated in (Figure: 7.6) below. The actors who have an influence in the

management of the woman during labour are the midwives. They are the decision makers at all times and although the student midwives are part of the care they report directly to the midwife who is in charge of patient care

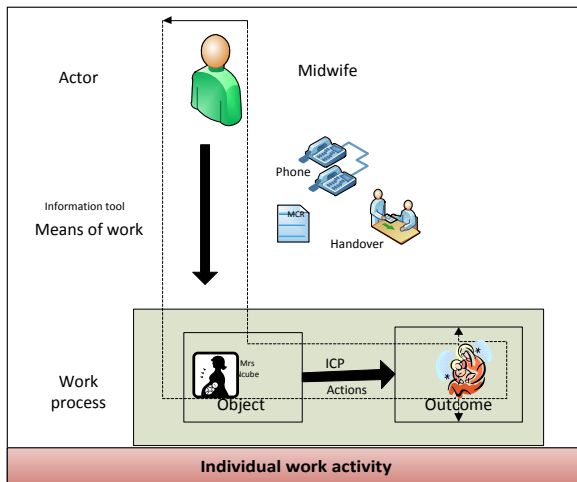


FIGURE: 7.6 *INDIVIDUAL WORK OF A MIDWIFE*

The midwives in the labour ward (LW midwives) are in charge of women in labour at all stages of labour. Although tasks are distributed between the nurses and the student midwives by the midwives, they always have to communicate their findings to the midwives who would either confirm or accept the findings. The midwives make the diagnosis of labour and determine whether a woman should be kept in the ward or return home and come back when in labour. Further, midwives communicate between each other when making decisions whether it's during the first second, third or fourth stages of labour.

The student midwives from various institutions are in the labour ward to learn from the midwives in practice what they have been taught in theory. They work hand in hand with the midwives or nurses observing the women in labour as instructed by the midwives.

The enrolled nurses are also part of the team in the labour ward. Although their scope of practice does not allow them to manage the woman in labour, they assist the midwife with tasks allocated to them such as doing observations of vital signs in the first stage of labour, checking urine samples and supporting the woman in labour with tasks such as mobilizing. With every task carried out by the nurses they are required to communicate with the midwife who makes all decisions regarding the management of the woman in labour. As illustrated in the Figure: 7.7 below

the second and third stages of labour are entirely managed by midwives and student midwives as it requires intense monitoring.

7.2.4 Actors activities within MOU A labour ward

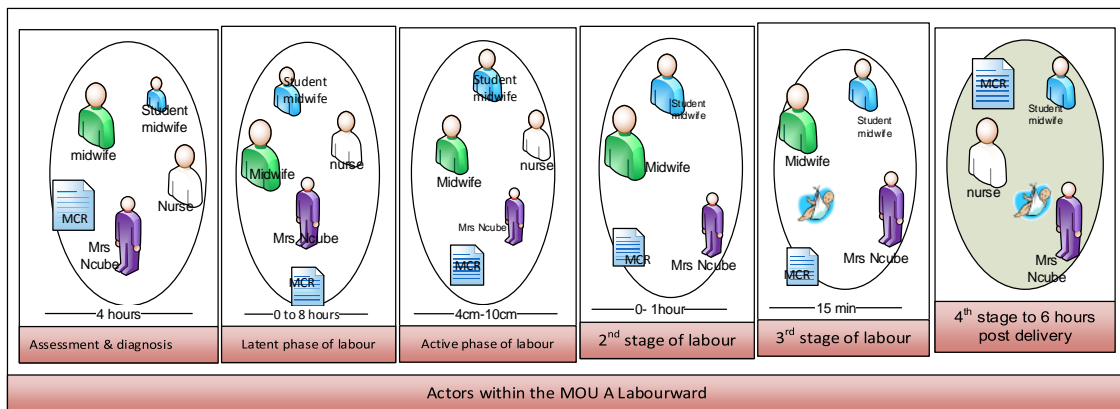


FIGURE: 7.7: ACTORS WITHIN THE MOU A LABOUR WARD

When the woman arrives with complaint of labour (Figure: 7.8) observations are done which include vital signs and the midwife, the nurse or the student nurse does urine tests. The midwife is the only one who can do the physical examination to determine if she is in labour while the student midwife can do the physical examination with the assistance of the midwife. Once the woman is confirmed as being in true labour she is admitted in the labour bed. If the actors are not sure of the labour signs they keep the woman for four hours and monitor for true labour signs. Collaborative information seeking allows decision making among midwives in the labour ward. All findings are documented in the maternal case record and communicated between the other midwives in the labour ward. Once labour is confirmed the woman is managed through the four stages of labour until six hours post-delivery then discharged home with a healthy baby.

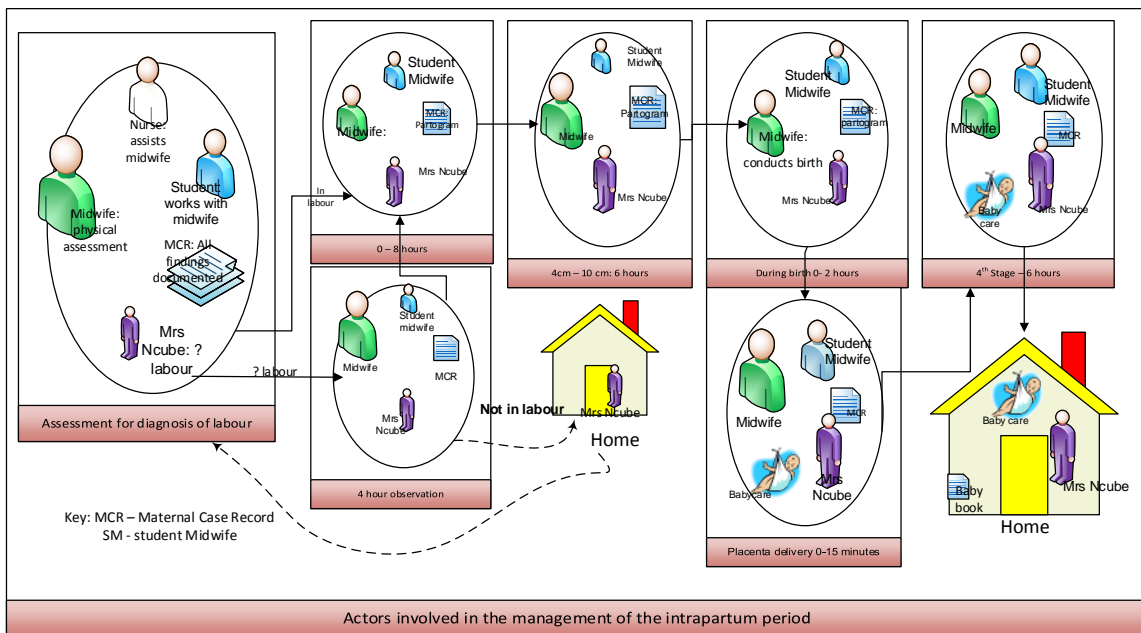


FIGURE: 7.8: ACTORS INVOLVED IN THE MANAGEMENT OF INTRAPARTUM

7.2.5 Group activities within MOU A

At the group level the individual work activities of the various actors and the information flows influencing the work processes as shown in Figure: 7.9 below include;

- The actors in the antenatal clinic: booking women, managing low risk antenatal women, collaborative information seeking, referring high-risk women;
- The actors in the labour ward: management of low risk intrapartum women, collaborative information seeking, referral of high risk women;
- The operations manager (OP): coordination of activities within MOU, quality assurance, strategic planning and woman advocacy;
- Student midwives from various institutions (Std. Midwives): clinical practice participation
- Postnatal clinic nurses (PNC nurses): management of low risk post-natal mothers and baby, collaborative information seeking, and consultation with midwives.

Although each group organises its activities for the care of the pregnant woman, information flows between the groups influence the management of the woman. The activities are coordinated within themselves and the operations managers. The individual actors and means of communication influence the communication processes in each section.

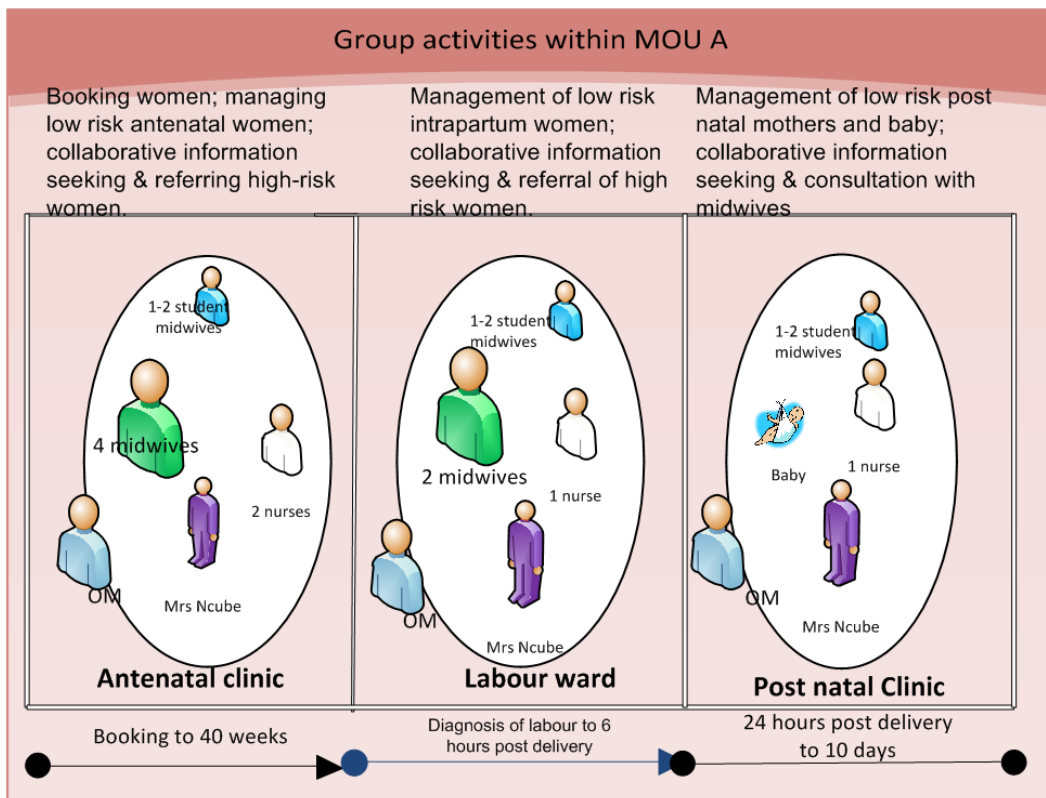


FIGURE: 7.9: GROUP ACTIVITIES WITHIN MOU A

The activity analysis (Figure: 7.10) below indicates a number of concerns that have implications in the effective management of the intrapartum period. The role of the midwife in the management of the intrapartum period is vital and influenced by information communication at each stage of labour. The information collected during the antenatal period also influences the management of the intrapartum period. All actors in each stage of labour collect information, document the information and communicate as necessary with one stage of labour management influencing the outcome of the next stage. As the custodian of the object of activity (woman in labour) effective ICP is vital for a good outcome of the activity (healthy mother and baby). Further the MOU follows national maternal guidelines and protocols from the Western Cape DOH including specific protocols from the facilities in order to effectively communicate among them. Any misinterpretation or miscommunication of these guidelines between the actors could also further lead to mismanagement of the woman in labour. Certain contradictions /tensions were identified in four major areas: communicating / handing over information,

documenting information, retrieving information for woman management. An explanation is as follows:

- Communicating / handing over information: there needs to be better communication among midwives during the management of a woman in labour. This includes being able to hand over a woman comprehensively during breaks and shift changes.
- Documenting information: effective comprehensive documentation allows for continuity of care. The midwives need to ensure accurate and timely documentation.
- Retrieving information for woman management: being able to access evidence based information during woman management reduces miscommunication by misunderstanding information.

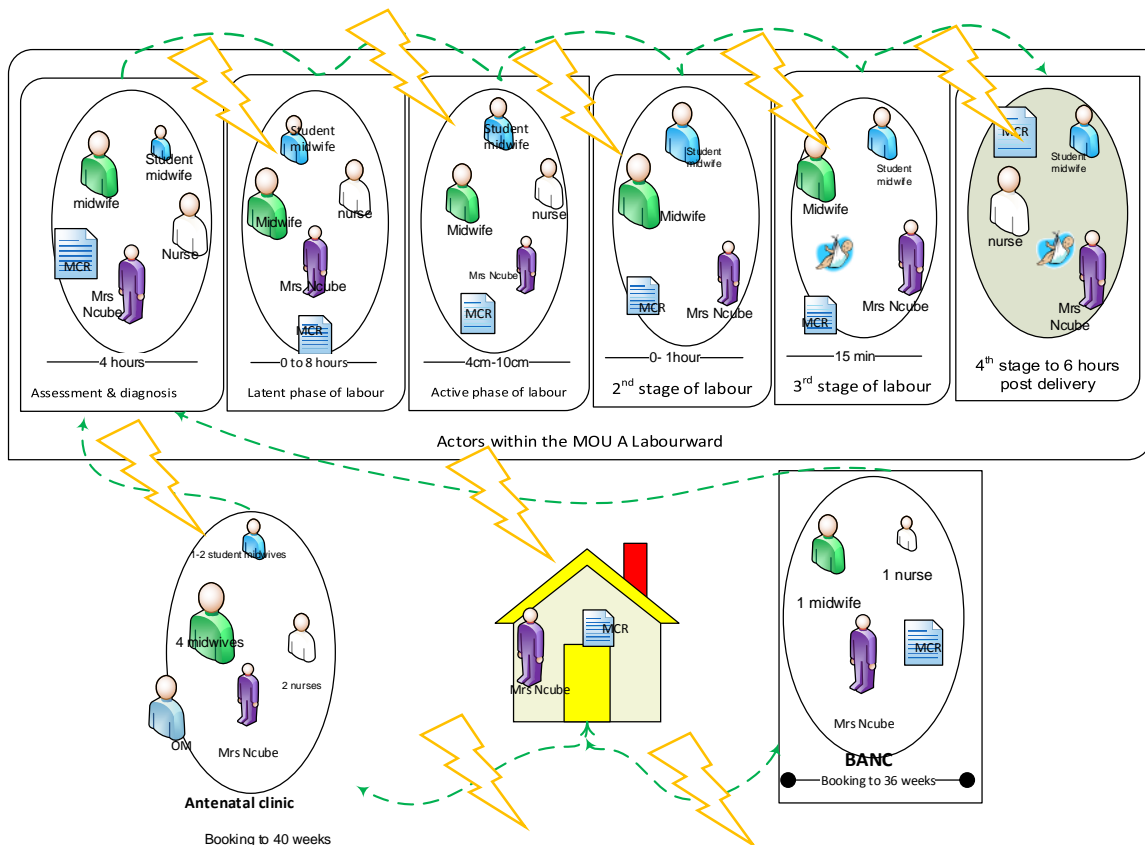




FIGURE: 7.10: INFORMATION CONCERNS MOU A LABOUR WARD MILIEU

Key: Flow of information 
 Constrictions 

7.2.6 ELEMENTS OF WORK ACTIVITIES MOU A

The (Figure: 7.11) below depicts the activity analysis of MOU A and the consecutive relationship of the ICP with the RH A and the BANC clinics.

- The community of practice or actors includes the midwives, operations manager, the student midwives and the nurses.
- The division of work is guided by the scope of practice described by the South African Nursing Council (SANC) while the rules for the management of the intrapartum period are guided by the maternal guidelines and the protocols.
- The means of work or information tools used include the telephones, maternal case records, and verbal handovers.

- The object of the activities is the woman in labour with actions, which are geared towards the effective management of the intrapartum period and anticipated outcome a healthy mother and baby.
- The relationships with activities mediated by networking include activities between the MOU B and RH B and the BANC clinics.

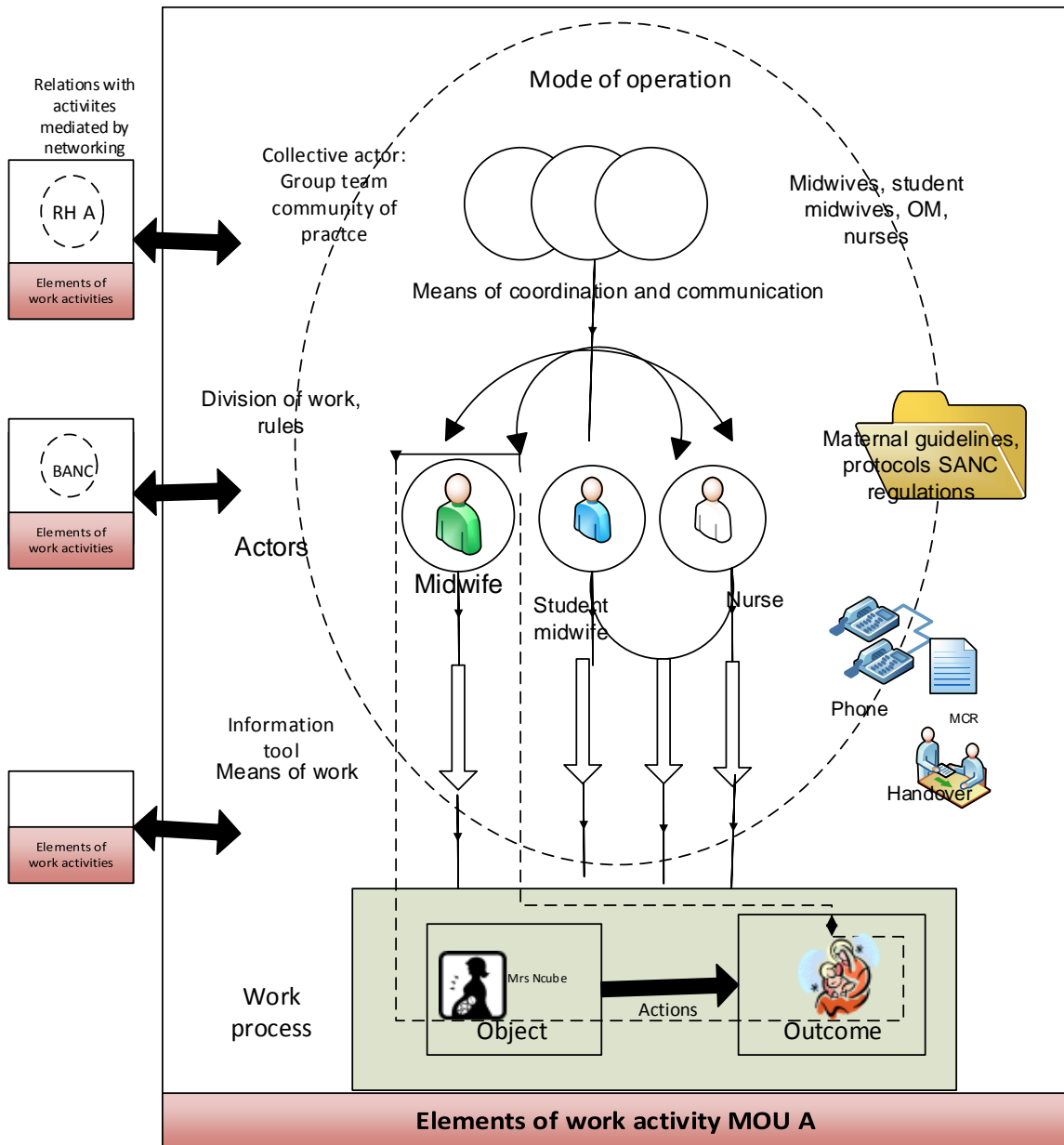


FIGURE: 7.11: ELEMENTS OF WORK ACTIVITY MOU A

The areas identified where the constrictions could occur (indicated with yellow lightning) during the ICP as depicted in (Figure: 7.12) below include;

- Breakdown in ICP between the MOU and networking activities such as referrals and consultation between MOU A and RH A, referral from the

BANC clinic to MOU B where inadequate information is collected or inappropriate communication regarding the pregnant woman.

- Misunderstanding and incorrect use of guidelines including protocols would lead to constrictions with rules for coordination. Incorrect communication during collaborative information seeking between the actors causes miscommunication and inappropriate management of women in labour.
- Inadequate or incorrect data collection when using the maternal case record, inaccurate handovers and inappropriate phone communications were also seen as challenges that interfered with the means of work.
- When ICP influences the work processes the outcome of the woman in labour is undesired as it leads to complications with the labour that would have otherwise have been prevented.

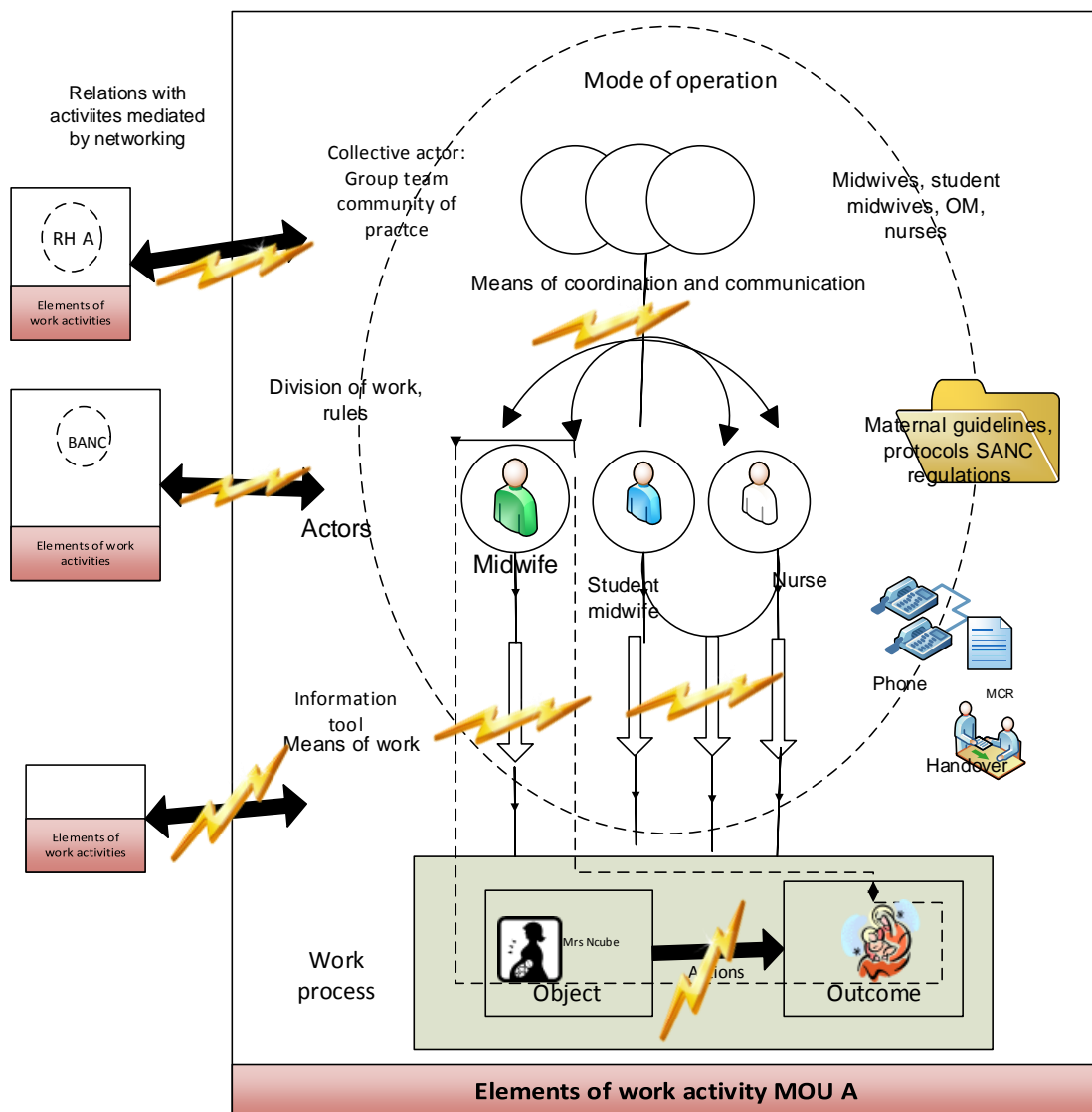


FIGURE: 7.12: ELEMENTS OF WORK ACTIVITY WITH CONSTRICTIONS MOU A
7.3 Activity analysis: IC between the MOU A and the RH A

MOU A is situated approximately 12 km from the RH A. All intermediate risk women are referred to RH A after telephonic consultation with the doctors in RH A. In this study two case studies were selected considering the referral chain. The phenomenon of interest was the IC processes within the MOU and between the MOU and the RH that influence the management of the intrapartum period. The challenges/constrictions for the IC were described during data collection and the analysis below. The key actors in the MOUs included midwives in the labour ward, student midwives, nurses and the operations manager of the MOU. The referral hospital included the doctors on call in the labour ward and the telephone operators. Although other actors had an influence on the information communication process in one way or another, the direct influence in the ICP was between the midwives managing the intrapartum women in the MOU A and the doctors in the RH making decisions on consultation or referral of women. The communication between these two facilities is via telephonic communication. When the midwives from MOU A call RH A the call goes through the operator who in turn looks for the doctor on call in labour ward or theatre. The doctor could also be in the other wards within the hospital.

