# The development of a district-based model of intervention for improving the quality of maternal health care at primary level

**A thesis submitted to the:**

Faculty of Community and Development Disciplines

School of Nursing
University of KwaZulu-Natal

**As a requirement for the degree:**

Doctor of Philosophy

**By:**

**Anna Silvia Voce**

**Supervisor: Professor L R Uys**

December 2005

# Dedication

I dedicate this work to the memory of my father,

Angelo Gabriele Antonio Voce,

who taught me always to say YES to life and all its gifts and challenges.

# Acknowledgements

I am most grateful to and would sincerely like to acknowledge:

The Limpopo Province MCWH Directorate for providing the catalyst for this study, and for their support throughout the study period

The Department of Health and Welfare in Limpopo Province for granting permission for the study to take place

The Reproductive Health Management Teams of Limpopo Province, for their commitment and enthusiasm and untiring effort in taking up the cause, and identifying and dealing with the issues affecting the quality of maternal health care

The Centre for Rural Health for providing me the opportunity to work in Limpopo Province, and for the countless experiences prior to this project, that prepared me and enabled me to respond to the request from Limpopo Province

The Department of Community Health for giving me the gift of time to complete the final writing-up

Hugh Philpott, co-facilitator, mentor, colleague and friend, whose faith in me has always been greater than my own belief in myself

Leana Uys, supervisor and role model, for her encouragement, thoughtfulness, commitment, efficiency and active support throughout the study

Erina Clelia Voce, for unfailing love and support, always

# Declaration

Except for referenced citations in the text, this is the researcher's original work.

Signature: …… Date: ……

Supervisor: …… Date: ……

# Abstract

The Limpopo MCWH Directorate, concerned about the high perinatal and maternal mortality rates arising from the poor quality of maternal health care provided at primary level, commissioned this study to explore what would be the appropriate interventions that could be applied province-wide to improve the quality of maternal health care at municipal and district level.

Thus the study aimed to develop a useable and replicable model of intervention with Reproductive Health Management Teams (RHMTs) at municipal and district level that would lead to improvements in the quality of maternal health care. The study objectives were to:

1. Identify indicators and the method for a baseline assessment of the quality of maternal health care at municipal and district level.
2. Identify indicators that would permit an analysis of the factors that influence the key issues emerging from the baseline assessment.
3. Develop a programme of intervention, with its monitoring and evaluation procedures, that would address the factors that influence the key issues.
4. Recommend a strategy for replicating the intervention programme.

An action-research approach was adopted in this study, and was implemented in a series of cyclical action-research steps in cooperation with the RHMTs. The study was implemented in 25 municipalities in Limpopo Province and was implemented over a period of 28 months, from December 2001 to March 2004. Both qualitative and quantitative methodologies were used.

Indicators were identified to conduct a baseline assessment of the quality of maternal health care; the tools were developed to collect the data necessary to calculate these indicators; the indicators were applied to achieve a baseline assessment of the quality of care, and the information analysed to identify priority key issues affecting the quality of maternal health care. These key issues were identified as: the poor quality of the 1st ANC visit and poor management of labour.

These key issues were analysed in order to identify what were the most important influencing factors affecting the quality of maternal health care. Staffing, supervision, referral systems,

support services and the planning and organisation of the health facilities were found to be the most influential factors. Indicators were developed to measure these factors, with the data collection tools required to collect the data necessary to calculate the indicators. The indicators were measured to describe the current situation with regards to each.

Once the influencing factors had been identified, interventions were identified, prioritised and planned for implementation in each municipal area. The priority interventions that could be implemented at municipal level were: in-service training in antenatal care and the management of labour; supervision of antenatal care and labour; audit of the service and improving referral systems. Tools were developed to monitor the implementation of these interventions and the outcomes of monitoring reported.

The model to improve the quality of maternal health care developed in Limpopo Province is possible to implement within the context of health services in South Africa. A limiting factor to full implementation may well be staffing shortages, although this study did not set out to establish the degree of influence that staffing shortages do actually exert. The real challenge to full implementation, however, lies in the ability of managers at different levels to work together to support quality service delivery, and for providers to deliver an integrated, comprehensive service to pregnant women. Municipal and district level Reproductive Health Management Teams, with a full mandate and good leadership, managerial, clinical and public health skills, have the potential to address the most critical factors at the local level that are influencing the quality of care.

# Table of Contents

# List of Tables

# List of Figures

# List of Appendices

# Definition of terms

| | |
|---|---|
| Advanced Diploma Midwife | A registered midwife who has undergone an advanced programme of training to equip her to proficiency in the management of obstetric complications. |
| Clinic | A health facility that provides promotive, preventive and basic curative care, staffed by nurses, and usually operates for 8 hours a day, 5 days a week. |
| District | A well-defined administrative and geographical unit within a province with a well-defined population. Within the current policy of the health system, the district is the major locus of health service management and provision. A district would consist of a number of local municipalities. Within Local Government nomenclature, a district would be the equivalent of Category C Municipalities, known as District Municipalities or District Councils and would have authority over a number of local municipalities. |
| Effective programme of intervention | A programme is effective if it meets objectives in this instance improved perinatal and maternal outcomes. |
| Enrolled Nurse | Other wise known as a Staff Nurse. Has undergone a two-year training programme and is registered with the South African Nursing Council as an enrolled nurse and is licensed to carry out general nursing duties. |
| Enrolled Nursing Auxiliary | Otherwise known as a nursing assistant. Has undergone a one year training programme. |
| Health centre | A health facility that provides a 24-hour service, has lying in beds and includes a labour ward. |
| Improvement in quality | Increased adherence to standards. |
| Indicator | A health indicator is a health measurement that helps to describe a situation. Through the use of indicators we can obtain measurements that will give us an indication of the health of mothers and babies; of the quality of care provision at health facilities within the district; and of health promoting, health seeking and service utilisation behaviours of communities. |
| Integrated programme of intervention | Provide for comprehensive care (promotive, preventive, curative, rehabilitative, palliative); provides full maternal health service (all components of care – preparation for pregnancy, antenatal care, intrapartum care, postnatal care, neonatal care); provides for continuity of care – community to clinic, health centre and hospital; integrated management of the service (functional and administrative). |
| Level 1 Hospital/Community Hospital | A health facility that provides basic obstetric, surgical, medical, paediatric and psychiatric care. Includes anaesthetic facilities. |
| Level 2 Hospital/ District Hospital | A health facility that provides specialist services. |
| Midwife | A registered nurse, who is has an additional midwifery qualification and is registered with the South African Nursing Council to practice as a midwife with regard to normal pregnancy and delivery. |
| Maternal mortality ratio | Number of maternal deaths per 100 000 live births. |

| | |
|---|---|
| Municipality | This refers to Category B municipalities and would be a single local municipality. Several local municipalities would fall under the authority of the District Municipality/ Council. |
| Nurse/Registered Nurse | A nurse/registered nurse is a person who has completed a nursing education programme (of either three of fours years) and is registered with the South African Nursing Council to practise as a nurse (may not necessarily have a midwifery qualification). |
| Perinatal mortality rate | Number of perinatal deaths per 1000 total births. Perinatal deaths include all still births that weigh more than 500 grams and early neonatal deaths. An early neonatal death is the death of a baby within 7 days of its birth. In South Africa the perinatal mortality rate is calculated on all perinatal deaths weighing 1000 grams or more. |
| Primary level | This includes community based health services, fixed and mobile clinics, health centres and the community hospital (also known as Level 1 Hospital). |
| Professional nurse | A registered nurse (see above definition for nurse/registered) |
| Quality of care | Care that meets a predetermined standard, within a given context, to achieve the most favourable outcome. |
| Replicable programme of intervention | Can be applied in different settings and still achieve aims and objectives. |
| Sustainable programme of intervention | Will continue to maintain quality improvements after initial (facilitated) intervention, without being significantly reliant on external resources. |

# Acronyms

| | |
|---|---|
| ADMs | Advanced Diploma Midwives |
| ANC | Antenatal Care |
| B | Bohlabela District |
| BBI | Better Births Initiative |
| B-EOC | Basic Essential Obstetric Care |
| C | Capricorn District |
| C/S | Caesarean Section |
| CCLOs | Chief Community Liaison Officers |
| C-EOC | Comprehensive Essential Obstetric Care |
| CFR | Case Fatality Rate |
| CHP | Centre for Health Policy |
| DHIS | District Health Information System |
| DHS | District Health System |
| DOH | Department of Health |
| ENND | Early Neonatal Death |
| EOC | Essential Obstetric Care |
| FDP | Frozen Dried Plasma |
| FSB | Fresh Still Birth |
| FTE | Full-time Equivalent |
| FWB | Fresh Whole Blood |
| HIV | Human Immunodeficiency Virus |
| IPC | Intrapartum Care |
| IQR | Interquartile Range |
| L1 | Level 1 |
| L2 | Level 2 |
| M | Mopane District |
| MCWH | Maternal Child and Woman's Health |
| MEDUNSA | Medical University of South Africa |
| MSB | Macerated Still Birth |
| MWAs | Mother Waiting Areas |
| NCCEMD | National Committee for the Confidential Enquiries into Maternal Deaths |
| NHS | National Health System |
| NPM | New Public Sector Management |
| OPD | Out Patients Department |
| PAR | Participatory Action Research |
| PCI | Perinatal Care Index |
| PEP | Perinatal Education Programme |
| PHC | Primary Health Care |
| PMM Network | Prevention of Maternal Mortality Network |
| PMR | Perinatal Mortality Rate |
| PMTCT | Prevention of Mother to Child Transmission |
| PN | Professional Nurse |
| PPIP | Perinatal Problem Identification Programme |
| QIC | Quality Improvement Cycle |
| RHMTs | Reproductive Health Management Teams |
| RPR | Rapid Plasma Reagin |
| S | Sekhukhune District |
| SA | South Africa |
| SAMM | Severe Acute Maternal Morbidity |
| UN | United Nations |

| | |
|---|---|
| UNFPA | United Nations Population Fund |
| UNICEF | United Nations Children Fund |
| V | Vhembe District |
| W | Waterberg District |
| WHO | World Health Organisation |

Chapter
1

# Background

## 1. Introduction

The new post-apartheid government of South Africa, elected in 1994, committed itself to redressing the inequities produced by a health system that had been historically fragmented and uncoordinated, and that unjustly provided unequal access to essential health care services to the different sectors of the South African population. A recognised priority of the new government was maternal, child and women's health and a number of key policies and strategies were implemented in order to increase the availability, accessibility and equity of health services for women and their children. Key amongst these has been the expansion of primary health care facilities; the provision of free services to pregnant women and children; making maternal deaths a notifiable condition and appointing a National Committee for the Confidential Enquiries into Maternal Deaths; organising maternal, child and women's health services into a directorate, with national and provincial directors; review of the Sterilisation Act, No44 of 1998; promulgation and implementation of the Choice of Termination of Pregnancy Act, No92 of 1996; and the publication of National Contraception Policy Guidelines, National Maternity Care Guidelines and National Cervical Screening Guidelines (Adar and Stevens 2000).

Nationally, the utilisation of antenatal care has increased, as has the overall proportion of births attended by a skilled attendant (DOH 1998). This is an indication that the overall accessibility to maternal health services has increased. However, with regards to delivery care, inequities are still evidenced when utilisation of care is analysed by socio-economic status and by geographical distribution (Smit *et al* 2004).

## 2. Problem statement

While accessibility to care has improved, national and provincial level directorates responsible for maternal health services have become increasingly concerned about the inadequate quality of care provided at primary level, as evidenced by high perinatal and maternal mortality rates and high proportions of avoidable perinatal and maternal deaths. The perinatal mortality for South Africa is estimated at 33/1000 (MRC Unit for Maternal and Infant Health Care Strategies *et al.* 2002), while the maternal mortality ratio is estimated at 175-200 per 100 000 live births (NCCEMD 2002). In a national review of maternal deaths it was found that "in over half the cases there were health care provider related avoidable factors in the management of the event that lead to the woman's death" (*Ibid.* p.9) and that "assessing the patient was done inadequately … the wrong diagnosis was made in 10.9% of cases … and the standard protocol for the condition was not followed in 40.1% of cases … Lack of continued monitoring of the patients or response to abnormalities in the monitoring occurred in a total of 22.2% of cases" (*Ibid.* p.10). In an audit of maternal health services in four hospitals in Northern KwaZulu-Natal (Ghandi, 1999) it was found that 45% of perinatal deaths were due to avoidable medical management problems, and the majority of these were related to basic mistakes in the management of labour.

Both studies corroborate observations of the principal investigator, whose involvement during 2000 and 2001 in a woman's health initiative in a Northern District of KwaZulu-Natal, which included participation in monthly perinatal review meetings, revealed that doctors and nurses were not performing to the required standards of accepted practice, resulting in repeated perinatal deaths that were often preventable. Most of the skills required form part of basic midwifery and medical training. In addition to health workers inadequately applying their skills, there were additional problems within the health system that led to preventable deaths – for example inadequate supervision, inadequate equipment, problems in communication that affected referrals and continuity of care, and problems in emergency transport (Philpott and Voce, unpublished workshop reports, February 2000 – August 2002).

In order to improve the poor quality of maternal health care at primary level, policies, guidelines, norms and standards have been developed at national level, and in-service training programmes

implemented at provincial level, but these have not resulted in the expected gains. The practice of health workers remains unchanged and the problems in the health system remain unresolved. National, provincial and district managers continue to seek effective solutions that will indeed make a difference in the quality of maternal health care provision.

To this end the provincial Maternal, Woman's and Child Health (MCWH) Directorate in Limpopo Province commissioned this study towards developing and implementing throughout the province, a 2-year intervention programme which aimed to assess the quality of maternal health care in municipalities and districts in Limpopo Province, identify key issues to be addressed, and develop and implement appropriate interventions.

Once the facilitators had agreed to develop and implement a programme throughout Limpopo Province, the Provincial MCWH Directorate approached the National MCWH Directorate to seek their support for the conduct of the programme in Limpopo Province. The national department gave encouragement for the programme to continue, and decided to regard it as a pilot programme, which could later be extended to other provinces in South Africa.

Thus the question underlying this study is:

What is an effective, integrated, sustainable and replicable intervention model that could be applied province-wide to improve the quality of maternal health care at the primary level in South Africa?

## 3. Relevance of the study

Rosenfield and Maine (1985) posed the question: "Where is the M in MCH?" and drew international attention to the then neglected tragedy of maternal mortality. This triggered the launch of the Safe Motherhood Initiative in 1987 which spearheaded the establishment of programmes to reduce maternal mortality and morbidity (Kwast 1998a) The largest of these, the Prevention of Maternal Mortality Network, was established in 1987, and consisted of a team of researchers at Columbia University's School of Public Health and multidisciplinary teams in Nigeria, Ghana and Sierra Leone,

whose primary purpose was to conduct action-oriented research on maternal mortality in sub-Saharan Africa (Kamara, 1997a; PMM Network, 1997).

The international and local literature of the last decade and a half documents the problems related to the provision of quality maternal health care and describes programmes that have been implemented to attempt to resolve the barriers to maternal health. In West Africa, in some east and southern African countries, Central America and Asia, the programmes of intervention have been based on multi-pronged approaches to deal with the breadth of problems contributing to high maternal mortality (Kwast 1998a).

Many of the problems experienced in other countries, as identified through the preliminary literature search, would apply to South Africa. But in South Africa there has been a dearth of intervention programmes. Small-scale projects have been implemented, generally with a very specific focus.

## 4. Research aim and objectives

It is against the above backdrop that the aims and objectives of this study were developed.

The overall aim of the study was to develop a useable and replicable model of intervention with Reproductive Health Management Teams (RHMTs) at municipal and district level that would lead to improvements in the quality of maternal health care at the primary level in South Africa.

The research objectives were to:

4.1. Identify indicators and the method for a baseline assessment of the quality of maternal health care at municipal and district level

4.2. Identify indicators that would permit an analysis of the factors that influence the key issues emerging from the baseline assessment.

4.3. Develop a programme of intervention, with its monitoring and evaluation procedures, that would address the factors that influence the key issues.

4.4. Recommend a strategy for replicating the intervention programme

# 5. Conceptual framework

A number of authors have presented models to categorise the determinants of the quality of maternal health care, to describe the relationships between these and to identify areas of intervention. This section describes the models identified in the literature and then presents the conceptual framework underlying this study.

## 5.1. Models identified in the literature

### 5.1.1. The Prevention of Maternal Mortality (PMM) Network

The PMM Network (McCarthy and Maine 1992; McCarthy 1997 and Maine 1997) adopted a proximate determinant framework in which they identified the sequence of events that led to maternal deaths (pregnancy, development of a pregnancy-related complication, and death from that complication) and then identified intermediate and distant factors that directly affect these events. These included a woman's health and reproductive behaviour, her health status, her access to health services, and unknown factors (this last category was added due to the recognition that life-threatening obstetric complications can neither be prevented nor predicted). These factors were not considered to be independent of one-another, for example health status was affected both by behaviour and access to health services. Each of these intermediate categories was subdivided further. The framework also depicted socio-economic status as a more distant determinant of a woman's likelihood of dying from a maternal death.

Through the above framework, the PMM Network identified three main categories of intervention that would make the greatest contribution to reducing maternal mortality: (1) Family planning services to reduce fertility and the life-time risk of maternal death; (2) Safe abortion services to reduce the incidence of abortion-related causes; (3) Emergency obstetric care to treat pregnancy related complications.

The PMM Network focused on improving emergency obstetric care to treat pregnancy related complications on the premise that "With timely, adequate medical care, almost all maternal deaths can be averted." (McCarthy 1997 S p20) Maine (1997) reported that the strategic focus of the PMM Network was to increase accessibility to, and the quality and utilisation of, emergency obstetric care

for women who develop complications, rather than having contact with all pregnant women. In dealing with women with obstetric complications, they focused on reducing the 'three delays': delays by women in seeking care, delays in reaching the appropriate care, and delays in receiving care at health facilities.

The public health approach underlying the PMM Network model meant that they aimed to provide the best care for most, including those that will never be seen in health facilities (Maine 1997). This may mean a much lower level of care but to a much larger population in need. The World Health Report (2002) describes this as a shift towards 'new universalism' where rather than providing "all possible care for everyone, or only the simplest and most basic care for the poor, this means delivery to all of high-quality essential care… (which) implies explicit choice of priorities among interventions" (*Ibid.* p.xiii)

### 5.1.2. Kwast and Koblinsky

Kwast and Koblinsky (1995) state that since it is difficult to *predict* which pregnancies will develop life-threatening complications, it is important for both family and health care providers to recognize the complications of pregnancy early, to make timely decisions about seeking a higher level of care, and to be able to access the appropriate services that should render quality care. This is based on the 3-delays model expounded by the PMM Network. Kwast and Koblinsky's model of intervention aimed to address the problems that affect the attainment of optimal levels of care relating to the behaviours of users and providers, the quality of service provision and policies that negatively impact on the ability to attain optimal levels of care. They described a three-pronged approach to any intervention. Their approach, applied in Bolivia, Guatemala and Indonesia, included strategies for: (1) affecting behaviours of clients, families and healthcare providers and health care managers; (2) improving services; and (3) influencing policy that would result in increased budgetary allocations to maternal health care, increased co-ordination among the levels of service; and appropriate delegation of responsibility and authority (with the simultaneous formulation of legislation that would support practice). The relative emphasis in the application of the programme varied according to the context within which it was being applied. In line with the PMM Network, the focus was primarily on improving the availability and quality of the health services, before encouraging increased utilisation. This was based on the premise of 'getting one's house in order first, before inviting people in'.

### 5.1.3. Adeyi and Morrow

Adeyi and Morrow (1996) built on the work of the PMM Network: They broadened their framework to include: (1) The management of uncomplicated labour; (2) Detections of complications in labour; (3) Clinical management of complicated labour. In their analysis of factors that hinder effectiveness in each of these three categories, they identify two major groups of factors. The first group of factors includes those that are the responsibility of the Department of Health (at national, provincial or district level) which include the health policy environment, availability of public financial resources, availability and deployment of trained health personnel, and the formulation, production and dissemination of a nationally certified standard of practice. The second group of factors relate to the clients: social, educational, economic and marital status and their utilisation of health services.

Adeyi and Morrow (1996) provide guidelines for developing a tool to measure the quality of care at the point of service delivery.

### 5.1.4. UNICEF/WHO/UNFPA

The UNICEF, WHO and the UNFPA adopted a similar evaluation model to the PMM Network and developed guidelines for monitoring the availability and use of obstetric services. (UNICEF/WHO/UNFPA 1997) The guidelines present the rationale for using process, rather than just impact indicators, to measure the availability, utilisation and quality of essential obstetric services. The UN Guidelines were applied in Malawi (Hussein *et al.* 2001) and were shown to be relevant and effective in promoting improvements in service availability, utilisation and quality.

### 5.1.5. Kwast

Kwast (1998a, 1998b and 1998c) presents a framework that depicts the relationship between the determinants of quality of care and outcomes. She identifies six major categories of determinants of quality of care that need to be considered when developing a programme of intervention. These are: the political environment, financing, socio-cultural factors, health system, education/training and interaction. The quality of care in turn determines the outcomes, with regards to the: integration of services, utilisation of services, health outcomes and sustainability. Kwast proceeds to explain how structure and process components are linked, a probable reference to the Donabedian (1988)

approach to defining and assessing quality of care. She describes education and training initiatives and strategies for monitoring and evaluating quality improvements.

### 5.1.6. Donabedian's approach to defining and assessing quality of care

Donabedian (1988) extended his definition of the quality of care to include the performance (technical and interpersonal) of practitioners, the amenities available, the contribution of patients and the influence of the health system (including factors over which the individual practitioners have no immediate control). He proposes three approaches to measuring the quality of care: (1) structure – which refers to the setting in which care occurs (including human, material and physical resources, and the organisational structure); (2) Process – which refers to the activities involved in providing and receiving the care; (3) Outcome – which refers to the effects of care on the health status of populations.

## 5.2. Summary of the main features of the models reviewed

The main features of the above models have been summarised in Table 1.1. The summary for each model includes the factors that influence the quality of care and the areas of intervention.

Table 1.1. Summary of models reviewed

| Model | Main features | Factors influencing quality of care | Areas of intervention |
|---|---|---|---|
| Prevention of Maternal Mortality Network | Proximate Determinant Framework. Identification of the sequence of events leading to maternal death and arranged into proximal, intermediate and distant factors. | Health and reproductive behaviour of women<br>Health status of women<br>Access to health services<br>Unknown factors<br>Socio-economic factors | Availability of family planning services<br>Availability of services for safe abortions<br>Availability of emergency obstetric care. Strategic focus on the latter.<br>Based on public health approach. |
| Kwast and Koblinsky | Early recognition of problems<br>Timely decision to seek higher level care<br>Timely access to appropriate services | Mother's health and nutritional status<br>Complications during pregnancy<br>Care received during delivery | Affecting behaviours of clients, families, health care workers and managers<br>Improving services<br>Influencing policy in terms of budgetary allocations, co-ordination amongst levels of service, appropriate delegation of responsibility and authority with supportive legislation |

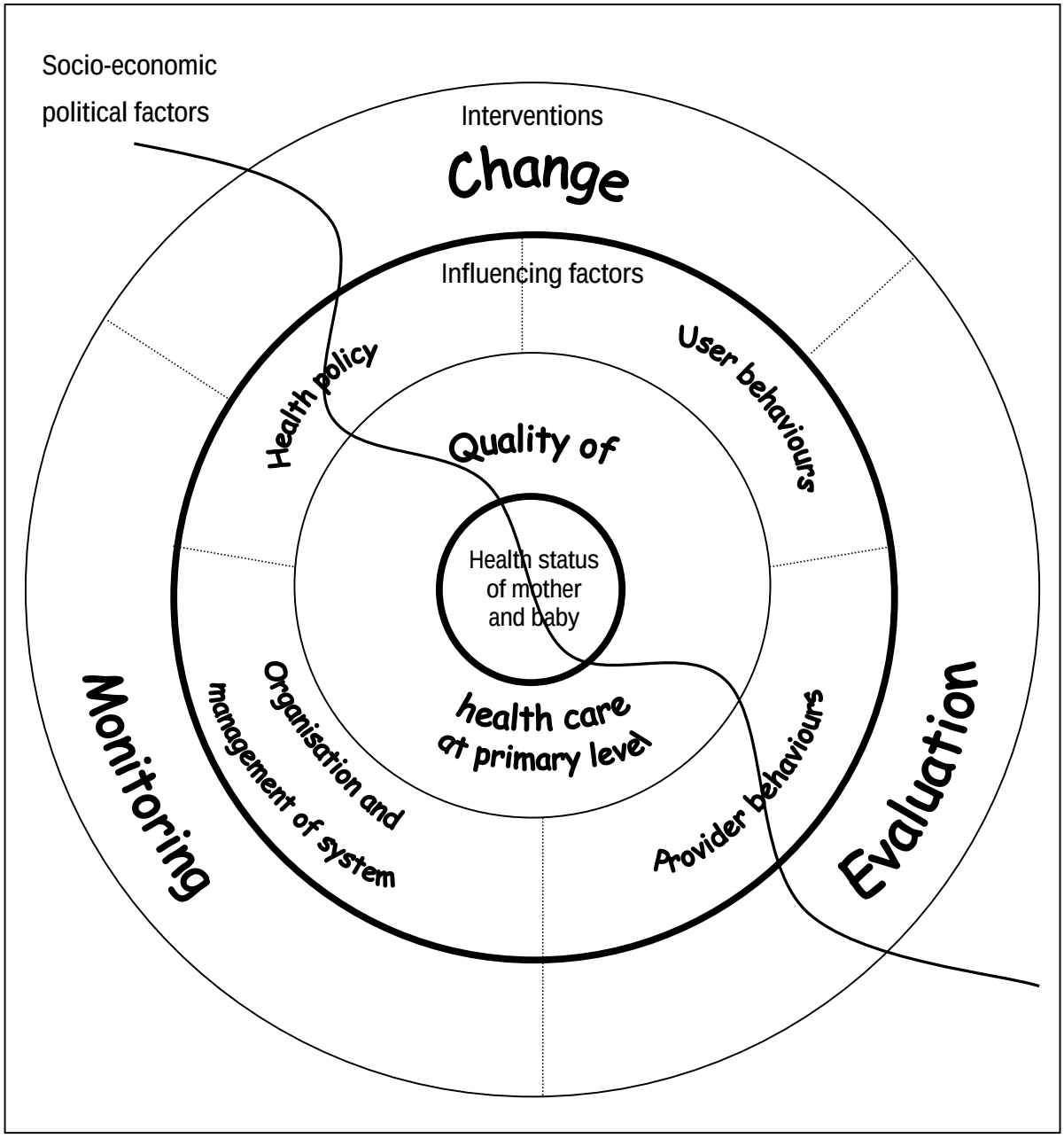
Table 1.1. Summary of models reviewed (Cont.)

| Model | Main features | Factors influencing quality of care | Areas of intervention |
|---|---|---|---|
| Adeyi and Morrow | Point of service delivery a focal point<br>Clinical management of uncomplicated labour<br>Detection of complications in labour<br>Clinical management of complicated labour | Two major groups:<br>Responsibility of the Department of Health (health policy environment, availability of funds, availability and deployment of personnel, national standards of practice)<br>Client related factors (social, educational, economic, and marital status, utilisation of the service) | None explicitly stated |
| UNICEF/WHO/ UNDPA | When measuring quality of care, need to measure process indicators and not just impact<br>Population based neasurements | Availability, utilisation and quality of care | None explicitly stated |
| Kwast | Linkages between structure and process that affect outcomes<br>Determinants of quality influence quality which in turn influence outcomes<br>Outcomes include health status, but also integration and utilisation of services and sustainability | Political environment, financing, socio-cultural, health system, education and training, and interaction | Reviews a number of interventions applied in various parts of the word to address these factors. Specifically – quality assurance processes, education and training initiatives, and monitoring and evaluation strategies |
| Donabedian | | Technical and interpersonal performance of practitioners, the amenities available, contribution of patients, influence of the health system | None explicitly stated |

## 5.3. Conceptual framework underlying this study

The conceptual framework underlying this study was developed through an initial analysis of all the factors that may influence the quality of maternal health care. The emerging framework builds on and incorporates the models described in Section 4.1. and 4.2. above and is depicted in diagrammatic form in Figure 1.1.