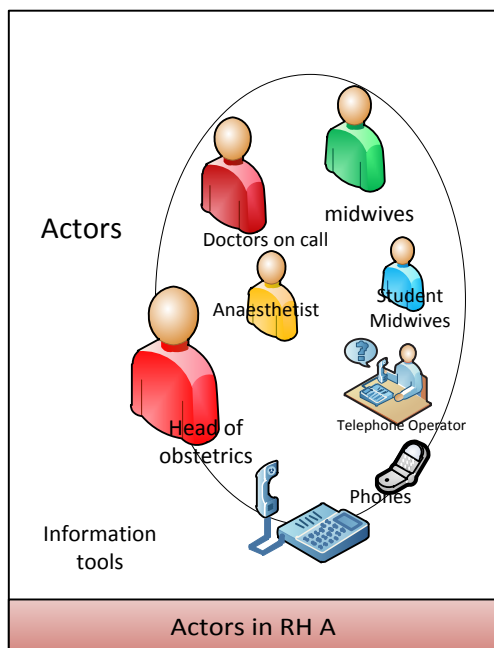


FIGURE: 7.13: *ACTORS IN THE RH A*

7.3.1 *Actors in the RH A*

The actors in the RH A have various roles in the ICP including information systems

actions of the various actors (shown in Figure: 7.13) were:

- Midwives in the RH A: advocate for better woman care, care of women in labour in RH A. They also forward phone calls to doctors from MOU A
- Student midwives in the RH A: advocate for better woman care, care of women in labour in RH A. They also forward phone calls to doctors from MOU A
- Anaesthetists: receive calls on behalf of the doctor on call when the doctor is in theatre and give response to midwives in MOU A
- Telephone operators: receive all calls that come through to the hospital and forward them to the respective doctors on call
- Doctors on call: provide expert advice to the midwives in MOU A and authorise referrals from the MOU for women at risk, provides expert management to women in labour at RH A

7.3.2 Group activities within the RH A

Further the doctors at the referral hospital manage moderate risk women when the need arises. They are also on call for the MOU in case they need to consult with them for expert advice. The phone calls are received by the telephone operator (Figure: 7.14) who forwards the calls to the doctors on call. The doctor could be anywhere in the hospital. If the midwife receives phone calls from the telephone operator the call is forwarded to the doctor on call and does not give any advice to the midwives in RH A. If the doctor is scrubbed up in theatre the anaesthetist receives the call and passes the information to the doctor then receives feedback that is passed on back to the midwife in MOU A.

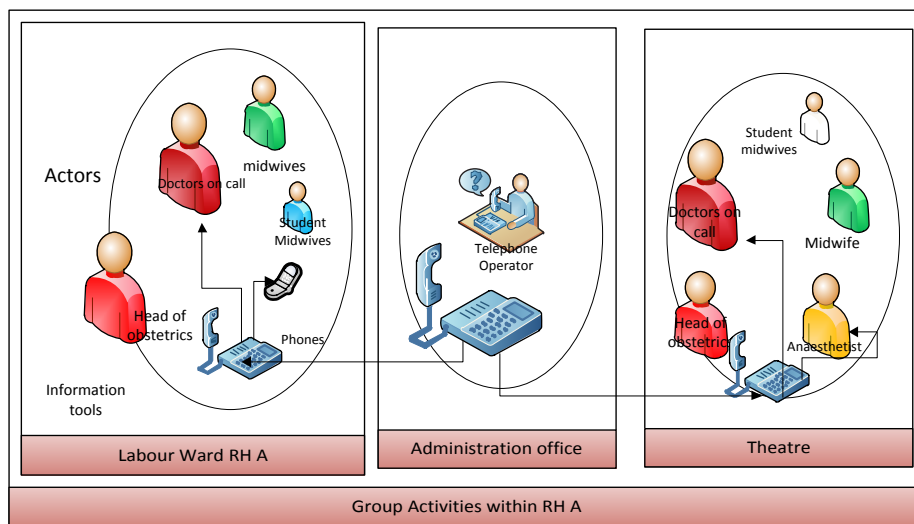


FIGURE: 7.14: FLOW OF PHONE CALLS

7.3.3 Network of activities between the referral drainage A

The information generated between activities in MOU A influences the management of the intrapartum period. The information generated during the management of the intrapartum period influences the communication processes between MOU A and the RH A. The RH A doctors rely on the information collected at the MOU level, for expert advice and decision making regarding women at risk within the MOU. The Figure: 7.15 below illustrates the flow of information from MOU A where all phone calls are received through the telephone operator and directed to the doctors on call. These calls are directed either to the labour ward or the theatre where the doctor on call is working.

If the doctor is in theatre and scrubbed up the anaesthetist would take the call and relay the message to the doctor who gives feedback and the same is relayed to the midwife from the MOU (Figure: 23). The midwives manage the low risk women during the intrapartum period. All information collected during this period is communicated to the doctors when seeking expert advice and any other consultation process. Although the critical thinking approach is used by the midwives to make decisions during woman care, the midwives rely on the doctor's expert advice to make decisions when in doubt. Challenges that arise are due to the fact that failure of the midwife and the doctor to communicate effectively, results in poor outcome.

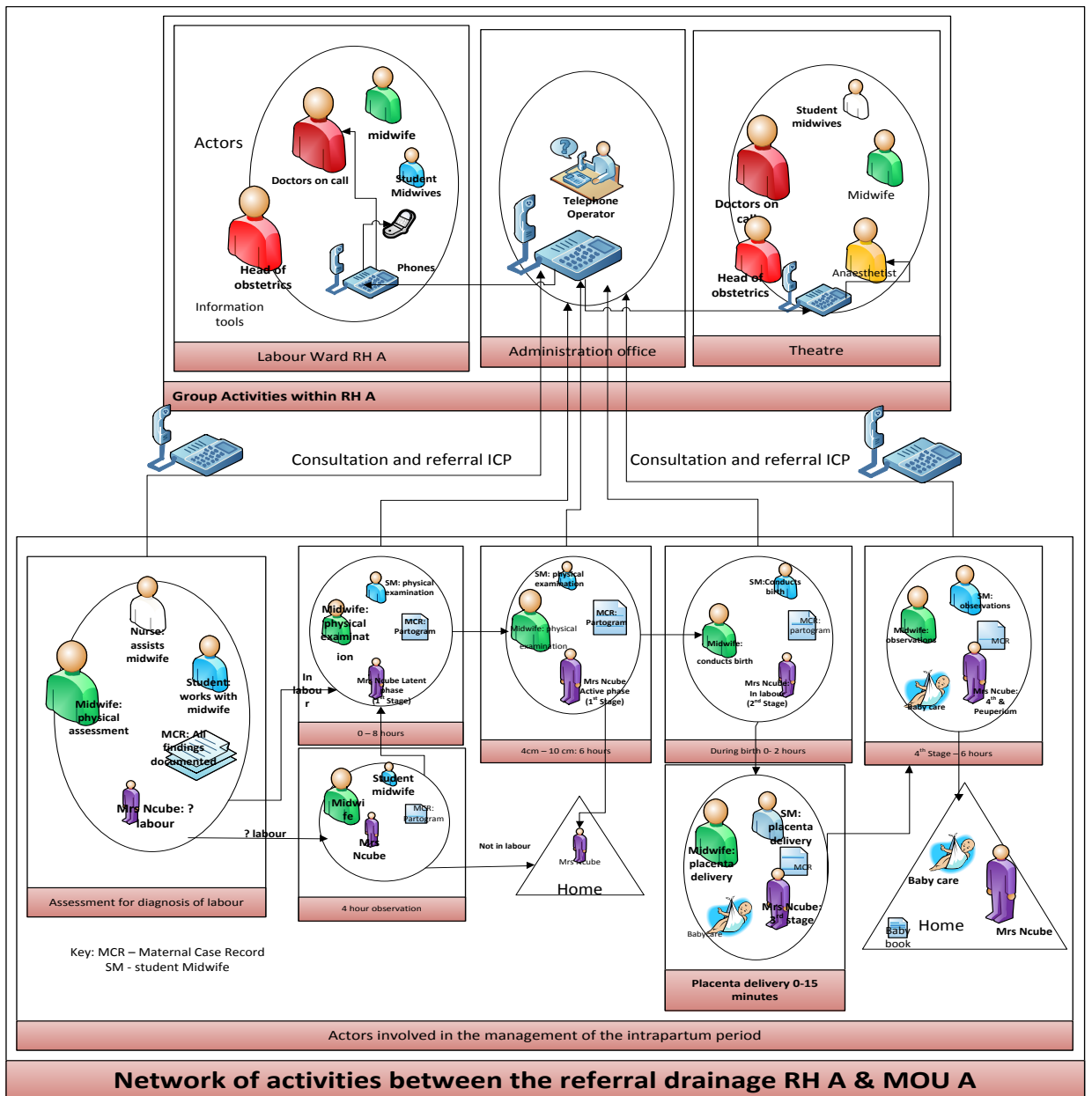


FIGURE: 7.15: NETWORK OF ACTIVITIES WITHIN THE REFERRAL DRAINAGE

The doctor relies on the woman assessment and the information communicated by the midwives during consultation to make decisions, as they are not on site to make any assessments. The midwife also relies on the protocols and maternal guidelines for information that assist in identifying the women at risk. Although these protocols are both at the MOU A and the referral hospital in paper form, changes are made to protocols at the referral hospital that the midwife might not be aware of. Breakdown in information occurs when two different protocols are used for information communication. The midwives rarely interact with the doctors to provide feedback on challenges that face them during the IC processes.

When the telephone operator receives the calls within the referral hospital, they do not always know where the doctor on call is situated. They have to track the doctor by calling wards and hoping to find them. Although the protocols and guidelines are used in decision making not all doctors are familiar with the protocols or communicate them as desired.

7.3.4 ELEMENTS OF WORK ACTIVITY RH A

The areas identified where the constrictions could occur (indicated with yellow lightning) during the ICP as depicted in (Figure: 7.16) below

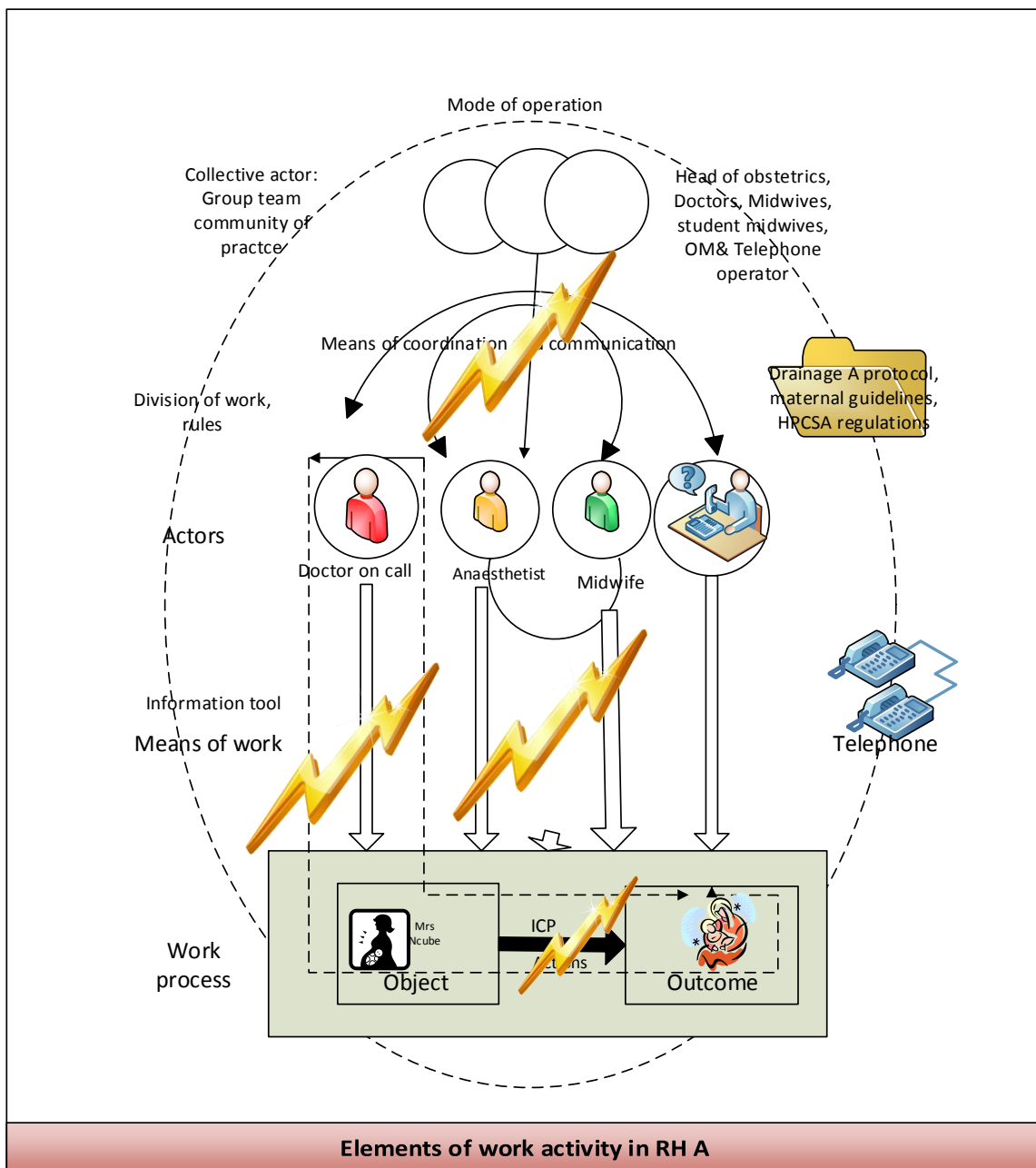


FIGURE: 7.16: ELEMENTS OF WORK ACTIVITY RH A

- Breakdown in ICP within RH A begins with the means of coordination and communication within the RH A. when the protocols and guidelines are not correctly used and interpreted by whether the midwives or the doctors who made the decisions.
- The tools used for communication are often unreliable which causes frustration especially when looking for a doctor who could be anywhere in the hospital.
- The availability of the midwife or the doctors is a challenge as the available doctors are overwhelmed by the work that influences the decisions they make.
- When ICP influences the work processes the outcome of the woman in labour is undesired as it leads to complications with the labour that would otherwise have been prevented.

7.3.5 Information flows in case study A with challenges identified

Information collected in MOU A influences the communication of the information during consultation and referral processes. The flow of information and phone calls in the referral hospital also influences the ICP, timeliness of these decisions and further the management of the woman during the intrapartum period. The challenges analysed using the Act AD framework (Figure: 7.17) are as follows;

- The challenges faced by the team communication in MOU A influences the communication with the team in RH A. The same applies to the challenges emerging from the team communication in RH A affecting communication with MOU A.
- Use or the inappropriate use of protocols, guidelines and policies which are the means of coordination in either in RH A or MOU A that influence the information communication between the skilled birth attendants
- The behaviour and attitude of the actors in MOU A or RH A influences the communication processes within and between the two units of analysis.
- Further the means of work or the information tools within and between MOU A and RH A have an effect on the information communication.
- These factors ultimately affect the actions aimed at the woman in labour and further have an influence on the outcome increasing morbidity and mortality.

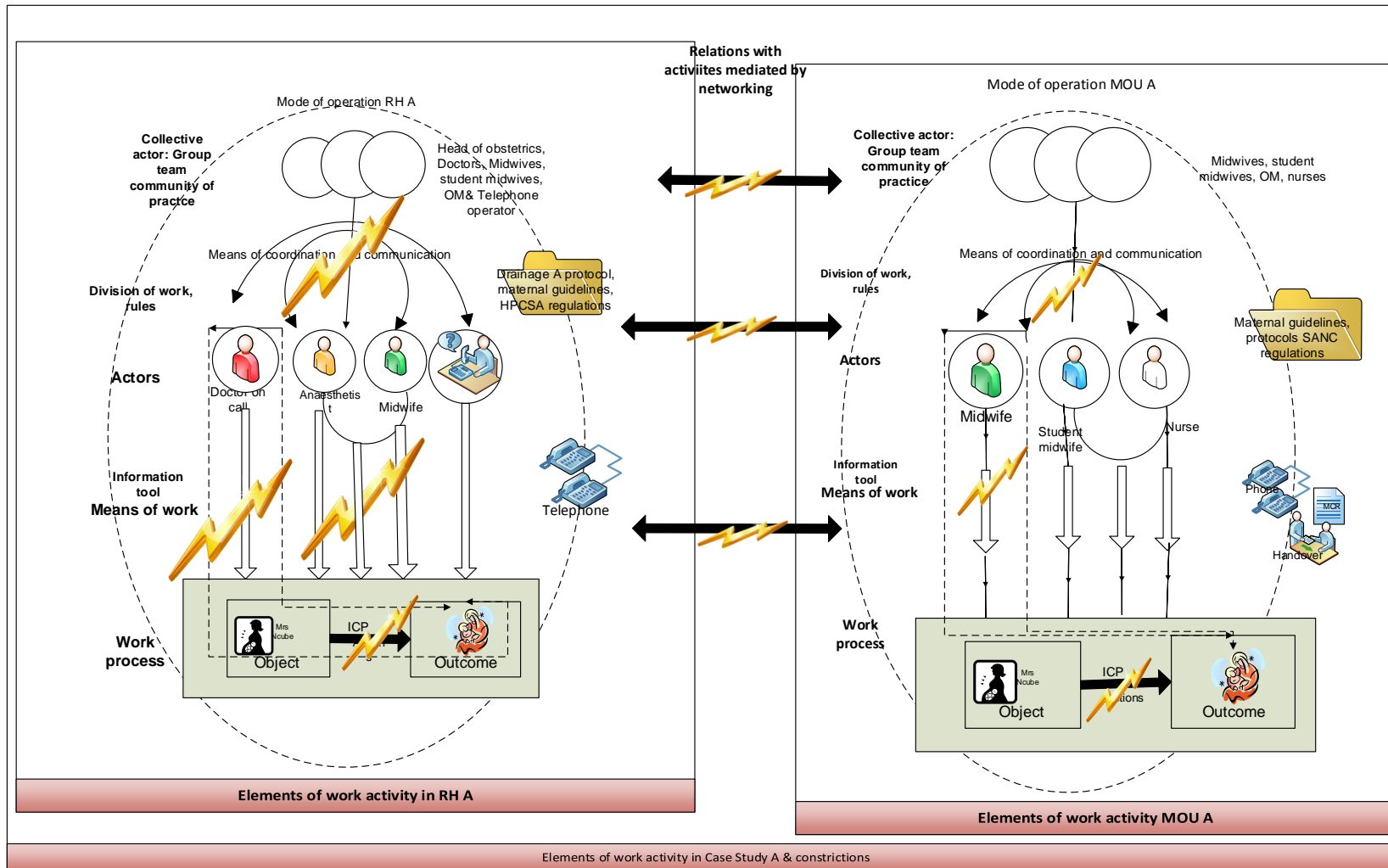


FIGURE: 7.17: INFORMATION FLOWS IN CASE STUDY WITH CHALLENGES IDENTIFIED

7.4 Activity analysis: IC within MOU B

The community health centre where MOU B (Figure: 7.18) is situated, provides primary level care that includes mental health services, community health services and the general medical care with 24hour trauma and minor illnesses including management of HIV/AIDS continued care. The pharmacy within the premises services both the MOU B and the community health centre.

Although the MOU is situated in the building separate from the CHC, the midwives and the administrative services are rendered to the MOU by the CHC. The MOU has an antenatal clinic that runs Monday to Friday 08h00 to 16h00. The antenatal clinic has about 4 midwives per day, 2-3 student midwives and 2 nurses who assist the midwives. New clients are booked on Tuesdays with about 80 -100 bookings per day and following of clients is done on all the other days.

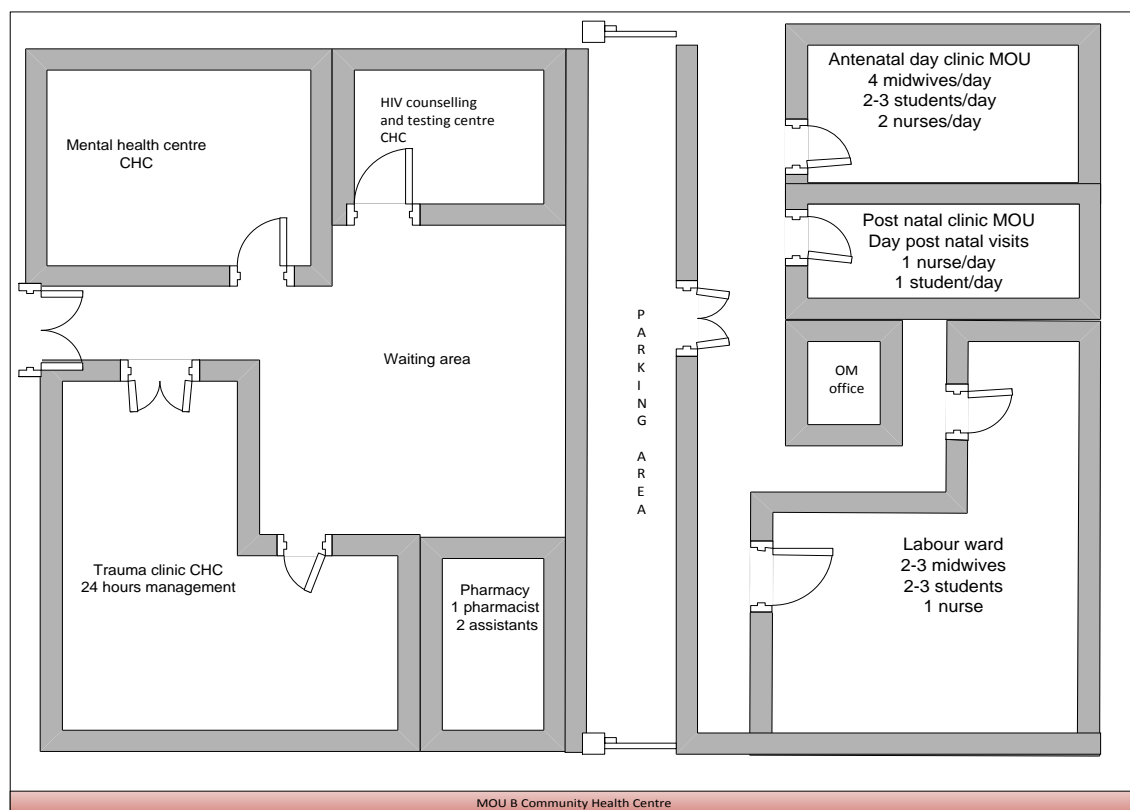


FIGURE: 7.18: LAYOUT OF MOU B AND CHC

Individual interviews were conducted to elicit the ICP within the MOU. It is a 24-hour maternity service within a community health centre that operates providing maternity services to the community independent of the community health centre (CHC). Low risk pregnant women are managed in the MOU during the antepartum period, intrapartum period and the postpartum period. The booking for the women starts when she has had her first contact with the midwife who takes history, performs investigations, does a physical examination and plans with the woman for further management. The MOU B also receives women from four other BANC sites from 36 weeks gestation who come for follow up and delivery at MOU B.

7.4.1 Antepartum care MOU B

This starts as early as the woman confirms she is pregnant until a week after delivery when she is followed up. At any point when the woman is at risk she is referred to the moderate or high-risk hospital for further management according to the protocol in either RH B or the tertiary hospital respectively. The MOU B is situated about 20km from RH B and the women are referred via an ambulance in case of an emergency. All information collected during the antenatal period is vital information needed during the intrapartum period. This information gathered is documented in the maternal case record (Figure: 7.19) that the woman carries with her throughout the pregnancy and post-delivery. When a woman is in labour she reports to the labour ward where the midwives make a labour diagnosis and admits her for delivery and post-delivery care.

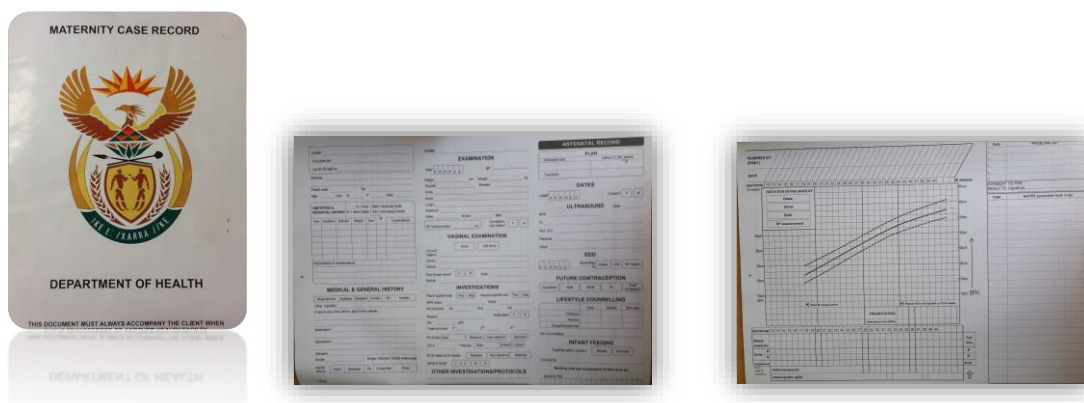


FIGURE: 7.19: MATERNAL CASE RECORD (MCR)

In the labour ward the midwife manages the woman communicating information with other midwives, student midwives and doctors during consultation and referral. The Figure: 7.20 depicts the routine procedure at MOU B that includes the

booking procedures and follow up visits.

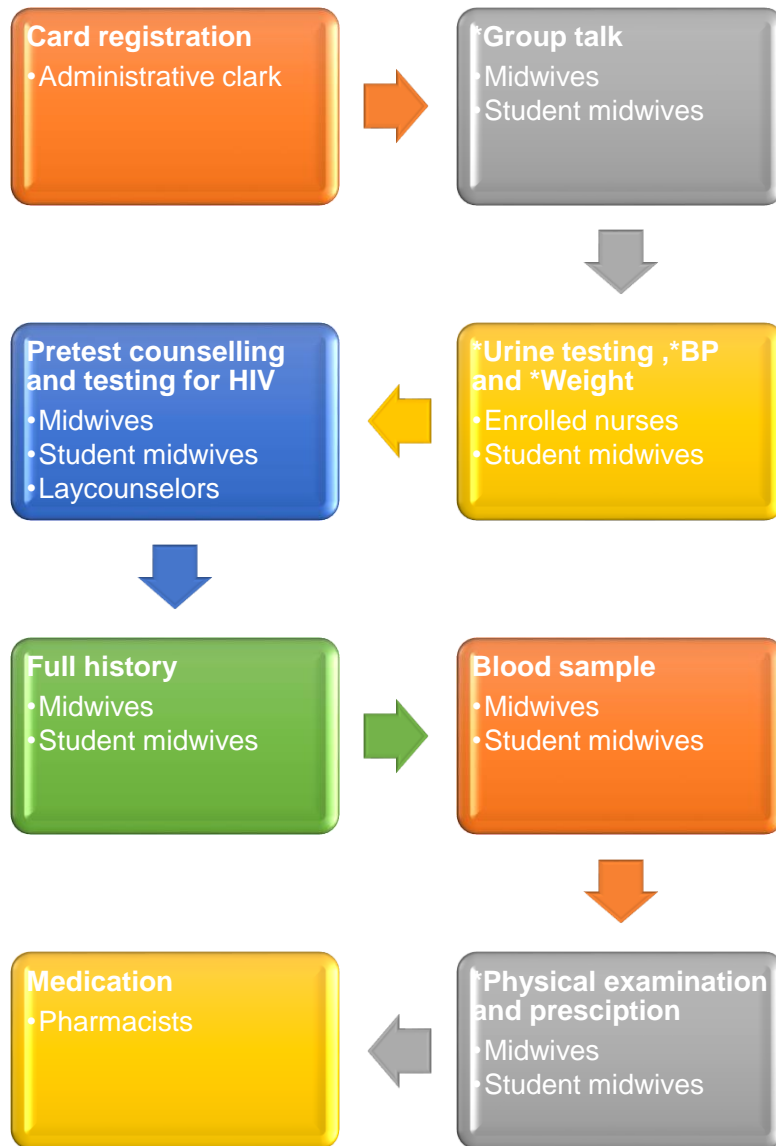


FIGURE: 7.20: ROUTINE PROCEDURE FOR ANTENATAL CARE IN MOU B

*Procedure repeated at subsequent visits

7.4.2 Intrapartum care MOU B

The layout of the labour ward (Figure: 7.21) below indicates the flow of clients and thus flows of information in the labour ward. When a woman presents with history of signs of labour, she is received at the midwives' desk and escorted to bed 1 or 2 where the midwife requests information regarding the current complains. Further the midwife reviews the maternal case record to retrieve information regarding the antenatal period. She then further examines the client to make a diagnosis of labour according to previous history and the current examination.

This allows the midwife to categorise the patient as low, moderate or high risk and also determine if she is in labour. If the client is in the first stage of labour, she is admitted in the first stage beds 1-6 and examination of the client continued. All information collected is usually recorded in the maternal case record. If the midwife is unsure of the labour the client is also admitted for four hours for observation to determine if she is in true or false labour in the first stage beds 1-6. Only midwives and student midwives manage clients at this stage and nurses may do observations and record on the maternal case record.

When the woman gets to the second stage of labour she is transferred to where she is managed for 2nd 3rd and 4th stages of labour. All information is recorded in the maternal case record that is kept at the midwives desk for any of the midwives to access. Only midwives and students' midwives manage women at this stage.

The woman is then transferred to the postnatal room where she is managed up to 6 hours postnatally. A nurse is allocated to the postnatal room to manage the postnatal clients. All information postnatally is documented in the maternal case record and communicated to the midwife who is in charge of the women in labour ward.

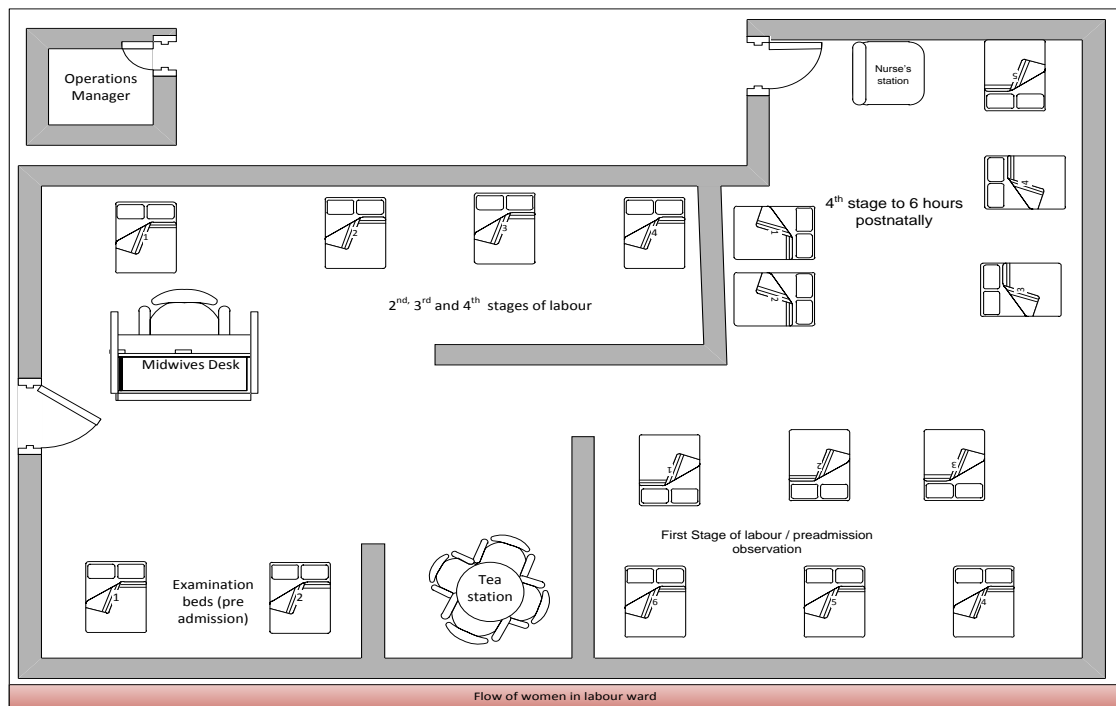


FIGURE: 7.21: *DIAGRAM OF LABOUR WARD LAYOUT MOU B*

7.4.3 Individual Action of a midwife

The objective of the interview was to understand the ICP within the MOU and therefore the need to know the actors managing the women in labour. The key actors within the MOU included (Figure: 7.22) the midwives, enrolled nurses and student midwives. Each actor had an action that ultimately influenced the activities of within the MOU. The telephones, maternal case record (MCR) and verbal handover were used as the means of work that influenced the information communication processes. Every individual was expected to document the activities involved in the care of the woman in labour on the MCR

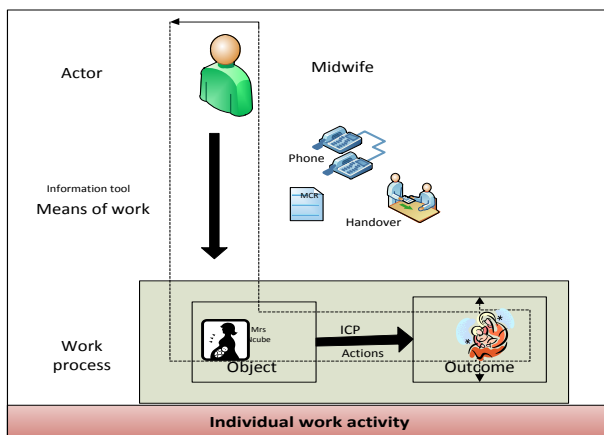


FIGURE: 7.22: *INDIVIDUAL ACTION OF A MIDWIFE*

The activities of the actors described above included the involvement of the midwives in the direct woman care by planning implementation and evaluation of the care provided. Although responsible for the effective management of the intrapartum period, the midwives were ultimately accountable for the woman care. This accountability included internalization of the information in order to effectively communicate and to ensure continuity of care during shifts and other related activities.

The nurses assisted the midwives with woman care such as vital signs observations and meeting the basic care needs of the woman adhering to their scope of practice. They were responsible for effective communication with the midwives of all their activities involving the care of the pregnant woman and immediate reporting of abnormalities detected for a swift response.

The student midwives included students who had no previous midwifery experience therefore had to work shadowed by midwives. The student midwives managed the women in labour with the midwives and were not allowed to deliver women without being mentored by a qualified midwife. Information communication between midwives and students remained vital for both educational purposes and the need to ensure quality continued care. The diagram below represents the group activities of the actors.

7.4.4 Group Activities in MOU B

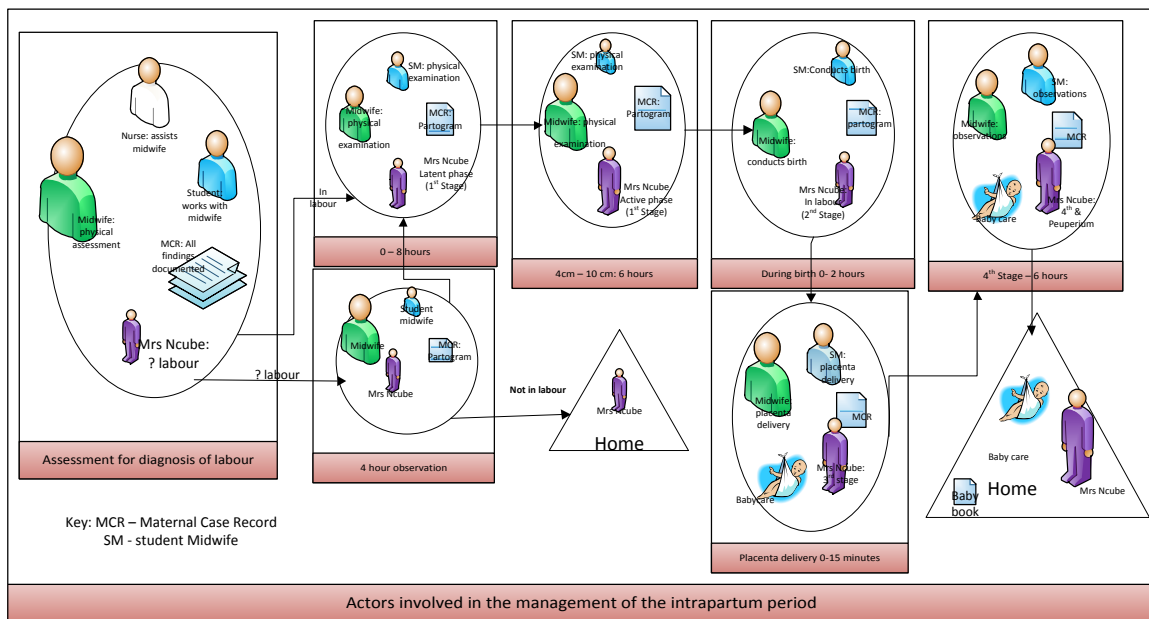


FIGURE: 7.23: GROUP ACTIVITIES OF MIDWIVES IN MOU B

When the woman arrives with complaints of labour observations are done which include vital signs and the midwife, the nurse or the student nurse does urine tests. The midwife is the only one who can do the physical examination to determine if she is in labour while the student midwife can do the physical examination with the assistance of the midwife. Once the woman is confirmed as being in true labour she is admitted in the labour bed. If the actors are not sure of the labour signs they keep the woman for four hours and monitor for true labour signs.

Collaborative information seeking allows decision making among midwives in labour ward. All findings are documented in the maternal case record and communicated between the other midwives in the labour ward. Once labour is confirmed the woman is managed through the four stages of labour until six hours post-delivery then discharged home with a healthy baby.

At the organizational level MOU B is one of 11 MOUs and falls under the southern suburbs whose referral drainage falls under RH B. The interaction of the actors within and between the MOU and RH form a network of activities that are influenced by ICP during the management of the intrapartum period. The ICP is influenced by the protocols, which are written by the referral hospital for the

management of the intrapartum period. These organizational level activities are described below and the flow of information.

7.4.5 Activity analysis MOU B labour ward milieu

The information mentioned above is analysed by the activities indicated below (Figure: 7.24). The activities influence the ICP during the management of the intrapartum period. The constrictions and tensions experienced are due to failure to communicate information during the management of women in labour are indicated. This results to inadequate information to make informed decisions during emergencies and consultation with doctors or even between midwives. This may even be fatal to the women in labour.

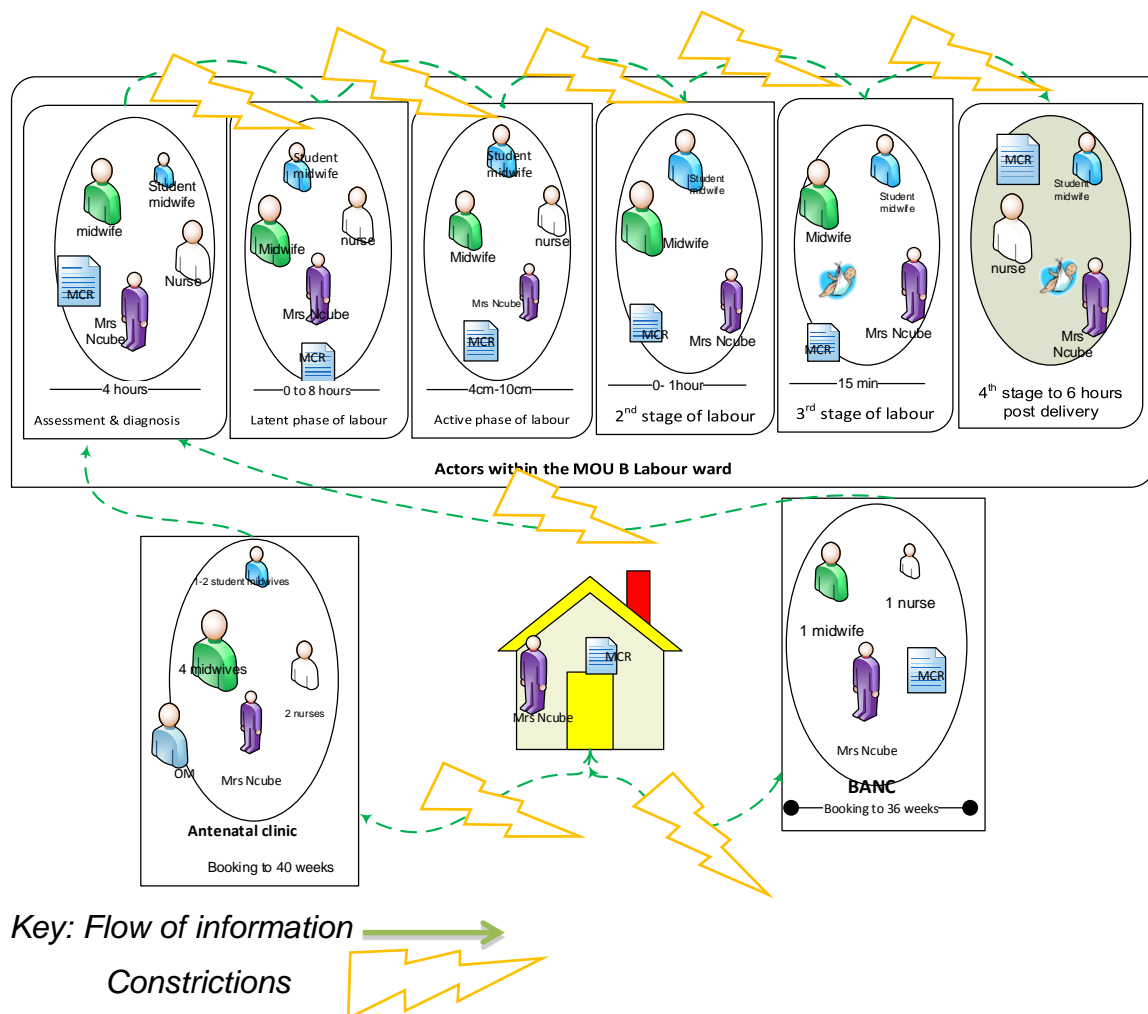


FIGURE: 7.24: ACTIVITY ANALYSIS MOU B LABOUR WARD MILIEU

The (Figure: 7.25) below depicts the activity analysis of MOU B using the Act AD framework and the consecutive relationship of the ICP with the RH B and the BANC clinics.

- The community of practice or actors includes the midwives, operations manager, the student midwives and the nurses.
- The division of work is guided by the scope of practice described by the South African Nursing Council (SANC) while the rules for the management of the intrapartum period are guided by the maternal guidelines and the protocols.
- The means of work or information tools used include the telephones, maternal case records, and verbal handovers.
- The object of the activities is the woman in labour with actions which are geared towards the effective management of the intrapartum period and anticipated outcome a healthy mother and baby.