Figure 1.1. Conceptual Framework underlying the study




The conceptual framework is depicted as a series of concentric circles. The mother and baby, are in the centre, diagrammatically surrounded by a heavier line, to depict that the focal attention of all health care activities and interventions to improve the quality of care, must be on achieving the best possible health outcomes for mothers and their babies.

In the adjacent circle is the quality of health care provided at primary level. This has a direct influence on maternal and perinatal outcomes. It includes care that meets the desired standard in the provision of:

- Routine antenatal care for low risk pregnancies
- High-risk antenatal care
- Intrapartum care for uncomplicated labour
- Detection of complications
- Clinical management of complications
- Routine post-natal care
- Care of the sick neonate

The next circle depicts categories of 'Influencing factors'. They are included in this circle because they all have an effect on the quality of health care at primary level. Their influence is not unidirectional, that is just acting on the quality of care, but rather multidirectional in the sense that they influence each other. For example: provider behaviours may influence user behaviours and vice versa. Health policy may influence user behaviours (for example the policy in South Africa of providing free ANC to pregnant women), how maternal health services are delivered within the Primary Health Care approach, and how they are managed within the policy of the District Health System. The organisation and management of the health system may influence the supervision and in-service of health providers, which in turn will influence provider behaviours. There are multiple possibilities. The conceptual framework has been depicted as a circle to incorporate these relationships and influences.

Below is an explanation for what each category of factors would refer to:

- Health providers - the technical competence of health providers (midwives, advanced midwives and doctors), their public health and management related knowledge and skills, their access to in-service and continuing education, their relationship with users, their job satisfaction and motivation.

- Organisation and management of the health system - which includes management structures, processes and functions at local level, processes to monitor quality, supervision and support of health workers, referral procedures, integration of services, implementation of health policies, and health information systems.
- Health policy - the orientation of the national health system, national and provincial goals and objectives, national guidelines for standards of care, policies regarding human and material resources, and financing of health services.
- User behaviours: influence the quality of care through health seeking and health promoting behaviours, utilisation of health services, and their satisfaction with service provided.

The outer circle depicts 'Interventions' and is separated from the two previous circles by a heavier line to depict the difference between the causative factors and the interventions. Interventions include strategies for change, strategies for monitoring change and for evaluating the effects of the change. Strategies for change need to address the influencing factors, in order to achieve a change in the quality of health care at primary level, which in turn ought to achieve a change in the outcomes for mothers and babies.

'Socio-economic factors' are depicted as a strand affecting all circles. Although these factors are part of the contextual background against which problems manifest and against which interventions are developed, they are presented overtly within this conceptual framework because they may exert an influence that requires interventions outside of the usual parameters of the health system.

The conceptual framework was 'fleshed out' during the process of the study.

## 6. Conclusion

This chapter has introduced the study and has provided a description of the problem statement, the relevance of the study, the research aims and objectives, and the conceptual framework that underlies this study. Chapter 2 presents the literature review, which focuses on the problems of quality maternal health care and the interventions that have been implemented nationally and internationally to improve it. Chapter 3 describes the setting for the study and presents the

methodology used to achieve the study aim and objectives. Chapter 4 presents the findings, which help to flesh out the conceptual framework of the study, while chapter 5 discuses these and draws conclusions pertaining to the objectives of the study. In chapter 6 are drawn together the recommendations for replicating the programme

Chapter
2

# Literature Review

## 1. Introduction

This chapter draws together the information that was obtained from the literature that applies generally to the problem of quality of maternal health care, internationally and nationally. During the process of the study, further topics were researched in the literature in order to:

- Provide the rationale for the study - reported in Chapter 1: Background.
- Inform the conceptual framework of the study - reported in Chapter 1: Background
- Develop the methodology for the study - reported in Chapter 3: Methodology
- Contribute to the findings – reported in Chapter 4: Findings.
- Reflect on and critique this study - reported in Chapter 5: Discussion.

Relevant literature was identified as follows:

- Electronic databases were searched (CINAHL, SABINET, MEDLINE, Academic Search Premier, EBSCO Host) using the following key words: health – action research; quality of health care – maternal; quality of health care – antenatal; quality of health care – intrapartum; quality of health care – measures; quality of health care – monitoring and evaluation; midwifery services – staffing; nurse and midwife – workloads; staff and nurse and midwife – rotation; staff and nurse and midwife – absenteeism rates; midwifery – supervision; health system – referral systems; organisation of health services; high risk antenatal care; nurse and midwifery in-service training.
- International and national websites were searched (e.g. World Health Organisation, Family Health International, Health Systems Trust)
- Experts in the field of maternal health were consulted and both published and unpublished literature was obtained from them

- Hand searching was carried out of international journals, including the International Journal of Obstetrics and Gynaecology (particularly the Supplements), Midwifery, Journal of Advanced Nursing, Health Policy and Planning, Social Science and Medicine.
- The reference list at the end of identified material was used to identify and request further literature.
- National planning documents were reviewed
- Relevant published and unpublished research reports were reviewed.

Only English language literature was reviewed. This may have constrained access to the wider body of knowledge, and may have limited what has been used in this study.

# 2. Problems in maternal health care

## 2.1. Internationally

### 2.1.1. Accessibility of the service

"Remoteness and several hours, or days walking is a strong deterrent to access health facilities, resulting in appalling maternal morbidity, e.g. vesico-vaginal fistulae, if women survive the ordeal of obstructed labour at all." (Kwast, 1998a, p69)

### 2.1.2. Problems that relate to the professionals themselves

The non-recognition of complications by health workers is a factor contributing to the poor quality of care. In addition, health workers often do not have skills adequate enough to save the lives of women who do develop a complication. Health workers have poor attitudes and poor general motivation, usually in response to poor working conditions, and inadequate training, support and supervision. (Kwast, 1998a; PMM Network, 1997)

Jaffre and Prual (1994) focus on the barriers to quality of care inherent in the relationship between patient and provider in Niger. They explore the different perceptions of quality of care held by patients and providers. They explore the underlying cultural dimensions that contribute to midwives

in particular, not implementing the basic care required during labour, in situations where the application of technical skills forces the midwives to violate certain cultural practices.

De Dijn, 1997 (in Kwast, 1998c) adds the dimension of the quality of life of the health worker as a factor determining the quality of care provided and goes as far as saying that "quality of care is impossible if in the provision of care the quality of life of the caregiver him/herself is not addressed as well. This poses problems regarding the recognition of the caregiver as a person, the necessity of spirituality and the dealing with inevitable limitations and finality (in Kwast 1998c, p199).

### 2.1.3. Management related problems and their influence on the quality of maternal health care

Kwast 1998(a) and Kwast and Bentley (1991) point to the devastating effects in Asia and Africa of serious staff shortages and lowered standards of care that have resulted from changes in education patterns, decades of lack of educative and supportive supervision, and inadequate in-service and continuing education.

Bhatt (1989) records problems that were identified through medical audits of perinatal and maternal deaths in a hospital in Gujurat, India and include: lack of supervision of inexperienced staff, failure to examine patients before prescribing treatment, failure to monitor patients, lack of coverage of the ward by more experienced staff at night and during weekends.

The Prevention of Maternal Mortality (PMM) Network (1995) describes the findings of situation analyses conducted of facilities providing emergency obstetric care in Ghana, Nigeria and Sierra Leone. They report on the lack of drugs and supplies, non-functional equipment and non-availability of blood, long waiting times between admission and treatment, inadequate record keeping, and malfunctioning referral systems.

Urassa *et al.* (1997), in their study of the operational factors affecting the quality of maternal health care in Tanzania, identify problems in the delay of transfer of patients from the district hospital to the referral hospital, the unavailability of trained medical and nursing personnel, lack of drugs and equipment, lack of transport, poor staff motivation, and a poor working environment.

### 2.1.4. Policy related problems

Conroy (1995) identifies policy related problems impacting on the quality of health care. He identifies problems in policies (or rather the lack of) that protect the rights of women. Or where such policies exist, there is a lack of legislation and/or resources, and there are unwritten rules or traditional practices that impact on the effective implementation of the policy. With regards to service provision he identifies problem areas such as: lack of policies that clearly state standards of care, and lack of training, management and supervision of personnel to meet these standards of care; inadequate decentralisation of care to the most peripheral but most appropriately trained personnel (with the necessary licensing and registration)

Kwast (1998b) states that "problems arise when the administration of hospitals is already separated within the organisation of health services at national level, and maternal and child health/family planning are run by primary health care services which are administered by a different department in the Ministry of Health (*Ibid.* p.132)

On a broader social and economic level Structural Adjustment Programmes (SAP) have had a negative effect on health, caused by reduced economic growth, subsequent cuts in public spending, and increasing prices for basic foodstuffs, all resulting from the stabilisation and adjustment policies pressed upon developing countries to improve on their debt repayments to the International Monetary Fund and the World Bank (Kwast 1998a). In Nigeria, subsequent to the introduction of a SAP, an increase in maternal mortality and a decrease in institutional deliveries were experienced (Logie and Woodrofe 1993 in Kwast 1998a). This may well be corroborated by the findings of the PMM network teams who mostly reported a decline in hospital utilisation rates despite improvements in the services, and they attribute this to a worsening economic situation in Nigeria and the inability of the population to pay for health services.

### 2.1.5. Community related problems

The status of women in society, the cultural and spiritual beliefs of women and their families, and non-recognition of the complications by women also result in high maternal mortality and morbidity (PMMN 1997; Kwast 1998a)

## 2.2. In South Africa

Wilkinson (1995) in an analysis of the preventable perinatal deaths in a rural hospital in KwaZulu-Natal, identifies the following problem areas: organisation of the maternity service (location of the hospital antenatal clinic, the absence of a high-risk clinic and the inappropriate/inadequate allocation of personnel); unavailability of trained personnel; unavailability of management protocols, and the inadequate training, support and supervision of personnel in the use of the protocols; and inconsistent perinatal audit meetings.

The National Committee on Confidential Enquiries into Maternal Deaths (2000) identified the following avoidable problems leading to maternal deaths: delays in transporting patients; lack of intensive care facilities, equipment and personnel; unavailability of blood transfusion facilities; poor initial assessment and diagnosis, clinical management that did not adhere to protocols and substandard care, poor monitoring of the patient, non-identification of complications; and unprofessional conduct. Sub-standard care and unprofessional conduct accounted for more than half of the maternal deaths.

The Perinatal Care Survey of South Africa identified avoidable factors that led to perinatal deaths. Factors that related to patients were: no antenatal care, late initiation of antenatal care, infrequent attendance at antenatal clinic, delays in seeking medical attention during labour, inappropriate response by the pregnant woman to reduced fetal movements. The most common health related factors were: inappropriate response by health workers to problems identified during antenatal care, problems in monitoring the fetus during labour, and delays by health workers in referring patients or calling for assistance. Lack of transport was the most common administrative factor. (MRC *et* al, 2000).

The Centre for Health Policy (CHP) conducted a rapid appraisal of maternal health services in South Africa, using maternal health as a probe for developing theoretical frameworks and methodologies to better understand health system functioning. The rapid appraisal was conducted primarily through a review of the published and grey literature on maternal health services in South Africa, key informant interviews and limited analysis of secondary data (Penn-Kekana and Blaauw, 2002). Through these

sources of information, the researchers made an attempt to compile findings for the process indicators suggested by the UN Guidelines (UNICEF/WHO/UNDPA, 1997). They conclude that there are adequate resources (facilities and staff) for the provision of maternal health services, and the high maternal mortality rates could be attributed to socio-economic problems, which in turn may affect user's health seeking behaviours, and problems in the health system, such as poor quality supervision, inflexible management, and staff unwillingness to change. They report on the problems in poor collection and co-ordination of data.

# 3. Programmes of intervention

## 3.1. Internationally

### 3.1.1. Education and training of health workers

In an overview article of education for quality improvement in reproductive health programmes Kwast (1998b) reports on the following areas of intervention: Life Saving Skill training for midwives; training for midwives in research, education, interpersonal communication skills and management; development of guidelines by WHO for the prevention of prolonged labour with the partograph; development of training materials by the Safe Motherhood Initiative to help midwives to address the major causes of maternal death; education and training of non-obstetricians in surgical obstetrics in India, Bangladesh, Mozambique and of medical assistants to perform caesarean sections in Malawi, Zambia, Tanzania, Uganda and Mozambique; management and leadership training of problem-solving multidisciplinary teams.

### 3.1.2. Upgrading of facilities

In addition to the training initiatives, Kwast (1998b) also reports on the development of guidelines and protocols for obstetric care and neonatal care in hospitals and health centres and the improvement of the health information system and recording of maternal health related data in Central America in Panama and Guatemala.

A number of projects in the PMM Network have focused on upgrading teaching, district and secondary referral hospitals (Ifenne *et al.* 1997; Ande *et al.* 1997; Leigh *et al.* 1997; Olukoya *et al.*

1997; Sabitu *et al.*1997) and health centres (Djan *et al.* 1997; Senah *et al.* 1997) to ensure that they became effective lifesaving facilities. The main activities and results are recorded in Table 2.1. and Table 3.1. :

Table 2.1. Interventions in hospitals

| Project site | Activities | Results: 1990 - 1995 |
|---|---|---|
| Teaching Hospital, Zaria, Nigeria | Restoration of surgical theatre<br>Renovation of maternity ward<br>Training physicians in obstetric surgery<br>Emergency drug pack instituted<br>Blood donations from family members | Utilisation of all obstetric services declined by about 60%, with steepest decline (80%) in women with obstetric complications.<br>Increased referrals to the secondary hospital.<br>Mean admission-treatment time decreased from 3.7 hrs to 1.6 hrs, with 53% increase in women seen within 30 mins.<br>CFR fell from 14% - 11% |
| District Hospital, Ekpoma, Nigeria | Equipped the theatre, labour ward and laboratory<br>Blood bank instituted<br>Stand by generator repaired<br>Drug and consumable materials purchased<br>Revolving emergency obstetric drug fund established in hospital<br>Refresher courses conducted for midwives, laboratory technicians, medical officers, medical records officers<br>Transport loan fund established in community | No real change in obstetric admissions<br>Improvements in admissions in obstetric complications (5% - 20%) were not sustained and returned to 9% by end of project period<br>No change in utilisation of laboratory services and low blood transfusions<br>Hospital C/S rate increased from 0% to 11% |
| District Hospital, Makeni, Sierra Leone | Renovation and upgrading of theatre<br>Installation of standby generator<br>Procured drugs and supplies required for emergency obstetric care<br>Recruitment of physician with obstetric skills and training of another physician in obstetrics skills | Utilisation of services – increase in maternal admissions, institutional deliveries, and admissions for obstetric complications.<br>Increase in caesarean section rates<br>Decline in Case Fatality Rates from 32% to 5%<br>Increase in abortion-related procedures |
| District Hospital, Makeni, Sierra Leone (cont) | Refresher courses for nurses and midwives on the recognition and management of obstetric complications, setting up intravenous infusions and manual removal of placenta<br>Training of laboratory technicians to screen for HIV<br>Introduced improved record keeping<br>Introduced policy of treatment before payment<br>Cash incentives provided to staff | As above |
| Secondary referral hospital, Ogun State, Nigeria | Refresher course for physicians and midwives on emergency obstetric skills<br>Equipped theatre, labour ward and laboratory and procured supplies<br>Set up reliable electricity supply<br>Problems encountered in setting up blood services | Admissions for obstetric complications declined from '92–'94 and then started rising again<br>CFR remained relatively unchanged<br>C/S rates rose in response to improved functioning of the hospital |

Table 2.1. Interventions in hospitals (cont.)

| Project site | Activities | Results: 1990 - 1995 |
|---|---|---|
| Referral Hospital, Kebbi State, Nigeria | Visit by specialist obstetricians who provided training as well as cared for patients. Stayed 5 weeks each from '92-'93.<br>Introduced first aid box with essential drugs and supplies.<br>Training of midwives in the recognition and management of obstetric complications | Increase in C/S rate<br>CFR dropped from 22% - 5%<br>Initial increase in admissions for obstetric complications, then decline |

Table 2.2. Interventions in health centres

| Project site | Activities | Results: 1990 - 1995 |
|---|---|---|
| Health Centre, Juaben, Ghana | Establishment of blood bank and operating theatre<br>Recruited physician and trained in obstetrics<br>Midwives trained in life saving skills<br>Established running water supply | Utilisation of services increased 3-fold<br>Referral rate dropped from 42-14%<br>Increase in surgical procedures<br>Midwives performed 32% of manual removals, 58% of vacuum extractions and 98% of episiotomy repairs<br>CFR nil |
| Health Centre, Pakro, Ghana | Health Centre established by renovating an old warehouse, equipped and provided with drugs and supplies<br>Obstetric services offered once a senior nurse midwife had been posted there. | An average of 9 women with obstetric complications were seen each year<br>With an average of 23 deliveries per year |

### 3.1.3. Community based interventions

Kwast (1998b) reports on community based interventions that included the establishment of birthing houses, emergency transport funds, and receiving blood donations from the family members of pregnant women. The PMM Network projects all reported interventions aimed at improving access to health facilities and the reduction of delay in seeking help from the health facilities.

## 3.2. In South Africa

### 3.2.1. Clinical audits

Clinical audits have been instituted as a means of improving obstetric care. At a national level, the National Department of Health has recently made maternal deaths a notifiable event. Provincial assessors and the National Committee for the Confidential Enquiry into Maternal Deaths review all notified maternal deaths and describe the prevalence, patterns of disease, avoidable factors, missed opportunities, and substandard care pertaining to the maternal deaths (NCCEMD 2000). The aim of

these reviews is to identify inadequacies in all aspects of the health service and, based on the problems identified, to develop recommendations that will improve the quality of maternal health care. The first report of the committee (Pattinson 1998) presented ten recommendations for implementation in each of the provinces, with a view to improving the quality of maternal health care.

Pattinson (2002 in press) reports on the benefits of analysing 'near miss' death events. He defines a 'near miss' death event as a severe life-threatening event that occurs during pregnancy that could result in death, but either because of good fortune, or good care, the patient survives. 'Near-miss' audits have two major advantages over auditing maternal deaths:

"Firstly, maternal morbidity occurs more than three times more frequently than maternal deaths, hence information on maternal care can be gathered and analysed more rapidly, allowing for more rapid feedback and intervention. The second is that the woman survives and the woman can be interviewed to identify whether the health system failed or not" (Pattinson 2002, in press).

'Near miss' audits have been piloted in three areas (Pretoria, Soweto and Bloemfontein) to review acute maternal morbidity and to determine the major inadequacies in the quality of care leading to the 'near miss'.

Perinatal death audits review each perinatal death and identify the avoidable factors (health worker related, administration related and patient related) that led to the death. The Perinatal Problem Identification Programme (PPIP) is a computer software programme developed by the University of Pretoria designed to facilitate the collection, collation and analysis of data pertaining to perinatal deaths.

A national 'Priorities in Perinatal Care Conference' and PPIP workshop are held each year to review problems related to perinatal care, morbidity and mortality. From the observations of the principal investigator, it would appear that many secondary and most tertiary level hospitals are using the PPIP to assist them in conducting regular perinatal audits. But most primary level hospitals would not be conducting regular perinatal audits nor would they be using the PPIP to capture and analyse their

data. In those primary level hospitals that are using the PPIP, incomplete records and poor quality analysis of the perinatal deaths limit the reliability of what is recorded as an avoidable factor.

The Saving Babies Report 2000 (MRC *et al* 2000), compiled following the perinatal care survey, presented 8 recommendations which dealt with: improving the collection of data pertaining to perinatal deaths; improved management of labour (including the use of the partogram); resuscitation of neonates and the care of premature neonate; improved availability of protocols of management in antenatal clinics, especially referral protocols; introducing a system where the time when women confirm pregnancy becomes the first antenatal visit, where she is classified according to risk and further antenatal care is planned. The extent to which these recommendations have been disseminated and implemented is not clear.

### 3.2.2. Health worker related interventions

The Perinatal Education Programme (PEP) is a distance-learning programme for midwives (and for medical officers) to increase their cognitive knowledge of maternal and neonatal care (Theron, 1999). The National Department of Health has endorsed this programme and is encouraging each of the provinces to promote it particularly amongst midwives. The extent to which midwives have registered and completed the programme will be investigated in a national study of the quality of maternal health care planned for 2003 (Personal communication - National MCWH Directorate).

The Health Workers for Change Programme is a programme developed by the Women's Health Project to improve the quality of care at primary level. It is aimed at managers of health services, and health workers within clinic, health centre and hospital settings. It is specifically designed to improve the manner in which service providers provide care. The programme helps health workers to analyse the factors that have influenced their life choices, explore how they are perceived by clients, to analyse the status of women in society, to explore the unmet health needs of women, to overcome obstacles at work, and to develop solutions to improve the quality of care (Fonn and Xaba, 1995).

Within KwaZulu-Natal, the provincial Maternal Child and Women's Health (MCWH) Directorate is currently (July 2002) conducting a training of the trainer programme aimed at educating midwives about the essential components of antenatal and postnatal care.

The Better Births Initiative (BBI) conducted by the University of Liverpool, has been piloted in Gauteng. It aims at improving obstetric care by eliminating unnecessary procedures that do not have any benefit (e.g. pubic shaving, unnecessary routine episiotomies), improving the experience of labour and delivery for the woman (by providing pain relief during labour, offering fluids, allowing movement during labour, providing choice with regards to the birthing position, introducing birthing companions) and improving the availability of basic drugs (e.g. oxytocin) (Smith and Garner, 2002)

### 3.2.3. Policy

The National MCWH Directorate has produced a set of national guidelines (DOH 2002) for the management of conditions that commonly result in maternal deaths. The guidelines also set out a national strategy for safe motherhood and maternity care in South Africa.

## 4. Conclusion

Although the problems related to poor maternal and perinatal care are well documented, and though there have been a number of initiatives aimed at addressing some of these problems, there seems to be a dearth of attention being paid to the 'ritual', systematic and rigorous monitoring of the quality of maternal and perinatal care at the point of service delivery, by managers within the health system responsible for service delivery.

With the implementation of the District Health System, service managers within districts must be responsible for measuring the quality of service they provide, identifying and dealing with particularly the system related factors that hinder the quality of care. Service managers at this level are best suited for establishing priorities in their particular context and planning, monitoring and evaluating interventions aimed at making and sustaining quality improvements. But, in the transition towards a fully decentralised health system, district level service managers still find themselves implementing intervention programmes planned at national and provincial level, oftentimes without local adaptation, integration and co-ordination, nor with the necessary monitoring and evaluation mechanisms.

Chapter
3

# Methodology

## 1. Introduction

The initial impetus for this study was provided by the Provincial Maternal, Child and Woman's Health (MCWH) Directorate in Limpopo Province, through their request for a programme of training, support and facilitation aimed at dealing with the problems associated with the poor quality of maternal health care at municipal and district level throughout the province. The Limpopo Province MCWH Directorate had already established Reproductive Health Committees in each district and agreed to the expansion of these committees so that they could become fully fledged Reproductive Health Management Teams (RHMTs). The essence of the programme of training, support and facilitation lay in building the capacity of the RHMTs to identify the problems leading to poor quality of care in their own situation, analyse these, plan and implement solutions relevant for their own context, and to then monitor and evaluate their effectiveness.

Once agreement had been reached to develop and implement a programme throughout Limpopo Province, the Provincial MCWH Directorate approached the National MCWH department to seek their support for the conduct of the programme in Limpopo Province. The national department gave encouragement for the programme to continue, and decided to regard it as a pilot programme, which could later be extended to other provinces in South Africa. It is against this backdrop that the aims and objectives of this research were developed.

## 2. The setting: Limpopo Province

Limpopo Province (formerly called Northern Province) is situated northeast in South Africa, and borders onto Botswana, Zimbabwe, and Mozambique, and North West Province, Gauteng and

Mpumalanaga Province. It has 12%[1] of South Africa's population, estimated to be close to 5.3 million, of which 89% live in a non-urban environment (in rural villages, commercial farms, small settlements and other areas that are further away from towns and cities). With regards to the type of dwelling, 71% of households are classified as formal, 20% as traditional, 7% as informal and 3% as back yard. 78% of households have access to piped water, 23% have no toilet facility and 28% have a telephone/cellular phone in the dwelling. 33% of the population aged 20 years or above have had no schooling and 6.8% have tertiary qualifications. It has one of the highest rates of unemployment estimated between 36 – 49%.

The Province is divided into six district municipalities and within these there are 26 local municipalities as listed in Table 3.1.

Table 3.1. Districts and Municipalities in Limpopo Province

| District Municipality | Local Municipality | Population 2002 |
|---|---|---|
| Sekhukhune | Schuinsdraai Nature Reserve District Managed Area | 31 |
| | Greater Marble Hall Municipality | 111 612 |
| | Greater Groblersdal Municipality | 252 725 |
| | Greater Tubatse Municipality | 265 911 |
| | Makhudutamaga Municipality | 319 953 |
| | Fetakgomo Municipality | 115 008 |
| Bohlabela | Kruger National Park District Managed Area | 3 884 |
| | Bushbuckridge Municipality | 644 861 |
| | Maruleng Municipality | 104 177 |
| Mopane | Greater Giyani Municipality | 257 531 |
| | Greater Letaba Municipality | 238 217 |
| | Greater Tzaneen Municipality | 408 849 |
| | Ba-Phalaborwa Municipality | 129 063 |
| Vhembe | Musina Municipality | 39 263 |
| | Mutale Municipality | 82 091 |
| | Thohoyandou/Mulamele Municipality | 636 576 |
| | Makhado Municipality | 542 623 |
| Capricorn | Blouberg Municipality | 179 104 |
| | Aganang Municipality | 174 485 |
| | Molemole Municipality | 127 579 |
| | Polokwane Municipality | 503 601 |
| | Lepelle-Nkumpi Municipality | 278 337 |

[1] Statistics for Limpopo Province have been obtained from Statistics South Africa (2003), Day and Gray (2001), Barron and Asia (2001), and from the Department of Health (1998).