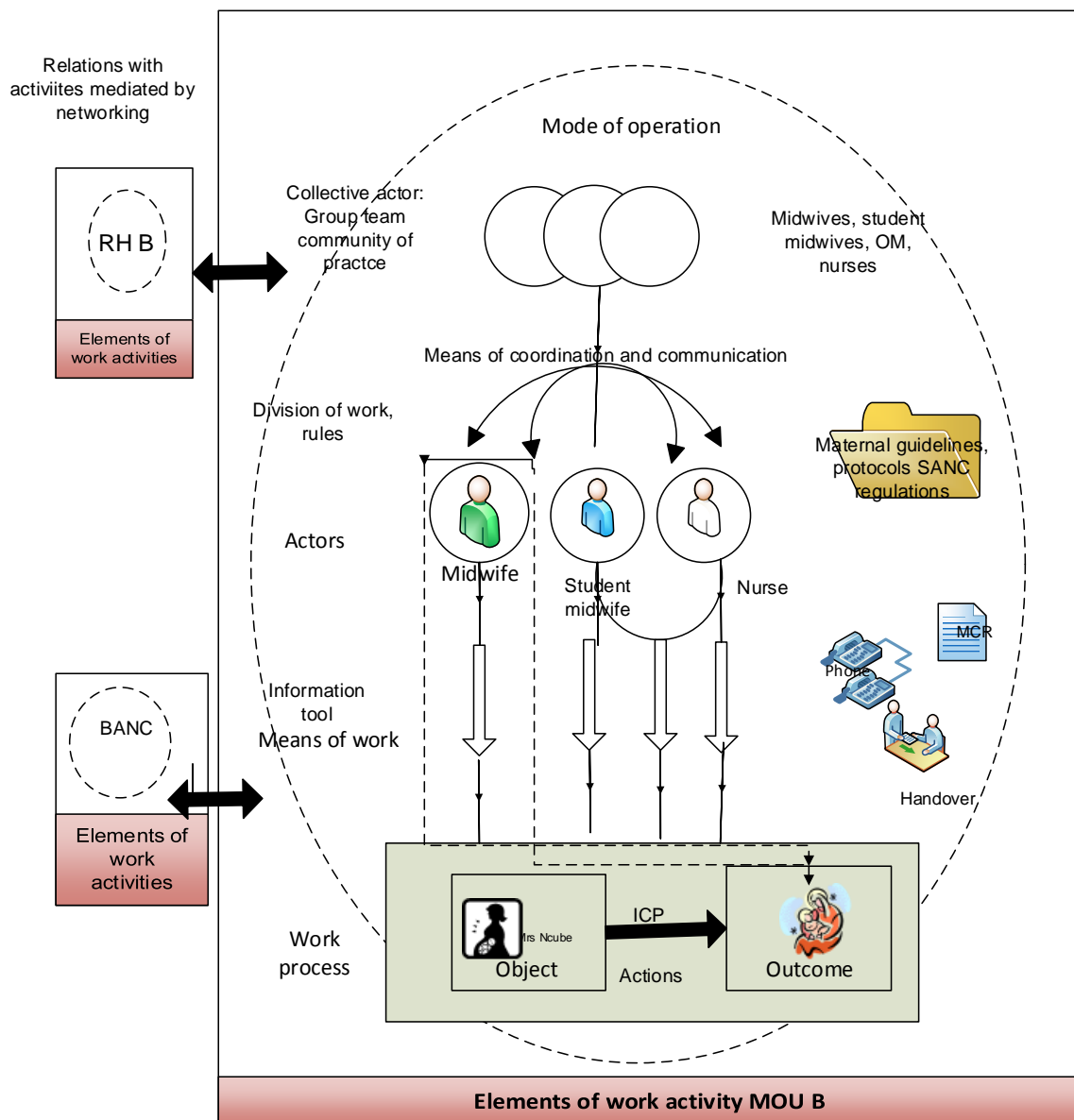


FIGURE: 7.25: *ELEMENTS OF WORK ACTIVITY MOU B*

- The relationships with activities mediated by networking include activities between the MOU B and RH B and the BANC clinics.

7.4.6 Elements of work activity of MOU B with development spots

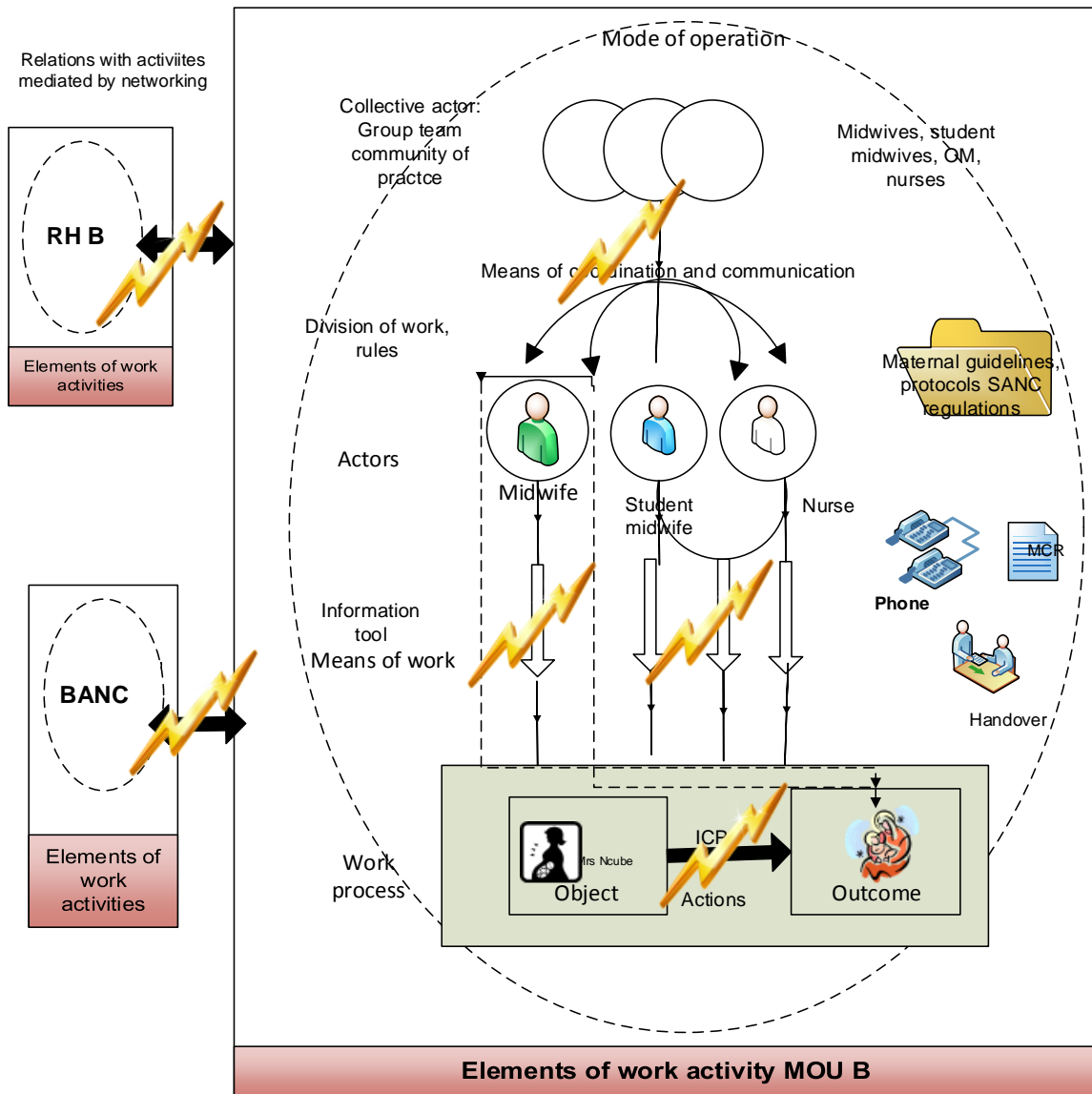


FIGURE: 7.26: ELEMENTS OF WORK ACTIVITY MOU B WITH CONSTRUCTIONS

The areas identified where the constrictions could occur (indicated with yellow lightening) during the ICP as depicted in (Figure: 7.26) include;

- Breakdown in ICP between the MOU and networking activities such as referrals and consultation between MOU B and RH B, referral from the BANC clinic to MOU B where inadequate information is collected or inappropriate communication regarding the pregnant woman.

- Misunderstanding and incorrect use of guidelines including protocols would lead to constrictions with rules for coordination. Incorrect communication during collaborative information seeking between the actors causes miscommunication and inappropriate management of women in labour.
- Inadequate or incorrect data collection when using the maternal case record, inaccurate handovers and inappropriate phone communications were also seen as challenges that interfered with the means of work.
- When ICP influences the work processes the outcome of the woman in labour is undesired as it leads to complications with the labour that would have otherwise have been prevented.

7.5 Activity analysis: IC between the MOU B and the RH B

Although as mentioned earlier the ICP in MOU B influence the decisions made by the referring doctors, the information flows at the referral hospital also influences the decision making process. Various actors (Figure: 7.27) in the referral hospital play a role in the activities involving the referral and consultation of women at risk.

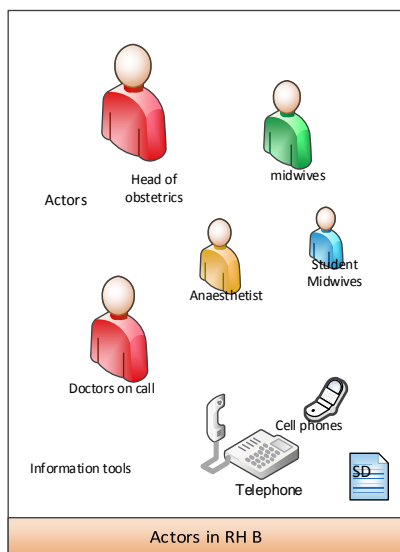


FIGURE: 7.27 ACTORS IN RH B

The head of obstetrics is involved in all decision-making processes within the referral drainage B that includes the protocols for management and care of all women within the drainage. The accountability for the clinical management of the MOUs that refer to the drainage rests on the management at RH A.

The doctors on call for the MOUs at the RH B are situated at the admission suit but also have other duties within the RH B that include being in theatre, wards or even labour ward when required.

The midwives responsible for the admission suit also receive calls and give advice to the midwives in the MOU according to their scope of practice while they await the doctor's decision. They are also involved in the decision making process. The midwife also takes care of the patients who are received for admission from the MOUs awaiting transfer to the wards. The student midwives who work in the admission suit work side by side with the midwife learning activities expected of her by the education institution.

The anaesthetist who works in theatre, is part of the ICP as when the doctor on call is scrubbed up the call can be directed to theatre and the anaesthetist can reply the message to the doctor who makes the decision and passes back the message to the midwife in the admission suit to pass it back to the midwife in MOU B.

The information tools used in RH B include a standard document where all phone call information is documented; telephones and cell phones are also used.

7.5.1 *Flow of information in RH B*

The flow of phone call information in RH B (Figure: 7.28) begins with all calls received in the admission suit.

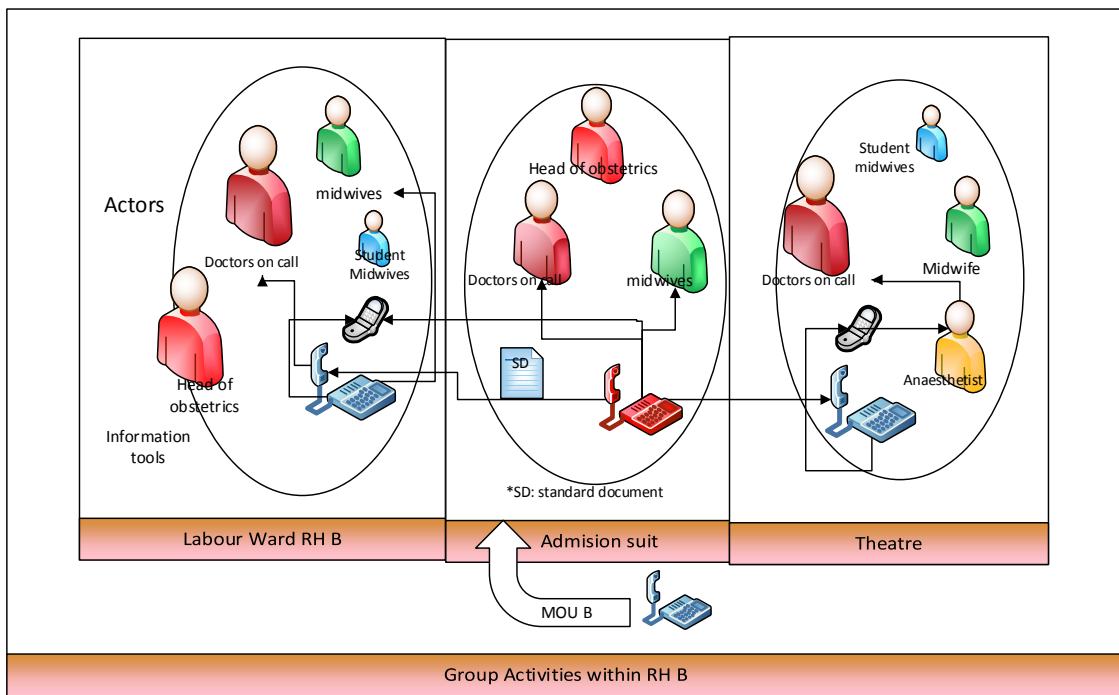


FIGURE: 7.28: FLOW OF PHONE CALLS WITHIN RH B

Either the midwife or the doctor on call can receive the calls from the MOU. If the midwife receives the call she can transfer it to the doctor on call that could be in theatre, wards or even labour ward.

The midwife in the labour ward could also receive the call from the midwife in the admission suit and look for the doctor who could be anywhere in the labour ward. In theatre, as mentioned earlier, if the doctor is scrubbed up then the midwife from the admission suit transfers the call to the anaesthetist who relays the information to the doctor who makes the decision and relays the information back to the midwife. If there is further information required the doctor requests for the information via the anaesthetist and the midwife.

The Figure: 7.29 below represent the flow of IC from the MOU to the referral hospital.

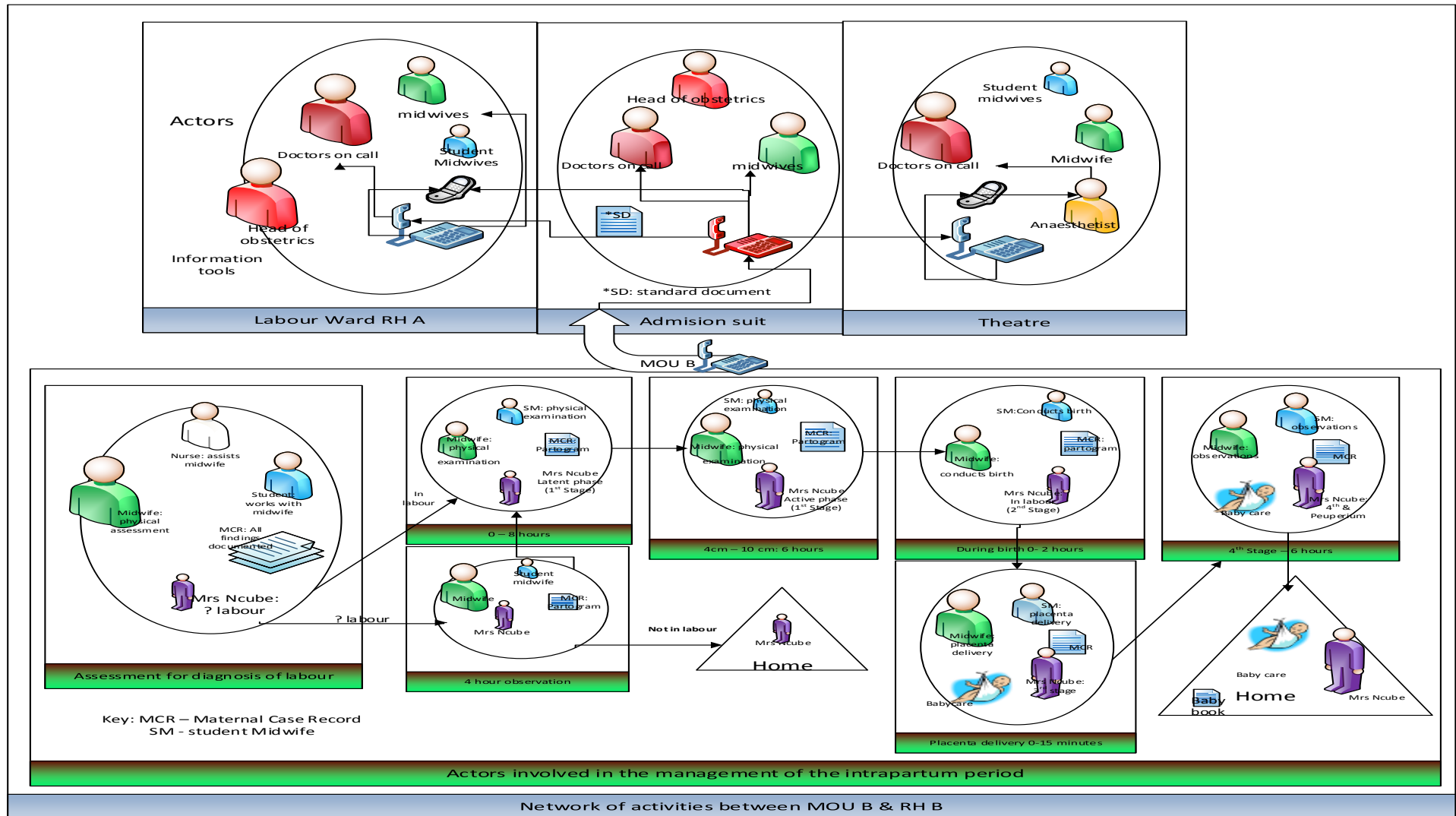
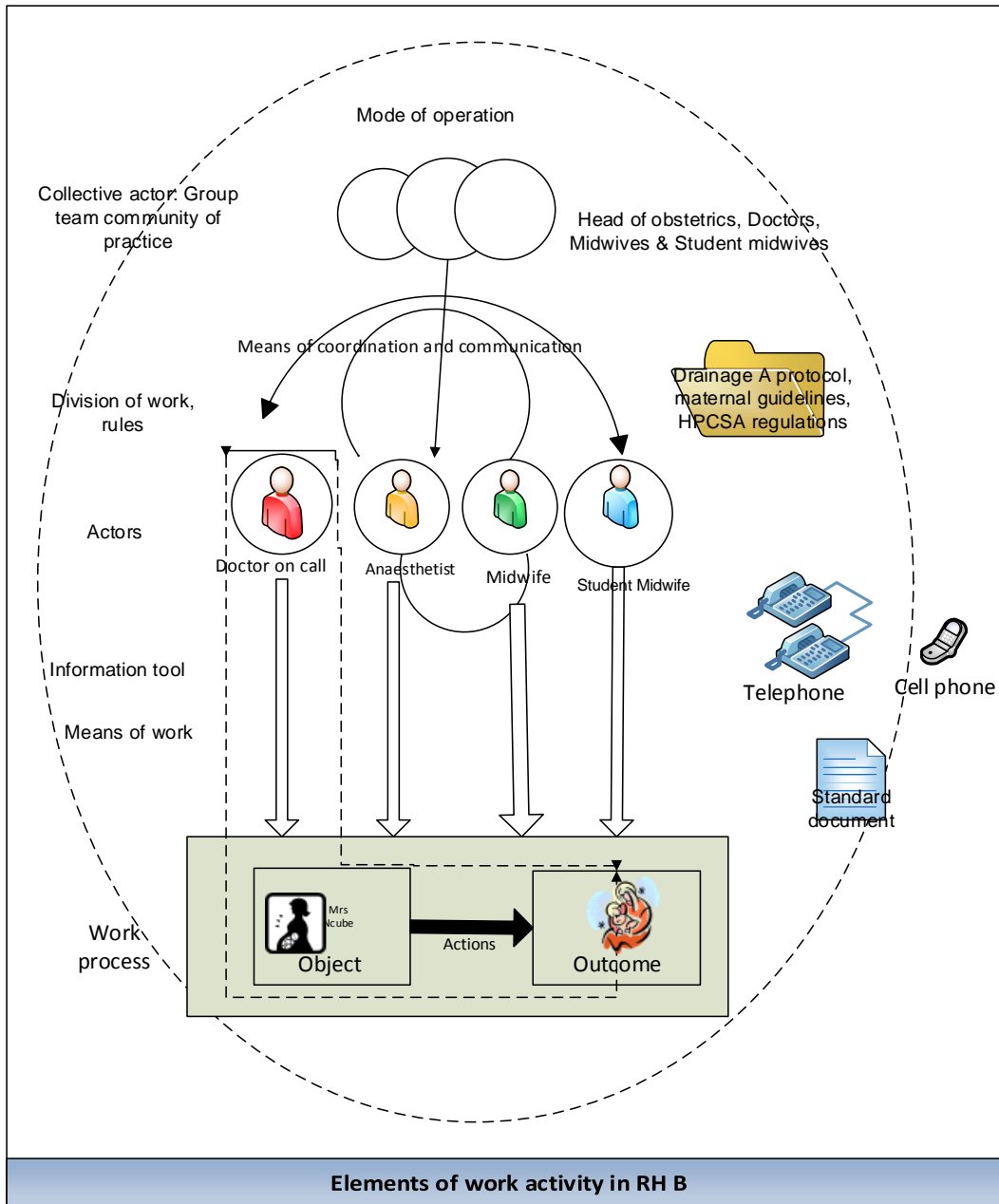


FIGURE: 7.29 NETWORK OF ACTIVITIES BETWEEN THE REFERRAL DRAINAGE

At any point during the management of the intrapartum period the midwife at the MOU B may need to consult with the doctors at the RH B. The only means of communication is the phone calls. In case the doctors in the referral hospital want to follow up on a previous query they will also call the MOU.



The elements of work activity shown above depicts: the collective actors as the doctors and midwives, means of coordination as the guidelines, means of work as telephones and standard documents, the object being the woman in labour and the outcome healthy woman and a healthy baby.

7.5.2 Elements of work activity RH B development spots

The Figure: below 7.30 depicts the collective work activity using the Act AD framework.

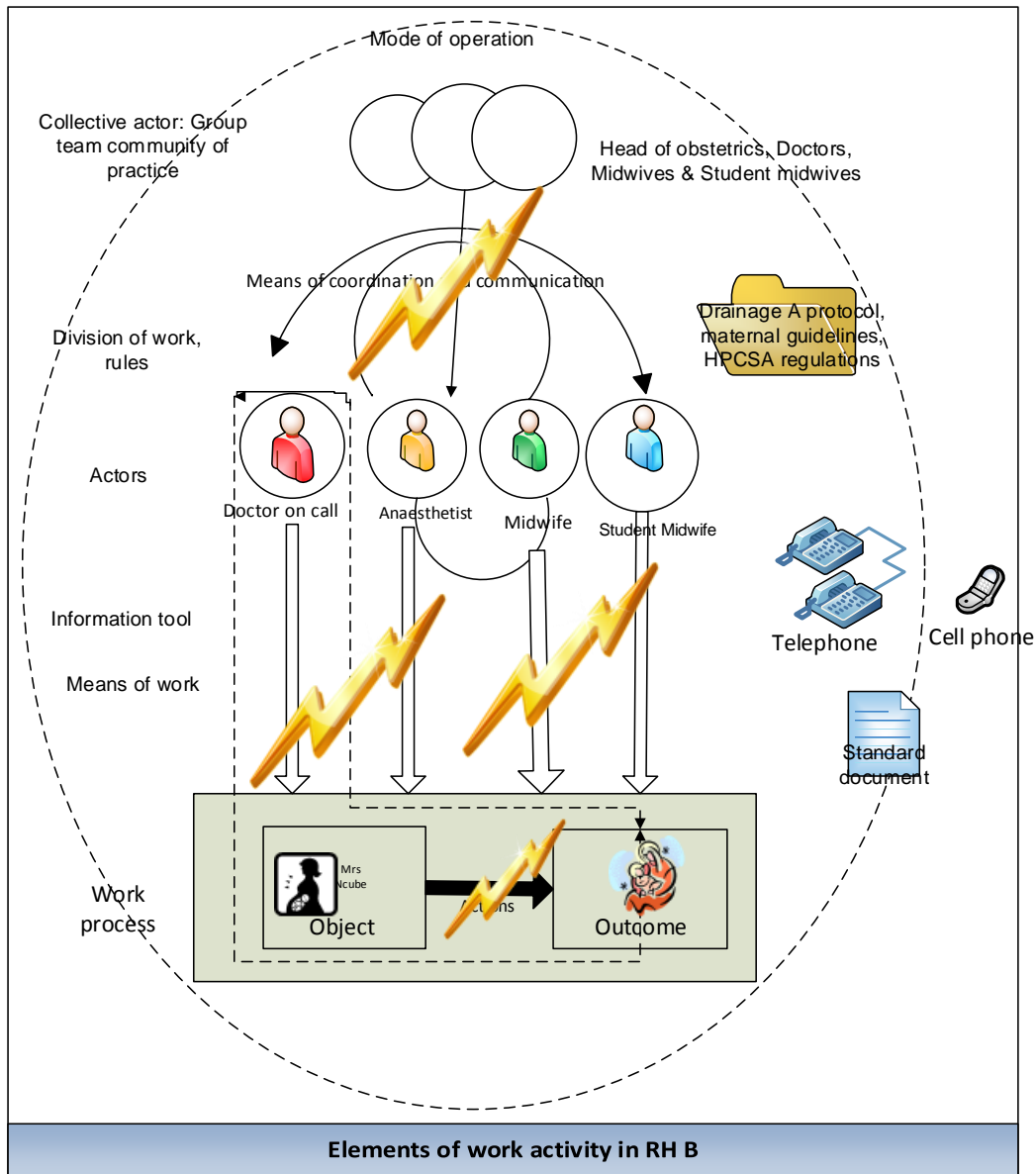


FIGURE: 7.30 ELEMENTS OF WORK ACTIVITY WITH CONSTRICTIONS RH B

The protocols and the maternal guidelines used in MOU B should be well understood by the doctors from referral hospital B when making decisions. However, these protocols are not always followed by the RH A which causes mistrust among the doctors and midwives especially when feedback is given not according to the set rules.

Further, the actors influence the information communication process by: the doctors who are overwhelmed by phone calls and the fact that they also have to work elsewhere in the hospital. They can receive more than one phone call at a time and are expected to make decisions for all the callers instantly. This causes frustration on their part and ineffective communication of decisions.

Further the midwives and student midwives in the RH B have to manage the patients in the admission suit and at the same time receive calls from the MOU and look for the doctors if they are not in the admission suit. The anaesthetist who receives calls might not have an obstetric background therefore the information communicated to the doctors might not be accurate as expected.

The tools used, which include the standard document used are only in the RH B and not in the MOU therefore when the midwives call from the MOU they give either less or more information required for decision making. Phone calls are not always reliable especially when the MOU calls and the phones are engaged or the doctor is handling more than one phone call.

Elements of activity Case Study B

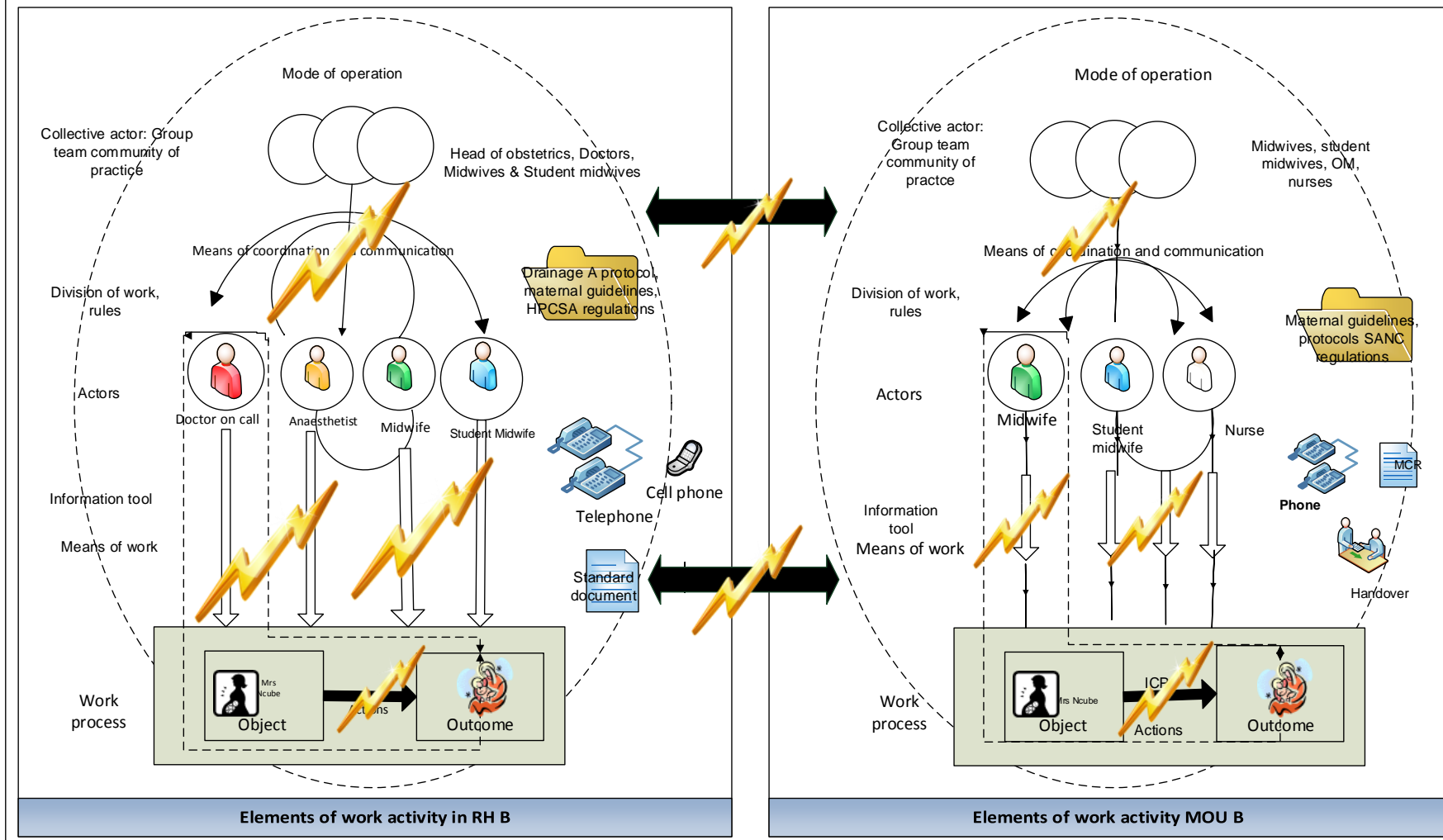


FIGURE: 7.31 INFORMATION FLOWS IN CASE STUDY B WITH CHALLENGES IDENTIFIED

7.5.3 Elements of work activity with development spots MOU B and RH B

The Figure: 7.31 above shows that the means of coordination and communication requires improvement. The understanding of the protocols by both parties was necessary whether the actors in the MOU B or the actors in the RH B. Notwithstanding, if the protocols guiding the management are not implemented it leads to mistrust by both parties and further breakdown in communication.

Information tools and means of work during the ICP include the handover processes in the MOU and require possible structuring. Phone calls both in the MOU, the RH and between the RH and MOU influence the ICP.

The management of the intrapartum period is influenced among other things by the ICP within the MOU within the RH and between the RH and the MOU. This further has an influence on the outcome that includes mismanagement of the woman leading to fatal outcomes.

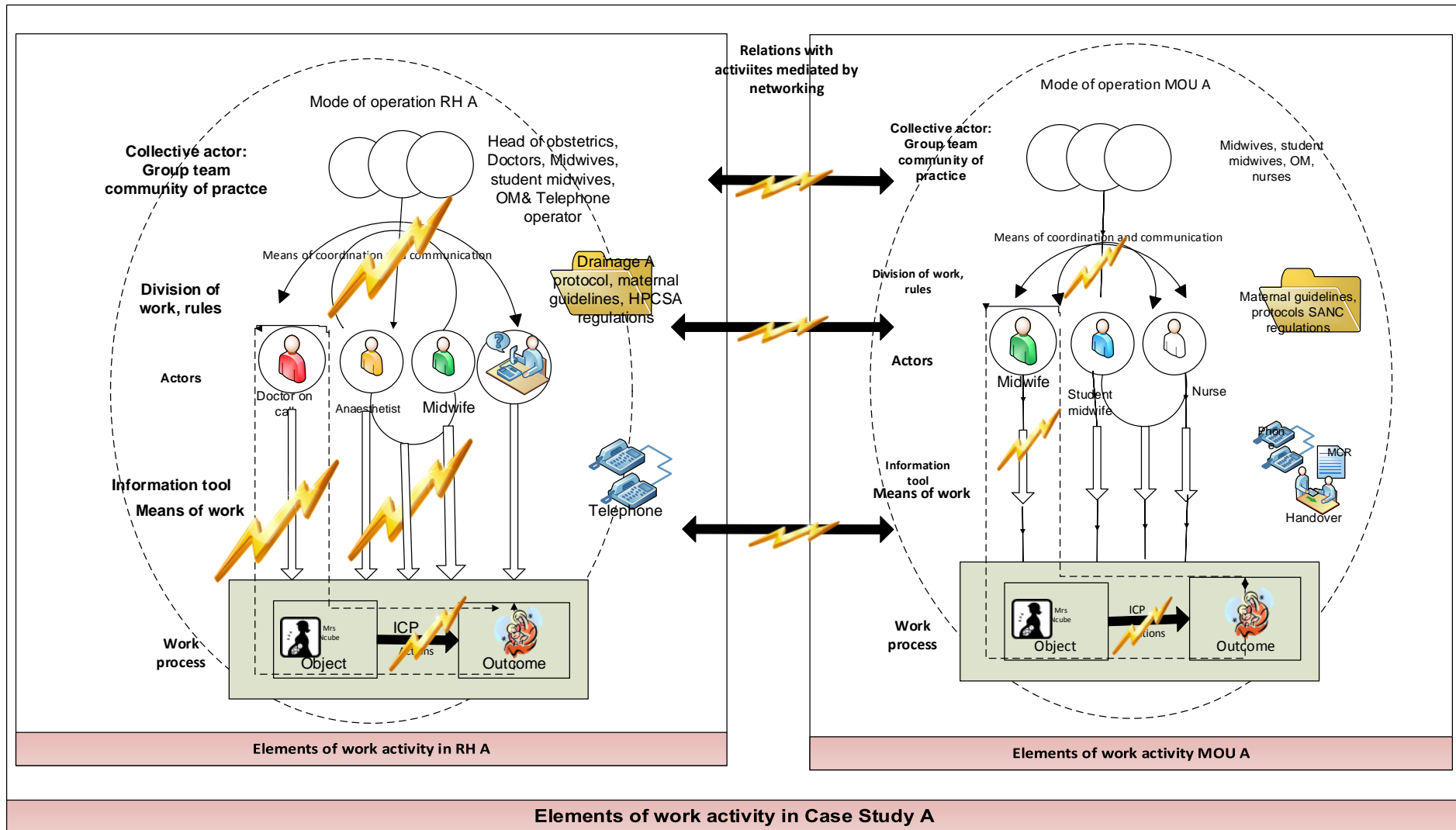


FIGURE: 7.32: CASE STUDY A DEVELOPMENT SPOTS

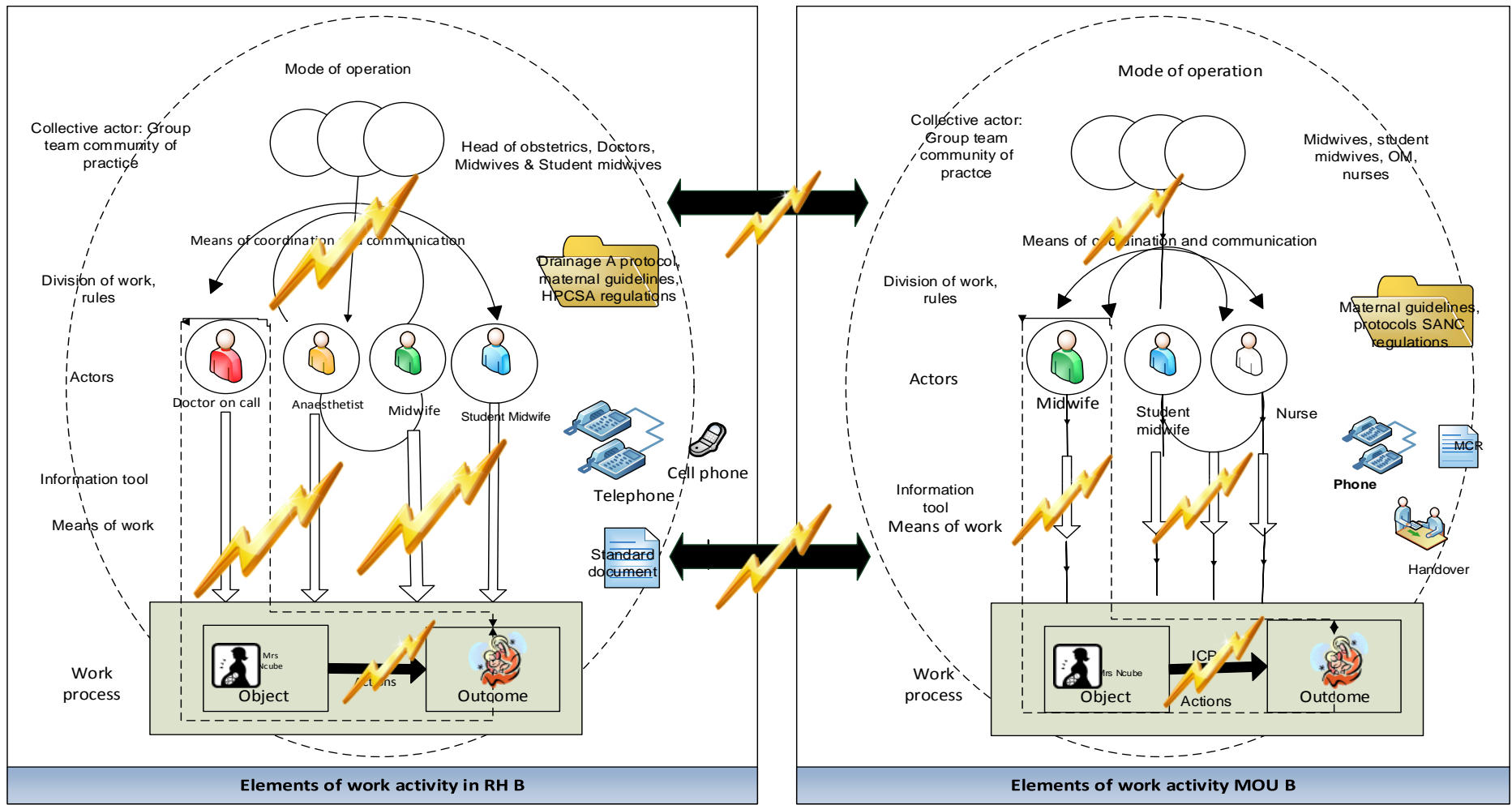


FIGURE: 7.33: CASE STUDY B DEVELOPMENT SPOTS

7.6 Summative comparison of the case study

The two Figures above (Figure: 7.32 & 7.33) represent the different development spots in each of the case studies with their various units of analysis. Similarities and differences between the two cases are discussed below.

Collective actors: In both case studies the midwives and the doctors were involved in the ICP within the MOU and between the MOU and the referral hospitals as the key players in the management of the woman during the intrapartum period. The challenges faced with ICP within the teams were unique to each setting.

Means of coordination and communication: the maternal guidelines and the respective registrations authority (SANC, HPCSA) guidelines were national guidelines therefore applied to both cases. The protocols however were specific to either case study A or B. The challenges with policies and protocols faced in both cases were due to the inappropriate use, which led to wrong referral and consultation procedures.

Division of work and rules: in both cases the midwives managed low risk women and consulted with the doctors in the referral hospitals in case of a high risk woman in labour. All intermediate and high-risk women in labour were managed in the hospitals. The midwives consulted with the doctors when in doubt and the doctors made decisions regarding referral of women and management decisions when the midwife in the MOU was in doubt.

However the midwives in RH B were involved in the phone call process where they could take phone calls and give advice to the midwives in MOU B whereas the midwives in RH A were not involved in the communication processes.

Actors: Whereas the RH A included the telephone operator in receiving phone calls and forwarding to the doctors, RH B did not include the telephone operator and the phone calls were directed to the admissions suite where either a midwife or doctor was situated to receive the calls. This allowed for less time wasting. However, in both cases there was shortage of skilled birth attendants which influenced the flow of phone calls as the doctors could be anywhere in the hospital attending to other patients. The experience of the actors in both cases seemed to influence the ICP.

Information tools: Both case studies mostly used the maternal case record in the MOU for documenting all information. The ISBAR was not used neither by the MOU nor the referral hospital for referral processes. The RH B had a standard document used when the MOU calls for consultation or request to transfer the woman in labour. There was however no standard document used in RH A and the doctors relied on remembering about the referral.

The challenges with incomplete documentation, inefficient telephone calls and inappropriate communication during phone calls was experienced in both cases. This affected the management of the intrapartum period whether it was within the MOU or during the consultation and referral processes. The undesired outcome of labour in most cases could have been avoided by effective ICP.

These challenges identified were seen as development points for the effective management of the intrapartum period.

8 CHAPTER EIGHT: DEVELOPMENT OF THE FRAMEWORK

8.1 Introduction

This chapter discusses the development of the framework based on the empirical data and concepts that emerged from the themes. The statements that emerged from the findings (Chapter six) were analysed as the important aspects to the information communication process as illuminated by the SBA. Firstly, the analysis in chapter seven above allowed for the identification of development points by highlighting constrictions using the Act AD framework as a lens for analysis. These development points were highlighted from both the challenges expressed in chapter six and seven and the desired ICP as highlighted in the two chapters. As described earlier in chapter six the following statements were derived from the empirical data as influencing the information communication processes:

- *That effective data collection influences effective documentation, which affects effective information retrieval and communication.*
 - *Data collection process which is either primary or secondary sources of data*
 - *Information included sources of data, timing and organization*
- *The state of mind of the actors (sender and the receiver) also influences the ICP as the internalization of the situation impacts on the action taken.*
- *Further the tools used for data collection influence the effectiveness of the information communicated (tools used whether paper or electronic).*
- *The mode of communication also influences the delivery of the message communicated (written or verbal).*
- *The language used during communication also influenced the reception of the message and the information communicated.*
- *The information entities and format of vital information communication*
- *Time factor was viewed as important during communication of messages (urgent or not urgent).*
- *Feedback was important to the skilled birth attendants too. The reception of feedback communicated from the RH and the action taken by the midwives in the MOU was important for both parties.*

Using the Act AD framework the researcher highlighted suggested developments in the ICP.

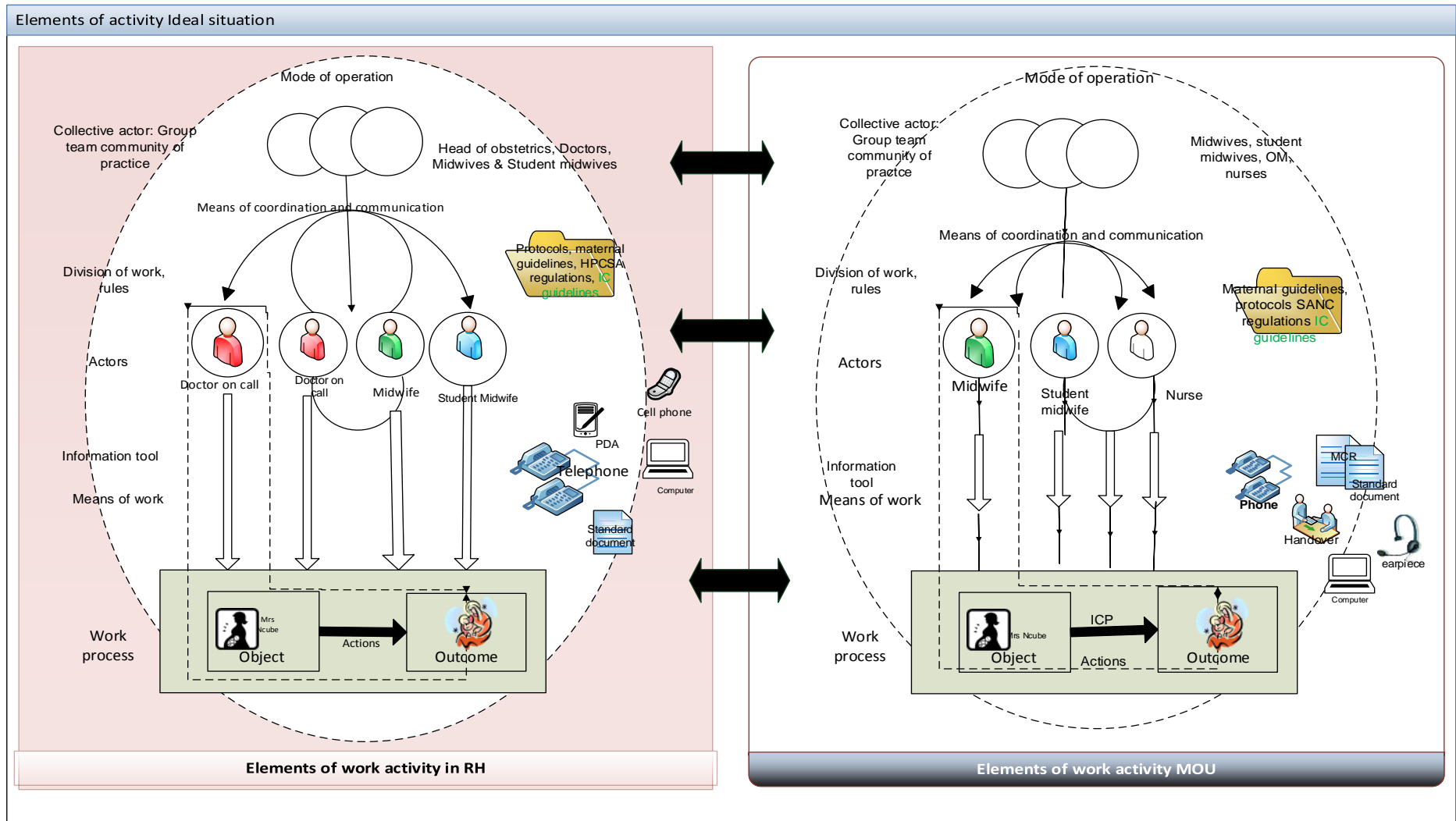


FIGURE: 8.1: SUGGESTED DEVELOPMENTS

8.2 Suggested developments

Figure: 8.1 illustrates my perception of developments that could be implemented using the Act AD framework as the lens for activity analysis. The suggestions emerged from the development spots as illustrated by Figure: 7.32 and 7.33. Although due to the different contexts and the flow of information in each of the cases these suggestions would be implemented according to the flow of information being revised to streamline communication. The suggestions include a combination of strengths identified from one case, which could be implemented in another, or a fresh look at different ways of managing the activities.

Collective actors: Improving and coordinating the group activities within the MOUs to improve the team work will influence the communication between the teams during the management of the women in labour. This coordination could be done by reviewing or streamlining the flow of information through specific information management guidelines. Streamlining the flow of information will improve communication between the teams in the referral hospitals; between doctors, between midwives and the doctors having specific information management processes and developing a neo-culture through in-service training of effective ICP, adapting structured communication process of knowing what is expected by each of the actors and ensuring that they are all training in the structure.