Table 3.1. : Districts and Municipalities in Limpopo Province (Cont.)

| District Municipality | Local Municipality | Population 2002 |
|---|---|---|
| Waterberg | Thabazimbi Municipality | 69 747 |
| | Lephalale Municipality | 103 095 |
| | Mookgopong Municipality | 17 280 |
| | Modimolle Municipality | 59 407 |
| | Bela-Bela Municipality | 56 459 |
| | Mogalakwena Municipality | 333 395 |
| Limpopo Province | | 5 424 585 |

There are 6 Level 2 Hospitals, one in each District Municipality. There are a total of 35 Level 1 Hospitals (some local municipalities have more than one Level 1 Hospital). The Level 3 care is provided through the Polokwane/Mankweng Complex, which is linked to the Medical University of South Africa (MEDUNSA). There are 455 clinics and health centres.

It is estimated that 64% of deliveries occur in hospitals, 13% at clinics and 23% take place at home and in private facilities (Lakhana 2002). The maternal mortality ratio for Limpopo Province was reported as 67/100 000 live births, but this illustrates under-reporting of maternal deaths (NCCEMD 2002). The perinatal mortality rate is estimated to be 29/1000, the low birth weight rate at 14%, the perinatal care index at 2.12, the still birth to neonatal death ratio 1.5 : 1 and the caesarean section rate 13% (Lakhana 2002).

## 3. Research objectives and questions

The following are the objectives of the study and the questions that guided the attainment of the objectives.

### 3.1. Identify the indicators and a method for conducting a baseline assessment of the quality of maternal health care at municipal and district level

3.1.1. What are the most relevant indicators to assess:

(a) The health of the mother

(b) The health of the baby

(c) The following dimensions of quality of care at primary level:

- Availability of services

- Utilisation of services
- Performance of essential procedures
- Quality of procedures being performed

3.1.2. What are the norms and targets for these indicators?

3.1.3. How will data be collected for these indicators?

3.1.4. How will the data be analysed?

3.1.5. How will the findings be used to identify key issues?

### 3.2. Identify indicators that will permit an analysis of the factors that influence the key issues emerging from the baseline assessment

3.2.1. How will the relevant influencing factors be identified?

3.2.2. What are the indicators to assess the influencing factors?

3.2.3. What are the norms and targets for these indicators?

3.2.4. How will data be collected for these indicators?

3.2.5. How will data be analysed?

### 3.3. Develop a programme of intervention, with its monitoring and evaluation procedures, that will address the factors that influence the key issues

3.3.1. How can priority areas for intervention be identified?

3.3.2. How can objectives be developed for the identified areas of intervention?

3.3.3. What strategies and activities can be implemented to achieve the objectives?

3.3.4. How can the programme be monitored?

3.3.5. How can the programme be evaluated?

### 3.4. Develop a strategy for replicating the intervention programme

3.4.1. What has been learned from this study that can be applied to other provinces, with regards to:

(a) Conducting a baseline assessment of the quality of care?

(b) Identifying and measuring factors that influence the quality of care?

(c) Implementing, monitoring and evaluating a programme of intervention that will address the factors that influence the quality of care?

# 4. Research design

All researchers watch, listen, ask, record, examine, analyse and interpret. What shapes the research design is the purpose for doing the research (Schwandt, 1994). The nature of the problem to be studied determines the research methodology to be used. This suggests that a researcher has a wide variety of methods to draw on, in order to pursue answers to a particular research question. McKinlay (in Baum, 1995) calls this a "paradigm of choices" and calls for an approach to judging methodological quality or methodological appropriateness.

Through reading the literature on research methodologies, the methodology best suited to this inquiry would be one of co-operative action-research. Some, but not all of the features of participatory action research were achieved. In part, direction was provided to the RHMTs, and as they field-tested, implemented, analysed and interpreted their actions, they were equipped and empowered to fulfil their management responsibility beyond their previous limited involvement. In part, the Provincial MCWH Directorate had given the facilitators a specific mandate and these provided some terms of reference for the study.

## 4.1. Theoretical background to action-research

Denzin and Lincoln (1994) place action research within the 'fifth moment'[2] of the history of qualitative research – where qualitative research is embracing more action-oriented, small-scale theories fitted for specific problems within specific situations. Reason (1994) places action-research in the field of co-operative inquiry, or participative research methodology. In co-operative inquiry "all those involved in the research are both co-researchers, whose thinking and decision making contribute to

[2] The traditional period is regarded as the first moment, characterised by a positivisit paradigm and classical ethnography. The second moment is the modernist phase, influenced by a post-positivist paradigm, interpretive and constructionist theories, and includes an emphasis on rigorous analysis that would lead to the formulation of grounded theory. The third moment is characterised by blurred genres, where qualitative researchers employed a full complement, paradigms, methods and strategies in their research. Applied research gained recognition. In the fourth moment occurs the crisis of representation, where research became more reflexive and the influence of the gender, race and class of the researcher were identified and analysed. The fifth moment includes more action and activist-oriented research, which includes social criticism and critique, a replacement of grand narratives with local, small scale theories fitted to specific problems and situations. (Denzin and Lincoln, 1994)

generating ideas, designing and managing the project and drawing conclusions from the experience, and also co-subjects, participating in the activity being researched." (*Ibid.* p.326)

The focus in action-research is on the activity. It is a form of study into practice. According to Torbet (1981 in Reason 1994) action-research is not "a reflective science about action, ... (but) an action science" (p.330) concerned with the development of genuinely well-informed action. Thus the main aim of action-research is the development of effective action, the improvement of practice, and the implementation of effective change as measured by specific outcomes (Sarantakos 1993; Reason 1994; Hamilton 1994; Baum 1995; Waterman 1998; Dick 1999; Hampshire 2000).

Action-research proceeds in a self-reflective cyclical way, alternating between action and reflection. Reason (1994) describes 4 phases in the cycle of action-reflection. In Phase 1 co-researchers identify an area for research and make some initial propositions about how the research will proceed. In Phase 2 these ideas are applied in everyday life and work. The agreed actions are initiated and the outcomes observed and recorded. In Phase 3 co-researchers become fully immersed in the activity. They may continue to maintain their interest and enthusiasm, or not. They may continue to record, or not. They may "stumble on unexpected and unpredicted experiences and develop creative new insights" (*Ibid.* p.326). After a period of being in Phase 2 and Phase 3, co-researchers consider their original propositions in the light of their new experience. They may amend, or may develop new research procedures so that they can more fully record their experiences.

The phases in action-research described by Reason are similar to the phases proposed by Elliott (1991 in Smith 1994), which have been used by teachers as they engage in a self-reflective action-research process. This cycle involves: proposing, planning, implementing, observing, recording, reflecting, writing up and re-entering the cycle. This research process has often been accompanied by a biographical method of data collection (Smith 1994).

In the co-operative nature of action-research, the research process involves a group of people. But there are variants in how these action-research groups interact and how they engage in the action-research process.

- A group of practitioners may come together (either facilitated or self-directed) in the tradition of action-learning (Revans 1983) or reflective practice (Argyris and Schon 1974; Schon 1983; Schon 1987) for the explicit purpose of improving their practice. Their concern is to find solutions to problems that confront them in their daily work. These problems occur in complex situations, characterised by uncertainty, instability, uniqueness and value conflict, and have no perceived solution. Although individuals meet in a group, the process is primarily aimed at each individual developing a more effective practice. These individuals bring to the group the problems they are faced with, using an intuitive creativity in conceptualising them and in proposing solutions. They also bring their reflections on their actions. Schon (1983, 1987) identified two types of reflection. The first is what he calls reflection-in-action, a kind of intuitive, tacit knowledge, 'thinking about what you are doing while you are doing it' that an individual employs in the midst of a situation. The second is reflection-on-action, the process of making sense of an action after it has occurred, in order to learn from the experience, through the assistance of members of the inquiry group. This reflection is a conscious process where practitioners think about what underlying thoughts and assumptions guided their behaviour, and critically analyse the thought processes.

- An operational team comes together as an action-research team, for the purpose of finding solutions to operational problems that hinder the effectiveness of the service they provide. Operational, action-research processes often begin with a request for assistance, followed by a negotiation phase, in which the goals and broad framework for the study are developed (Bless and Higson-Smith 1995). When initiated in this way the research process is usually facilitated. The extent of facilitator involvement may vary, along the continuum between technical/experimental approaches, where the facilitator/researcher plays the major role, and emancipatory/empowering approaches, where the focus is on practitioner control (Hampshire, 2000). The research is conducted through a cyclical process that alternates between action and reflection, a constant iterative process of collecting data, feeding it back, acting on the information, reflecting on the action, evaluating it and modifying action where necessary. Action-research conducted in this way has been used successfully to bring about organisational change, and improve service provision in industry, education and health (Hampshire 2000).

- Participatory action-research (PAR) has as its primary concern issues of power and powerlessness. Practitioners of PAR are particularly concerned about the political nature of knowledge production (i.e. research), and how the production of knowledge is used to empower "the establishment", and disempower marginalized and oppressed community groups (Reason 1994). "So the PAR strategy has a double objective. One aim is to produce knowledge and action directly useful to a group of people – through research, adult education, and socio-political action. The second aim is to empower people at a second and deeper level through the process of constructing and using their own knowledge … for a process of self-awareness through collective self-inquiry and reflection." (*Ibid.* p 328)

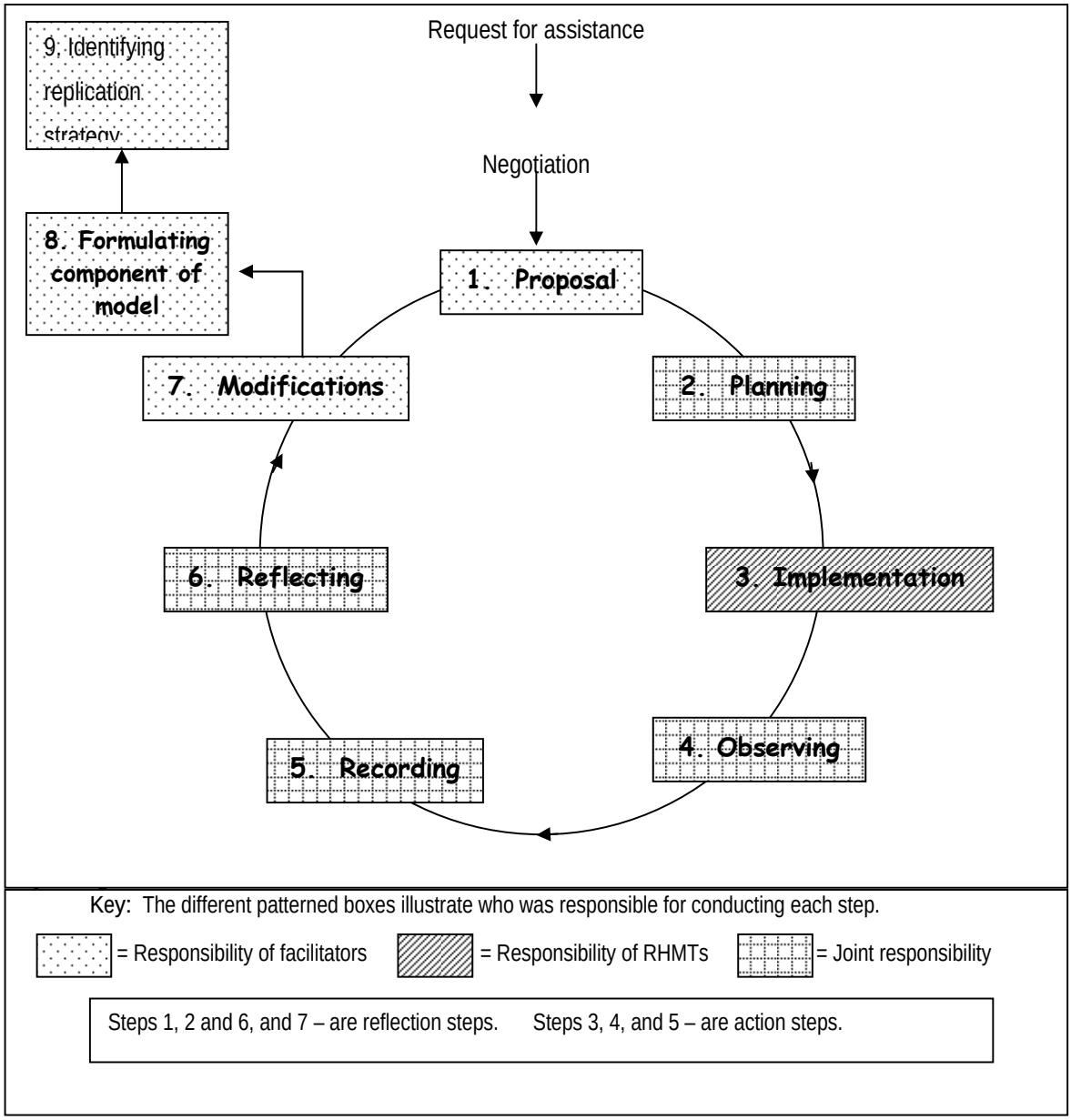
## 4.2. The application of action-research in this study

The action-research approach in this study would primarily fall in the arena of 'operation action-research'. The Limpopo Province MCWH Directorate initiated the research process with a request for assistance to implement a programme of training, support and facilitation for the purpose of improving the quality of maternal health care. The broad goals and content of the programme of training and support were negotiated with the Directorate and with the National MCWH Directorate, who extended the purpose of the programme to developing a replicable model for intervention that could be applied in other provinces.

The result of the negotiation with the Limpopo Province MCWH Directorate was that the programme of training, support and implementation would be for RHMTs and carried out through twelve 2-day workshops. The process and outcome of each workshop would contribute towards the formulation of the model of intervention that could be replicated in other provinces.

Thus the model of intervention was developed incrementally, through a cyclical process of action-reflection. The cycle below represents the action and reflection steps that were taken in the development of each component of the model.

Figure 3.1. Action-reflection steps that were taken to develop each component of the model




Step 1: Proposal

The facilitators[3] were responsible for proposing the objectives, content and process of each 2-day workshop. The workshops were planned sequentially and each workshop was designed to develop the model of intervention further. The facilitators designed the techniques and tools required to cover

[3] For a full description of the participants involved in this research please refer to Chapter 3 - Section 7 – Table 3.5.

the content and to support the process of each workshop, drawing on personal expertise, through review of the relevant literature, and consultation of relevant experts.

### Step 2: Planning

At the workshop the facilitators presented the objectives of the workshop, the content to be covered and the process that would be utilised. They guided the RHMTs through each part of the workshop and helped them to prepare for implementation in their local areas, post-workshop.

### Step 3: Implementing

The RHMTs returned to their municipal areas and districts and implemented the plan that was developed in the workshop (conducted home assignments). They returned to the next workshop with feedback on their implementation.

### Step 4: Observing

Both RHMTs and facilitators observed the process and outcomes of the implementation: The RHMTs while they were implementing, and the facilitators while receiving the feedback at the subsequent workshop.

### Step 5: Recording

Both RHMTs and facilitators recorded their observations through workshop reports and records of meetings.

### Step 6: Reflecting

A number of reflective steps were taken – self-reflection by the principal investigator, reflection with the co-facilitator, with the RHMTs, with the PhD Supervisor and against published and unpublished literature. Included in the self-reflection by the principal investigator was how she has influenced the research process as 'research instrument'. The focus of the reflection with the co-facilitator was on the content and process of the workshop, and the implementation that followed the workshop. The RHMTs contributed their reflections on the implementation step. The PhD Supervisor assisted to reflect on the theoretical basis and development of the model. Published and unpublished literature assisted with the critique of the study process and products.

### Step 7: Modifications

The facilitators, based on the reflections, identified and introduced necessary modifications to the content and process of the workshop, and to the implementation step.

The study was designed so that the Cycle of Steps 1 – 7 was repeated several times: each workshop was repeated four times, to include all the RHMTs from the districts in Limpopo Province. Each time a workshop was repeated, it incorporated modifications suggested in the previous run of the workshop. For example the first in the series of Workshop #1 was conducted for the RHMTs in one district. Based on observations, the recording of outcomes, and reflections, the workshop was modified in preparation to conduct Workshop #1 for the RHMTs in the second district. And so forth, each repetition contributing to refining this component of the model, its final write up and the development of the replication strategy. Based on the outcomes in all the districts from this Workshop #1, the content and process for Workshop # 2 was proposed and planned and the cycle continued for this series of workshops. And so forth, for all the workshops.

### Step 8: Formulating each component of the model

Finally, after the workshop had been conducted several times, each time including the modifications suggested, and the facilitators were satisfied that the best practice had been achieved, the principal investigator wrote up that component of the model, referring to relevant literature and in consultation with experts, in order to present the model logically and thoroughly.

### Step 9: Developing replication strategy

As each component of the model was formulated and written up, the principal investigator developed recommendations for the implementation of the model in other provinces.

## 5. Population and sampling

Based on the directive from the National Department of Health, the target population for this study were managers and supervisors of maternal health services in South Africa. The study population

were Reproductive Health Management Teams (RHMTs)[4]. The sample population was chosen through convenience sampling - because the facilitators were requested to develop and implement a programme of training, support and facilitation in Limpopo Province, the study was located in this Province. Within Limpopo Province, all districts in the province were included in the study. Within each district, all municipalities were included, with one RHMT established for each municipality.

Each Municipal RHMT consisted of:

- The midwife in charge (or delegate) of the maternity ward in the Level 1 Hospitals in that local municipality
- The doctor working in maternity in the Level 1 Hospitals
- The Chief Community Liaison Officers (CCLOs) responsible for supervising the clinics
- One or two midwives working in the clinics

At the beginning of the study, District RHMTs were envisaged, consisting of:

- The maternity matron (or delegate) in charge of the maternity ward in the Level 2 Hospital
- The district obstetrician
- The PHC manager (based at the district office)
- Representatives from academic institutions (university nursing departments and nursing colleges) in the district

Rather than forming separate teams, these district level representatives decided to participate as members of the Municipal RHMTs for the municipality within which the Level 2 Hospital was located. In total there were 25 Municipal RHMTs from all six districts in Limpopo Province, with representatives from 41 hospitals (including the 6 Level 2 Hospitals) and representatives from one or two clinics relating to each Level 1 Hospital, and their clinic supervisors and PHC Managers.

All RHMTs maintained a consistent representation at each workshop. In general, the participation of the individual representatives was fairly consistent throughout the study period (attendance registers available on request). The representatives that were the least represented and least consistent were

[4] This is a new concept in the management of maternal health services, and RHMTs are not present in all provinces.

the maternity doctors in Level 1 Hospitals. The reason given was that, due to a shortage of doctors in the hospital, they were unable to be away from their clinical responsibilities. The district obstetricians, however, maintained a consistent attendance. The PHC managers in one particular district were consistently absent, called away to 'urgent' unscheduled meetings, which happened to coincide with the workshop days, despite the fact that the dates for these had been planned and circulated at the beginning of each of the two years of the study period for the whole year.

## 6. Study period

The study was conducted over a period of 28 months. The study started with the initial consultation and negotiation in December 2001, with the Provincial and National MCWH Directorates. A setting up meeting was held in Limpopo Province in January 2002. Monthly 2-day workshops started in February 2002 and were completed in March 2004. In January 2003 a provincial level meeting was held with institutional and district managers from all over the province, at the request of the Provincial MCWH Director. In September 2003, after the appointment of a new Provincial MCWH Director, field visits were conducted in the larger Level 1 Hospitals, at her request, to monitor the implementation of the interventions designed by the RHMTs and to provide on-site support. A meeting was held in November 2003, with a range of Provincial Directors, at the request of the new Provincial MCWH Director. This was an attempt by the MCWH Director to prompt her provincial colleagues to implement higher-level health system change in order to support the interventions at district and municipal level to improve the quality of maternal health care. The issues dealt with in this meeting arose from observations and reflections in the workshops and in the site visits. In February and March 2004 a final 2-day workshop was conducted with the RHMTs, with the purpose of summarising the process and activities of the project, 'taking stock', and planning for the future.

A concluding certification ceremony was held in March 2004, providing University of Natal certificates of completion to those who had attended 8 or more workshops, and certificates of attendance to those who had attended less than 8 workshops.

Table 3.2. Plan Year 2002

| District | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov |
|---|---|---|---|---|---|---|---|---|---|---|---|
| # 1 | Setting up meeting | Wrkshp # 1 | | Wrkshp # 2 | | Wrkshp # 3 | | Wrkshp # 4 | | Wrkshp # 5 | |
| # 2 | | | | | | | | | | | |
| # 3 | | Wrkshp # 1 | | Wrkshp # 2 | | Wrkshp # 3 | | Wrkshp # 4 | | Wrkshp # 5 | |
| # 4 | | | Wrkshp # 1 | | Wrkshp # 2 | | Wrkshp # 3 | | Wrkshp # 4 | | Wrkshp # 5 |
| # 5 | | | | | | | | | | | |
| # 6 | | | Wrkshp # 1 | | Wrkshp # 2 | | Wrkshp # 3 | | Wrkshp # 4 | | Wrkshp # 5 |

Table 3.3. Plan Year 2003

| District | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov |
|---|---|---|---|---|---|---|---|---|---|---|---|
| # 1 | Wrkshp # 6 | | Wrkshp # 7 | | Wrkshp # 8 | | Wrkshp # 9 | | Field visits | Field visits | Field Visits & Provin-cial meeting |
| # 2 | | | | | | | | | | | |
| # 3 | Wrkshp # 6 | | Wrkshp # 7 | | Wrkshp # 8 | | Wrkshp # 9 | | | | |
| # 4 | | Wrkshp # 6 | | Wrkshp # 7 | | Wrkshp # 8 | | Wrkshp # 9 | | | |
| # 5 | | | | | | | | | | | |
| # 6 | | Wrkshp # 6 | | Wrkshp # 7 | | Wrkshp # 8 | | Wrkshp # 9 | | | |

Table 3.4. Plan Year 2004

| District | Jan | Feb | Mar |
|---|---|---|---|
| # 1 | Field visits | Wrkshp # 10 | |
| # 2 | | | |
| # 3 | | Wrkshp # 10 | |
| # 4 | | | Wrkshp # 10 |
| # 5 | | | |
| # 6 | | | Wrkshp # 10 |

## 7. Research team and their roles

In the nature of co-operative enquiry, there are a number of participants involved in the research. These participants, and the roles they fulfilled, are depicted in the table below.

Table 3.5. Research participants and their roles

| Participants | | Roles |
|---|---|---|
| Steering Committee | Limpopo Province MCWH Directorate | ▪ Provide overall direction and modify objectives and activities of the study if necessary<br>▪ Monitor progress of study<br>▪ Provide feedback to, and receive feedback from, researchers<br>▪ Mobilise resources for the implementation of the study |

Table 3.5. Research participants and their roles

| Participants | | | Roles |
|---|---|---|---|
| Reference Group | National MCWH Directorate | | ▪ Provide advice on the focus, content and process of each phase of the study<br>▪ Provide information about key literature to be consulted |
| | Expert consultants[5] | | |
| Researchers | Facilitators | Principal investigator | ▪ Propose each component of the model and plan the process of implementation<br>▪ Facilitate implementation<br>▪ Observe the implementation and record these observations.<br>▪ Reflect on and analyse the process of implementation, and its outcomes<br>▪ Identify areas of modification<br>▪ Formulate each component of the model<br>▪ Recommend a replication strategy |
| | | Co-facilitator | ▪ Contribute to the proposal and planning of each component of the model<br>▪ Co-facilitate implementation<br>▪ Contribute to reflections and suggestions for modification |
| | RHMTs | | ▪ Implement the model<br>▪ Reflect on implementation |
| | Research Assistant | | ▪ Make all the logistical arrangements throughout conduct of study |
| PhD Supervisor | | | ▪ Provide advice on content and process of each phase of the study<br>▪ Deepen the quality of reflection<br>▪ Monitor documentation of the evolving model<br>▪ Ensure appropriate academic standard |

## 8. Data collection methods and instruments

In this study both quantitative and qualitative data was collected. Quantitative data was collected to establish a baseline assessment of the quality of maternal health care, to measure the factors that influence the quality of care, and to assess the extent of implementation of the interventions planned to address the influencing factors. Observations and reflections constituted the qualitative data.

The quantitative data collection methods and instruments were developed as the study proceeded, shaped by each action-reflection cycle. The process for developing the tools was as follows:

- An instrument was developed prior to the workshop
- The instrument was refined during the workshop

[5] The type of experts that were consulted included: Midwives, obstetricians, management consultants, information system specialists, public health specialists, educational media specialists

- It was tested in consecutive districts
- The instrument was finalized for the model and its replication

Instruments to collect quantitative data were used by the RHMTs, and included checklists, interview schedules, and facility review forms.

Qualitative data was largely collected from group-work carried out during each workshop and on the field visits. The following procedure was used for the group work in the workshops:

- A group-work guide was developed prior to each workshop
- The outcomes of the group-work were documented
- Notes were analysed in terms of the objectives
- Analysis was checked with the co-facilitator

The data collection tools that were used in the study are contained in the appendix to chapter 4. They include the tools used to:

- Conduct the baseline assessment of the quality of maternal health care
- Assess the influencing factors
- Assess the interventions
- Facilitate each 2-day workshop

## 9. Data analysis

Data was analysed throughout the conduct of this study, as part of each action-reflection cycle, as each stage of the study informed the next.

With regards to quantitative data analysis, the RHMTs analysed the data that led to the compilation of the findings of the baseline assessment. This was done manually. The principal investigator analysed the data leading to the assessment of the influencing factors. This was done manually.

The principal investigator analysed the data leading to an assessment of the intervention phase. This was done manually and using Microsoft Excel, as appropriate.

Qualitative data analysis was conducted particularly during Step 6 of the action-reflection cycle, with the specific purpose of formulating each successive component of the model of intervention. The editing analysis style (Crabtree and Miller 1992) was used for analysis. In this style of qualitative analysis the researcher moves closer to the subjective/interpretive side of the analysis continuum. They describe it as follows: The researcher "enters the text much like an editor searching for meaningful segments, cutting, pasting and rearranging until the reduced summary reveals the interpretive truth in the text" (p.20). The researcher searches the text for meaningful segments that both stand on their own and relate to the purpose of the study. Once identified, these segments are sorted into categories. Further analysis seeks to identify relationships between categories and the themes that connect them.

## 10. Assuring the quality, credibility and generalisability of the study

The quality of the study was assured through the following:

- Training for the RHMTs through the workshops in all methods
- The repetition of the workshops, with reflection, identification of modifications required and incorporations of these modifications into the next workshop
- Thorough documentation of workshops, meetings, and personal and collective reflections
- Ongoing consultation with the steering committee and with reference group
- Validation of reflections with co-facilitator and with RHMTs

Badger (2000) proposes the following criteria to judge the quality of action-research and to ensure generalisability:

- Practical utility of the study. Over recent years the problems in maternal mortality and perinatal mortality in South Africa have been documented through reports issued by the National Department of Health. The challenge for South Africa at present is to develop, implement and

sustain interventions that will make a difference to the quality of maternal health care. This study aims to provide a model for such an intervention.