Means of coordination and communication: drawing up information communication guidelines on the suggested communication tools and training would ensure effective implementation and utilization of the tools during data collection and communication. The guidelines should include information management at the point of care to ensure accuracy. Although there is auditing in one of the cases, consistency and ownership of the documentation processes should be emphasised. The suggested communication tools should be evaluated for effectiveness in the context while drawing up usable tools. All skilled birth attendants require training and familiarization of the protocols and guidelines being used for management of the intrapartum client or referral processes.

Division of work and rules: Simple process guidelines on the consultation process for the midwives need to be structured for easy access. Division of work with

specific doctors dealing with only referrals and not being anywhere else in the hospital will improve accessibility. Possibly the doctor on call could have a specific mobile phone for use when receiving calls from MOUs and giving feedback.

Actors: Only the skilled birth attendants involved in the management of the intrapartum period should be allowed to communicate between the MOU and the RH. Third party communications should be avoided such as telephone operators and the anaesthetists involved in the communication process. The communication should be directly involving the actors managing the client.

Information tools: Introduction of a standard tool for communication which is familiar to both the MOU and the referral hospital where all the skilled birth attendants are trained and familiarized with the tool. The tool could be part of the maternal case record, which the woman takes along on transfer to the referral hospital. As suggested in the policies ISBAR should be re-evaluated and retraining done if it's used for ICP. Further introduction of computers for entering data should be embarked upon with intensive on-site training.

This data, which is entered at the point of care, should be retrievable in the referral hospital using a computer or personal digital assistant (PDA) or the computer by the doctor on call. This would allow the doctors in the referral hospital to make decisions based on data in front of them. Further, using wireless data collection tools allows for instant data collection. This can be done consecutively while examining a woman in labour preventing retrospective writing thus improving the accuracy of data collected. The effectiveness of handovers could be improved with the use of digital recorders in case the skilled birth attendant forgets the information given.

The effectiveness of the actions taken during the management of the intrapartum period is dependent on the decisions made by the skilled birth attendant whether at the MOU or the referral hospital. The data collected forms the basis for the information that is used for these decisions and therefore the need for appropriate ICP.

As indicated in Figure: 6.2 (chapter 6) the cycle of frustration begins with a culture of inadequate data collection ending with mistrust among skilled birth attendants. A suggested reverse of the situation for improving ICP is the cycle of satisfaction (Figure: 8.2) emerging from appropriate data collection processes.

8.2.1 Improving ICP

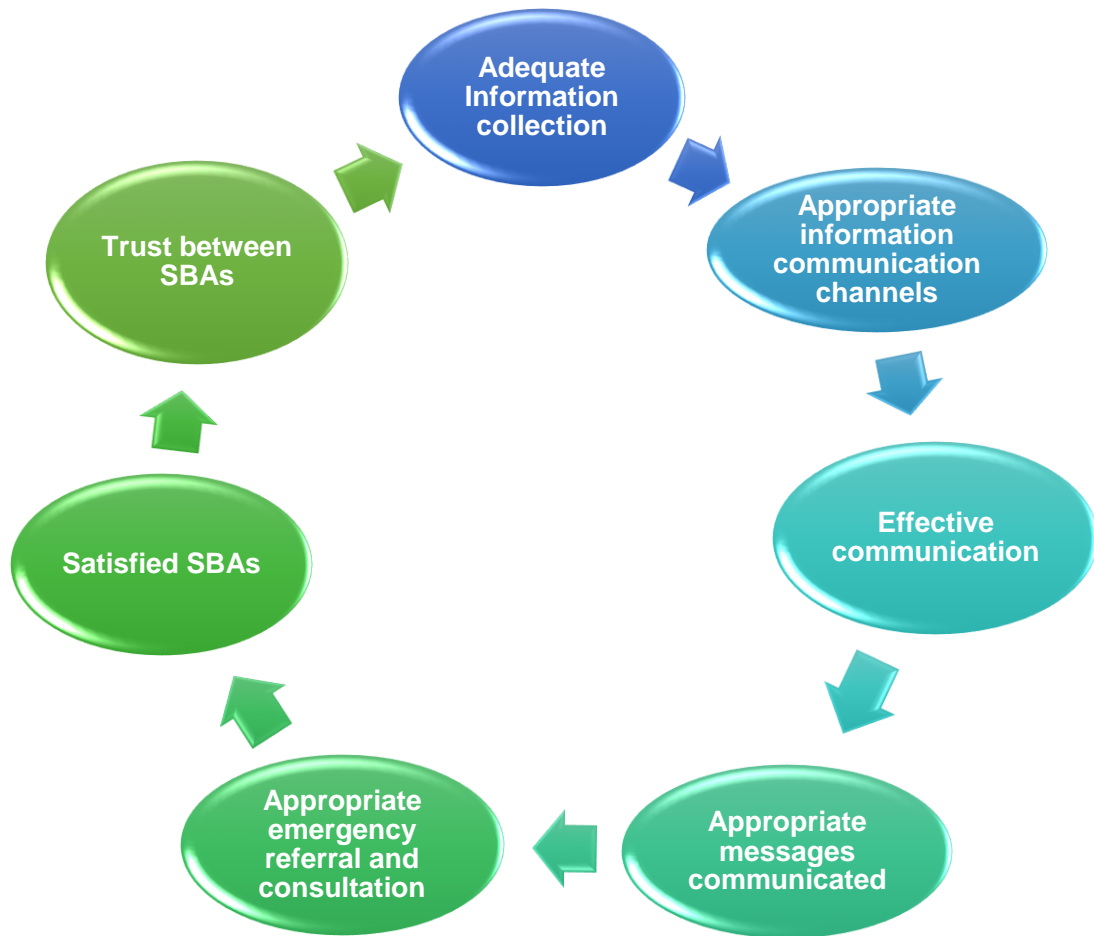


FIGURE: 8.2 CYCLE OF SATISFACTION.

As indicated by the cycle of frustration (Figure: 6.2) in chapter 6, mistrust of the skilled birth attendants was seen to emerge as a result of inadequate information and inappropriate communication processes. This continues the cycle of frustration leading to culture of accepting ineffective information communication processes. This leads to the ineffective management of the intrapartum period.

As indicated in Figure: 8.2 proposing a future state would require evaluation of the specifics of the cycle of frustration (Figure: 6.2). This is achievable by encouraging adequate information collection with the use of appropriate channels. Emphasizing on effective communication will require messages that are appropriate for the conversation, which would lead to appropriate referrals and consultation. This contributes to the satisfaction of the skilled birth attendants and trust between the skilled birth attendants, which is currently lacking. In order

to achieve this satisfaction, there is need to evaluate the concepts within the context. The FAAS framework (Figure: 8.3) was developed to evaluate the ICP for feasibility, availability, acceptability and safety of any communication aspect. The acronyms used were inspired by the infant feeding criteria as described in Chapter 2 section 2.2.8.2 although it does not directly relate to the use in infant feeding as discussed below:

8.3 The FAAS Framework

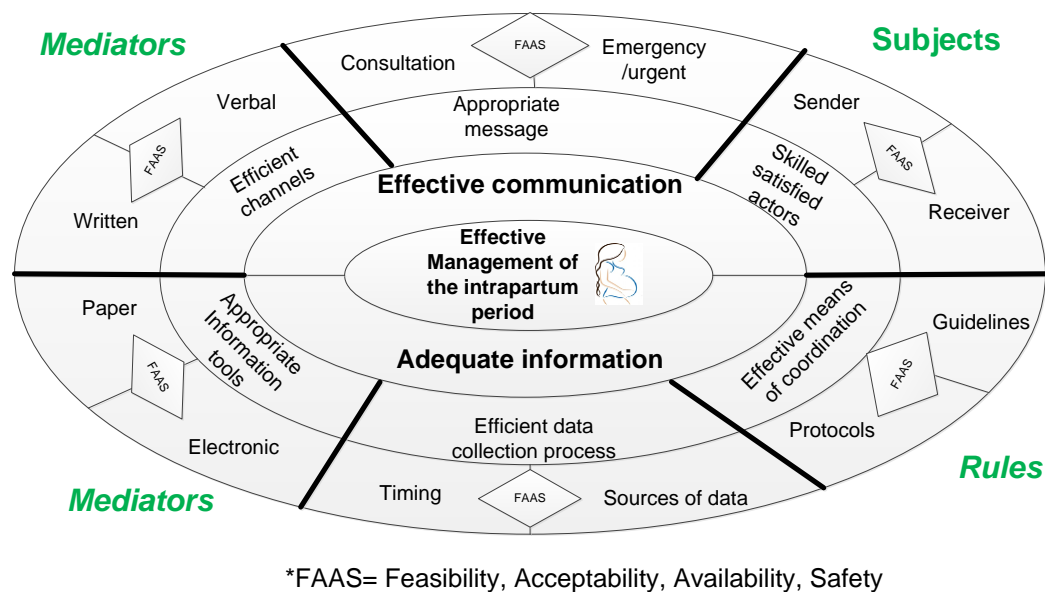


FIGURE: 8.3: THE FAAS FRAMEWORK

The framework is described from the core or the inner to the outer circle. The inner circle of the FAAS framework (Figure: 8.3) represents the expected action for an outcome of a healthy mother and healthy baby. Among other actions involved for the effective management of the intrapartum period for example observations, examination of the woman in labour etc. is the requirement of the effective information communication during the intrapartum period. Effective ICP as highlighted in chapter 6 & 7 requires adequate information and effective communication processes as shown in the inner circle Figure: (8.3).

Adequate information requires appropriate information tools (paper or electronic), efficient data collection process (timing and organization) and effective means of coordination (policies or guidelines).

Effective communication requires skilled satisfied actors (sender or receiver), appropriate messages (urgent or consultation) and efficient channels of communication (written or verbal) as indicated.

For effective information communication each of these aspects discussed above require appropriate evaluation of their feasibility (the state or degree of being effortlessly or suitably done); acceptability (adequate to gratify a need); availability (easy to get or to access); and safety (state of being protected against harm). These terms have been used in the development of the framework to indicate the factors that need to be evaluated in order to ensure effective ICP.

8.4 Explanation of the framework

The framework should be seen in part and as a whole with each aspect influencing the ICP. Although the effective management of the intrapartum period was the desirable outcome, it requires more actions than just the communication processes. The skilled birth attendant's decision making is not just based on the information at hand but more importantly as indicated in chapter 3, on the application of knowledge to data to create information (Coiera 2003). This therefore means that all decisions are based on information processing and therefore the importance of evaluating the effectiveness of the information communication.

The criteria being used in the FAAS framework would assist in the evaluation of an effective information communication process when the concepts are applied to aspects of communication and information as discussed below and illustrated by (Figure: 8.3).

8.4.1 *Effective communication*

Effective communication is a desired trait that emerged as indicated in chapter 6 section 6.6.3.2 and requires the effectiveness of the channels (verbal or written), the appropriateness of the message whether during consultation or emergency situations and the required skill of the actors whether the sender or receiver to communicate the message. As illustrated in Figure: 8.3 the required elements

need to be evaluated. For example the skill of the actors needs to be evaluated in both the person sending the message and the one receiving the message. The channel of communication need to be evaluated whether it's the verbal or written communication being used it is required to meet the FAAS criteria.

In applying the FAAS criteria, *feasibility* refers to the fact that the most appropriate channel; message or experienced actor is capable of being used to communicate effectively. The possibility of the channel being used to communicate a message, which could be urgent, or consultation is evaluated (Chapter six section 6.6.2.1). The feasibility of the actors (sender or receiver) deals with the capability of the subject to use her knowledge to conceptualize data into information that can allow a decision making process which requires training (Sox, Higgins and Owens 2013; Coiera 2003)

The *acceptability* of the channels, message or the actors presenting the message needs to be evaluated. The acceptability of the channels requires an evaluation of whether the actors prefer the written or verbal channels to communicate the message, which could be urgent, or consultation (Chapter six section 6.6.2.1). The acceptability of the sender or the receiver deals with the experience of the sender or receiver to be trusted with the message. As discussed in the findings the experience of the sender or receiver is trusted to be acceptable as accurate (Chapter six section 6.5.1.1). The credibility of the message, which includes trustworthiness, is interlinked with the perspective of the sender or receiver in being able to appreciate the message as “true”.

The *availability* of the channel, precise message or enough actors to communicate needs to be analysed. Being able to evaluate the availability of resources to effectively use written or verbal communication needs evaluation (Chapter six section 6.6.2.1; Robson & Robinson 2013). The availability of the message requires available complete messages that are useful and timely. The availability of actors requires available human resources to receive and send messages when required. The shortage of skilled birth attendant was a major challenge to effective communication (Chapter six section 6.5.8.2).

The *safety* of the channels depends on whether they are distorting the message being communicated and if the message is accurately sent and received without distortion by the channels. The safety of the message to be communicated is influenced by both the experience of the sender and the receiver's experience including the message itself if it was accurately interpreted by both the sender and the receiver (Chapter six section 6.5.4.2: Chapter seven). The safety of the message depends with the amount of noise interfering with the message including the interpretation of the message by the sender and receiver (Figure: 6.3; Coiera 2003). Coiera (2003) indicates that message that is sent may not be the message received and thus the need to prevent distortion of messages by the channels. The safety of the actors being able to communicate effectively all the time could be influenced by their state of mind or even the experience with the particular issue at hand. Having a structured communication process prevents distortion of messages.

8.4.2 Adequate information

The requirements for adequate information emerged as a desire for ICP and due to the challenges that emerged in (Chapter six section 6.5.11.2) for inadequate information. The *feasibility* of the information tools used requires an understanding of the context in order to develop tools that are user friendly. The feasibility of the means of coordination requires protocols and guidelines that have been developed using the principles of protocol development which includes explicit context assumptions, abstract rather than concrete protocols, understanding the skill of the user and constantly reviewing protocols (Coiera 2003).

The desire for adequate information was illuminated as the need to have acceptable information tools (manual or computer based), which are user friendly. An *acceptable* data collection process with appropriate timing and reliable sources of data requires implementation of processes that collect data immediately and transfer it for use in a timely manner. Acceptable means of coordination (guidelines and policies), which are easy to accept and implement involving the actors in the development of guidelines, ensures acceptability of the means of coordination.

The *availability* of the information tools includes the local resources that are available to provide and support manual or computer based tools (Coiera 2003). The availability of the data collection process has to do with being able to enter data in a timely manner and maintaining the quality. Availability of the sources of data involves having data from primary sources, which is accurate and reliable. The *safety* of information tools needs to be evaluated on how the stored information can be retrieved without being distorted. Further the safety of the information tools deals with the choice of information tools, which can outlast the data entered into the manual, or computer based tools. The safety of the data collection process includes the fact that one can reliably enter data accurately and timeously from reliable sources all the time. Entering the data accurately maintains the quality of data and safety of the use of the data. Evaluating the safety of the data collection process requires understanding if the data was entered promptly or retrospectively which would influence the accuracy of the data entered. The safety of the sources of data includes the trustworthiness of the source of the data, which could influence the outcome. The safety of the means of coordination requires protocols and guidelines that have been designed according to the best evidence to improve the quality of decisions according to (Coiera 2003). Further, understanding the contextual factors when developing and disseminating protocols and guidelines in order for the users to effectively use the guidelines.

8.5 Evaluation USING FAAS framework

Using the framework to evaluate the ICP requires determination of the specific development points whether it's the channels of communication, the message, the actors, information tools, data collection process or the means of coordination (Figure: 8.3). Once the specific elements are identified the specific attributes to the elements need to be evaluated. For example Figure: 8.4 cycle of frustration on the right side of the diagram, indicates inadequate data collection challenges. In using the FAAS framework (Figure: 8.4 middle bottom) one would require the evaluation of the information tools (whether paper or electronic), data collection process (timing and sources) and the means of coordination (policies and guidelines). The evaluation of these elements and their attributes would illuminate

and enable modelling of a desired state in order to produce adequate information collection (Figure: 8.4) ending in a cycle of satisfaction.

Further identification of challenges in any of the elements especially within the cycle of frustration requires the elements for example sender or receiver can be evaluated by looking at the attributes, which include feasibility, acceptability, availability and safety included in the FAAS framework. The Figure: 8.4 below depicts that evaluating the elements of the cycle of frustration in the present situation using the FAAS framework will enable the transition to a more desirable state the cycle of satisfaction. The framework can be used as a whole with all the elements that are highlighted and their attributes (FAAS) or in parts depending on the areas of development that have been identified.

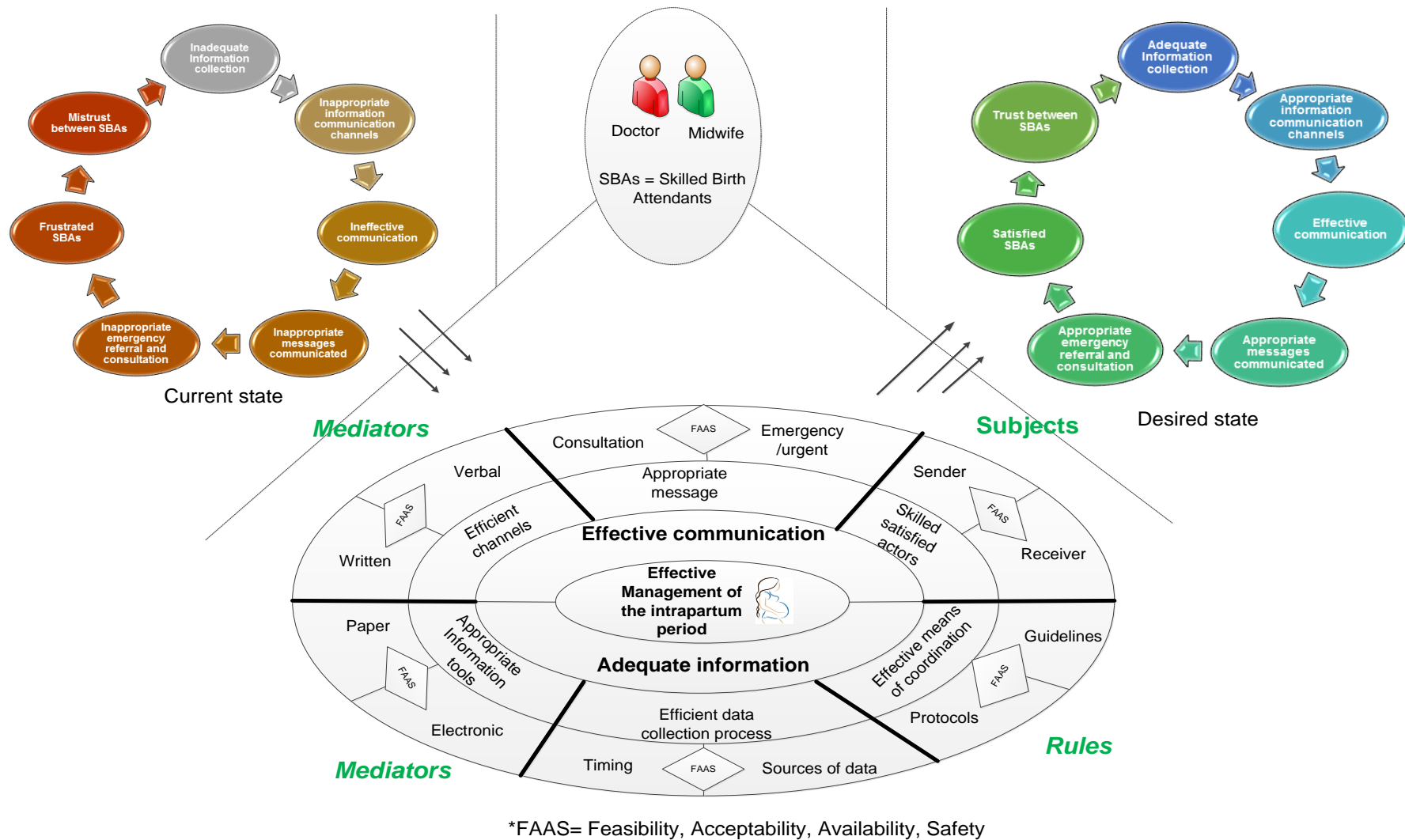


FIGURE: 8.4 SUGGESTED ICP EVALUATION

8.6 Summary

The chapter has focussed on the main suggestions for improvement of ICP including the development of a framework for evaluation. The FAAS framework shows 'fit' with the Act AD framework (Figure: 8.5) and is used to bridge the current and the desired state through evaluation in (Figure: 8.4). Figure: 8.5 below illustrates the fit with the FAAS framework. The actors and the message communicated by the actors represents the subjects; the means of coordination and the data collection process represents the rules; the information tools and channels represent the mediators or the means of work.

These factors are seen as important in both the FAAS framework and the Act AD framework which influence the actions affecting the work process involving the woman in labour. Actions such as effective information communication processes affect the management of the intrapartum period producing a desired outcome of a healthy mother and baby. Further discussions, recommendations and conclusions will be discussed in the following chapter 9.

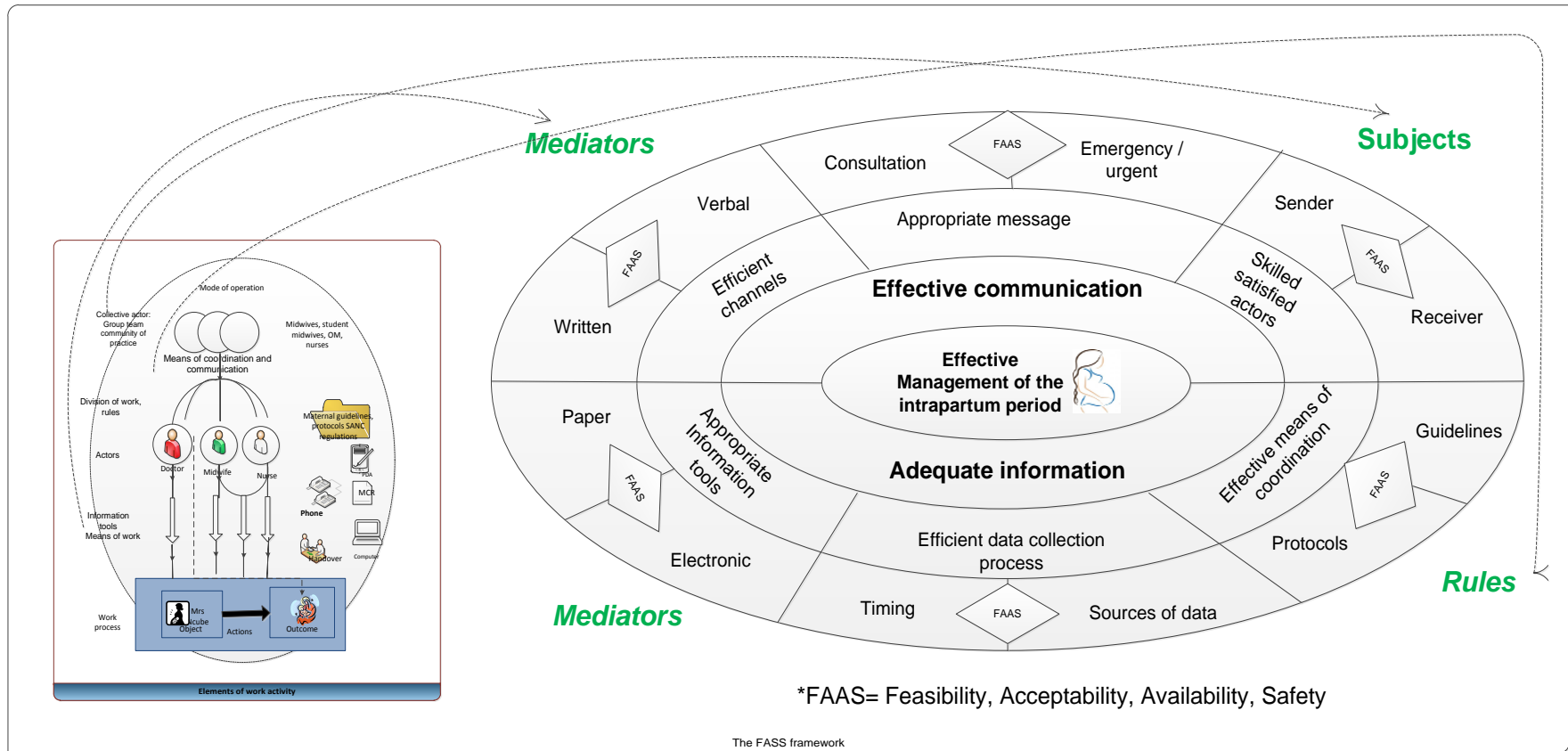


FIGURE: 8.5 THE ACT AD AND THE FAAS FRAMEWORK

9 CHAPTER NINE: DISCUSSION and CONCLUSION

9.1 Introduction

This last chapter revisits the research aims and objectives while highlighting the important conclusions from the case studies. The chapter further illuminates the contributions made by the study in terms of knowledge in the related fields. The study addresses the objectives of the study and although every effort is made to deal with the issues of information communication processes during the intrapartum period, the study cannot claim to address all the issues pertaining to ICP and the intrapartum arising from the research process. The study limitations and recommendations for further research are presented for further consideration.

The quality of the study is considered by including a genuine account of the study, limitations and expressing the challenges encountered with a practical evaluation to the authenticity of the research. In proposing the contributions that the study makes to the field I begin with the review of the research questions which allows the formulation of the assertions from the case study while concluding with the propositions from the assertions.

9.2 Revisiting research questions

The research questions are highlighted below in order to provide an overview of the structure from which the assertions of the case were developed while considering where the suggestions for the case were developed. The main research question to this study was; *“How can skilled birth attendants address the complexities of the information and communication processes to enhance the management of the intrapartum period?”*

The various research questions are repeated to highlight the required perspective of the study.

RQ1: What is the *expected information communication* process during the intrapartum period described in the policies and protocols in the Cape Town MDHS?

RQ2: How do skilled birth attendants *actually communicate information* within the MOU and between the MOU and referral hospital during the management of intrapartum period in the Cape Town MDHS?

RQ3: Why do skilled birth attendants find it difficult to communicate information during the management of the intrapartum period?

RQ4: How do the skilled birth attendants *desire to improve information communication* effectively during the management of the intrapartum?

RQ1: What is the *expected information communication* process during the intrapartum period described in the policies and protocols in the Cape Town MDHS?

In the analysis of trends and patterns of the *expected ICP* the cases illuminated a number of expectations by the skilled birth attendants during the management of the intrapartum period. Five main perspectives emerged from the expected ICP which include:

1. Perspectives that accessibility of obstetric services is a priority for effective management of the intrapartum period. The implications for this are that policies and protocols for management and referral to levels of care influence the access of care for women during the intrapartum period. Accessibility was not necessarily attributed to effective ICP.
2. The perspective that the recommended tools used for information communication would allow accurate data collection and communication of the information for the effective management of the intrapartum period. These tools included the ISBAR, early warning charts, telephones, radios and the partograms. The training for the use of the tools was attributed to effective use.
3. Perceptions that the expected communication would allow the skilled birth attendants to pass information regarding the management of women in an effective manner. The expected information requires understanding from both the sender and the receiver on the message to be communicated. There was no prescribed structure to communicate this message but a general assertion that it should be effective. No communication training was recommended but the assumption the skilled birth attendant knew how to communicate.

4. The knowledge of the expected documentation emerges from the fact that the necessary vital information needs to be captured. The outlined information needed during the intrapartum period is as specified in the partogram which is seen as the main tool used for documentation. However all prior information from the management of the antepartum period is required during the intrapartum period. No specific structure is emphasised on the specific entity to communicate but the ISBAR, early warning chart and the partogram are documents required to have the information.

5. The expected referral is outlined according to levels of care (low, intermediate and high-risk). These levels of care require that the low risk women are managed at level one, the intermediate at level two and high risk at level three. The women at each of these levels of care should have swift referrals to higher levels of care when needed. Although effective ICP is not attributed to effective referral systems, the expected ICP to the outcome of referrals is reflected in the actual ICP presented.

After a detailed consideration of these affirmations the connectedness of one expectation being influenced by the other arises from the information communication being a complex process. The recommended tools influence the expected documentation and therefore this influences the effectiveness of the expected communication. The communication further influences the expected referral which becomes a key factor in enabling the accessibility of women to care during the intrapartum care. The challenges and the actual ICP illuminate the extent of this assertion.

Therefore the proposition derived from this aspect is to ensure that structured, adequate documentation with appropriate dependable tools being used. Reducing the duplication of the documentation increases the accuracy and quality of the information. Recommending tools and means of communication including training requires regular monitoring and evaluation to ensure appropriate implementation while identifying the challenges. The need to have guidelines for effective communication, which are acceptable, ensures that the expected referral allows for proper access to care for the women during intrapartum

RQ2: How do skilled birth attendants *actually communicate information* within the MOU and between the MOU and referral hospital during the management of intrapartum period in the Cape Town MDHS?

Four main assertions emerged from the actual information communication from evaluating how the communication processes happen within the MOUs and between the MOUs and the RH.

1. One of the most important features that emerged regarding the actual ICP was the handover process in both MOU A and MOU B. The need to communicate information regarding the care of women in labour during the shifts and between shifts was seen as the most valuable aspect in the continuity of care. The handover was standard within the MOUs although the structure differed and the content depending on who was handing over and when the handover was taking place. The communication processes during the handover influenced the management of women in the intrapartum as it was a continuous process. The handover, which occurred between shifts, required attention to detail, as the individual practitioner handing over the information would leave the unit. However, the handing over within shifts was brief to inform the other practitioners of what was going on in the unit. I assert that the lack of structure to the handing over processes allowed for gaps within information being delivered
2. Collaborative information seeking that was experienced within the MOUs was a response to team management and seeking for evidence-based care. Collaborative information seeking involved the need to confirm information regarding a woman in labour. The need for accurate information required the skilled birth attendants to refer to guidelines and evidence for the care of the particular client. Further, teamwork allowed the experienced skilled birth attendants to attend to queries regarding the management of the women during the Intrapartum period. Although collaborative information seeking was seen as vital, it required internal motivation by the skilled birth attendants to seek the best evidence. I assert that emphasising on best care requires evidence-based approach, which every practitioner does not necessarily seek from reliable sources.
3. The Information communicated to the referral hospitals either during consultation

by the MOUs or in case of an emergency was deemed important for the decision making process. Notwithstanding the flow of information within the referral hospital regarding the care of the women in the MOUs was required to be adequate, accurate and efficiently communicated to enable the practitioner to make informed decisions. This information communicated was influenced by the collection of information at the MOU, and the collection and communication of this information at the referral hospital. Multiple perspectives on what was important for communication and what was being communicated segregated this information.

4. Referral processes were deemed as an important aspect for both the flow of referral and the flow of information during consultation and/or emergency. This was mostly influenced by the systems put in place for referral such as telephonic communication, which were complicated by the unreliability of the phones, shortages of skilled birth attendants both in the MOU and RH. For effective management of women during the intrapartum period effective referral processes also require appropriate protocols and communication guidelines. The use of maternal case record during the referral process allowed the women to have continued care based on documented information. This was a practice worth keeping.

In developing propositions based on this sub question it can be concluded that appropriate handover of information within the MOU affects the management of the intrapartum period and the outcome of women. The information used for decision making is also influenced by the evidence based on the information, which is subjective to collaborative information seeking from experienced practitioners. Adequate information communicated and appropriate referral processes require the streamlining of communication systems and referral channels with accurate, structured ICP.

RQ3: Why do skilled birth attendants find it difficult to communicate information during the management of the intrapartum Period?

In gaining insight into the complexities associated with the communication of information during the intrapartum stage, a myriad of challenges were identified within two realms as identified below:

1. The challenges with information emerged from the fact that inadequate information had a negative impact on the care of women during the management of labour. These challenges were due to inappropriate tools for data collection, which lead to data loss, the data processes that were untimely or with unreliable sources of information. Further the means of coordination of this information either the guidelines or the protocols used for the care of the women was not context appropriate or not well understood. The acceptability of information used for decision making whether it was by the skilled birth attendant in the MOU or the doctor at the referral hospital, was based on the need to make accurate decisions according to the information presented. My assertion is that the challenges with data collection at the point of care had a roller coaster effect to the outcome of the intrapartum period.
2. The evidence from the data regarding communication challenges raised my awareness of the impact of care influenced by the communication. The actors in the communication were mostly frustrated by the processes and lost sight of the need to effectively communicate without personal influences. The lack of trust between the senders and the receivers of the messages was a main barrier to the communication. The midwives in the MOU felt mistrusted while the referral hospital doctors thought the midwives communication depended on their levels of experience. This influenced the acceptability of the message communicated whether it was during an emergency or during consultation. Notwithstanding the challenges faced with the channels of communication, whether written or verbal such as telephone communications were influenced by language.

The proposition that arises here is that identification of the challenges, such as inadequate information and communication challenges needs to be elevated to development points within the activities. Realigning the processes for information collection at the point of care and throughout the various activities requires considering the information tools, the data sources and the means of communication to be identified at the point of care. These can be structured and protocols developed to

bridge this gap in care.

RQ4: How do the skilled birth attendants *desire to improve information communication* effectively during the management of the intrapartum?

The desire to improve information communication by the skilled birth attendants emerged either as a challenge to communication or the need for better information communication processes. Two main discourses are subsequent to the expression of a need for change in order to improve the current situation.

1. The assertion that effective documentation would improve the collection of required data for informed decision-making was due to the inaccuracy of the data collected influencing the management of the women in labour. Inaccurate data was collected either due to use of inappropriate tools which required realignment of the data collection processes. Further inaccurate data collection was as a result of retrospective recording due to the prolonged interval between observation perception and documentation. The experience of the skilled birth attendant to collect the required information and the knowledge to realize the adequacy of data was a trait that could improve the data collected before and during the intrapartum period.
2. Desired communication process was asserted to streamline information communication from the point of care to communication during handovers, referrals and consultations. Being able to structure the required information especially in an emergency will ensure that effective messages are communicated whether verbally or written in a timely manner without causing frustration to either the sender or receiver. The communication tools such as telephones, computers and paper need to be reliable and usable in the particular context.

In developing this proposition I concluded that, ICP needs to be context specific to allow for effective information communication processes. I propose that developing effective communication and adequate information become the main focus. Notwithstanding although the skilled birth attendant indicated the desires for information communication the challenges faced in communication require to be addressed as development spots for better communication processes. The ownership

to change the current situation was not owned by the practitioners but rather saw that as an outside opportunity.

9.3 Conclusions and recommendations

Although a lot of the conclusions were elaborated in the review of the research questions brief expressions of the researcher's conclusions and recommendations are described below.

9.3.1 Conclusions

In conclusion, I found out that while conducting this study, what is expected by the policy makers (DOH, SANC, HPCSA etc.) is not necessarily what actually happens at the point of care. The assimilation of policies and the interpretation of expectations require context specific policies developed with the practitioners at the point of care. This allows acceptability and ownership of the information during implementation. The evaluation of the expected ICP revealed consistencies and inconsistencies in what is required of the skilled birth attendants especially on tools for documentation. The consistencies were mainly on specific steps of management of the different conditions in pregnancy whereas the inconsistencies were focused on the ICP. The tools seemed to have a lot of duplication of the required information.

The actual ICP was mainly attributed to the collection of data or the communication of information. The information needed by the skilled birth attendants was mainly for decision-making regarding the management of the women during the intrapartum period. The information tools, the data collection process, and the means of coordination influenced the data collection processes. Communication processes were influenced by the actor, the message, the recipient and by the channels of communication. The need to streamline the ICP was illuminated as requiring adequate structured processes while reducing the number of people involved in this communication.

The challenges faced with the ICP were illuminated as desires for change. These challenges were related to either collection of information, documentation of the information, retrieval of the information and communication of the information. This resulted in a chain of frustration (Figure: 6.2) among the skilled birth attendants and a sense of mistrust among them. The expression of challenges was reflected from either an optimists or pessimistic view of reality (the half empty or half full position). Most of

these challenges were thus illuminated as development points as asserted in Chapter 7.

The skilled birth attendants knew that they had challenges but they did not necessarily envision a desired goal state related to all the challenges. The desires that were expressed included improved phone call processes, adequate information collection and adequate communication. With this in mind I make a few recommendations.

9.3.2 Recommendations

I propose that improvement of the ICP during the intrapartum period would require the following considerations:

1. Accurate, complete and adequate documentation of procedures and processes from the point of care within the MOU and throughout the referral process. The responsibility lies with every skilled birth attendant for adequate monitoring and evaluation of not only the completeness but the accuracy of the information documented. Use of ICT in data collection at the point of care may help improve accuracy of the documentation such as these discussed below:
 - A hands free wireless device to collect information as the midwife continues with her daily activities. This would reduce the pieces of papers used for documentation
 - A partopen would be useful to collect information that is directly transmitted to a computer, which transfers the data to a central point for retrieval when necessary.
 - Having a doctor at the referral hospital with a mobile device or tablet to receive electronic information as completed in the MOU would enable data transmission and information which is not fragmented or via a third party.

2. During the handover of information there is need for an evidence based handover communication framework that highlights vital information to be communicated. This would reduce the errors in communication which cause information breakdowns, have significant implications for patient safety and the quality of care. Further, audio-recorded handover processes allow the skilled birth attendant to refer to information when in doubt. Use of audio tape recorders by outgoing skilled birth attendants in addition to structured face-to-face handovers at the point of care or in the referral hospitals reduces breakdown in the communication.

3. Collaborative information seeking requires evidence-based approach to searching and retrieving the required information. Whether the information is from experience or protocols and policies provided, the information should be acceptable, feasible, available and safe. The responsibility lies with the skilled birth attendant to be assertive enough to ensure the intended information is communicated.

4. The information tools used require synchronization and avoiding duplication of work:
 - The information required on the partogram, skilled birth attendant and the early warning charts should be collated in one cohesive document, which is used during the management of the intrapartum period and the referral processes.
 - Structured brief and accurate information should be used during referrals. Use of ICT to collate the information between the three documents (partogram, SBAR and the early warning chart) would allow retrieval of required information swiftly.
 - Reducing the number of people involved in the communication during telephonic conversations is suggested. Phone calls from the MOUs should go to a central receiver (not person) at the referral hospital directly, which directs the calls to a cellphone of a doctor on call. The doctor on call should have Personal Digital assistants (PDAs) that they can carry when they are anywhere in the hospital where they can retrieve the information of the client in question. If the doctor on call is in theatre the calls are forwarded to another doctor who is available.
 - Feedback of progress of the woman after consultation should be followed up immediately by the decision maker and the decision should be reflected in a central computer which can be accessed by all decision makers.
 - A structured tool for documentation on decisions made and information communicated prevents information losses at the referral hospital. Using MCR electronically or the integration of the documents within the MCR allows for access of the information within the MOU and between the MOU and referral hospital. Integrating the MCR and the paper record for the woman to keep will meet both the health care system needs and the need for the woman to keep her records.

- Relooking at the duplication of the data within the MCR to prevent duplication of the information while co-designing for electronic records will allow reduction of the information needed.
5. Further using co-designing approaches to develop ICT that is suitable for the management of the intrapartum period ensures participation of end users making it more acceptable whether it is the means of communication or implementation of all information systems.

In summary, information communication is a process, which is influenced not by an individual actor or individual action but rather by the team activities. This therefore demands appropriate, acceptable means of communication and coordination from the primary sources of data throughout the flow of information.

9.4 Quality of the research

The discussion on the quality of the case study was examined in reference to credibility, reflexivity, rigour or trustworthiness and generalizability according to Lincoln and Guba (1985), Koch and Harrington (1998). The quality issues addressed by Stake (1995) and Yin (2003) will be considered in the discussion.

Trustworthiness as identified by Lincoln and Guba (1985) in their work on naturalistic inquiry clarify how a qualitative researcher can convince the audiences that the work of his/her research is worth being considered. While acknowledging the influence of cultural experiential and contextual influences to one's interpretation of research, the need to build best research evidence requires trust and confidence in the findings presented. The model of trustworthiness developed by Lincoln and Guba presents four components, which include credibility, transferability, dependability and conformability. To urge for constructivist paradigm Lincoln and Guba (1985) require credibility, transferability and dependability to be addressed.

9.5 Credibility

Credibility is also referred to in literature as internal validity (Thomas and Magiviviy (2011); Holloway and Wheeler (2010:299). Both accurate description and interpretation by researchers and truth told by the participants are important in asserting credibility. In my attempt to assert that the study and my role as the researcher is credible I ensured the following:

- I recognised my affiliation with the field of study and the experiences thereof.
- I obtained consent from all participants that I confirm my interpretation of their accounts and verify their contributions.
- Prolonged engagement as referred to by Lincoln and Guba (1985) is important in trustworthiness and especially in case study research. This is to be able to work with people to build trust while gaining a credible account of a tight and holistic case. The time I spent in the MOUs and referral hospitals day and night times allowed me to build trust with the gate keepers to allow unrestricted access to the sites. It was also important to establish rapport with the participants who therefore became comfortable with disclosing the information.
- Doing observations and confirming the observations with the participants allowed me to view the phenomenon of interest from more than one perspective. The field notes made during these observations were confirmed with either the review of documents or short interviews with participants to confirm observations.
- The use of multiple data sources in the study allowed for analysis of various themes while the triangulation contributed to a search for convergence among multiple data sources.
- The use of analysis software allowed themes created to be visible while reducing human error in deduction of information. The findings reflected throughout the study are as evaluated from the data and therefore the suggestions deemed dependable.
- The development of research questions while using a theoretical lens to carry out the research allowed the research to be grounded in theory. The deduction of data allowed the research questions answered to be matched with the relevant data sources that were inductively analysed. Being able to draw study conclusions from the data presented, allowed the developed framework to be grounded in theory and empirical data.

- Debriefing sessions and peer review sessions with experts in the field including regular supervision sessions during the period of the study kept me accountable to the process.

9.6 Transferability

Two models of generalizability in qualitative research include the model of transferability or case to case translation and analytic generalization which allows the researcher to develop conceptualizations through in-depth scrutiny and higher order abstraction.

Transferability is discussed by Polit and Berk (2010) as a “collaborative enterprise that requires the researcher to provide a detailed description which will allow the readers to make inferences about inferring the findings to other settings which Donald Campbell refers to as proximal similarity”. This means that the similarity for time, people, settings and contexts need to be closely similar to allow fittingness.

The thick description of the research context, study participants, transactions and processes allows this study to be carried out in a similar context. The multiple case study approach also allowed similar findings from one setting of the case to be revealed in another similar setting with similar units of analysis. The study was carried out in more than one site with more than one unit of analysis which increased the possibility of describing the cases in a manner transferable to another similar setting.

Stake (1995) asserts that the naturalistic generalisations are made probable by the provision of a mediated experience with the case. In analytic generalizations the researcher distinguishes between information relevant to all and that which is particular to individuals. Being able to generalize to a theory or conceptualization I identified concepts in the data and supported that with theoretical concepts thus being able to develop concepts for the framework.

While evaluating my report I realized the influence of the methodology on the outcome and results presented and acknowledge that I was able to effectively use the theoretical lens and philosophical underpinnings to carry out the required research. On the other hand I identified with examples to problems in qualitative research as described by Thorne and Darbyshire (2005) where in instances I clung to the “aha moment” hoping to elicit the intended full closure. I however was conscious of not stopping until saturation of important themes and categories was perceived attained.

Further I have avoided overgeneralizations and striving for detailed conclusions based on the data rather than perceptions.

9.7 Reflexivity

Having worked in the maternal and neonatal units and not specifically the units of analysis provided me with previous experience of information communication processes that were not consistent with the literature, policies and protocols which influenced the management of the intrapartum period. Being able to study the phenomenon of interest in a context I have not worked before but familiar structures allowed me to remove from the cultural and social context yet understand the processes as being familiar. The magnitude to which the study may or may not be biased by my familiarity, and the influence of the same in compromising the study because of my biases, is seen as to be judged by others removed from the study itself. However in interpretivism one cannot totally remove themselves from being a co-constructer of meaning within the study.

(Lincoln and Guba 1985; Koch 1994) further assert it is essential for the researcher to interact with what is being researched and that our value positions are not obstacles but rather make research more meaningful. My experiences which could influence my encounter allowed me to interact and understand the ICP during the intrapartum management especially when making field notes and observation of the activities. Further being able to listen and understand the participant's words and terminologies during interviews while making conversation and reviewing data.

The experience I perceived allowed me to see the management of the intrapartum period within the context of study understanding the difference between what literature presents and what is in the field. Interacting with people who know I am in their profession enabled me easy access to the participants, their viewpoints, and entrusted me with the information as a "colleague". Gaining mutual trust and respect with my participants made them comfortable to go beyond the required and even provide me with informal interviews in case I had questions regarding transcripts or interviews and observations.

The choice of techniques or procedures underpinning this case study was informed by Stake (1995) and Yin (2014) who are leading theorists in case study research. Other leading authors include Merriam (1998) and Flyberg (2006). The choice as to whether to adopt the Stake or Yin, was informed by the fact that Stake has a more “realistic and practical approach” while Yin (2014) adopts a more “scientific” approach. I decided to use a pluralistic approach for best of both worlds. As the study is situated in a constructivist paradigm Stake’s (1995) set-up is accepted for the better part of the study but for the process of case study research adopts Yins approach which is more rigorous.

The aspect of the study which was a concern to the researcher was the use of the multiple case study approach which allowed for breadth and further transferability but produced concerns regarding the need for depth in each of these units of analysis. Although data saturation was sustained in each of the cases further research might elicit more information into the complexities of ICP. However the degree to which the issues have driven the development of the FAAS framework could not be underestimated.

Being able to have the case bounded prior to research according to Yin and Stake is an important aspect in case study research. I determined the boundaries of the case and rigorously referred to the research questions throughout the study in order to remain within the bounds of the case.

The context of the study during the data collection was a busy environment that required patience. The MOUs provided a challenge due to shortage of staff who would be busy with deliveries most of the times. It was difficult to make appointments but I would wait in the labour ward until a midwife was available for an interview. I had to be cautious that they were not tired or frustrated when conducting the interviews and preferred to do so only in the mornings for the day staff and early evening for the night staff when they were fresh from home. Further, the interviews could be interrupted due to emergencies so we would set aside a time when there is another midwife to relieve the participant during the interview. The interview room was within the premises so that the midwife could get back to work after the interview.

In the referral hospitals I made appointments with the doctors and midwives who made arrangements to be relieved for the period they were away during the interviews. Interview rooms were set in a quiet area where the participants were removed from their active environment with an “interview in progress” sign to avoid disruptions.