- Desire for innovation and implementing change. The establishment of RHMTs for the management of a maternal health service has been an innovation towards implementing change strategies that will influence the quality of maternal health care.
- Extent to which it generates knowledge about a system. The conceptual framework that was developed for this study takes cognisance of the multidimensional factors within the health system that would influence the quality of maternal health care. The research process provided information as to the influence of factors at different levels within the system, on the quality of care.
- Information must be presented in a logically developed, unbiased argument, demonstrating both academic rigour and thoroughness. The steps in the action-reflection cycle, particularly the proposal, planning, observing, recording, reflecting steps, contributed to the logical and thorough development of the model. The involvement of the RHMTs, the co-facilitator and the PhD Supervisor contributed to reducing bias and to maintaining academic rigour.
- Although the research takes place within a specific context, phenomena are usually 'of a kind' and through the construction of a model, findings may be generalised to other situations. The thrust of this study was to develop a model that can be generalised to, and replicated in, other provinces. The factors that influence the quality of care are common to the problems identified in the literature review, and are expected to be common to most provinces in South Africa. The process of developing interventions was generic and can be applied in other contexts. A specific step was included in the research process for the formulation of a replication strategy for application in other provinces. Further research will need to evaluate the effectiveness of the model in other contexts. The opportunity to test the indicators proposed in this study in all 9 provinces has been provided by the National Department of Health, who has commissioned a situation analysis that will be implemented during 2005, both to assess the quality of care and to measure the influencing factors.
- In the process of self-reflection, the researcher must continually consider how her actions, beliefs and values have affected the situation and its interpretation. During the reflection step of the action-reflection cycle, there was opportunity for the principal investigator to determine how

she influenced the findings and what she brought to the analysis of the data and to the final formulation of the model.

Waterman (1998) discusses three types of validity in qualitative studies:

- Dialectical validity – which involves the analysis and movement between theory, research and practice and uncovering the contradictions and complexities in a situation. The findings of the study with regards to the various components of the model were compared with what had been reported in the literature, and similarities and differences were noted.
- Critical validity – analyses the process of change, the intentions, actions and their ethical implications and consequences, rather than the degree of change. The factors affecting the ability of the RHMTs to implement change were identified and discussed.
- Reflexive validity – exploration of researcher biases in the interpretation of phenomena. Researcher biases have been reported in Section 13.

## 11. Ethical considerations

- The Provincial MCWH Directorate commissioned and provided oversight to the study. The researchers were accountable to the Provincial MCWH Directorate, and indirectly to the National MCWH Directorate.
- The RHMTs agreed to be part of developing the model at the setting-up meeting held in January 2002 and at Workshop #1 held in February and March 2002. Their ongoing participation was voluntary and members of RHMTs could withdraw at any time. Attendance registers were kept, not to enforce attendance, but for Department of Health administrative purposes (for the provision of meals and the paying out of subsistence and travel allowances, which are standard in the province for any meeting and workshop attended by Department of Health employees). The certificates awarded at the end of the programme were awarded at the request of RHMT members. The request arose towards the end of the 28-month project. It was a request aimed at receiving recognition for all that they had done.
- All research participants were informed that the model of intervention was being developed for application in other provinces.

- Permission and authorisation for the study to be submitted as a doctoral thesis was sought from, and granted by, the Research Committee of the Faculty of Community and Development Disciplines and its Ethics Committee (see appendix to chapter 3).
- The study was of benefit to researchers, provincial, district and institutional level managers, to the RHMTs, and indirectly to all health providers and to all pregnant women.
- RHMT members were encouraged to conduct further research linked to the overall study. In the same way that the principal investigator has submitted the research report for the award of a doctoral qualification, so two RHMT members have taken the opportunity to conduct research based on this study that will contribute to them being awarded master level qualifications in nursing.
- Some negative effects did arise from the study being implemented. These resulted from the dynamic inherent in any system as a consequence of practices being scrutinised and change being implemented. Avoidable problems and inefficiencies within the health system were 'exposed'. On the whole, the RHMTs and their line managers addressed these constructively. Some stakeholders within the health system did not co-operate with the RHMTs, while some others resisted and counteracted changes that were planned and implemented. Researchers and the MCWH Directorate dealt with these in the best way possible, as they were recognised at individual, institutional and systemic level.
- Feedback to the RHMTs was provided through workshop reports that provided detailed descriptions of the process, the outcomes and any decisions taken.
- Confidentiality of workshop data was maintained. Sources of information were protected through the compilation of composite workshop reports.
- Facilitators helped the RHMTs to plan for the sustainability of the programme, in the site visits and in the final workshop.

## 12. Limitations to the study

Some limitations to the study were recognised at the onset. Further limitations arose and were identified as the study proceeded. At the onset it was recognised that:

- It would be difficult to deal with all the factors that influence the quality of maternal health care. It was hoped that by identifying and focusing on what were considered the major problems and strategic areas, significant changes would occur in the quality of maternal health care. But it would be difficult to attribute success or failure directly to the programme of intervention, particularly because this study did not aim to measure the changes in the quality of maternal health care directly. Meyer, Pope and Mays (2000) point out that while action research attempts to influence practice positively, change is problematic, and although action research lends itself to discovery of solutions, its success should not be judged solely in terms of the size of the change achieved or the immediate implementation of solutions. Instead success can often be viewed in relation to what has been learned from the experience of undertaking the research. It is from these lessons that the model was constructed.
- Although the model would strive to identify a generic process and broad areas of content, the programme would still evolve within the specific context of Limpopo Province. Although all districts would be included in the study, and they represented a variety of situations, the programme would still evolve with a context-specific influence.
- The programme of intervention would be dependant on the maintenance of functioning RHMTs. At the beginning of the project, the level of commitment from the teams was high. But within a national climate of high staff turnover, limited resources and reported high workloads, the teams could be hard pressed to maintain their level of commitment throughout the study period.
- There was agreement with Reason (1994) who points out that there would be difficulties in self-reflection – particularly self-defensive responses that would prevent the clear identification of one's own biases and mistakes in practice.

During the study, the following limitations were noted:

- The Provincial Obstetrician and the MCWH Director who commissioned the study left the employ of Limpopo Province Department of Health and Welfare during the process of the study. The Provincial Obstetrician transferred to another province just 3 or 4 months after the start of the study, and the MCWH Director retired halfway through 2003. This was a significant drawback with regards to maintaining good linkages with institutional, district and provincial level managers throughout the progress of the study.

- The administrative de-linking of the clinics from the hospitals impacted on relationships between clinic-based and hospital-based representatives in some RHMTs.
- During the progress of the study, the MCWH division at provincial level was removed from under the authority of the Director: PHC Services and was upgraded from sub-directorate to directorate level. Soon after this administrative arrangement was completed, some of the clinic supervisors, ultimately accountable to the Director: PHC services, no longer felt responsible to supervise MCWH services in the clinics.
- The transfer of the Provincial Obstetrician led to a number of other obstetricians resigning from the Level 3 Hospital, which became dysfunctional as a Level 3 facility. This impacted severely on referrals to Level 3 care in the province. The referral lines were reassigned to relieve the load on the poorly staffed level 3 Hospital.
- The focus of the research has undoubtedly been on midwives. A full exploration of the way in which doctors influence the quality of maternal health care was not conducted, but is needed.
- The hospitals that did return the Facility Review Form (see section 3.2.5.) may have introduced a sampling bias

## 13. Researcher bias

As stated in the background, the facilitators had been involved in facilitating a woman's health initiative in KwaZulu-Natal during 2000 and 2001. The conceptual framework for the study, and the interventions developed to bring about quality improvements, were influenced by this experience. This had its advantages and disadvantages. The advantages were that the facilitators had a very good idea of what were the key issues with regards to the provision of quality maternal health care, what were the influencing factors, and what could be interventions that could bring about improvements. The disadvantages were that this may have overly influenced the outcome of the study, in each of its stages. However, the action-reflection cycle was repeated four times, and the outcomes of the workshops with one team, corroborated the outcomes of the workshops with the other teams.

The principal investigator is not a clinical expert, but rather has public health skills and has a health system and health management orientation. The co-facilitator is a clinical expert and has extensive

experience in managing maternal health services at tertiary level. These differing skills complemented each other in this study.

The study was conducted over an extensive period of time. It was difficult to maintain a completely objective stance throughout the study. The facilitators 'got caught up' in the happenings and events in the Limpopo Department of Health and Welfare, and its rippling effects to the most peripheral municipalities and on the RHMTs. So much 'soft' information was gathered and much of it internalised. Much information became intimate tacit knowledge (Waterman 1998) to the extent that the principal investigator has omitted to consider and report on it all, and to bring it all to bear on the analysis and discussion of the findings. Which emphasises that, however complex the health system is in design and function, it is made even more complex by the range of human and organisational interactions, all of which are difficult to capture and analyse and report on, particularly within the constraints of reporting as clearly as possible the findings for each study objective. This crisis of representation (Lather 1993 in Waterman 1998) has been sorely felt in the writing up of this research report. The principal investigators acknowledges that the research report represents only one account of what happened, and has excluded all that happened that does not pertain directly to the study objectives.

## 14. Conclusion

This chapter has presented the methodology that was used in pursuing the study objectives. It has further described how the quality, credibility and generalisability of the study was assured, and what were the ethical considerations, limitations and researcher biases that influenced the study and its outcomes.

Chapter 4

# Findings

## 1. Introduction

Reported in this chapter are the outcomes of action-research steps 1-5 (proposal, planning, implementation, observing and recording) for study objectives 1-3. The outcomes of action-research steps 6-8 (reflection, modifications, and formulating model) for study objectives 1-3 are recorded in Chapter 5: Discussion and Conclusions. The findings for Objective 4 arise out of action-research step 9 and are reported in Chapter 6: Recommendations.

The findings are reported according to:

- The process followed to achieve the objective
- The products that arose from the implementation of the process

## 2. The indicators and method for a baseline assessment of the quality of maternal health care at municipal and district level

### 3.1. Background to Study Objective 1

The following were the research questions that guided the attainment of this objective:

a) What are the most relevant indicators to assess:
   - The health of the mother
   - The health of the baby
   - The following dimensions of quality of care at primary level:
     * Availability of services
     * Utilisation of services
     * Performance of essential procedures
     * Quality of procedures being performed

b) What are the norms and targets for these indicators?

c) How will data be collected for these indicators?

d) How will the data be analysed?

e) How will the findings be used to identify key issues?

## 3.2. The process followed to achieve Study Objective 1

The following account is a summary of the process followed to answer the research questions and to achieve Study Objective 1.

### 3.2.1. To identify the most relevant indicators

The indicators that were identified and used by the RHMTs to conduct a baseline assessment of the quality of maternal health care in the municipalities and districts of Limpopo Province represent the outcome of the following process:

3.2.1.1. Facilitators reviewed the literature, consulted with national and international experts, and drew on personal experience in order to:

a) Identify critical components of maternal health care that should be measured in the South African context

b) Identify a 'long list' of measurements that would assess the quality of maternal health care at municipal and district level

c) Select an essential list of indicators to be used by RHMTs to conduct a baseline assessment of the quality of maternal health care

d) Categorise the indicators according to a systems framework (Aga Khan University *et al.* 1993)

3.2.1.2. The RHMTs:

a) Reviewed the list of indicators proposed by the facilitators. They questioned uncertainties and ambiguities, and proposed their own additions and modifications.

b) Used the indicators to achieve a baseline assessment of the quality of maternal health care in their respective municipalities

c) Reflected on the use of the indicators and suggested further modifications

3.2.1.3. The facilitators observed and reflected on the implementation by the RHMTS and recategorised the indicators according to the planning questions they helped to answer (Maine *et al.* 1997).

### 3.2.2. To establish the norms and targets for the identified indicators

Once an indicator is measured, a judgement needs to be made about how a programme is performing. Therefore a comparison needs to be made with some standard. The norms and targets for the indicators identified in this study, were established through the following process:

3.2.2.1. The facilitators reviewed the literature, consulted with national and international experts, and drew on personal experience in order to establish norms and targets for the identified indicators.

3.2.2.2. The RHMTs reviewed and agreed the norms and targets.

### 3.2.3. To identify how data will be collected for the identified indicators

3.2.3.1. The facilitators developed the data collection tools and presented these to the RHMTs.

3.2.3.2. The RHMTs planned for the data collection in their respective municipalities and used the tools to collect the data.

3.2.3.3. The RHMTs provided feedback on the user friendliness of the data collection tools.

### 3.2.4. To identify how data will be analysed for the identified indicators

3.2.4.1. The facilitators developed summary sheets to enable the RHMTs to collate and compile their findings as municipalities, and then to aggregate these findings for the district.

3.2.4.2. RHMTs used these to record their findings and provided feedback on their use.

3.2.4.3. The facilitators reviewed the literature, consulted with experts and drew on personal experience to develop a method and guidelines to enable the RHMTs to interpret their findings, to identify and list problem areas, and establish major problems.

3.2.4.4. The RHMTs applied the method to interpret their findings, answer the planning questions posed, and list the major problems in the quality of maternal health care in their municipalities and districts.

### 3.2.5. To identify key issues

3.2.5.1. The facilitators proposed a method to enable the RHMTs to identify the key issues.

3.2.5.2. The RHMTs applied the method to score and prioritise the major problems, thus identifying priority key issues with regards to the quality of maternal health care.

3.2.5.3. The facilitators observed the emerging trends for the province, identified the similarities in the selected key issues and recorded the identified key issues for the province.

## 3.3. The products for Study Objective 1

Where possible the products have been consolidated and presented in tabular format. In order to facilitate the flow for the reader, some products have been included in the appendix to this chapter.

### 3.3.1. The indicators to conduct a baseline assessment of the quality of care

The final list of indicators used by the RHMTs to conduct the baseline assessment may be found in Column 1 of Table 4.1. These have been categorised according to the planning questions they help to answer.

### 3.3.2. The norms and targets for the indicators

The norms and targets for the above indicators may be found in Column 2 of Table 4.1.

### 3.3.3. Data collection tools

The data collection tools that were developed for use by the RHMTs to collect data in their respective municipalities have been appended to this chapter (Chapter 4 Appendix 1A). These include:

- Exit interview schedule for the 1st ANC visit (ANC Form 1)
- Checklist for ANC record review (ANC Form 2)
- Clinic checklist (ANC Form 3)
- Checklist for essential obstetric care (EOC) facilities (IPC Form 1)
- Checklist for labour record review (IPC Form 2)

A summary of the source of data and the tool used to collect the data for each indicator is presented in Column 3 of Table 4.1.

### 3.3.4. Tools and method for data analysis

3.3.4.1. The summary sheets, designed to enable the RHMTs to collate and compile their findings as municipalities, and then to aggregate these findings for the district, are included in the appendix to this chapter (Chapter 4 Appendix 1B).

3.3.4.2. The findings of the baseline assessment, aggregated for the province, are recorded in Column 4 of Table 4.1.

3.3.4.3. The guidelines developed to enable the RHMTs to interpret their findings are recorded in Column 5 of Table 4.1.

3.3.4.4. The method used to identify and list problem areas, and establish major problems, is described in the appendix, as is the list of major problems identified by the RHMTs (Chapter 4 Appendix 1C).

### 3.3.5. Identification of key issues

Arising from the findings of the baseline assessment, the RHMTs compiled a list of major problems. The list of major problems identified was very long and unmanageable with regards to planning interventions to resolve them. Thus the RHMTs were requested to select 5 priority key issues from their list of major problems. The method for identifying key issues is described in the appendix (Chapter 4 Appendix 1D). The priority key issues that emerged are recorded below.

- Poor quality of the 1st ANC visit, which is compounded by late booking for this visit, and poor return of RPR results.
- Poor record keeping in labour. This is emphasised by related key issues i.e. the high percentage of perinatal deaths due to avoidable factors, high perinatal care index, high perinatal mortality rate and high maternal mortality rate. This key issue was reformulated as poor management of labour.
- Non-availability of emergency transport
- Non-availability, poor distribution and inaccessibility of functional health facilities (hospitals and health centres)

Table 4.1. Summary of the products for Study Objective 1

Are essential services available?

| Indicators | Norms and Targets | Source of data | Findings | How do you interpret your findings? |
|---|---|---|---|---|
| 1. Availability (number and distribution) of functioning Basic Essential Obstetric Care (B-EOC) facilities per 500 000 population.<br><br>The definition of a functioning facility is one that has performed all of the following Signal Functions within the last 3 months:<br>▪ Antibiotics (injectable)<br>▪ Oxytocics (injectable)<br>▪ Anticonvulsants (injectable)<br>▪ Manual removal of placenta<br>▪ Assisted vaginal delivery<br>▪ Resuscitation of the asphyxiated newborn | WHO/ UNICEF/ UNFPA guideline = 4 per 500 000 population<br><br>Therefore for Limpopo Province with a population of close to 6 million requires 32 functioning B-EOC facilities | Facility based survey - use IPC Form 1 | C – 2 / 1 140 285<br>S – no data<br>B – 0/ 749 038<br>M – 2/ 1 087 889<br>W – 3/ 639 383<br>V – 0/ 1 504 170<br><br>Overall – 7/ 5 120 765 population | WHO/ UNICEF/ UNFPA (1997) state that: If the minimum acceptable level of at least 4 B-EOC facilities and 1 C-EOC facility per 500 000 population is not met, a high priority is to bring the amount of EOC services at least up to the minimum acceptable level. This may be done in different ways – by upgrading existing facilities, building new facilities, or a combination of the two.<br><br>If the overall minimum acceptable level is met, it is reasonable to conclude that in the aggregate there exist a reasonable number of EOC facilities. The next step is to look at the geographical distribution of the EOC facilities. If there are underserved areas, then we need to increase the availability of EOC facilities in those areas.<br><br>Meeting the minimum, acceptable number of EOC facilities does not mean that all women necessarily have access to EOC. In very difficult terrains, or in a vast area with few roads, more than the minimum number of EOC facilities may be needed to make them reasonably accessible to women in need<br><br>A map will assist to analyse the distribution of facilities per population density, as well as indicate where facilities are not easily accessible due to poor roads and other geographical barriers. |

Are essential services available? (Cont.)

| Indicators | Norm and Targets | Source of data | Findings | How do you interpret your findings? |
|---|---|---|---|---|
| 2. Availability (number and distribution) of functioning Comprehensive EOC (C-EOC) facilities per 500 000 population<br><br>The definition of a functioning facility is one that has performed all of the C-EOC signal functions within the last 3 months. Signal functions for a C-EOC facility include all B-EOC functions plus:<br>▪ Removal of retained products<br>▪ Caesarean section<br>▪ Blood transfusion | WHO/ UNICEF/ UNFPA guideline = 1 per 500 000 population<br><br>For Limpopo Province with a population of close to 6 million require 12 C-EOC facilities | Facility based survey - use IPC Form 1 | C – 2<br>S – No data<br>B – 4<br>M – 8<br>W – 5<br>V – 7<br><br>Overall – 29 | As above |
| 3. Existing B-EOC facilities that have performed some (but not all) signal functions within the last 3 months. (Record the signal functions missing) | N/A | Facility based survey – use IPC Form 1 | C – 1<br>S – no data<br>B – 0<br>M – 4<br>W – 10<br>V – 7<br><br>Overall – 22 | If facilities are available, but not functional, the reasons that not all signal functions are performed need to be analysed. The interventions may require upgrading the physical structure of the facility, in-service training, or a change in the organisation of the health system or in policy. |

Are essential services available? (Cont.)

| Indicators | Norm and Targets | Source of data | Findings | How do you interpret your findings? |
|---|---|---|---|---|
| 4. Existing C-EOC facilities that have performed some (but not all) signal functions within the last 3 months. (Record the signal functions missing) | N/A | Facility based survey – use IPC Form 1 | C – 1<br>S – no data<br>B – 0<br>M – 0<br>W – 1<br>V – 0<br><br>Overall – 2 | |

How many women are using essential services?

| Indicators | Norms and Targets | Source of data | Findings | How do you interpret your findings? |
|---|---|---|---|---|
| 5. ANC coverage (as measured by % pregnant women who have attended ANC at least once)<br><br>No. 1st ANC visits in one year<br>No. expected births in catchment area in the same year (i.e. total population X birth rate)<br>X 100 | National target: 90% | Numerator: monthly summary of clinic register<br>Denominator: Census data for total population<br><br>Use ANC Summary sheet | C – 37%<br>S – 37%<br>B – 29%<br>M – 54%<br>W – 57%<br>V – 86%<br><br>Overall – 53% | This indicator assesses the coverage for ANC. It is assumed that if women attend ANC at least once, then it is possible for them to attend again. If ANC coverage is lower than the expected, analyse the availability, distribution and accessibility of ANC services. If these are found to be adequate, then reasons for under-utilisation need to be explored. |

How many women are using essential services? (Cont.)

| Indicators | Norms and Targets | Source of data | Findings | How do you interpret your findings? |
|---|---|---|---|---|
| 6. % 1st ANC visits < 20 weeks<br><br>No. 1st ANC visits < 20 weeks<br>Total no. 1st ANC visits<br>X 100 | Proposed target = 85% | Numerator and denominator - Monthly summary of clinic register<br><br>Use ANC Form 3 | C – 38%<br>S – 29%<br>B – 32 %<br>M – 31%<br>W – 32%<br>V – 33%<br><br>Overall – 33% | If this is low, a community-based survey needs to be conducted to determine the reasons that women book late for their ANC. |
| 7. Institutional delivery coverage<br><br>No. deliveries that take place in B-EOC or C-EOC facilities<br>No. expected births in the catchment area (i.e. total population X birth rate)<br>X 100 | SA National target 90% (including deliveries in clinics, B-EOC and C-EOC facilities)<br><br>WHO/ UNICEF/ UNFPA guideline Minimum coverage of 15% in B-EOC and C-EOC facilities | Numerator – monthly summary of maternity register.<br>Denominator – Census data for total population<br><br>Use IPC Summary sheet | C – 56%<br>S – 49%<br>B – 64%<br>M – 54%<br>W – 43%<br>V – 64%<br><br>Overall – 56% | WHO/ UNICEF/ UNFPA (1997) state that: If < 15% of all births in a population take place in EOC facilities, one can conclude with reasonable certainty that women who require lifesaving EOC services are not receiving them. If the minimum acceptable level is met, then it is reasonable to conclude that many women who need EOC are delivering in EOC facilities. But it may be that a large proportion of women delivering in EOC facilities are those having normal deliveries. This indicator provides no information as to whether women with obstetric complications are receiving the EOC they need. |

How many women are using essential services? (Cont.)

| Indicators | Norms and Targets | Source of data | Findings | How do you interpret your findings? |
|---|---|---|---|---|
| 8. Women with listed obstetric complications who are treated in a B-EOC or C-EOC facility<br><br>No. women in B-EOC or C-EOC facilities with listed complications<br>Total expected no. of complications in the catchment area (i.e. expected births X15%)<br>X 100 | WHO/ UNICEF/ UNFPA target 100% | Numerator - Monthly summary of maternity register. Denominator – calculate from census data<br><br>Use IPC Summary sheet | C – 41%<br>S – 43%<br>B – 6%<br>M – 27%<br>W – 4%<br>V – 28%<br><br>Overall – 37% | WHO/ UNICEF/ UNFPA (1997) state that: If the acceptable level for this indicator is not met, i.e. 100% - then it may be concluded that some women with complications are not receiving the care they need. If the target is met, then it is possible to conclude that most women needing EOC services are receiving them. Indicator could score greater then 100% if there are more than 15% of women who experience complications. |
| 9. Early admissions (≤ 5cm dilatation)<br><br>No. admissions ≤ 5cm dilatation<br>Total no. admissions<br>X 100 | Not stated, but proposed >80% admissions should be ≤ 5cm | Numerator and denominator - Monthly summary of maternity register<br><br>Use IPC Summary sheet | Indicator added subsequent to baseline assessment | If this is low, a survey needs to be conducted to determine the reasons that women experience delays. |

How many essential activities/procedures are being performed?

| Indicators | Norms and Targets | Source of data | Findings | How do you interpret your findings? |
|---|---|---|---|---|
| 10. % 1st ANC visits tested for RPR and blood results returned within 2 weeks<br><br>No. 1st ANC visits RPR results received within 2 weeks<br>Total no. 1st ANC visits<br>X 100 | Not stated – proposed target 100% | Numerator and denominator - 'Blood book'<br><br>Use ANC Form 3 | C – no data<br>S – 45%<br>B – no data<br>M – 38%<br>W – 54%<br>V – 20%<br><br>Overall – 43% | This indicator may be compared with the ANC record review to see what percentage of charts have RPR results recorded. If both are very low, then the reasons for this need to be analysed and strategies need to be developed to provide more effective transport and laboratory support to ANC services. |
| 11. Adequacy of emergency transport<br><br>No. of emergency transport requests made by Clinics and Health Centres met within 1 hour (from time of request to time of arrival of ambulance at clinic or Health Centre)<br>Total no. emergency requests.<br>X 100 | NCCEMD (2002) $\leq$ 1hr | Numerator and denominator – 'Emergency transport request book'<br><br>Use ANC Form 3 | C – no data<br>S – 68%<br>B – 11%<br>M – 61%<br>W – 73%<br>V – 34%<br><br>Overall – 42% | A response time of one hour is recommended as a measure of the effectiveness of emergency response, because on the partograph, after the alert line is crossed, the action line will be crossed after 2 hours if the problem persists. Still need time to get from the referring facility to the referral institution and to commence treatment. |

How many essential activities/procedures are being performed? (Cont.)

| Indicators | Norms and Targets | Source of data | Findings | How do you interpret your findings? |
|---|---|---|---|---|
| 12. Caesarean section rate per total population<br><br>No. of Caesarean sections<br>Total no. expected births in catchment area (i.e. total population X birth rate) X 100 | WHO/ UNICEF/ UNFPA guideline = Not less than 5%, nor more than 15% | Numerator – maternity register.<br>Denominator – Census data<br><br>Use IPC Summary sheet | C – 8%<br>S – 5%<br>B – 7%<br>M – 5%<br>W – 5%<br>V – 10%<br><br>Overall – 7% | WHO/ UNICEF/ UNFPA (1997) state that: Because of the concern about the performance of unnecessary C/S, this indicator has both a minimum and a maximum acceptable level. If <5% C/S are performed, than it is possible to conclude that some women who need C/S are not getting them. The priority then is to improve the availability and performance of appropriate C/S. If >15% C/S – assume that some unnecessary C/S are being done. If within the acceptable range, one would still need to review the indications for C/S to ensure that appropriate C/S are being performed. |

What is the quality of the care provided?

| Indicators | Norms and Targets | Source of data | Findings | How do you interpret your findings? |
|---|---|---|---|---|
| 13. Quality of education and discussion at the 1st ANC visit<br><br>No. 1st ANC visits in which there is adequate education and discussion (as compared to checklist)<br>Total no. 1st ANC visits interviewed X 100 | Not stated - Proposed standard<br>100% of 1st ANC visits score 100% | Numerator and Denominator - exit interview<br><br>Use ANC Form 1 and collate findings on ANC Form 3 | C – 5%<br>S – 5%<br>B – no data<br>M – 19%<br>W – 18%<br>V – 26%<br><br>Overall – 20% | If this is significantly less than 100%, determine which of the factors in the checklist scored the lowest and establish the reasons for this. |

What is the quality of the care provided? (Cont.)

| Indicators | Norms and Targets | Source of data | Findings | | | | How do you interpret your findings? |
|---|---|---|---|---|---|---|---|
| 14. Quality of ANC records<br><br>Score 100 ANC records using checklist.<br>How many score: 90-100%<br>70-89%<br>< 70%<br>What are the most commonly missed items? | 100% of records should be 100% correct | Survey – Checklist for ANC record review<br><br>Use ANC Form 2 | C – no data<br>S – no data<br>B – no data<br>M – no data<br>W – no data<br>V – no data<br><br>Overall – no data | | | | Which items are most commonly missed? Establish the reasons for the commonly missed items. |
| 15. Quality of labour records<br><br>Score 20 labour records using checklist.<br>How many score:<br>90-100%<br>70-89%<br>< 70%<br>What are the most commonly missed items? | 100% of records should be 100% correct | Survey – Checklist for Labour record review<br><br>Use IPC Form 2 | | <70 | 70-89 | 90-100 | Which items are most commonly missed? Establish the reasons for the commonly missed items. |
| | | | C | 87 | 12 | 1 | |
| | | | S | 86 | 10 | 4 | |
| | | | B | 83 | 17 | 0 | |
| | | | M | 78 | 21 | 1 | |
| | | | W | 50 | 29 | 21 | |
| | | | V | 78 | 17 | 5 | |
| | | | T | 78 | 18 | 4 | |

What is the quality of the care provided? (Cont.)

| Indicators | Norms and Targets | Source of data | Findings | How do you interpret your findings? |
|---|---|---|---|---|
| 16. Waiting time between decision and commencement of C/S in C-EOC Facilities<br><br>No. women requiring an emergency C/S in whom the procedure is commenced within 30 minutes of making decision<br>Total number of women requiring emergency C/S<br>X 100 | 100% < 30 minutes | Survey – record review | C – No data<br>S – No data<br>B – No data<br>M – No data<br>W – No data<br>V – No data<br><br>Overall – No data | WHO/ UNICEF/ UNFPA (1997) state that: Prompt treatment is essential to preventing maternal deaths. Could get an accurate picture of the waiting time between admission and treatment for women who require emergency C/S to ascertain whether there are any delays in providing emergency care within the facility. |
| 17. Case fatality rate<br><br>No. of deaths from listed obstetric complications<br>Total no. listed obstetric complications in B-or C-EOC facilities<br>X 100 | WHO/ UNICEF/ UNFPA guideline < 1% | Numerator and Denominator - Maternity register<br><br>Use IPC Summary sheet | C – 1.1%<br>S – 0.6%<br>B – 0<br>M – 0.6%<br>W – 5.4%<br>V – 0.3%<br><br>Overall – 0.7% | WHO/ UNICEF/ UNFPA (1997) state that: If the CFR exceeds 1% this may be due to the inadequate quality of care in the facility, or due to long delays in reaching the health facility (resulting in poor condition on arrival), or the facility may be at the end of the referral chain, so that women with the most serious complications are seen there. It is also important to consider the number of women being counted in the CFR – in a small number (e.g. fewer than 20), even 1 death can create a deceptively large increase in the CFR. |

What is the quality of the care provided? (Cont.)

| Indicators | Norms and Targets | Source of data | Findings | How do you interpret your findings? |
|---|---|---|---|---|
| 18. Anaesthetic death rate<br><br>No. women who died from an anaesthetic for C/S<br>Total no. women who have had an anaesthetic for C/S<br>X 100 | Proposed: 0 | Numerator and Denominator - Maternity register/ Operating Theatre register<br><br>Use IPC Summary sheet | C – 0.2%<br>S – 0.2%<br>B – 0.1%<br>M – 0.9%<br>W – 0.3%<br>V – 0.1%<br><br>Overall – 0.1% | Anaesthetic deaths should be preventable. Establish the reasons if there are a significant number in your municipality/district |

Outcome/Impact measures that assess the health of mother and baby

| Indicators | Norm/s and Targets | Source of data | Findings | How do you interpret your findings? |
|---|---|---|---|---|
| 19. Maternal Mortality Rate<br><br>Number of annual maternal deaths<br>Total deliveries<br>X 100 000 | SA National estimate 175-200/100 000 | Numerator and denominator - Maternity register<br><br>Use IPC Summary sheet | C – n=23<br>S – n=13<br>B – n=12<br>M – n=11<br>W – n=7<br>V – n=12<br>Total – n=78<br>Rate – 86/100 000 | Because the number of maternal deaths will be small for a municipality, it would probably be best to calculate the MMR for the Province and then look at the numbers in each District, including an assessment of the avoidable factors that may have led to the death using the PPIP (perinatal problem identification programme) |

Outcome/Impact measures that assess the health of mother and baby

| Indicators | Norm/s and Targets | Source of data | Findings | How do you interpret your findings? |
|---|---|---|---|---|
| 20. Perinatal Mortality Rate<br><br>Number of annual perinatal deaths<br>Total births<br>X 1000 | SA National estimate 40/1000 | Numerator and denominator – Maternity register<br><br>Use IPC Summary sheet | C – 30/1000<br>S – 40/1000<br>B – 35/1000<br>M – 24/1000<br>W – 26/1000<br>V – 23/1000<br><br>Overall – 29/1000 | You would want to aim for your PMR to be < 20. If it is high look at the percentage of avoidable perinatal deaths, the category of perinatal death (whether FSB, alive or dead on arrival, MSB or ENND) and the breakdown of the causes of perinatal deaths (as analysed by the PPIP). |
| 21. % Perinatal deaths due to avoidable causes<br><br>No. perinatal deaths due to health worker and administration related avoidable factors<br>Total no. perinatal deaths<br>X 100 | Proposed target: 0 | Numerator and Denominator – PPIP<br><br>Use IPC Summary sheet | C – 23%<br>S – no data<br>B – 33%<br>M – 61%<br>W – 3%<br>V – 7%<br><br>Overall – 20%<br><br>These figures represent estimates made by RHMTs | If there are a significant number of avoidable perinatal deaths, calculate the % related to health worker or administration factors (also through the PPIP) |

Outcome/Impact measures that assess the health of mother and baby

| Indicators | Norm/s and Targets | Source of data | Findings | How do you interpret your findings? |
|---|---|---|---|---|
| 22. Perinatal care index (PCI)<br><br><u>Perinatal Mortality Rate</u><br>Low Birth Weight Rate | < 2 | Numerator and denominator calculated from data in maternity register/PPIP<br><br>Use IPC Summary sheet | C – no data<br>S – no data<br>B – no data<br>M – no data<br>W – no data<br>V – no data<br><br>Overall – no data | If this is 2 or higher, think of a few indicators that will help you determine the causes of poor perinatal care in your service (PPIP). |

# 3. The indicators to measure the factors that influence the key issues emerging from the baseline assessment

## 3.1. Background to Study Objective 2

The first study objective aimed to identify the indicators and method for a baseline assessment of the quality of maternal health care. These were developed and applied and four priority key issues emerged. The non-availability of emergency transport, and the non-availability, poor distribution and inaccessibility of functional health facilities were felt to be problems that required resolution at a higher level within the health system. So the following two key issues were prioritised for analysis and further planning by the RHMTs:

- Poor quality of the 1st ANC visit
- Poor management of labour

The following were the research questions that guided the achievement of Study Objective 2:

a) How will the relevant influencing factors be identified?
b) What are the indicators to assess the influencing factors?
c) What are the norms and targets for these indicators?
d) How will data be collected for these indicators?
e) How will data be analysed?

## 3.2. The process followed for achieving Study Objective 2

The following account is a summary of the process followed to answer the research questions and to achieve Study Objective 2.

### 3.2.1. To identify the most relevant influencing factors

The facilitators elicited from the RHMTs what they thought were the factors that led to the poor quality of care during the 1st ANC visit and to the poor management of labour. Two complementary processes were used. The first was an initial problem analysis using the 'But why?' method (Werner and Bower, 1991; Varkevisser *et* al, 1991; Katzenellenbogen *et* al, 1997). This was implemented by each RHMT in Workshop 2, immediately after the identification of the priority key issues. The question was asked: 'Why is there poor management of the 1st ANC visit

and during labour?' This led to the identification of immediate factors influencing care. Subjecting these factors to "but why?' generated underlying factors of influence. The second process followed for the identification of the influencing factors was a more thorough analysis based on the steps of the Quality Improvement Cycle (QIC) (Weber *et al*, 2001). This process was conducted in Workshop 3 and required the RHMTs to:

a) Define what were the standards of care for the 1st ANC visits and for the management of labour
b) Identify the current level of performance (particularly with regards to deficiencies in performance)
c) Identify the factors leading to poor performance, both immediate and underlying factors

Both processes led to the identification of similar influencing factors.

Once the RHMTs had identified the immediate and underlying factors influencing the quality of care, the facilitators:

a) Grouped similar factors together
b) Categorised them
c) Linked these categories to the relevant sphere of influencing factors depicted in the conceptual framework

### 3.2.2. To identify indicators to assess the influencing factors

Once the influencing factors had been identified, categorised and linked to the conceptual framework, it became apparent that the majority of influencing factors fell within the ambit of the management of the health system. Thus the primary focus was to develop indicators to measure these factors, as they would more directly be related to interventions that the RHMTs could implement within the relative short term.

Two complementary processes were used to identify the indicators for these factors. The first identification of indicators arose from the planning phase of the Quality Improvement Cycle. This required the RHMTs to:

a) Develop objectives for resolving the influencing factors
b) Identify the measures required to monitor and evaluate the achievement of the objectives

This led to the development of indicators directly related to interventions that were subsequently planned to deal with the influencing factors.

In the second process, the facilitators reviewed the measurements identified by the RHMTs, evaluated them as to how feasible it would be to collect the data required to measure them, and rationalized them into an essential list of indicators.

### 3.2.3. To identify the norms and targets for these indicators

In order to identify the norms and targets against which the measured indicators would be compared, the facilitators reviewed the literature, consulted with national and international experts, and drew on personal experience.

In many instances, no norms or targets were available. The principal investigator, under the guidance of the PhD Supervisor, established a method for generating norms and targets, explained as follows: It is possible to establish an average situation in Limpopo Province for the indicators of interest, by establishing the spread of the middle 50% of the data, using the mean and standard deviation (where the distribution of data follows a normal curve) or the median and the inter-quartile range (where the distribution of data does not follow a normal curve). It is possible to identify those facilities that fall outside this distribution. These are facilities that require priority intervention, to raise the performance of an indicator to a target that matches other facilities in the Province.

### 3.2.4. To identify how data will be collected for these indicators

The principal investigator developed the data collection tool (Facility Review Form) to collect the data required to calculate the indicators. The indicators were not applied to the health service with the intent of describing it with regards to the identified influencing factors, but with the purpose of developing the model, with guidelines for the RHMTs for a future monitoring of the indicators. For convenience of the RHMTs, the tool was developed to collect hospital-based data that was readily available. A great deal of effort would have been required from the RHMTs to collect clinic-based data, and this was not feasible within the constraints of their situation at this stage[6]. Indicators that required data not readily available, would need to be measured prospectively, and could also not be measured at this stage.

[6] It was not possible for the RHMTs to conduct another survey in such proximity to the completion of the baseline assessment of the quality of care

The Facility Review Form was designed to be completed by the Midwife in Charge of each hospital maternity unit. The research assistant distributed the Facility Review Forms by hand, utilising routine transport going to hospitals. A total of 21 out of 41 (51%) hospitals returned the completed form by fax to the research assistant. With regards to Level 1 Hospitals sixteen (16) out of a total of thirty-four (34) hospitals returned the Facility Review Form, representing a 47% return rate for the Level 1 Hospitals. With regards to the Level 2 Hospitals, four (4) out of the six (6) hospitals returned the Facility Review Form, representing a 66% return rate. The Level 3 Hospital also completed and returned a Facility Review Form. At the time of the study the Level 3 Hospital was functioning as a Level 2 Hospital, and thus in the analysis of the findings it was grouped with the Level 2 Hospitals. The returns from each district are illustrated in Table 4.2.

Table 4.2. Returned Facility Review Forms by district

| District | Total Number Level 1 Hospitals | Number Hospitals submitted a return | Return rate (%) | Level 2 Hospitals returned (Yes/No) |
|---|---|---|---|---|
| Capricorn | 7 | 3 | 43 | Yes |
| Mopane | 7 | 5 | 71 | Yes |
| Vhembe | 6 | 3 | 50 | Yes |
| Bohlabela | 3 | 1 | 33 | No |
| Sekhukhune | 4 | 2 | 50 | No |
| Waterberg | 7 | 2 | 29 | Yes |
| Total | 34 | 16 | 47% | 71% |

Not all forms returned were 100% complete. No patterns emerged from the questions that were left unanswered. This indicates that the data requested is available but that some respondents either did not understand a particular question, or did not themselves have access to the data.

None of the returns provided data to enable the calculation of absenteeism rate. The facilitators know through first-hand experience that the data to calculate this indicator is indeed available. From the way in which this section was completed, it would seem that most did not understand what was being asked for. It would seem that the way in which this data was elicited in the Facility Review Form was too complicated, defeating the respondents.

### 3.2.5. To determine how data will be analysed

The principal investigator analysed the data manually and through the use of Microsoft Excel. This was in keeping with the resources (personnel, skills, equipment and software) available to the RHMTs at municipal and district level.

The analyses involved calculating the indicators (expressed either as percentages or ratios). For each indicator the numerator, denominator and formula for calculating the indicator was provided.

In order to illustrate how added meaning can arise from the information generated by the indicators, an attempt was made to stratify the hospitals:

- By level – the data for Level 1 Hospitals was analysed separately from the data for Level 2 Hospitals;
- By size – the hospitals were categorised according to the average number of deliveries conducted monthly;
- By district – to determine any geographical differences.

The total number of the hospitals that returned the Facility Review Form (i.e. the sample size studied) may be representative of all the hospitals in the Province, but may also be subject to sampling bias – the hospitals that did not respond may be different from those that did. The principal investigator does not have information available that will assist to determine the extent of representivity when analysing by size of hospital. The samples are not representative when stratified by district. But given these limitations, and for the purpose of illustration of the kind of analysis that needs to be conducted by the RHMTs, the principal investigator pursued the 'stratified' analysis.

To complete the analysis, the principal investigator provided:

- A commentary on the information generated by each indicator
- Guidelines provided on how to interpret the information and on the implications for decision-making

## 3.3. The products for Study Objective 2

### 3.3.1. Factors influencing the quality of maternal health care

This section records the influencing factors identified through the process described in 3.2.1 above. Only the products most pertinent to the research question, and therefore the research objective, are recorded below. The remainder are contained in the appendix to this chapter (Chapter 4 Appendix 2). The products include:

- The standards of care for the 1st ANC visit and for the management of labour (See Chapter 4 Appendix 2A)
- Current deficiencies in the provision of care during the 1st ANC visit and labour (See Chapter 4 Appendix 2B)
- Immediate factors causing the poor quality of care during the 1st ANC visit and labour (See Chapter 4 Appendix 2C)
- Underlying factors influencing the quality of care (See Chapter 4 Appendix 2C)
- Categories of influencing factors (presented in Table 4.3.)
- Sphere of the conceptual framework to which the influencing factors are linked (presented in Table 4.3.)

Table 4.3. Factors that influence the quality of maternal care and the sphere of influence

| Influencing factors | Sphere of influence in the conceptual framework |
|---|---|
| Staffing<br>This incluhdes the absolute and the relative shortage of staff. | Policy<br>RHMTs identified current policies that govern the Public Sector, in general, and the Health Sector, in particular, which affect recruitment and retention of staff, and which result in staffing shortages. Examples provided by the RHMTs included:<br>▪ Not paying rural allowance to nurses<br>▪ Appointing staff who apply/reapply for posts at entry level regardless of their experience and level of training<br>▪ Declaring certain skills as 'scarce skills' and paying 'scarce skills allowances'. This has led to advanced midwives leaving maternity and taking up posts, as an example, in oncology, so that they can claim the scarce skill allowance.<br><br>Management of the health system<br>RHMTs identified management practices at provincial, district, institution and unit level which result in staffing shortages. These pertained to the training, distribution, placement, allocation, and utilisation of staff. Examples included:<br>▪ ADMs not trained in Limpopo Province<br>▪ Existing ADMs not placed correctly<br>▪ Fewer staff allocated to maternity unit as compared to other units within the hospital<br>▪ Too frequent rotation of staff, resulting in inexperienced staff serving in the maternity unit |

Table 4.3. Factors that influence the quality of maternal care and the sphere of influence (Cont.)

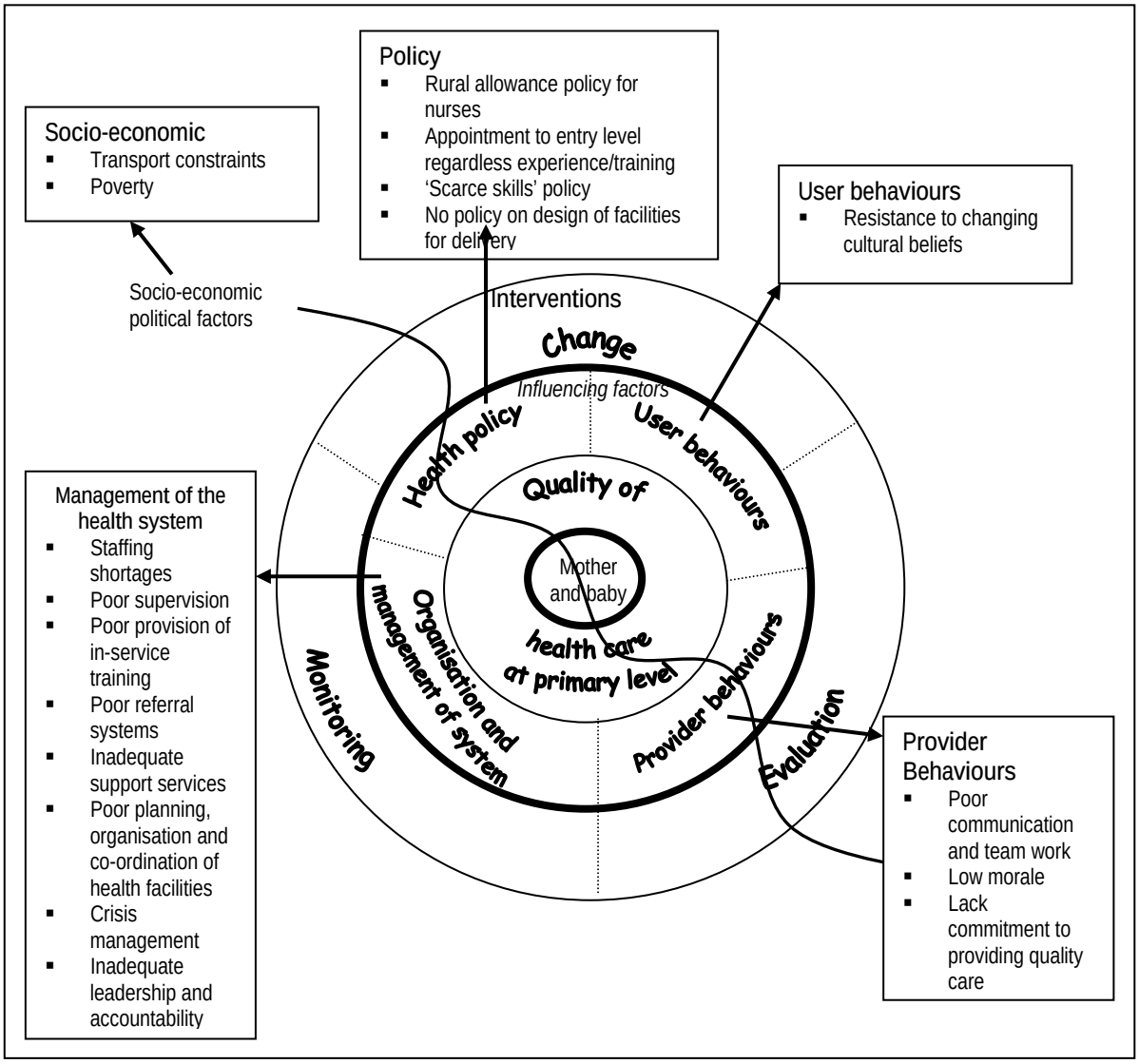
| Influencing factors | Sphere of influence in the conceptual framework |
|---|---|
| Supervision<br>This included inadequate clinical supervision (i.e. of patient care) and management supervision (i.e. of the service, including service audits) | Management of the health system<br>The RHMTs identified management practices that negatively influenced supervision. Examples included:<br>▪ No incentives/career path for supervisors<br>▪ No supervision plan<br>▪ Institutional managers not providing support for the corrective actions recommended by supervisors<br>▪ Irregular and poorly conducted perinatal audit meetings |
| Referral systems<br>This included inadequate adherence to protocols of management and referral guidelines. | Management of the health system<br>RHMTs identified problems in the availability, distribution, and familiarity with guidelines and protocols of management.<br><br>Provider behaviours<br>The poor relationship between personnel at the different levels of care also affected referrals, and therefore the quality of care. E.g. doctor at referral hospital refusing a referral. |
| Support services<br>This included problems with emergency services, laboratory services, and equipment, drugs and other supplies. | Management of the health system<br>Problems were identified with the availability, allocation, co-ordination and utilisation of:<br>▪ Ambulances and emergency services personnel<br>▪ Blood testing facilities, from the collection of the blood specimens to the communication of the results of the test (e.g. no on-site testing facilities, lack of transport to collect blood specimens, no fax machines to receive results)<br>▪ Essential equipment, drugs and other supplies (e.g. no sphygmomanometers, ultrasound and CTG machines, poor availability of blood) |
| Planning, organisation and co-ordination of health facilities<br>This included the planning of health facilities (where they have been built and how they have been designed), and the running, organisation, co-ordination, monitoring and evaluation of health services. | Policy<br>No formulation of policy on how facilities should be built, in order to support service delivery policy (e.g. specifications of labour wards and resource allocation should accommodate labour companions)<br><br>Management of the health system<br>The following problems were identified:<br>▪ Poor provision of High Risk Antenatal Care<br>▪ Planners of health facilities have not accommodated the need for Mother's Waiting Areas (MWAs) and the extra space required to permit labour companions.<br>▪ Lack of clarity on priority objectives – crisis management, resulting in many uncoordinated meetings and workshops |

Table 4.3. Factors that influence the quality of maternal care and the sphere of influence (Cont.)

| Influencing factors | Sphere of influence in the conceptual framework |
|---|---|
| Provider attitudes<br>This included problems related to health professionals who lack skills, discipline, initiative, creativity, and self-motivation | Management of the health system<br>RHMTs identified the following management related problems:<br>▪ Poor provision of appropriate in-service training programmes<br>▪ Nepotism in staff appointments<br>▪ Autocratic leadership styles, and hierarchical and bureaucratic organisational culture<br>▪ Code of conduct not implemented<br>▪ Lack of recognition for high standards of work, no disincentives for below standard of work<br><br>Provider behaviours<br>The RHMTs described health workers who:<br>▪ Have low morale<br>▪ Lack commitment to providing quality care |
| Client attitudes<br>Client-related factors that impact on the quality of care are the delay in seeking care both for ANC and when in labour. | Provider behaviours<br>The RHMTs identified that the provider behaviours listed above have caused the service to lose credibility, and thus clients only use it as a "last resort".<br><br>Client behaviours<br>The RHMTs identified the following client related problems:<br>▪ Resistance to changing cultural beliefs<br><br>Socio-economic conditions<br>The RHMTs identified the following client related problems:<br>▪ Transport problems<br>▪ Poverty/monetary constraints |

Figure 4.1. is a diagrammatic summary of the relationship between the influencing factors and the conceptual framework. From the diagram it may be seen that a majority of factors that influence the quality of care at primary level may be attributed to the organisation and management of the health system. It may well be that there is a relationship between these factors and provider behaviours and the identified policy issues.

Figure 4.1. Diagrammatic representation of the relationship between the influencing factors and the conceptual framework




### 3.3.2. The indicators to assess the influencing factors

Within the sphere 'management of the health system' the following influencing factors were selected for the development of indicators:

- Staffing
- Supervision
- Referral systems
- Support services
- Planning, organisation and co-ordination of health facilities

It was beyond the scope of this study to develop measurable indicators for management styles, leadership and accountability, although their influence is regarded as important, and in some instances, critical.

As described in section 3.2.2 the indicators arose out of a planning process, and were then rationalised into an essential list of indicators. The objectives developed during the planning process, and the concomitant measures identified by the RHMTs, are recorded in the appendix to this chapter (see Chapter 4 Appendix 2D). Table 4.5. records the essential list of indicators identified.