In conclusion, I adhered to the acceptable understandings of trustworthiness by providing a true reflection of the participant’s accounts without deception while showing the relevant evidence from the research.

9.8 Contributions

The contribution of this dissertation is multi focused: the knowledge contribution by analysing work activities in a low resourced area and studying it in depth; theoretical contribution by use of activity driven approach to develop a framework for evaluation of effective management of the intrapartum period; practical contributions of recommendations for improvement of ICP and a methodological contribution through use of case study while applying an in-depth use of activity analysis and thematic analysis.

9.8.1 *Contribution to knowledge*

In this study the work activities were analysed in a low resource setting within a developing country context. The analysis as described in chapter six and seven allowed for the visualization of activities that contribute to the management of the intrapartum period in an area with few resources and little or no use of ICT. The viewpoints of the participants’ observation of ICP and the other research methods utilized in the two cases gave insight to the understanding of the work activities in this low resourced setting and would allow visualization of the challenges. These challenges can be identified as development spots in order to improve the quality of care within the available resources.

9.8.2 *Theoretical contribution*

This research provided a real application of activity driven approach by showing the use of both Activity Driven Information Systems for development (ADISD) and the activity Driven framework in the analysis of ICP. The main theoretical contribution was the use of Activity Driven approach to understand the work activities. The evaluation

of findings was further utilized in developing the FAAS framework (Chapter 8). This framework can be utilized in the evaluation of effective ICP, which is required for the effective management of the intrapartum period.

The utilization of the cycle of frustration (Figure: 6.2) which is also a further contribution to develop a cycle of satisfaction (Figure: 8.2), allowed the visualization of the present state and a desired state. The framework as depicted by Figure: 8.4 would allow the evaluation of the present ICP in order to achieve a desired ICP.

The main contribution to the dissertation was using thematic analysis and the use of activity analysis to create a shared understanding of the present state, while making action plans for the desired future on different levels or ADISD methodology (section 4.3.1). This analytical transferability further allowed the development of the FAAS framework as described above.

9.8.3 *Practical contribution*

The findings of the case studies can be seen as the practical contributions of the dissertation. At the policy level evaluating the expected ICP, which included the policies and protocols, highlighted the means of coordination for the ICP during the management of the intrapartum period. Further understanding what is actually happening enabled me to make recommendations such as in section 9.3.

I learnt that during the study one couldn't cover everything but rather draw boundaries. Understanding the actual ICP allowed me to see the challenges as described by the participants or through other research methods. The study further contributed an understanding of the cycle of frustration within and between skilled birth attendants as illustrated in section 6.5.3.5.

Analysing the study gave me the insight of the need for the skilled birth attendant to take ownership providing accurate, complete and adequate information for effective information communication processes. This would be one of the ways to improve management for the intrapartum period while improving the outcomes in maternal and child health.

Further, allowing optimum utilization of ICT in low resource areas requires understanding of the context. This study provided understanding of work activities, which can be utilized in the implementation of any ICT. This contribution to health informatics would provide insight into sociotechnical issues while designing ICT for the context.

9.8.4 *Methodological contribution*

The use of a multi-method multiple case study with multiple units of analysis for understanding the ICP during the management of an intrapartum period was a major contribution. This methodology allowed for both an in-depth analysis of ICP and provided breadth of the research to understand the phenomenon of interest in a better light.

Having the features of different disciplines (HI and maternal health) enabled an in-depth application of activity analysis and the thematic analysis in the description and analysis of findings. Both of these fields would utilize the study findings while co-designing for change in both application of ICT in the improvement of maternal care or the practical applications emerging from the findings.

The utilization of the research methods' strengths and challenges faced in an unpredictable environment such as the labour ward (Chapter five), allowed me to illuminate the need to choose appropriate research methods in addition to ethical considerations.

9.9 Limitations and implications for further research

The identification of limitations of the research will allow for identification of directions for future research. Although the information collected during the antepartum period influences the communication during the intrapartum period, the study was limited in the evaluation of the impact of data collection during the antepartum. Further research evaluating the work activities from the antepartum period, which influence the ICP during the intrapartum, need to be evaluated.

During the analysis of data the large amounts of data collected from the various sources and methods ensured representation of the phenomenon within the context. Further research on a bigger scale could confirm or refute the findings of this research.

While analysing the expected ICP, conclusion was drawn based on the few documents available to the researcher for management of the intrapartum period. Although efforts were made to find other documents within Cape Town Metropole, related to policies, guidelines and protocols none could be found either from the DOH or other institutions.

The document review done in the analysis of the ICP involved the partogram in the MCR on whether it was complete or not. Further analysis focused on the completeness of information in the MCR that requires to be done to establish links between information documented and the outcome of the management of the intrapartum period.

Most of the study required attention to data collection, analysis and producing the study report. This took away the time spent on academic publications as output for the research. Future work will require producing academic publications based on the practical, methodological and theoretical contribution of the research.

The developed framework (FAAS framework) needs to be validated in future research for effectiveness and applicability ensuring the effective management of the intrapartum period. A practical applicability of the framework needs to be evaluated with adequate teaching of the application.

Further intervention research is required to improve the ICP integrating didactic approaches to expected ICP. Continuous monitoring and evaluation of the effectiveness of ICP requires analysing the processes and not just auditing the outcomes.

9.10 Conclusion

This dissertation provided the analysis of complexities of the ICP while discussing ways to improve these challenges in order to enhance the management of the intrapartum period. The analysis of what was expected allowed the visualization of what is actually happening, while identifying the challenges of ICP. The desires of the skilled birth attendants to improve were highlighted as the need for envisioned future. The challenges were identified as development points for either future intervention research or pedagogical opportunities.

The important contribution of the FAAS framework was developed using the concepts emerging from the expected, actual and desired ICP activities. I anticipate that the framework will ensure evaluation of ICP ensuring the effectiveness of the intrapartum period.

The findings of the research showed that the accuracy, completeness and adequacy of the data collection influenced the ICP from the point of care during handover and consultation including referrals. Further adequate information required appropriate information tools, appropriate data collection processes and means of coordination. Effective communication, which included the channels of communication, the actors involved and the message, had an impact on the effective management of the intrapartum period.

The use of Activity Driven Approach highlighted the visualization of activities within the MOU and between the MOU and the referral hospitals. This further showed potential development spots within the elements of work activity.

In conclusion, what is expected is not actually what happens nor is it what is desired. The skilled birth attendant may have challenges and want change but do not necessarily have all the solutions to their challenges. Further, desires for change are illuminated as challenges and not necessarily as a desire for change depending of the 'glass half full or half empty' approach.

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11 APPENDICES

APPENDIX 11-A INSTITUTIONAL ETHICS COMMITTEE



P.O. Box 652 • Cape Town 8000 South Africa • Tel: +27 21 469 1012 • Fax +27 21 469 1002
80 Roeland Street, Vredehoek, Cape Town 8001


Office of the Research Ethics Committee	Faculty of Informatics and Design
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At a meeting of the Faculty Research Ethics Committee on 20 March 2013, ethics approval was granted to Mrs Doreen KM M'Rithaa, student number 212271318 for research activities related to the DTech: Information Technology at the Faculty of Informatics and Design, Cape Peninsula University of Technology.

Title of dissertation/thesis:	Development of a sustainable information communication framework that contributes to effective management of the Intrapartum period
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Comments

Permission to conduct the research is to be obtained from PGWC:
Research activities are restricted to those detailed in the research proposal.

 Signed: Faculty Research Ethics Committee	15 April 2013. Date
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 Signed: Chairperson: Faculty Research Committee	15 April 2013 Date
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APPENDIX 11-B: DEPARTMENT OF HEALTH APPROVAL



STRATEGY & HEALTH SUPPORT

Health Services Department
Private Bag 11579, Rondebosch, Cape Town 7700
Tel: 021 460 8000 Fax: 021 460 8001
www.cape.gov.za

REFERENCE: RP 052/2013
ENQUIRIES: Ms Charlene Roderick

Cape Peninsula University of Technology
P.O. Box 652
Cape Town
8000

For attention: **Mrs. Doreen KM M'Riithaa, Prof Mikko Korpela and Prof Retha De la Harpe**

Re: DEVELOPMENT OF A SUSTAINABLE INFORMATION COMMUNICATION FRAMEWORK THAT CONTRIBUTES TO THE EFFECTIVE MANAGEMENT OF THE INTRAPARTUM PERIOD

Thank you for submitting your proposal to undertake the above-mentioned study. We are pleased to inform you that the department has granted you approval for your research.

Please contact the following people to assist you with any further enquiries in accessing the following sites:

Mowbray Maternity Hospital	S Fawcus	Contact No. 021 685 5578
Karl Bremmer Hospital	L Naude	Contact No. 021 918 1222
Elsies River CHC	R Kasker	Contact No. 021 931 0213
Gugulethu CHC	K Murie	Contact No. 021 633 0020

Kindly ensure that the following are adhered to:

1. Arrangements can be made with managers, providing that normal activities at requested facilities are not interrupted.

APPENDIX 11-C PARTICIPANT INFORMATION LEAFLET

TITLE OF THE RESEARCH PROJECT: A framework for information communication that contributes to the improved management of the intrapartum period.

REFERENCE NUMBER: RP 052/2013

PRINCIPAL INVESTIGATOR: Doreen K.M. M'Rithaa

CO- INVESTIGATORS: Mikko Korpela, Retha de la Harpe and Sue Fawcus

ADDRESS: Faculty of Information and Design, Cape Peninsula University of Technology, P.O. Box 652, Cape Town 8000.

CONTACT NUMBER: +27 21 9389240

Dear Colleague,

My name is Doreen K.M. M'Rithaa and I am a Doctoral student. I would like to invite you to participate in a research project that aims to investigate the information communication processes during the management of the intrapartum period and develop a sustainable framework for information communication in the Cape Town MDHS.

Please take some time to read the information presented here, which will explain the details of this project and contact me if you require further explanation or clarification of any aspect of the study. Also, your participation is **entirely voluntary** and you are free to decline to participate. If you say no, this will not affect you negatively in any way whatsoever. You are also free to withdraw from the study at any point, even if you do agree to take part.

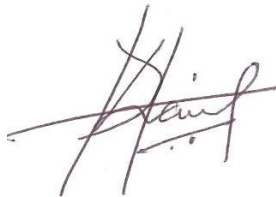
This study has been approved by the **Health Research Ethics Committee (HREC) at Cape Peninsula University of Technology** and will be conducted according to accepted and applicable National and International ethical guidelines and principles, including those of the international Declaration of Helsinki October 2008.

During the interview the information on how skilled birth attendants retrieve and communicate relevant information influencing the management of the intrapartum period among themselves will be elicited. As you are aware woman information

remains confidential yet very essential when communicated. Details on barriers to this communication will be elicited. For the researcher to get the full picture of these processes it will involve detailed information both positive and negative aspects. All information recorded and written which you provide will remain strictly confidential and the researcher will use it only for the proposed study. Any information you provide will not be disclosed or used against you under any circumstances.

If you are willing to participate in this study please sign the attached Declaration of Consent and *(hand it to the investigator, place it in the box available, etc. as is appropriate to your project)*

Yours sincerely

A handwritten signature in black ink, appearing to read 'Doreen K.M. M'Rithaa', written in a cursive style.

Doreen K.M. M'Rithaa
Principal Investigator

Declaration by participant

By signing below, I agree to take part in a research study entitled “A framework for information communication that contributes to the improved management of the intrapartum period.

I declare that:

- I have read the attached information leaflet and it is written in a language with which I am fluent and comfortable.
- I have had a chance to ask questions and all my questions have been adequately answered.
- I understand that taking part in this study is **voluntary** and I have not been pressurised to take part.
- I may choose to leave the study at any time and will not be penalised or prejudiced in any way.
- I may be asked to leave the study before it has finished, if the researcher feels it is in my best interests, or if I do not follow the study plan, as agreed to.

Signed at (*place*) On (*date*)
2013.

.....

Signature of participant

APPENDIX 11-D: INTERVIEW GUIDE A

IN-DEPTH INTERVIEWS (MOU)

Question one:

Tell me about your daily activities while on duty in the labour ward.

Sub-questions (probes)

What is your day like managing the intrapartum clients?

Question Two

How do you communicate client information within the MOU during the management of intrapartum?

Sub-questions (probes):

What information is expected to be communicated?

To who is the information communicated?

When is the information communicated?

What are the barriers experienced during this information communication?

How do you overcome these barriers?

What are the tools used in communication?

Question Two:

How do you communicate client information between the MOU and the referral hospital during the management of intrapartum period?

Sub-questions (probes):

What information is expected to be communicated?

To who is the information communicated?

When is the information communicated?

What are the barriers experienced during this information communication?

How do you overcome these barriers?

What are the tools used in communication?

Question three

How do you desire to improve information communication effectively during the management of the intrapartum period?

APPENDIX 11-E: INTERVIEW GUIDE B

INDEPTH INTERVIEWS (RH HOSPITAL)

Question one:

Tell me about your daily activities while on duty in the labour ward.

Sub-questions (probes)

What is your day like managing intrapartum clients at the MOU?

Question Two

How do you communicate MOU client's information within the referral hospital?

Sub-questions (probes):

What information is expected to be communicated?

To who is the information communicated?

When is the information communicated?

What are the barriers experienced during this information communication?

How do you overcome these barriers?

What are the tools used in communication?

Question Two:

How do you communicate client information between the referral hospital and the MOU during the management of intrapartum period?

Sub-questions (probes):

What information is expected to be communicated?

To who is the information communicated?

When is the information communicated?

What are the barriers experienced during this information communication?

How do you overcome these barriers?

What are the tools used in communication?

Question three

How do you desire to improve information communication effectively during the management of the intrapartum period?

APPENDIX 11-F TOOL FOR SEMI- STRUCTURED OBSERVATION

TABLE 11.1 CHARACTERISTICS OF THE UNITS INCLUDED IN THE OBSERVATION STUDY

Unit	Type of unit	Women population seen	Beds per unit	Total RNs in the unit per shift	Women per Midwife/day	Doctors per day
A-1	Midwifery obstetric unit	Antenatal				
A-2	Midwifery obstetric unit	Intranatal				
A-3	Midwifery obstetric unit	Postnatal				
B-1	District level Hospital	First stage labour				
B-2	District level Hospital	Second stage labour				

Key: A= Midwifery Obstetric Unit managed by midwives only at the primary level; B= Referral Hospital unit for MOU

Unit	Type of unit	Category	Beds per unit	Total Midwives employed in the unit per shift	Patients per Midwife/day	Doctors per day
C-1	Midwifery obstetric unit	Antenatal				
C-2	Midwifery obstetric unit	Intranatal				
C-3	Midwifery obstetric unit	Postnatal				
D-1	Secondary level Hospital	Admissions Suit				
D-2	Secondary level Hospital	First stage labour				
D-3	Secondary level Hospital	Second Stage of labour				

Key C= Midwifery Obstetric Unit managed by midwives only at the primary level; D= Referral Hospital unit for MOU

TABLE 11.2 GUIDE FOR OBSERVATION USED TO GUIDE COLLECTION OF DATA

Item	Content	Examples
Study equipment checklist	List of five items needed for data collection	forms, stopwatch
Unit information	Eight information items to be gathered to characterize unit	number of beds, number of midwives employed
Midwife manager description of baseline documentation and communication practices	Two open-ended questions for assessing the unit's baseline documentation and communication policies, processes, and forms	How do you expect the midwives to communicate? What documents/forms do you expect to be used?
Midwife profile	Seven interview items to assess nurse characteristics during each shift	sex, race, education, experience, age, qualification
Shift report	Seven items gathered to characterize the hand-offs observed at start and end of shift,	start and stop time, narrative, number of midwives present
Shift observations	Sheet to record and organize six items about each documentation and communication encounter	start and stop time, narrative, copy of actual written documentation
Post-shift interview	Seven interview questions for clarifying observations	Where do you write
Health information portability and accountability act identifiers	Eighteen identifiers to be removed from all copies of documentation before leaving observation site	Names of patients

APPENDIX 11-G EXAMPLE OF DOCUMENT REVIEW

THEME	CODE	QUOTATION
ACCESSIBILITY	Accessibility	<i>P39: Ensure 24-hour access to functioning emergency obstetric care (both basic and comprehensive</i>
	Expected level of care {4-0}	<p><i>P32: 24-hour labour and delivery service for intermediate and high risk women</i></p> <p><i>P32: Referral centre for clinics and community health centres in the district</i></p> <p><i>P32: Referral centre for level 1 hospital in the region</i></p> <p><i>P32: Management of extremely ill or difficult obstetric patients</i></p> <ul style="list-style-type: none"> • <i>Supervision and support for level 1 and level 2 hospitals</i> • <i>Responsibility for policy and protocols in the regions served</i>
TOOLS RECOMMENDED	Early warning sign Chart {2-0}	<p><i>P39: Introduce Early Warning Chart</i></p> <p><i>P39: The ISBAR communication format refers to the Situation, Background, and Assessment and Recommendation format. It is important that the health care workers formulate an appropriate request and clearly document the response</i></p>
	ISBAR_Recommended	<p><i>P39: Poor response to abnormal observations prompts an urgent need for the routine use of a national obstetric early warning chart used for all obstetric women which will result in more timely recognition, treatment and referral of women who have, or are developing, a critical complication</i></p> <p><i>P39: To facilitate communication, especially telephonically, it is advised that all professionals make use of the maternal ISBAR communication format to ensure that appropriate information is provided and to keep a record of the communication</i></p>
	Emphasis on IISBAR training {1-0}	<i>P39 Ensure training in the early warning charts and ISBAR referral system is provided</i>
	Expected means of communication {4-0}	<p><i>P32: Effective communication system (radio or telephone)</i></p> <ul style="list-style-type: none"> • <i>Reliable 24 hour transport service for emergency transfer to hospital</i> <p><i>P39: Ensure dedicated telephonic linkages for consultation for emergencies between referring and referral site are available. (ISBAR charts)</i></p> <p><i>P40: Calls regarding advice should be taken by the doctor on doctor</i></p>
	More documents introduced {1-0}	<i>P39 Introduce Early Warning Chart</i>

COMMUNICATION	Expected collegial relations {1-0}	P40: intercollegial interactions should always be conducted in a respectful and professional manner
	Expected consultation communication {1-0}	P39 When communicating with the more senior practitioner, clearly outline your need, whether you need advice, support or need the practitioner to take over further management. P39: The professional taking action or phoning the next level of health management, must clearly document the actions on the reverse side of the observation chart. This should include the date, time and if consulting another level, the name of the practitioner consulted and his verbal command
	Expected staffing norm {2-0}	P39: Ensure adequate staffing levels for 24-hour acute care in labour and postpartum P39: Until norms are provided use the WHO labour ward norm of one midwife in labour ward per 175 deliveries per year
	Improve assessment of patients {1-0}	P39: Poor response to abnormal observations prompt an urgent need for the routine use of a national obstetric early warning chart used for all obstetric women which will result in more timely recognition, treatment and referral of women who have, or are developing, a critical complication
	Technology recommended {1-0}	P32: just function in an efficient and cost-effective manner. Midwives and doctors are the best equipped to provide technologically appropriate care to women during their reproductive lives
DOCUMENTATION	Expected Partogram documentation {7-0}	P32: Enter all observations, fluid intake and output, and medications on the partogram. P32: Identified problems - Proposed management P32: All medications - All fluids administered, by whatever route P32: Record all findings of maternal and fetal condition, and of progress in labour, on the partogram P32: The action line is drawn 2 hours to the right and parallel to the alert line, and represents the extreme of poor progress where 'Action' is mandatory (e.g. transfer from a clinic to hospital, oxytocin infusion or caesarean section) P32: Use a partogram to note all observation

	Expected documentation {3-0}	<p>P29: The partogram must be used for all mothers in true or suspected latent or active phases of labour</p> <p>P29: The partogram must always accompany labouring mother during transfers (from antenatal ward to labour ward, from MOU to hospital) and must be kept in the mother's records after delivery</p> <p>P29: All health-care workers attending pregnant mothers must know how to use the partogram and how to graphically record several labour data on the partogram.</p>
	Partogram defined {1-0}	P29: A partogram is a graphical illustration of the progress of labour. It is a tool for monitoring labour, specifically the dilation of the cervix during labour.
	Expected information {2-0}	P29: All observations pertinent to the progress of labour and the condition of the mother and the foetus during labour must be recorded on the partogram in the prescribed manner and intervals
REFERRAL	Expected referral criteria {3-0}	<p>P29: The mode of transport (ordinary, urgent or Flying Squad) should be determined:</p> <ul style="list-style-type: none"> • By the registrar at the referral hospital. 78 • IF Flying Squad is required, this must be arranged by the base hospital doctor or sister, and this must be done through the B Side Registrar at GSH- Labour Ward <p>P29:Gugulethu Tuesday - Ultrasound: COR - High Risk Clinic: Dr Allie + MMH Team Wednesday - School of Radiography during term Thursday - High Risk Clinic: Dr Dietrich (alt. weeks</p>
	Coordinated referral required (3)	<p>P32: A well-coordinated referral system, with access to transport and facilities, is essential for the provision of optimal care to all pregnant women in the district.</p> <p>P32: it is essential to have in place a referral system with clear protocols of management, referral, transport and responsibility.</p> <p>P32: Referral of problems to hospital</p>
	Referral requested {3-0}	<p>P29: Admissions must be arranged with the Registrar on call for the particular referral hospital. If this is NSH or MMH, and further referral to GSH is required, this must be arranged by the Registrar at these hospitals.</p> <p>P29: REFER URGENTLY VIA FLYING SQUAD TO HOSPITAL</p> <p>P29: Transfer mother urgently by Flying Squad to referral hospital.</p>
	Expected solution for poor referral {1-0}	P40: If the receiving doctor is of the conviction that the patient has not been referred to the correct level of care, it is the responsibility of the receiving doctor to contact the next level of care, and inform the referring midwife of the rerouting of the patient. If the conclusion cannot be reached between the receiving doctor and the next level of care a Tygerberg consultant opinion should be sought to resolve the issue.

	Recommended monitoring of referral {1-0}	P39: Monitor and where necessary ensure criteria for referral and referral routes are established and utilized appropriately to functional emergency maternity facilities
	Expected referral communication {6-0}	<p>P32: Effective communication system (radio or telephone)</p> <ul style="list-style-type: none"> • Reliable 24 hour transport service for emergency transfer to hospital <p>P39: Under the situation analysis there should be a clear reference to the vital signs as well as to what the problem or concern is about. The form will assist any person to document the information that will be required for communicating with the next level of care or management</p> <p>P39: Under background information relating to the maternal period need to be captured where relevant</p> <p>P40: communication between the different units involved in patient care should be optimized to ensure rapid routing to the correct institution</p>
	Expected referral process {3-0}	<p>P32: Referral of complicated problems to level 2 or level 3 hospitals</p> <p>P40: Women are referred from primary care (BANC) to a doctor/ experienced midwife at the level 1 / district hospital as per protocol, but can be referred back for antenatal care to the MOU/clinic once the problem is sorted out to deliver at level 1(KBH). Intermediate risk women should preferably not deliver in a MOU but in a level 1 (KBH)</p> <p>P40: Referrals from MOU should be made to the doctor on call I labour ward</p>