Table 4.5. Essential indicators to measure health system management factors

| Influencing factor | Indicators | Measure of: |
|---|---|---|
| Staffing | Vacancy rate | General measure of the proportion of established professional nurse posts that is vacant. The measure provides an indication of the overall staffing situation in the health service. The overall vacancy rate will provide a context against which shortages in maternity units may be analysed. Analysis of the indicator needs to include at least geographical comparisons (particularly between urban and rural areas). Analysis of trends over time will show if staffing shortages are worsening, stabilising or improving. |
| | Percentage midwife posts filled | Measures the proportion of posts allocated to maternity that is filled. It does not measure whether the number of posts allocated to maternity is sufficient. Information obtained from this indicator may be compared to overall vacancy rates, per geographical area and over time. It may also be compared to other units within the institution to compare the staffing across services. |
| | Work load:<br>(a) Nurse (midwife) to bed ratio | Both measures are of workload in maternity units. The first (Nurse to bed ratio) is less useful, and particularly so in the absence of bed occupancy rates. It could be used as a measure of the allocation of staff to the maternity unit. Comparisons could be made across maternity units, within a district, and between districts in a province.<br><br>An alternative, direct measure of workload for maternity as a whole would be the nurse to admission ratio, as this would take into account the overall activity of the maternity unit. |

Table 4.5. Essential indicators to measure health system management factors (Cont.)

| Influencing factor | Indicators | Measure of: |
|---|---|---|
| Staffing (Cont.) | (b) Nurse (midwife) to delivery ratio | The most demanding work in a maternity unit is generated by the deliveries that occur in that unit. Thus the second indicator (nurse to delivery ratio), is designed to be a more direct measure of workload. But it is not refined enough. To be more exact, it should measure the ratio of midwives allocated to the labour ward to the number of deliveries in that labour ward. |
| | Percentage of midwives that have worked in maternity for >2 years | This is an indirect measure of the staff turnover in maternity. It is also an indirect measure of the level of experience of the midwifery staff working in maternity unit. |
| | Percentage Level 1 Hospitals that have a medical doctor allocated to maternity | This is an indirect measure of the medical coverage for maternity unit. A medical doctor allocated to maternity takes primary medical responsibility for the maternity unit, and is the first doctor on call when s/he is on duty. S/he does not need to be based in maternity all the time, and can fulfil additional medical responsibilities as available when completed all responsibilities to the maternity unit. |
| | Percentage Level 1 Maternity Units where medical officers have worked in maternity for $\geq$ 6 months | This indicator is an indirect measure of the experience of the medical doctors. A doctor who has had more than 6 months obstetric experience should be sufficiently experienced to deal with most obstetric complications and emergencies.<br><br>An additional consideration: In Level 1 Hospitals in South Africa it is common practice to rotate medical staff every 3-6 months. It is desirable that a doctor be allocated to the maternity unit for a period longer than 6 months, in order to permit him/her to build up sufficient obstetric experience and to provide continuity of medical support for the nursing staff. |
| | Percentage Level 2 Hospitals where Specialist Obstetrician has worked in the hospital for $\geq$ 2 years | This is a measure of staff turn over and provides an indication to the stability of senior leadership within the maternity unit. |
| | Absenteeism rate | This is a measure of relative staff shortage. Unduly high absenteeism rates will result in a 'felt' staff shortages. 'Being absent' needs to be clearly defined. The definition should definitely include unplanned leave days, either due to illness or family emergencies. Some units include in the definition time spent away from clinical duties, e.g. at workshops and meetings. The latter is a very unpopular definition. An acceptable absenteeism rate needs to be established, according to the definition used. |

Table 4.5. Essential indicators to measure health system management factors (Cont.)

| Influencing factor | Indicators | Measure of: |
|---|---|---|
| Supervision | Percentage clinics that implement the principle of double-checking for ANC<br>(a) At the 1st ANC visit<br>(b) At the 36th week visit | Measure of the provision made for clinical supervision. It may be regarded as an indirect measure of the quality of supervision and the quality of care |
| | Percentage Level 1 Hospitals that implement the principle of double-checking in labour<br>(a) On Admission<br>(b) 4-hourly | Measure of the provision made for clinical supervision. Indirect measure of the quality of supervision and the quality of care. |
| | Proportion of clinics and health centres that have received monthly supervision visits in the previous 6 months | Measure of the frequency of supervision. |
| | Proportion of facilities where supervision includes:<br>(a) Review of patient records<br>(b) Assessment of staff competencies<br>(c) Assessment of available resources<br>(d) Review quality of care indicators | Indirect measure of the quality of clinical and management supervision |

Table 4.5. Essential indicators to measure health system management factors (Cont.)

| Influencing factor | Indicators | Measure of: |
|---|---|---|
| Supervision (Cont.) | Proportion of Level 1 Hospitals that conduct all components of perinatal audit:<br>(a) 1st review of records within 24 hours of death occurring<br>(b) Preparatory meeting<br>(c) Monthly perinatal review meeting<br>(d) 6-monthly analysis of trends | Indirect measure of the quality of service audit |
| Referral system | Percentage referrals that adhere to guidelines and protocols of management | Measure of the adherence of referrals to the guidelines and protocols with regards to referrals. Indirect measure of the quality of care. |
| | Percentage referrals that received feedback from referral institution | Measure of the efficiency of the referral system. Indirect measure of the communication between referral and referring institution and the quality of team relationships. |
| Support services | Percentage facilities where the ambulance response time is > 1 hour | Measure of the availability/accessibility of emergency services |
| | Proportion of facilities that have essential blood | Measures of the provision of blood supplies. |
| | Proportion of facilities that have essential blood products | |

Table 4.5. Essential indicators to measure health system management factors (Cont.)

| Influencing factor | Indicators | Measure of: |
|---|---|---|
| Planning, organisation and coordination of health services | Percentage Level 1 Hospitals that provide a High Risk ANC service | Measure of the provision of referral support to clinics. |

### 3.3.3. The norms and targets for these indicators

The identified norms and targets have been recorded in the summary of the findings arising from the application of the indicators. The norms and targets are generally recorded in Column 2 of the summary tables in section 3.3.5 below.

### 3.3.4. Data collection tool

The Facility Review Form used to collect the data for these indicators is presented in Chapter 4 Appendix 2E.

### 3.3.5. Data analysis

The findings for the identified indicators are recorded in summary tables and graphs below. It is worth noting again that the indicators were not applied to the health service with the intent of statistically describing the status of the influencing factors in the health system in Limpopo province, but with the purpose of developing the model and guidelines for the RHMTs.

#### 3.3.5.1.Staffing indicators

The staffing indicators measured the following:

- The filling of posts (nursing personnel in general and midwifery posts in particular)
- Workload (nursing personnel)
- The allocation of staff (midwifery posts and medical personnel)
- Staff rotation and experience (midwifery and specialist obstetric personnel)
- Experience of staff (midwifery and medical staff)
- Absenteeism rates

The findings for these indicators are reported below. The findings have been reported separately for Level 1 and Level 2 Hospitals. For Level 1 Hospitals, the findings have been reported by district and by size of hospital (i.e. by the average number of deliveries conducted per month).

### 3.3.5.1.1. Filling of posts

Two indicators are used:

a) Vacancy rate

b) Percentage midwifery posts filled

a) Vacancy rate

This indicator measures the number of approved posts that are vacant. The Provincial Human Resource Manager provided the information on the number of approved, filled and vacant posts for 2003. The findings are reported in Table 4.6.

Table 4.6. Vacancy rate for all categories of nursing personnel in the province, presented by district

| Indicator | Norms and Targets | Findings | | | | | |
|---|---|---|---|---|---|---|---|
| Vacancy rate<br><br>Number of vacant posts / Total number of approved posts X 100<br><br>For (the time period) | One would expect that 100% of established posts should be filled i.e. that the vacancy rate would be 0% | District | Category | Approved posts | Posts filled | Vacant posts | Vacancy rate |
| | | C | PN | 604 | 575 | 29 | 4.8% |
| | | | SN | 313 | 193 | 120 | 38.3% |
| | | | NA | 312 | 183 | 129 | 41.3% |
| | | M | PN | 569 | 515 | 54 | 9.5% |
| | | | SN | 314 | 279 | 35 | 11.1% |
| | | | NA | 301 | 205 | 96 | 31.9% |
| | | V | PN | 667 | 637 | 30 | 4.5% |
| | | | SN | 357 | 337 | 20 | 5.6% |
| | | | NA | 352 | 269 | 83 | 23.5% |
| | | B | PN | 300 | 164 | 136 | 45.3% |
| | | | SN | 132 | 109 | 23 | 23.1% |
| | | | NA | 154 | 130 | 24 | 15.5% |
| | | S | PN | 381 | 265 | 116 | 30.4% |
| | | | SN | 201 | 97 | 104 | 51.7% |
| | | | NA | 193 | 107 | 86 | 44.5% |
| | | W | PN | 343 | 231 | 112 | 32.6% |
| | | | SN | 193 | 114 | 79 | 40.9% |
| | | | NA | 190 | 136 | 54 | 28.4% |
| | | Total | PN | 2864 | 2387 | 477 | 16.7% |

PN = Professional nurse; SN = Staff nurse; NA = Nursing assistant

Guidelines for interpreting and using vacancy rates

- The information presented is for the entire province, analysed for all categories of nursing personnel, and by district. It provides a useful context within which to interpret information on staffing of maternity units.

- The overall vacancy rate for professional nurses for 2003 in the province was 17%. However, aggregating the information hides geographical differences. An analysis of the vacancy rate by district shows that the range is between 4.5% and 45.3%, with the mean vacancy rate at 21.2%.
- A closer analysis shows that, with regards to professional nurses, the Capricorn and Vhembe Districts report minor staffing shortages. This may be related to the socio-political and economic context of these two districts: Capricorn contains the current capital city of Limpopo Province (i.e. Polokwane) and Vhembe contains the capital city of ex-Venda (Thohoyandou). Bohlabela, Sekhukhune and Waterberg are very large, rural and remote districts of Limpopo. Thus the above information shows a strong urban-rural differential with regards to staffing.
- The above information aggregated by district, provides useful background information, alerting District Managers to the potential severity of staffing shortages in their district. In order to take specific action with regards to recruitment and placement of personnel, District Managers would need to establish the variation between Local Municipalities within their district, and between facilities within the municipalities, and between clinic- and hospital-based services. An analysis at the local level would establish which specific clinics and which units/services were particularly short staffed.
- Of concern is that the shortages for staff nurses and nursing assistants, at best match but, on the whole, are far greater than the shortages of professional nurses. This has two implications – firstly, at provincial level, these categories of workers are defined as scarce skills, which enables the province to implement special recruitment strategies (e.g. introduce a special recruitment allowance) to redress these deficiencies. Secondly, it would have implications for professional nurses, who in the absence of these categories of personnel, would need to undertake responsibilities that could otherwise be delegated.
- As with all information, this indicator cannot be used on its own. It needs to be compared and interpreted with other staffing information, to reach a reasonable conclusion regarding the staffing situation, and particularly how it impacts on the standard of the services provided.

### b) Percentage midwife posts filled

This indicator measures the proportion of established midwifery posts in each institution that are filled. The findings are reported in Table 4.7 (i) and (ii) below and summarised in Figure 4.2.(i) and (ii).

Table 4.7. (i) Percentage midwife posts filled in Level 1 Hospitals

| Indicator | Norms and Targets | Findings | | | | |
|---|---|---|---|---|---|---|
| | | District | Hospital # | Filled posts | Established posts | Percentage (%) |
| Percentage midwife posts filled<br><br>Number of midwifery posts filled<br>Total number of established midwifery posts<br>X 100 | While staffing norms have not been developed, neither nationally nor provincially, one would expect that 100% of established midwife posts are filled | C | F | 8 | 8 | 100 |
| | | | M | 7 | 7 | 100 |
| | | | O | 29 | 29 | 100 |
| | | M | A | Not applicable* | | |
| | | | B | Not applicable* | | |
| | | | D | 5 | 5 | 100 |
| | | | I | 9 | 10 | 90 |
| | | | K | 15 | 15 | 100 |
| | | V | G | 25 | 28 | 98 |
| | | | H | 32 | 32 | 100 |
| | | | N | 30 | 30 | 100 |
| | | B | L | 5 | 9 | 56 |
| | | S | E | 10 | 18 | 56 |
| | | | P | 21 | 29 | 72 |
| | | W | C | 8 | 10 | 80 |
| | | | J | 10 | 13 | 77 |
| | | TOTAL | | 214 | 228 | 93.8% |

*Note: Hospitals A and B conduct less than 50 deliveries per month (on average) and thus do not have a separate maternity unit and thus do not have posts dedicated specifically to maternity

Figure 4.2. (i) Percentage midwife posts filled in Level 1 Hospitals

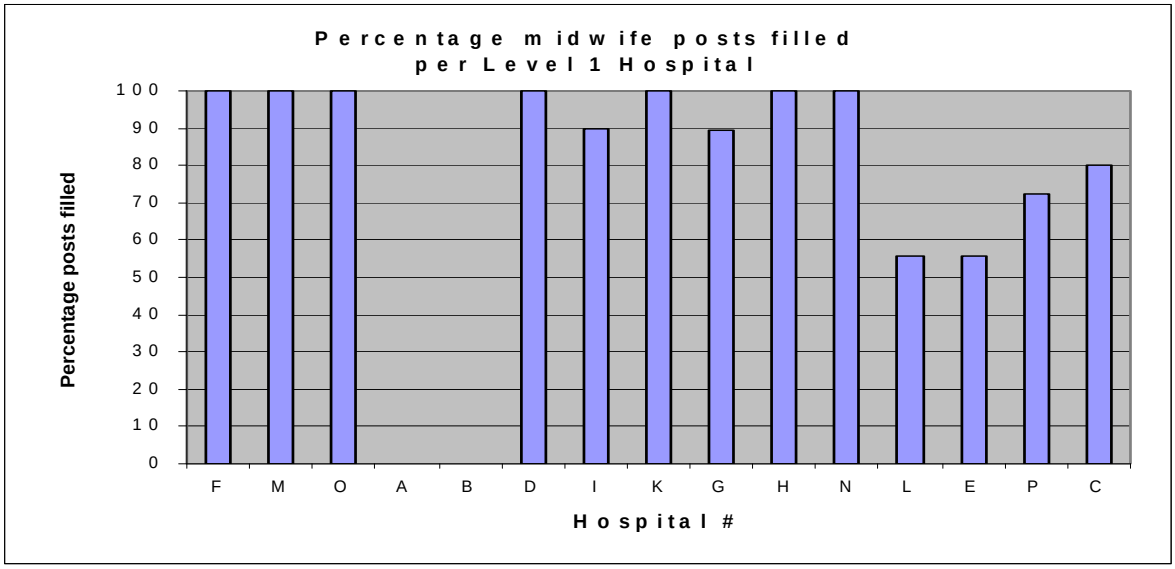


Table 4.7. (ii) Percentage midwife posts filled in Level 2 Hospitals

| Indicator | Standard/Norm/Target | Level 2 Hospitals | Filled posts | Established posts | Percentage (%) |
|---|---|---|---|---|---|
| Percentage midwife posts filled<br><br>Number of midwife posts filled<br>Total number of established midwife posts<br>X 100 | While staffing norms have not been developed, neither nationally nor provincially, one would expect that 100% of established midwife posts are filled | Q | 58 | 74 | 78 |
| | | R | 13 | 47 | 48 |
| | | S | 20 | 36 | 56 |
| | | T | 21 | 21 | 100 |
| | | U | No data | | |
| | | TOTAL | 112 | 178 | 62.9% |

Figure 4.2. (ii) Percentage midwife posts filled in Level 1 Hospitals

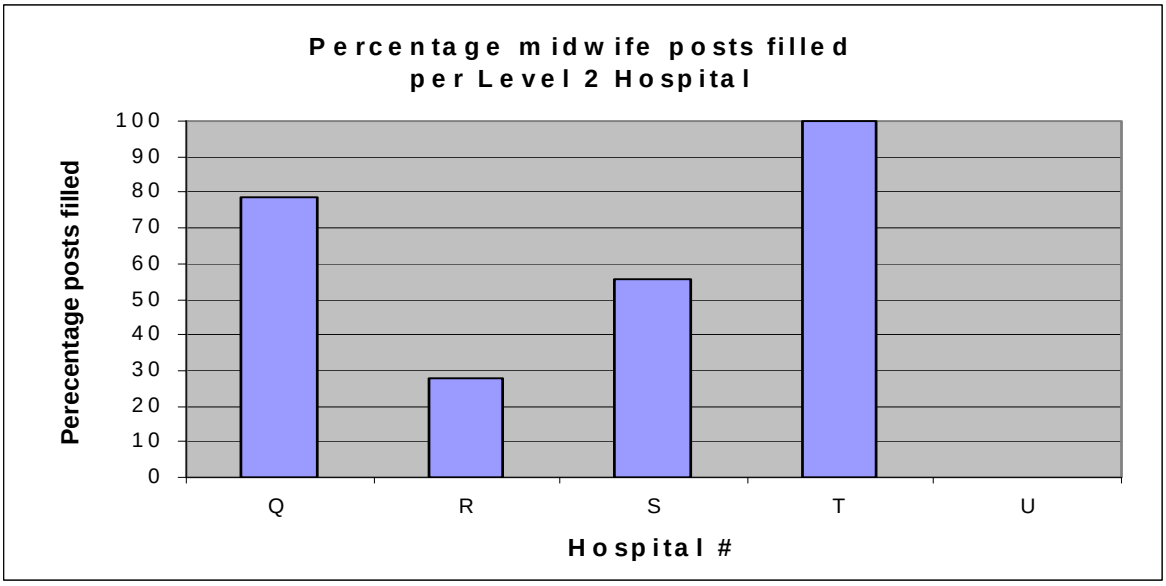



Table 4.8. Summary percentage Midwifery posts filled in each district, by level of hospitals

| District | Percentage midwife posts filled in sampled Level 1 Hospitals | Percentage midwife posts filled in sampled Level 2 Hospitals |
|---|---|---|
| Capricorn | 100% (44/44) | 56% (20/36) |
| Mopane | 97% (29/30) | 48% (13/47) |
| Vhembe | 97% (87/90) | 78% (58/74) |
| Bohlabela | 56% (5/9) | No data |
| Sekhukhune | 66% (31/47) | No data |
| Waterberg | 78% (18/23) | 100% (21/21) |

Guidelines for interpreting and using percentage midwife posts filled

- While the findings are not representative for each district, the information above may indicate that in Level 1 Hospitals the staffing trends with regards to midwifery follow the vacancy rate trends reported for the province – i.e. Well-staffed maternity units in Capricorn, Mopane and Vhembe districts, with poorly staffed maternity units in the remaining more rural districts.
- The data would seem to suggest that the Level 2 Hospitals have a lower proportion of posts filled than the Level 1 Hospitals. This would need to be tested, and if found to be true, the reasons explored.
- The data also seems to suggest that the same urban/rural trend does not apply to Level 2 Hospitals. The Hospitals in Capricorn, Mopane and Vhembe are least staffed compared to Waterberg. Again the explanations for this would need to be explored by District and Institutional managers.
- It would also be necessary to explore staffing patterns in the maternity units, compared to other units in these Level 1 and Level 2 Hospitals.
- Implications for decision-making: if it were found that Level 2 Hospitals experience greater staff shortages than Level 1 Hospitals, this may indeed comprise the quality of the secondary/referral obstetric service that is provided in the province. This staffing indicator will need to be compared to other staffing indicators, and to indicators of the quality of care. It may be necessary to initiate specific interventions to attract and retain midwives in secondary level services.

#### 3.3.5.1.2. Workload

This includes two indicators:

(a) The midwife to bed ratio

(b) The midwife to delivery ratio

a) The midwife to bed ratio

This indicator measures the ratio of midwives in the maternity unit as a whole to the number of beds in the maternity unit as a whole. The table below describes the findings per Level 1 Hospital, categorised by the district within which it is located and according to the number of deliveries conducted per month. For example, Hospital F is located in Capricorn District, and conducts on average $\leq$ 100 deliveries per month. It has 8 midwives and 30 beds in the maternity unit. Thus the

midwife to bed ratio in Hospital F is 0.3 (i.e. 0.3 midwives to 1 bed) or alternatively 1:3.8 (i.e. 1 midwife to 3.8 beds). A similar analysis was conducted for Level 2 Hospitals.

Table 4.9. (i) Midwife to bed ratio in Level 1 Hospitals

| Indicator | Norms and Targets | Findings | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Work load: Professional Nurse (Midwife) to Bed ratio<br><br>Total number of professional nurses / Total number of beds in maternity unit | No workload norms have been developed.<br><br>The median for L1 Hospitals seems to be 0.3.<br><br>The inter-quartile range (IQR) = 0.2- 0.48 | District | Hosp # | Level 1 Hospitals (Categorised by average number of deliveries per month) | | | | |
| | | | | ≤ 50 | ≤ 100 | ≤ 200 | ≤ 300 | > 300 |
| | | C | F | | 0.3 (8/30) | | | |
| | | | M | | | 0.1 (7/64) | | |
| | | | O | | | | 0.7 (29/40) | |
| | | M | A | N/A* | | | | |
| | | | B | N/A* | | | | |
| | | | D | | 0.3 (5/16) | | | |
| | | | I | | | 0.2 (9/40) | | |
| | | | K | | | 0.3 (15/43) | | |
| | | V | G | | | 1.3 (25/19) | | |
| | | | H | | | No data | | |
| | | | N | | | | 0.4 (30/81) | |
| | | B | L | | | 0.1 (5/44) | | |
| | | S | E | | 0.3 (10/29) | | | |
| | | | P | | | | | 0.5 (21/43) |
| | | W | C | | 0.3 (5/16) | | | |
| | | | J | | | 0.2 (10/48) | | |

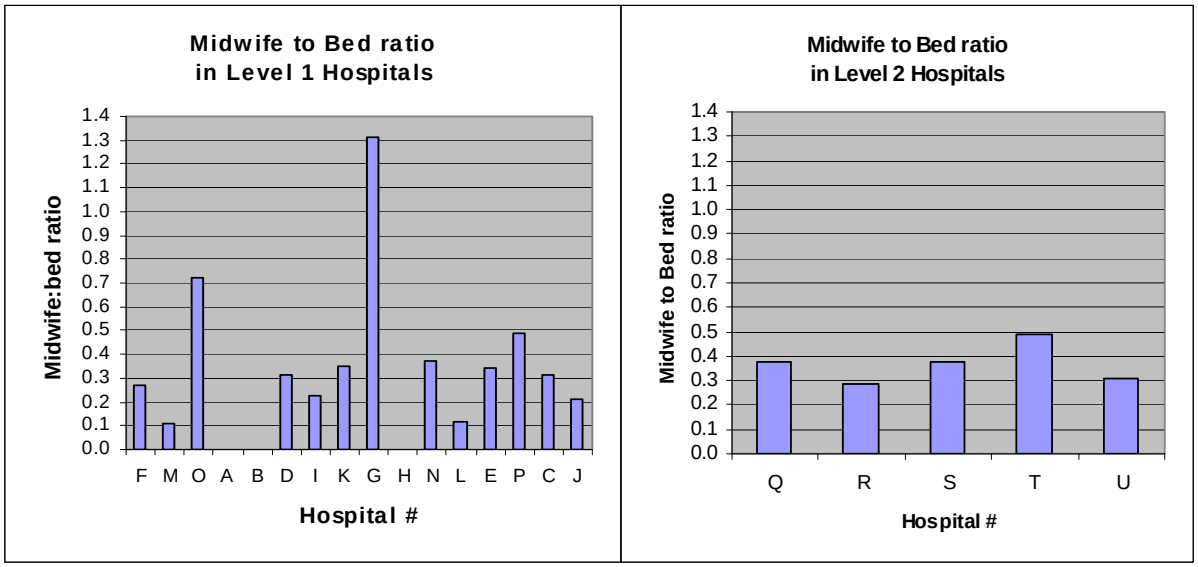
Table 4.9. (ii) Midwife to bed ratio in Level 2 Hospitals

| Indicator | Norms and Targets | Hospital | Average number of deliveries per month | | | |
|---|---|---|---|---|---|---|
| | | | ≤ 200 | ≤ 300 | ≤ 400 | ≤ 500 |
| Work load: Professional Nurse (Midwife) to Bed ratio<br><br>Total number of professional nurses / Total number of beds in maternity unit | The median = 0.4.<br>The IQR = 0.3-0.45 | Q | | | | 0.4 (58/153) |
| | | R | | 0.3 (13/45) | | |
| | | S | 0.4 (20/53) | | | |
| | | T | | 0.5 (21/43) | | |
| | | U | | | 0.3 (26/85) | |

Guidelines for interpreting and using midwife to bed ratio

- Three Level 1 Hospitals (Hospitals G, O and P) fall above the 75th percentile. Hospital M and L fall below the 25th percentile. With regards to the Level 2 Hospitals, Hospital T falls just above the 75th percentile.
- There should be concern for the hospitals that fall below the 25th percentile. Decision makers (District and Institutional) would need to review the staffing allocations in Hospitals M and L. with a view to allocating additional staff.

Figure 4.3. Midwife to bed ratio in Level 1 and Level 2 Hospitals




- HOWEVER - this indicator does not reflect bed occupancy rate. It could be possible that in the hospitals where the ratio is low (e.g. 0.1) there may be a high bed occupancy rate, which would generate similar workload in a hospital with a ratio of 1.3 but which has a low bed occupancy rates. And vice versa.
- This indicator may be more useful as an allocative rather than a workload measure.
- As an allocative measure, it would appear that all Level 1 Hospitals that conduct ≤100 deliveries per month, have similar midwife to bed ratios. No allocative pattern seems to emerge in those hospitals that conduct more than 100 deliveries per month.

### b) The midwife to delivery ratio

This indicator measures the ratio of midwives in the maternity unit to the number of deliveries. In order to calculate this indicator the number of midwives on duty in one (24-hour) day was divided by the average number of deliveries in one (24-hour) day. Thus the ratio represents the average ratio of midwives to deliveries in a (24-hour) day. The data was analysed per hospital, according to the district in which it was located and according to the average number of deliveries conducted per month. For example Hospital F is located in Capricorn District and conducts ≤ 100 deliveries per month. It has on average 8 midwives on duty on one day (over a 24-hour period). On average, 3 deliveries per day (over a 24-hour period) are conducted. Thus the ratio of midwives to deliveries is 2.4 midwives : 1 delivery. A similar analysis was conducted for Level 2 Hospitals.

Table 4.10. (i) Midwife to delivery ratio in Level 1 Hospitals

| Indicator | Norms and Targets | Findings | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Work load: Midwife to delivery ratio<br><br>Number of Professional Nurse on duty per 24-hr day<br>÷<br>Average number of deliveries per 24-hr day<br>=<br>PN: delivery Per day | No workload norms have been developed.<br><br>The median is 2.2 and the IQR = 1.4 – 2.85 | District | Hospital # | Level 1 Hospitals (Categorised by average number of deliveries per month) | | | | |
| | | | | ≤ 50 | ≤ 100 | ≤ 200 | ≤ 300 | > 300 |
| | | C | F | | 2.4 (8/3.3) | | | |
| | | | M | | | 2.9 (14/4.8) | | |
| | | | O | | | | No data | |
| | | M | A | N/A | | | | |
| | | | B | N/A | | | | |
| | | | D | | 1.3 (4/3.2) | | | |
| | | | I | | | 2.1 (8/3.8) | | |
| | | | K | | | 1.5 (8/5.5) | | |
| | | V | G | | | 2.6 (17/6.5) | | |
| | | | H | | | 3.3 (19/5.7) | | |
| | | | N | | | | 2.2 (18/8.1) | |
| | | B | L | | | 1.3 (5/3.8) | | |
| | | S | E | | 2.8 (9/3.2) | | | |
| | | | P | | | | | 0.9 (9/10.5) |
| | | W | C | | 3.7 (10/2.7) | | | |
| | | | J | | | 1.7 (7/4.1) | | |

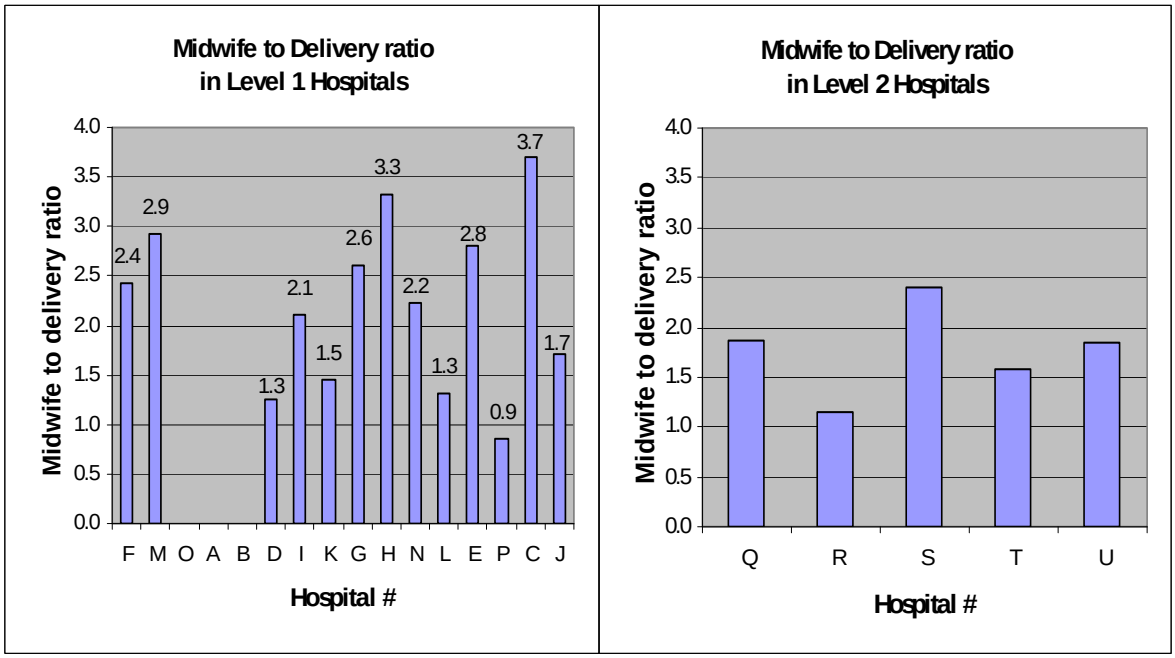
Table 4.10 (ii) Midwife to delivery ratio in Level 2 Hospitals

| Indicator | Standard/Norm/Target | Hospital | Average number of deliveries per month | | | |
|---|---|---|---|---|---|---|
| | | | ≤ 200 | ≤ 300 | ≤ 400 | ≤ 500 |
| Work load: Midwife to delivery ratio<br><br>Number of Professional Nurse FTE (Full Time Equivalent)<br>÷<br>Average number of deliveries per day<br>=<br>PN: delivery per day | No workload norms have been developed.<br><br>The median is 1.35<br>The IQR = 1.35 – 2.15 | Q | | | | 1.9 (26/14) |
| | | R | | 1.1 (8/7) | | |
| | | S | 2.4 (12/5) | | | |
| | | T | | 1.6 (11/7) | | |
| | | U | | | 1.9 (24/13) | |

## Guidelines for interpreting and using the midwife to delivery ratio

- In the absence of staffing norms issued by the Provincial and National Departments of Health, it is difficult to know how to interpret the above workload. On the surface, it may seem like an adequate level of staffing. There are a number of factors that need to be taken into consideration:
    - The indicator measures workload against deliveries. There are many admissions to a maternity unit that will not result in a delivery. Thus it may be helpful to measure the midwife to admissions ratio.

Figure 4.4. Midwife to delivery ratios in Level 1 and Level 2 Hospitals




- With the denominator being number of deliveries, a more accurate indicator would have been to measure the workload of midwives allocated to labour ward. The difficulty with this is that in many Level 1 Hospitals, midwives are allocated to care for more than labour ward patients (i.e. to care for women 'lying in' and who are post-natal)
- Another dynamic is that it is not easy to plan the work in labour ward. There may be times when it is very quiet (where no deliveries or only one delivery is occurring) and then there may be times when it is very busy, where three or four women are delivering all at the same time.
- Another influence on the workload would be the proportion of the overall caseload that experiences abnormal labour or has an obstetric complication or emergency, as opposed to a case load where the greater proportion have normal labours and deliveries.

- Given the above, in the absence of staffing norms and studies that show what an acceptable staffing level is for a maternity unit, the above calculations remain just a 'snapshot' of the situation at present, and provide a useful way of comparing institutions with each other.
- Compared to the median and interquartile range for Level 1 Hospitals, it would appear that Hospital P (which has a midwife to delivery ratio of 0.9 to one delivery) is severely short staffed

and requires immediate attention by decision-makers. The concern is that this hospital is situated in one of the rural districts that experience an overall staff shortage.

- It would also seem that the Level 2 Hospitals have a lower midwife to delivery ratio than Level 1 Hospitals. This would be of concern, particularly if the Level 2 Hospital case-load includes a higher proportion of obstetric complications and emergencies, which may require a higher, rather than a lower ratio. Again it would suggest that Provincial, District and Institutional managers need to review the quality of secondary/referral level care to ensure that it is not compromised by staffing shortages.

#### 3.3.5.1.3. Allocation of staff

The following count indicators are used:

a) Number of established midwife posts compared to average number of deliveries per month
b) Number of Advanced Diploma Midwives per Level 1 Hospital
c) Percentage of Level 1 Hospitals who have a medical doctor allocated to maternity

a) Number of established midwife posts compared to the average number of deliveries per month

Table 4.11. shows the number of midwifery posts allocated (but not necessarily filled) to each of the Level 1 Hospitals that returned the Facility Review Form. The hospitals have been categorised according to the district they are located in, and according to the average number of deliveries they conduct per month. The posts allocated to each hospital are recorded in the table. For example: Hospital F falls in Capricorn District, conducts $\leq$ 100 deliveries per month, and has 8 established midwife posts.

b) Number of Advanced Diploma Midwives in Level 1 Hospitals

Table 4.12. shows the number of Advanced Diploma Midwives (ADMs) in each Level 1 Hospital. Again, the hospitals have been categorised according to the district they are located in, and according to the average number of deliveries they conduct per month. The number of ADMs in each maternity is recorded in the table. For example: Hospital F falls in Capricorn District, conducts $\leq$ 100 deliveries per month, and has 2 ADMs.

Table 4.11. Number of established midwife posts

| Indicator | Norms and Targets | Findings | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | District | Hospital # | Average number of deliveries per month | | | | |
| | | | | ≤ 50 | ≤ 100 | ≤ 200 | ≤ 300 | > 300 |
| Number of established midwife posts | The approach for the allocation of midwife posts is not known – Targets unknown | C | F | | 8 | | | |
| | | | M | | | 7 | | |
| | | | O | | | | 29 | |
| | | M | A | Not applicable* | | | | |
| | | | B | Not applicable* | | | | |
| | | | D | | 5 | | | |
| | | | I | | | 10 | | |
| | | | K | | | 15 | | |
| | | V | G | | | 28 | | |
| | | | H | | | 32 | | |
| | | | N | | | | 30 | |
| | | B | L | | | 9 | | |
| | | S | E | | 18 | | | |
| | | | P | | | | | 29 |
| | | W | C | | 10 | | | |
| | | | J | | | 13 | | |

*Hospitals A and B do not have separate maternity units.

Table 4.12. Number of Advanced Midwives in Level 1 Hospitals

| Indicator | Norms and Targets | Findings | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | District | Hospital # | Average number of deliveries per month | | | | |
| | | | | ≤ 50 | ≤ 100 | ≤ 200 | ≤ 300 | > 300 |
| Number of advanced midwives in maternity unit in the Level 1 Hospital | The provincial target is to have one ADM on duty on each shift. In order to achieve this target, there would need to be at least 6 ADMs per Level 1 Hospital. | C | F | | 2 | | | |
| | | | M | | | 0 | | |
| | | | O | | | | 3 | |
| | | M | A | 0 | | | | |
| | | | B | 2 | | | | |
| | | | D | | 2 | | | |
| | | | I | | | 2 | | |
| | | | K | | | 4 | | |
| | | V | G | | | 4 | | |
| | | | H | | | 6 | | |
| | | | N | | | | 4 | |
| | | B | L | | | 2 | | |
| | | S | E | | 2 | | | |
| | | | P | | | | | 2 |
| | | W | C | | 2 | | | |
| | | | J | | | 2 | | |

### c) Percentage Level 1 Hospitals who have a medical doctor allocated to maternity

Inadequate medical coverage for the maternity unit was cited by the RHMTs as a factor contributing to the poor quality of care. A medical officer that is allocated to maternity ensures that there is medical coverage and medical supervision for the maternity unit. It also ensures that there is a clearly identified doctor with whom the midwives can consult and to whom they may refer patients when necessary. A medical officer who is allocated to maternity does not need to spend all of his/her time in maternity. But s/he does take a primary responsibility for maternity. An additional benefit of having a medical officer allocated to maternity is that it facilitates the building of

multidisciplinary team relations and allows nursing and medical personnel to review the functioning of the unit and plan for improvements. The converse situation is a situation where each day there is a different doctor who is on-call, who will respond to calls from maternity. This indicator measures the proportion of Level 1 hospitals that have made medical provision for maternity.

Table 4.13. Level 1 Hospitals that have a medical doctor allocated to maternity

| Indicator | Norms and Targets | Findings | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | District | Hospital # | Average number of deliveries per month | | | | |
| | | | | ≤ 50 | ≤ 100 | ≤ 200 | ≤ 300 | > 300 |
| Percentage of Level 1 Hospitals that have a medical doctor allocated to maternity | None set in the province. But would propose that a maternity unit that does above 100 deliveries a month should have one doctor allocated to maternity. | C | F | | Yes | | | |
| | | | M | | | Yes | | |
| | | | O | | | | Yes | |
| | | M | A | No | | | | |
| | | | B | No | | | | |
| | | | D | | Yes | | | |
| | | | I | | | Yes | | |
| | | | K | | | No | | |
| | | V | G | | | No | | |
| | | | H | | | Yes | | |
| | | | N | | | | Yes | |
| | | B | L | | | No | | |
| | | S | E | | No | | | |
| | | | P | | | | | No data |
| | | W | C | | Yes | | | |
| | | | J | | | Yes | | |

Table 4.14. Summary of the Percentage of hospitals that have a medical doctor allocated to maternity

| Dr allocated to maternity | No | Yes |
|---|---|---|
| Number of hospitals | 6 | 9 |
| Total (%) | 40% | 60% |

Guidelines for interpreting and using the information on the allocation of staff to maternity

- In Hospitals A and B, where there are less than 50 deliveries in one month, there is no need for a dedicated medical officer.
- Three-quarters (75%) of the hospitals that conduct ≤ 100 deliveries a month have a medical officer allocated to the maternity unit.
- It is disturbing to note that of the hospitals that conduct ≤ 200 deliveries per month, about 40% do not have a dedicated medical officer.
- District and Provincial managers would need to compare this information with indicators measuring the quality of care, to assess whether inadequate medical coverage contributes to poor quality care.

- Discussions would need to be held with institutional managers to ascertain the factors that are impeding their ability to ensure adequate medical coverage for the maternity unit.

#### 3.3.5.1.4. Staff rotation and experience of staff

Too frequent rotation of staff was cited by the RHMTs as a factor that contributes to the poor quality of care. If midwives and doctors are rotated out of maternity too frequently, they are not able to accumulate sufficient obstetric experience, nor do they develop a commitment to midwifery/obstetric standards. Thus the indicators that were developed measure the staff turnover and can be regarded as indirect measures of the experience of the staff. The indicators include:

(a) The length of allocation of midwives working in maternity (in Level 1 and Level 2 Hospitals)
(b) The length of allocation of medical doctors to the maternity unit (in Level 1 Hospitals).
(c) The length of stay of the specialist obstetrician in Level 2 Hospitals. In this instance, the indicator is just a measure of staff turnover, and cannot be used as an indirect measure of experience. It can be used to explain the overall development and leadership within the maternity unit.

a) The average length of allocation of midwives working in maternity (in Level 1 and Level 2 Hospitals)

The data for all the Level 1 Hospitals shows:

- 61% of the total number of midwives currently working in maternity have spent at least one year in maternity
- 41% of the total had spent more than 2 years in maternity
- 25% of the total had spent more than 5 years in maternity

Table 4.15 shows the percentage of the total midwives per Level 1 Hospital that have been allocated to maternity for the stated period. This is further summarised in Figure 4.5.

Table 4.15. (i) Length of allocation of midwives working in maternity in Level 1 Hospitals

| Indicator | Norms and Targets | Findings | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Percentage of Professional Nurses that have worked in maternity for:<br>▪ ≤ 6 months<br>▪ ≤ 1 year<br>▪ ≤ 2 years<br>▪ ≤ 5 years<br>▪ > 5 years<br><br>Number of Professional Nurses that have worked in maternity for (period)<br>Total number of professional nurses<br>X 100 | It is desirable to have at least one very experienced midwife on each shift who would act as supervisor/ consultant for the shift. Thus the number of experienced midwives in a maternity unit would need to be at least 6.<br><br>An experienced midwife may be defined as one who has been in maternity for > 2 years. | District | Hospital # | Percentage of professional nurses that have worked in maternity for: | | | | |
| | | | | ≤ 6 mths | ≤ 1 yr | ≤ 2yrs | ≤ 5 yrs | > 5 yrs |
| | | C | F | 4.4% (1/23) | 30.4% (7/23) | 26.1% (6/23) | 21.7% (5/23) | 17.4% (4/23) |
| | | | M | 16.7% (1/6) | 33.3% (2/6 ) | 50% (3/6) | 0 | 0 |
| | | | O | 0 | 0 | 100% (27/27) | 0 | 0 |
| | | M | A | 14.3% (1/7) | 14.3% (1/7) | 0 | 0 | 71.3% (5/7) |
| | | | B | 44.4% (4/9) | 0 | 0 | 0 | 55.6% (5/9) |
| | | | D | 33.3% (1/3) | 0 | 66.7% (2/3) | 0 | 0 |
| | | | I | 7% (1/14) | 35.7% (5/14) | 14.3% (2/14) | 14.3% (2/14) | 28.6% (4/14) |
| | | | K | 33.3% (4/12) | 25% (3/12) | 16.7% (2/12) | 16.7% (2/12) | 8.3% (1/12) |
| | | V | G | 0 | 10% (2/20) | 25% (5/20) | 25% (5/20) | 40% 8/20 |
| | | | H | No data | | | | |
| | | | N | 0 | 19.1% (4/21) | 14.3% (3/21) | 28.6% (6/21) | 38.1% (8/21) |
| | | B | L | 22.2%\ (2/9) | 0 | 0 | 44.4% (4/9) | 33.3% (3/9) |
| | | S | E | 0 | 30% (3/10) | 0 | 10% (1/10) | 60% (6/10) |
| | | | P | 10.5% (2/19) | 15.8% (3/19) | 52.6% (10/19) | 5.3% (1/19) | 15.8% (3/19) |
| | | W | C | 30% (3/10) | 0 | 10% (1/10) | 40% (4/10) | 20% (2/10) |
| | | | J | 20% (2/10) | 20% (2/10) | 40% (4/10) | 10% (1/10) | 10% (1/10) |
| | | | Total | 11% (22/200) | 16% (32/200) | 20% (40/200) | 16% (31/200) | 25% (50/200) |

The data for Level 2 Hospitals shows that:

- 86% of midwives have been allocated to maternity for greater than 1 year
- 16% for between 2 and 5 years
- 65% for greater than 5 years

Table 4.15. shows the percentage of the total midwives per Level 2 Hospital that have been allocated to maternity for the stated period. This is further summarised in Figure 4.5. (ii).

Figure 4.5. (i) Length of allocation to maternity – Midwives in Level 1 Hospitals

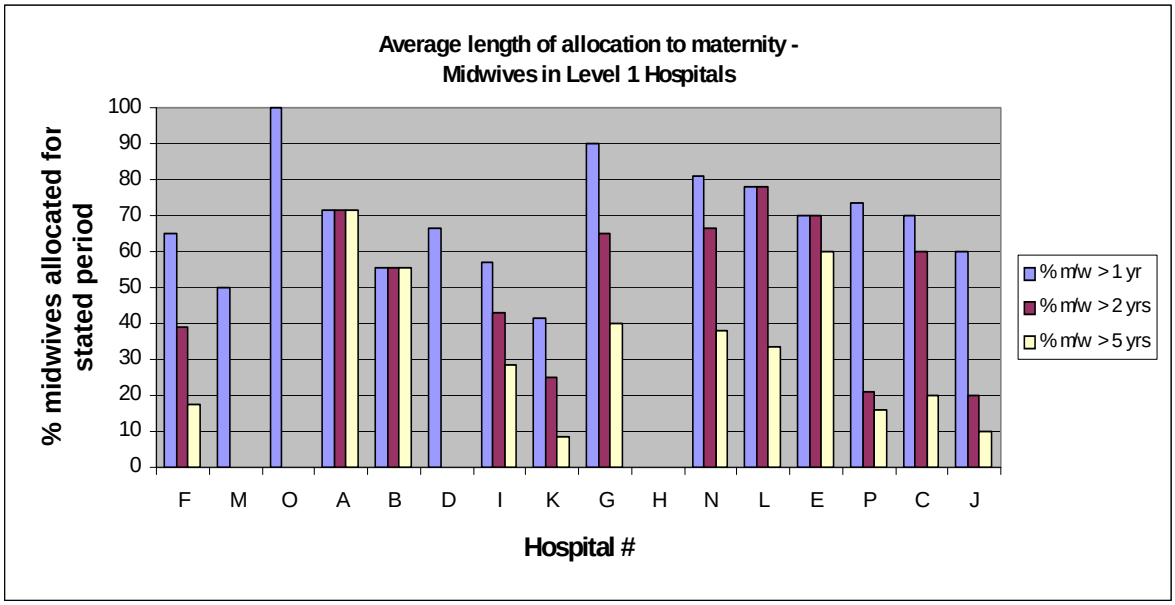
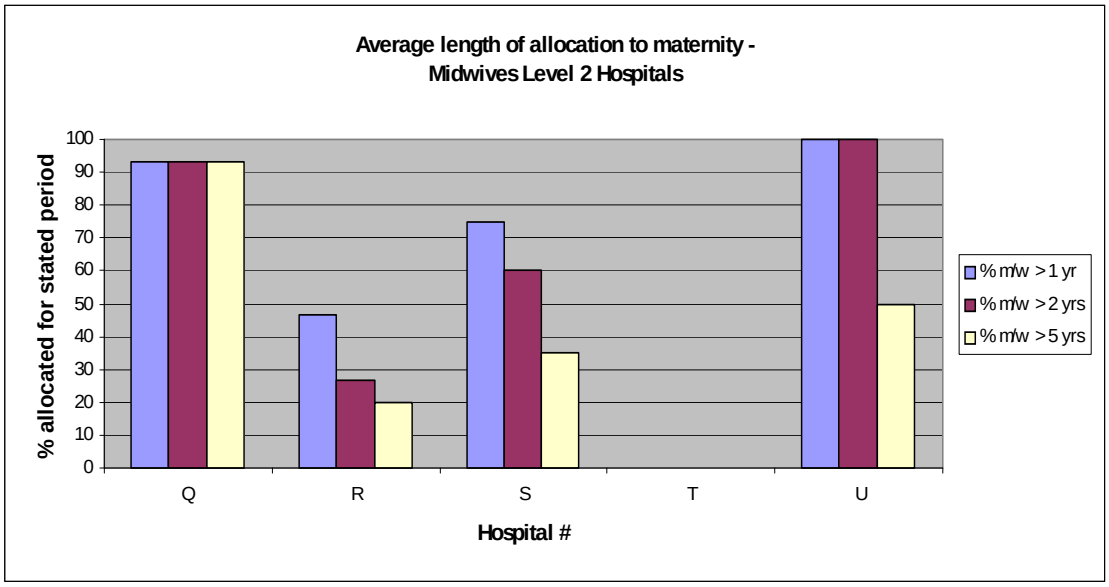



Table 4.15. (ii) Length of allocation to maternity – Midwives in Level 2 Hospitals

| Indicator | Norms and Targets | Findings | | | | | |
|---|---|---|---|---|---|---|---|
| | | Hospital | Percentage midwives that have worked in maternity for: | | | | |
| | | | ≤ 6 mths | ≤ 1 yr | ≤ 2 yrs | ≤ 5 yrs | > 5 yrs |
| Percentage of Professional Nurses that have worked in maternity for:<br>▪ ≤ 6 months<br>▪ ≤ 1 year<br>▪ ≤ 2 years<br>▪ ≤ 5 years<br>▪ > 5 years<br><br>Number of Professional Nurses that have worked in maternity for (period)<br>Total number of professional nurses<br><br>X 100 | At least 6 midwives who have been in maternity for > 2 years (see above). | Q | 3.5% (2/58) | 3.5% (2/58) | 0/58 | 0/58 | 93% (54/58) |
| | | R | 20% (3/15) | 13% (2/15) | 20% (3/15) | 7% (1/15) | 20% (3/15) |
| | | S | 15% (3/20) | 10% (2/20) | 15% (3/20) | 25% (5/200 | 35% (7/20) |
| | | T | No data | | | | |
| | | U | 0/26 | 0/26 | 0/26 | 50% (13/26) | 50% (13/26) |
| | | Total | 7% (8/119) | 5% (6/119) | 5% (6/119) | 16% (19/119) | 65% (77/119) |

Figure 4.5. (ii) Average length of allocation to maternity – Midwives in Level 2 Hospitals




Guidelines for interpreting and using the 'average length of allocation of midwives working in maternity (Level 1 and Level 2 Hospitals)

- The data shows that between 20% and 78% of midwives currently working in Level 1 maternity units have been there for > 2 years. The mean percentage is 41%. The mean percentage for midwives who have worked in maternity for > 5 years is 27%.
- Seven (7) of the 15 Level 1 Hospitals that returned data (47%) have at least 6 midwives who have been in maternity for > 2 years. Three hospitals have no midwives who have been in maternity for > 2 years. This means that there would be shifts where there is no experienced midwife on duty.
- With regards to Level 2 Hospitals, it would appear that the allocation to maternity is more stable, with three of four hospitals that provided data showing between 60-100% of the midwives being in maternity for longer than 2 years, and a mean of 50% midwives for > 5 years. These hospitals have between 12 and 54 midwives who have been in maternity for > 2 years.
- The exception is Hospital R which has only 27% (4 midwives) who have more than 2 years maternity experience. This may mean that not every shift has an experienced midwife on duty.
- It would appear that Level 2 Hospitals have very experienced midwives serving in the maternity units.
- On the surface, these findings do not seem to corroborate the perception that there is too frequent rotation of personnel. It maybe necessary to evaluate staffing in labour ward

separately, to assess the rotation practice in labour ward alone. This will only be possible in those hospitals that have a separate labour ward with its own staff allocation.

- The information provided by these indicators needs to be compared with indicators of quality of care to ascertain whether there is link between the length of allocation and the quality of care provided.
- This indicator may be useful to Institutional, District and Provincial managers to identify Level 1 and Level 2 Hospitals where there is less experienced staff. A deeper level of analysis in the identified institutions would need to be carried out, to determine whether quality of care is compromised and what additional support is required to ensure quality provision of care.

### b) Length of allocation of medical doctors to the maternity unit (in Level 1 Hospitals)

The RHMTs expressed a concern that the doctors were being rotated too frequently – every three months. No norm has been set about what should be the length of allocation of medical doctors to a maternity unit. But the facilitators considered it to be desirable if a medical doctor spent at least 1 year in maternity – 6 months to develop the necessary expertise, and a further six months to consolidate their contribution to the management and development of the maternity unit.

### Guidelines for interpreting and using 'length of allocation of medical doctors to maternity unit in Level 1 Hospitals'

Table 4.16. shows that:

- Just over half of the level 1 Hospitals (i.e. 9) have had a medical officer that has been allocated to maternity for > 1 year. Four hospitals (25%) have medical officers who have been allocated to maternity for > 5 years, and five have medical doctors that have allocated to maternity between two and five years. All these hospitals would be considered to have medical doctors who should have sufficient obstetric experience, and who should be in a position to contribute to the overall development of the maternity unit.
- Two hospitals have medical doctors who have been allocated to maternity for between 6 months and 1 year. These hospitals also could be considered as staffed by doctors with sufficient obstetric experience.
- Six Level 1 Hospitals have medical officers that have worked in maternity for $\leq$ 6months, but in one of these there is a specialist obstetrician who has been in the unit for > 2 years, and the other is staffed only by obstetricians.

- Thus Institutional, District and Provincial managers would need to establish what additional support, if any, was required in the four (4) maternity units that have medical doctors who have worked in maternity for ≤ 6 months. Firstly the level of overall experience would need to be determined (i.e. interns, or community service doctors, or medical officers), and secondly the specific obstetric experience.

Table 4.16. Length of allocation of medical doctors to the maternity unit in Level 1 Hospitals

| Indicators | Norms and Targets | Findings | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Percentage of Level 1 Hospitals with Medical Officers that have worked in maternity for:<br>≤ 6 months<br>≤ 1 year<br>≤ 2 years<br>≤ 5 years<br>> 5 years<br><br>Number of facilities where Medical Officers have worked in maternity for (period)<br>Total number of facilities<br><br>X 100 | None officially set. It would be desirable for each maternity unit to have at least one doctor who has been allocated to maternity for at least one year. | District | Hospital # | Facilities where Medical Officers have worked in maternity for: | | | | |
| | | | | ≤ 6 mths | ≤ 1 yr | ≤ 2yrs | ≤ 5 yrs | > 5 yrs |
| | | C | F | ✓ | | | | |
| | | | M | | | | | ✓ |
| | | | O | ✓ | | | ✓ 1Obstrcn | |
| | | M | A | ✓ | | | | |
| | | | B | All private (session) doctors | | | | |
| | | | D | | ✓ | | | |
| | | | I | | | | | ✓ |
| | | | K | | ✓ | ✓ | | |
| | | V | G | ✓ | | | | |
| | | | H | | | ✓ | | |
| | | | N | | | | | ✓ |
| | | B | L | No data | | | | |
| | | S | E | | | | ✓ | ✓ |
| | | | P | No data | | | | |
| | | W | C | ✓ | | | | |
| | | | J | ✓ 2 Obstrcn | | ✓ 1 Obstrcn | | |
| | | | Total | 38% (6/16) | 13% (2/16) | 19% (3/16) | 13% (2/16) | 25% (4/16) |

### c) The average length of stay of the obstetrician in Level 2 Hospitals

The indicator measuring the length of stay of the specialist obstetrician in the Level 2 Hospitals indirectly measures the stability of the unit with regards to specialist obstetric services.

### Guidelines for interpreting and using the 'average length of stay of the obstetrician in Level 2 Hospitals'

- Two (2) of the five (5) Level 2 Hospitals (40%) have obstetricians who have worked in maternity for ≤ 6 months. In both these hospitals, there is also an obstetrician that has worked in maternity for greater than 5 years.
- All hospitals have obstetricians that have been in the maternity unit for > 2 years, and four (4) of the five (5) have obstetricians who have been there for > 5 years.

- This indicator seems to show that all Level 2 Hospitals have had great stability with regards to specialist coverage of the maternity unit.
- Managers would need to monitor this, especially since it would appear that most obstetricians staffing Level 2 Hospitals are Cuban doctors, and the intergovernmental agreement between South Africa and Cuba has not been renewed.

Table 4.17. Length of stay of the obstetrician in Level 2 Hospitals

| Indicator | Norms and Targets | Hospital | Facilities where Specialist Obstetrician has worked in maternity for: | | | | |
|---|---|---|---|---|---|---|---|
| | | | ≤ 6 mths | ≤ 1 yr | ≤ 2yrs | ≤ 5 yrs | > 5 yrs |
| Percentage of Level 2 Hospitals with Specialist Obstetrician that has worked in the hospital for:<br>▪ ≤ 6 months<br>▪ ≤ 1 year<br>▪ ≤ 2 years<br>▪ ≤ 5 years<br>▪ > 5 years | None set. It is desirable for an obstetrician to stay for at least two years to enable the further development of the service. | Q | 1 | | | | 1 |
| | | R | | | | 1 | |
| | | S | 1 | | | | 1 |
| | | T | | | | | 2 |
| | | U | | | | | 4 |

### 3.3.5.1.5. Absenteeism rates

The last of the staffing indicators measures the percentage 'days lost' due to unscheduled leave. No meaningful data was obtained from any of the Level 1 or Level 2 Hospitals. This was probably due to the poor formulation of the question in the Facility Review Form. From the personal experience of the facilitators, the data is available and is usually kept by the midwife in charge of maternity. So although the hospitals did not return the required information, it is still worth keeping the indicator and measuring the absenteeism.

Table 4.18. Absenteeism rate

| Indicators | Norms and Targets | Findings |
|---|---|---|
| Absenteeism rate<br><br>Total number of days unscheduled leave (i.e. total number of days lost)<br>Total number of scheduled work days<br>X 100 | < 3% (Health Systems Trust) | No meaningful data obtained for Level 1 or Level 2 Hospitals |

Guidelines for using 'absenteeism rates'

- Absenteeism from clinical duties for whatever reason (either due to illness, compassionate leave or due to meetings/workshops) should not exceed 3%. In situations where there is an unacceptably high absenteeism rate, the unscheduled leave system is probably being abused.
- Whatever the absenteeism rate, it is important to ensure that clinical care is not compromised. A relief system needs to be in place to replace staff that is absent. All but one, of both Level 1 and Level 2 Hospitals, responded that there is no relief system in place in their facility to substitute for staff that is absent. Hospital A responded that there was a relief system in place. This is a hospital that does $\leq$ 50 deliveries a month, and does not have a separate maternity unit. Hospital D responded that although there was not a relief system in the hospital, within the maternity unit duties were re-allocated to cover the responsibilities of the absent staff. Presumably this would be the situation in all maternity units. The benefit of a relief system requires further investigation.

### 3.3.5.2. Supervision indicators

The supervision indicators identified for measurement include:

- Percentage facilities that routinely implement the principle of double-checking for ANC
  - At the 1st visit
  - At the 36th week visit
- Percentage of facilities that routinely implement the principle of double-checking in labour
  - On admission
  - 4-hourly
- Proportion of clinics and health centres that have received monthly supervision visits in the previous 6 months
- Proportion of clinics and health centres where supervision includes:
  - Review of patient records
  - Assessment of staff competencies
  - Assessment of available resources
  - Review of indicators of quality of care
- Proportion of Level 1 Hospitals that conduct all components of perinatal audit:
  - 1st review of records within 24 hours of the death occurring
  - Preparatory meeting
  - Monthly perinatal review meeting

- 6-monthly analysis of trends

As for the staffing indicators, the supervision indicators also were applied only in hospitals. Unlike the staffing indicators (which are measures of the inputs into the system) that rely on data available in the system, most of the supervision indicators (which are process measures) relied on the generation of new data, which mostly would be produced through the implementation of the interventions planned by the RHMTs. Thus this section of the findings reports only a baseline measure of the proportion of hospitals that routinely implement the principle of double-checking in labour, as this indicator was the only one that could readily be measured in the hospitals.

#### 3.3.5.2.1. Percentage of facilities that routinely implement the principle of double-checking in labour: (a) On admission (b) 4-hourly

Double-checking is the routine review of a patient by a more experienced practitioner. It is encouraged at critical times in the care of the woman in labour: (a) on admission – to ensure that nothing has been missed during the admission examination, and to confirm the plan for delivery; and (b) 4-hourly – to ensure that nothing has been missed with regards to possible emerging abnormalities, complications and emergencies, and to again confirm the plan for delivery. This indicator measures the proportion of facilities that routinely implement the principle of double-checking in labour. Table 4.29. presents the findings for this indicator. It reveals that:

- Three (3) of the Level 1 Hospitals always implement double-checking on admission to the labour ward. Only two (2) of these implement double-checking 4-hourly.
- The remainder of Level1 hospitals only sometimes implement the principle of double-checking in labour, both on admission and 4-hourly.
- Two of the Level 2 hospitals sometimes implement double-checking on admission and 4-hourly. One sometimes implements double-checking on admission but never 4-hourly.
- Two of the Level 2 Hospitals did not return any data for this indicator.

Guidelines for interpreting and using 'the percentage of facilities that routinely implement the principle of double-checking in labour'

- The reasons that the hospitals implement double-checking only sometimes are varied: there are not sufficient staff on duty to double-check; there is not enough experienced staff on duty; staff is experienced and does not need to be double-checked; both inexperienced and

experienced staff would automatically consult with a more experienced colleague if they were uncertain about their findings and so they feel that it is not necessary to routinely double-check.

- A study is required to ascertain whether this intervention suggested to improve the quality of care does indeed achieve improved perinatal and maternal outcomes.

Table 4.19 (i) Percentage of Level 1 Hospitals that routinely implement the principle of double-checking in labour.

| Indicators | Norms and Targets | Findings | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | District | Hospital # | On admission | | | 4-hourly during labour | | |
| | | | | Never | S/times | Always | Never | S/times | Always |
| Percentage Level 1 Hospitals that routinely implement the principle of double-checking in labour<br>▪ On admission<br>▪ 4-hourly during labour | Always | C | F | | ✓ | | | ✓ | |
| | | | M | | ✓ | | | ✓ | |
| | | | O | No data | | | | | |
| | | M | A | | ✓ | | No data | | |
| | | | B | | ✓ | | | ✓ | |
| | | | D | | | ✓ | No data | | |
| | | | I | | ✓ | | | ✓ | |
| | | | K | | ✓ | | | ✓ | |
| | | V | G | | ✓ | | | ✓ | |
| | | | H | | | ✓ | | | ✓ |
| | | | N | No data | | | | | |
| | | B | L | | ✓ | | | ✓ | |
| | | S | E | | | ✓ | | | ✓ |
| | | | P | No data | | | | | |
| | | W | C | | ✓ | | | ✓ | |
| | | | J | | ✓ | | | ✓ | |
| | | Total | | 0 | 10 | 3 | 0 | 9 | 2 |
| | | Percentage | | 0 | 63% | 19% | 0 | 57% | 11% |

Table 4.19 (ii) Percentage of Level 2 Hospitals that routinely implement the principle of double-checking in labour.

| Indicator | Norms and Targets | Hospital | On admission | | | 4-hourly during labour | | |
|---|---|---|---|---|---|---|---|---|
| | | | Never | S/times | Always | Never | S/times | Always |
| Percentage Level 2 Hospitals that routinely implement the principle of double-checking in labour<br>▪ On admission<br>▪ 4-hourly during labour | Always | Q | No data | | | | | |
| | | R | | ✓ | | | ✓ | |
| | | S | | ✓ | | | ✓ | |
| | | T | No data | | | | | |
| | | U | | ✓ | | ✓ | | |
| | | Total | | 60% (3/5) | | 20% (1/5) | 40% (2/5) | |

### 3.3.5.3. Referral system

Two indicators were selected to measure the referral system:

- Percentage of referrals that adhere to protocols of management
- Percentage referrals that receive feedback from referral institution

Data to calculate these indicators is not readily available in the health system. The data needs to be collected prospectively.

#### 3.3.5.3.1. Percentage of referrals that adhere to protocols of management

It is best to collect the data for the first of the referral indicators at the referral institution, on receipt of the referral. Would probably need to record the patient name and number, the referring facility, the indication for referral and whether the referral adhered to the protocol of management or not. This would then be collated and discussed as part of the monthly audit process.

#### 3.3.5.3.2. Percentage referrals that receive feedback from referring institution

It is best to collect the data for this second indicator at the referring facility (clinic or Level 1 Hospital). Would need to record the patient name and number, the indication for referral and details of the feedback received. Again this would be collated and discussed as part of the monthly audit process.

### 3.3.5.4. Support services

The indicators selected measure the availability/accessibility of emergency services and blood supplies, and include:

- Percentage facilities where the emergency response time is > 1 hour
- Proportion of facilities that have emergency blood
- Proportion of facilities that have essential blood products

#### 3.3.5.4.1. Percentage facilities where the emergency response time is > 1 hour

The question asked was: "Once you decide to refer an obstetric emergency, how long does it take for an ambulance to arrive?" Tables 4.20 (i) and (ii) summarise the findings for the Level 1 and Level 2 Hospitals.

Table 4.20. (i) Percentage Level 1 Hospitals where the emergency response time is > 1hour

| Indicators | Norms and Targets | Findings | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Emergency service response time | Within 1 hour | District | Hospital # | Average number of deliveries per month | | | | |
| | | | | ≤ 50 | ≤ 100 | ≤ 200 | ≤ 300 | > 300 |
| | | C | F | | 1 hr | | | |
| | | | M | | | 2 hrs | | |
| | | | O | | | | < 1hr | |
| | | M | A | 1 hr | | | | |
| | | | B | 1 hr | | | | |
| | | | D | | < 1 hr | | | |
| | | | I | | | ≥ 3 hrs | | |
| | | | K | | | No data | | |
| | | V | G | | | 1 hr | | |
| | | | H | | | < 1 hr | | |
| | | | N | | | | < 1hr | |
| | | B | L | | | < 1hr | | |
| | | S | E | | < 1 hr | | | |
| | | | P | | | | | At times 7 hrs |
| | | W | C | | < 1 hr | | | |
| | | | J | | | 1 hr | | |

Table 4.20 (ii) Percentage of Level 2 Hospitals where the emergency response time is > 1hour

| Indicator | Norms and Targets | Hospital | Average number of deliveries per month | | | |
|---|---|---|---|---|---|---|
| | | | ≤ 200 | ≤ 300 | ≤ 400 | ≤ 500 |
| Emergency service response time | Within 1 hour | Q | | | | 2 hours |
| | | R | | 2 hours | | |
| | | S | 1 hour | | | |
| | | T | | < 30 mins | | |
| | | U | | | 30 mins | |

Guidelines for using and interpreting emergency response time

- The findings show that for the majority of Level 1 Hospitals (12 out of 15 that responded, i.e. 80%) there is a response time of ≤ 1 hour. One hospital reported a response time of 2 hours, another of 3 hours and another "sometimes up to 7 hours". In the latter instance, it is not clear whether the response time is usually acceptable (i.e. <1hr), and that once the emergency services took close to 7 hours (which would be remembered because of the stress experienced by midwives when waiting for the ambulance to arrive).

- Three of the five (60%) Level 2 Hospitals reported response times of 1 hour or less. Two (more rural based Level 2 Hospitals) reported response of 2 hours.
- This indicator measures the time from placing a call for emergency services to the time of the arrival of the ambulance to the facility placing the request. It does not indicate the lapse of time in travelling between the referring and the referral institution.
- A more relevant measure may be the number of preventable maternal deaths in the last year that were related to the non-availability of ambulances.
- There needs to be a geographical comparison of institutions that report significant delays, and these delays need to be compared with the location of emergency service stations. There may be a need to open up new emergency service points.

#### 3.3.5.4.2. Availability of blood and blood products

The RHMTs report that maternal deaths occur because of a shortage of blood and blood products. The most critical blood products required to avert maternal deaths are Fresh Whole Blood (FWB) and Frozen Dried Plasma (FDP). Packed cells are only needed in situations where there is an insufficient supply of Fresh Whole Blood. Tables 4.21 summarise the findings for Level 1 and Level 2 Hospitals with regards to the availability of blood and blood products.

Table 4.21. (i) Availability of blood and blood products in Level 1 Hospitals

| Indicators | Norms and Targets | Findings | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Availability of blood and blood products | | District | Hospital # | Level 1 Hospitals | | | | |
| | | | | FWB | FDP | Packed cells | Platelets | Distance from nearest blood blank |
| | | C | F | 0 | No | No | No | 50 km |
| | | | M | 0 | No | No | No | No data |
| | | | O | 3 units | No | No | No | 50 km |
| | | M | A | 0 | Yes | No | No | 25 km |
| | | | B | 0 | No | No | No | 5 km |
| | | | D | 0 | No | No | No | 5 km |
| | | | I | 2 units | No | No | No | 35 km |
| | | | K | 0 | No | No | No | 25 km |
| | | V | G | 5 units | No | No | No | 45 km |
| | | | H | 5 units | No | Yes | No | 23 km |
| | | | N | 5 units | Yes | Yes | No | 80 km |
| | | B | L | 1 unit | No data | No data | No data | 65 km |
| | | S | E | 0 | No | No | No | 185 km |
| | | | P | 2 units | No | Yes | No | 120 km |
| | | W | C | 2 units | No | Yes | No | 120 km |
| | | | J | 7 units | Yes | Yes | No | No data |

Table 4.21. (ii) Availability of blood and blood products in Level 2 Hospitals

| Indicator | Norms and Targets | Findings | | | | | |
|---|---|---|---|---|---|---|---|
| Availability of blood and blood products | | Hospital # | FWB | FDP | Packed cells | Platelets | Distance from nearest blood blank |
| | | Q | 10 units | Yes | Yes | Yes | 0 km |
| | | R | 5 units | Yes | No | No | 18 km |
| | | S | 20 units | Yes | Yes | Yes | 0 km |
| | | T | 3 units | Yes | Yes | No | No data |
| | | U | 'Many' | Yes | Yes | Yes | 0 km |

Guidelines on the interpretation and use of the availability of blood and blood products

- Six of the sixteen (44%) Level 1 Hospitals reported not having any Fresh Whole Blood nor any other blood products
- Where blood and blood products were kept in the facility, this was either kept in the Outpatients Department, Casualty, or the Operating Theatre.
- Four Level 1 Hospitals reported having had maternal deaths in the last year due to the shortage of blood supplies. Two of these have no blood or blood products in the facility; one has three units of FWB in the facility; the other has 2 units of FWB and Packed Cells.
- It is difficult to interpret the data for Level 1 Hospitals. It would appear that the Level 1 Hospitals situated in Vhembe District have a higher allocation of FWB than hospitals in other districts. It does not appear that the number of deliveries conducted in a facility per month influences the allocation of blood – Hospital P with >300 deliveries per month has only 2 units of FWB allocated to it, the same as hospital I that does less than 200 deliveries per month. The distance between the hospital and the blood bank also does not appear to be a factor in determining the allocation of blood and blood products.
- The availability of blood does not appear to be a problem for Level 2 Hospitals, where three of the five report that the blood bank is within the institution.

### 3.3.5.5. Planning, organisation and coordination of health facilities

This measured the availability of a high risk clinic in Level 1 Hospitals, to which clinics could refer women identified as being at risk of developing complications during their pregnancy and their labour.

Table 4.22. Percentage Level 1 Hospitals that have a High Risk ANC clinic

| Indicators | Norms and Targets | Findings | | | |
|---|---|---|---|---|---|
| Percentage Level 1 Hospitals that provide a High Risk ANC clinic<br><br>No. Level 1 Hospitals that provide a HR ANC clinic<br>Total number of Level 1 Hospitals<br>X 100 | 100% | District | Hospital # | Presence of HR ANC Clinic | |
| | | C | F | | Yes |
| | | | M | | Yes |
| | | | O | | Yes |
| | | M | A | No | |
| | | | B | No | |
| | | | D | | Yes |
| | | | I | | Yes |
| | | | K | | Yes |
| | | V | G | | Yes |
| | | | H | | Yes |
| | | | N | | Yes |
| | | B | L | No | |
| | | S | E | | Yes |
| | | | P | | Yes |
| | | W | C | No | |
| | | | J | | Yes |
| | | TOTAL | 16 | 4 | 12 |
| | | Percentage | | 25% | 75% |

Guidelines for interpreting and using the percentage of Level 1 Hospitals that provide a High Risk ANC clinic

- This refers to the provision of a high-risk service by the maternity doctor or advanced midwife as opposed to the service being provided in the general OPD by practitioners (doctors and nurses) that may have less obstetric experience than the clinic-based nurse who has made the referral.
- 75% of Level 1 Hospitals do provide a High Risk ANC service. Hospitals A and B do not have a maternity unit, nor do they have dedicated maternity staff. It may not be possible within this setting to provide a special High Risk clinic. Attention needs to be focused on Hospitals L and C to understand the constraints they face in providing the service.

# 4. A programme of intervention, with its monitoring and evaluation procedures, that will address the factors that influence the key issues

## 4.1. Background to Study Objective 3

The first study objective aimed to identify the indicators and method for a baseline assessment of the quality of maternal health care. These were developed and applied and the following two key issues were prioritised for analysis and further planning by the RHMTs:

- Poor quality of the 1st ANC visit
- Poor management of labour

The second study objective aimed to identify the factors that affect the above key issues and the indicators to measure them. The following influencing factors were identified and measured:

- Staffing
- Supervision
- Referral systems
- Support services
- Planning, organisation and co-ordination of health facilities

The following were the research questions that guided the achievement of Study Objective 3:

a) How can priority areas for intervention be identified?
b) How can objectives be developed for the identified areas of intervention?
c) What strategies and activities can be implemented to achieve the objectives?
d) How can the programme be monitored?
e) How can the programme be evaluated?

## 4.2. The process followed for achieving Study Objective 3

The following account is a summary of the process followed to answer the research questions and to achieve Study Objective 3.

### 4.2.1. To identify priority areas for intervention

4.2.1.1. The facilitators analysed a) the deficiencies in the provision of care during the 1st ANC visit and during the management of labour and b) both the immediate and underlying factors influencing the quality of care, as identified by the RHMTs, with a particular focus on those that dealt with the management of the health system. Based on this analysis, facilitators proposed broad areas of intervention for addressing the influencing factors a) for improving the quality of the 1st ANC visit and b) for improving the management of labour.

4.2.1.2. The RHMTs reviewed the proposed interventions, identified where interventions for ANC and labour overlapped and developed a combined list of interventions.

4.2.1.3. Facilitators and RHMTs further identified those interventions that were possible to implement at municipal and district level, within the ambit of influence of the RHMTs, and identified those interventions that fell outside the level of authority of the RHMTs and required resolution by district or provincial level managers.

### 4.2.2. To identify objectives for the identified areas of intervention

4.2.2.1. The RHMTs developed objectives for each of the areas of intervention that could be implemented at municipal level. This was done in two stages – where the RHMTS from four districts, in two separate workshops (with two districts per workshop), developed an initial set of objectives. Because there was great similarity between the objectives developed by these four districts, the remaining two districts, in two separate workshops (with one district per workshop), instead of developing their own objectives, reviewed the objectives developed by their colleagues and prioritised them.

4.2.2.2. In developing the objectives, the RHMTs were asked to:

- Define the problems that the intervention was intended to resolve (this to ensure that all components of the problem were addressed at the stage of developing objectives)
- Establish objectives for each intervention
- Determine how they would measure that the objective has been achieved (this step contributed to the development of the indicators for Study Objective 2, as reported in Section 3.2.2.)

### 4.2.3. To identify strategies and activities to achieve the objectives

4.2.3.1. The RHMTs identified the strategies and activities they would need to implement in order to achieve the objectives. In selecting these, they were provided with the following criteria:

- Activities must be of high priority
- It must be possible to implement the activities by the end of 2003
- The activities will help to achieve the objective
- It must be affordable to implement the activities
- Activities are innovative

In developing the action plan they were asked to state:

- What would be done
- How it would be done
- Who would do it
- By when it would be done
- What additional resources would be required to implement the action plan

4.2.3.2. Facilitators developed Workshops 5-9 so that they would provide training, facilitation and support to the RHMTs to enable them to plan and implement each of the municipal level interventions they had identified.

4.2.3.3. In the 2-month period between workshops, the RHMTs implemented the activities planned in the workshops, and reported and reflected on the implementation at the subsequent workshops.

4.2.3.4. The facilitators analysed and reflected on the implementation by the RHMTs. This assisted in the planning of each subsequent workshop, and in finalising each component of the model.

### 4.2.4. To identify how the programme can be monitored

The facilitators developed tools for monitoring the implementation of the interventions. Some tools had been used in the baseline assessment others were newly developed (please see Section 4.3.3. below).

### 4.2.5. To identify how the programme can be evaluated

The facilitators proposed that the programme be evaluated through the conduct of another baseline assessment, utilising revised and improved on indicators and tools. An evaluation was not conducted as part of this study.

## 4.3. The products for Study Objective 3

### 4.3.1. Priority areas for intervention

The following is the list of the priority areas of intervention identified within the management of the health system sphere of the conceptual framework. The interventions are categorised according to the level of the health system where they would best be addressed:

a) At municipal level

- In-service training in ANC and the management of labour
- Supervision of ANC and labour management
- Audit of the service
- Referral system

b) At district/provincial level:

- Planning and organisation of ANC services
- Planning and organisation of health facilities for delivery (availability, distribution and functionality of EOC facilities)
- Staffing
- Support services (including emergency and blood transfusion services)

### 4.3.2. Objectives for the identified areas of intervention

Objectives were developed for the interventions that could be implemented at municipal level. These are contained in the appendix to this chapter (see Chapter 4 Appendix 3A)

### 4.3.3. Strategies and activities to achieve the objectives

Strategies and activities were developed for the interventions that could be implemented at municipal level. These are contained in the appendix to this chapter (see Chapter 4 Appendix 3A).

The following is a summary of the activities that were implemented:

Table 4.23. Overall summary of interventions implemented by the RHMTs

| Intervention | Activities implemented |
|---|---|
| In-service training | ▪ Facilitators trained RHMTs so that they could in turn train health workers in their respective municipalities. The content of training included:<br>* Routine ANC (including new schedule of visits)<br>* High risk ANC<br>* Management of normal labour<br>* Management of abnormal labour<br>* Management of obstetric complications and emergencies<br>▪ Facilitators conducted a training programme specially for doctors on the management of obstetric complications and emergencies<br>▪ The training was based on the National Guidelines for Maternity Care (DOH 2002) published by the National MCWH Directorate. This was done so that standard protocols for managing complications and emergency could be reinforced. Different approaches were used in different workshops to demonstrate different teaching methods that would encourage critical practice:<br>* The RHMTs, in their teams, were asked to read the guidelines dealing with the topic of that workshop. They were asked to develop questions on issues in the guidelines that were not well understood, or with which they disagreed. The questions were raised and discussed in plenary.<br>* As a form of pre-test of their knowledge, the RHMTs were asked to develop protocols of management for obstetric abnormalities and complications. Once they had completed the development of their protocols of management, they presented these in plenary. The protocols they had developed were compared with what was contained in the National Guidelines and checked for accuracy. Errors they had made were discussed and corrected.<br>* A case study of a maternal death was presented. The RHMTs were asked to identify the cause of death, the avoidable factors, and then to develop a protocol of how the condition should have been managed in order to avoid death. The protocols developed were compared with the National Guidelines.<br><br>Please see Chapter 4 Appendix 3B-1 for a summary of the in-service training intervention. |

Table 4.23. Overall summary of interventions implemented by the RHMTs (Cont.)

| Intervention | Activities implemented |
|---|---|
| Supervision of staff | ▪ RHMTs developed a job description for supervisors which:<br>* Clarified the levels of supervision and the lines of accountability (see Chapter 4 Appendix 3C-1 Levels of supervision for maternal health services).<br>* Developed the purposes and tasks of supervision for the shift supervisor and the unit manager, and for the municipal, district and provincial co-ordinators (see Chapter 4 Appendix 3C-2 - Supervision Matrix)<br>▪ RHMTS planned to publicise this job description and have it formally adopted in individual institutions<br>▪ The facilitators placed special emphasis on the following roles of the shift and unit supervisor in:<br>* Double checking (in ANC, at the 1st visit and 36th week visit; in labour, on admission and 4-hourly)<br>* Conducting monthly record reviews (for ANC and Labour). Facilitators developed the checklists (see Chapter 4 Appendix 3 D-1 and 2), RHMTs applied them, facilitators analysed the summary of the monthly record reviews and provided feedback to the RHMTs. |
| Audit of the service | ▪ Facilitators:<br>* Developed the components of perinatal audit (see Chapter 4 Appendix 3E-1)<br>* Developed guidelines for preparing for a perinatal review meeting (see Chapter 4 Appendix 3E-2)<br>* Developed a checklist to 'audit the perinatal care audit' (see Chapter 4 Appendix 3E-3)<br>* Modelled a perinatal review meeting at each workshop, in which the monthly perinatal statistics and a summary of the monthly perinatal and maternal deaths were reviewed, plus an in-depth discussion was held on 2 or 3 perinatal deaths (all presented by the RHMT responsible for organising the perinatal review meeting)<br>* In addition all maternal deaths that had occurred in all facilities in the previous 2-month period were reviewed. |

Table 4.23. Overall summary of interventions implemented by the RHMTs (Cont.)

| Intervention | Activities implemented |
|---|---|
| Referral system | ▪ RHMTs developed:<br>* District level protocols of management based on the national guidelines (process described in 'in-service training' above i.e. fulfilling two objectives simultaneously – that of training and that of developing agreed on district level protocols of management. The protocols developed in the workshop were 'ratified' and signed by the District Obstetrician).<br>* Referral guidelines/principles to facilitate referrals between levels of care in Limpopo Province (see Chapter 4 Appendix 3 F-1)<br>▪ Facilitators developed a form for auditing referrals (see Chapter 4 Appendix 3 E-2 Table 3) that could be discussed at the perinatal review meeting. |

### 4.3.3. Monitoring the implementation

This section reports on the process used to monitor the implementation of each intervention, and the outcome of monitoring.

#### 4.3.3.1. In-service training

At each workshop, facilitators received feedback from the RHMTs on the in-service training they had conducted in the previous 2-month period. The facilitators asked the following questions when eliciting feedback:

- What coverage was achieved? (i.e. how many were trained of those that needed to be trained?)
- What approach was used/how was training organised, to achieve coverage?
- When was training conducted? How long did it last?
- How effective was the training? How was effectiveness measured?
- What helped/hindered?
- What recommendations do you have for future training?

After the first in-service training activity the RHMTs had conducted, their feedback was discussed in the workshop. After this, the RHMTs were asked to hand in written reports on the in-service training they had done. Table 4.3.1. in the appendix (see Chapter 4 Appendix 3B-2) provides an example of the feedback provided – it represents a district level summary of the in-service training

conducted by the RHMTs during November 2002 – February 2003 on the management of normal labour and the puerperium. Table 4.3.1. shows that all but two of the 25 RHMTs had been able to implement some in-service training activity on the management of normal labour and the puerperium. The numbers trained for the province in this 2-month period added up to about 350 midwives (clinic- and hospital-based) and about 30 doctors. The way in which the training activities had been organised was variable – some RHMTS brought groups of midwives into the hospital, while others visited clinics and labour wards. Some organised a formal one- or two-day workshop (which was repeated to achieve wider coverage), others organised a 1-, 2- or 3-hour session. Some used the monthly perinatal review meeting as an opportunity to do the in-service training. The doctors were mostly trained in ward rounds by the district obstetrician. The teaching methods also varied – from lectures to the discussion of case studies, from organising an OSCE to 'hands on' learning in the labour ward. The RHMTs identified that the factors that enabled implementation of the in-service training activity included: supportive relationship with institutional managers, who made available a venue for training, photocopying facilities for the replication of training material, transport, and catering; good relationships between members of the RHMT; collaboration between RHMTs and clinical instructors based at the nursing college; good relationships with doctors. The hindering factors included: staff shortages, RHMT members not released to fulfil in-service training role, unavailability of transport, clash with other meetings and workshops, poor relationships in the RHMT. From the written reports received in subsequent workshops, it was evident that after the initial enthusiasm, the RHMTs were not able to sustain the initial level of input and coverage with regard to in-service training. Facilitators held discussions with the RHMTs in order to develop a more sustainable approach to in-service training. The main suggestions included: having a regular day each month on which in-service training activities are conducted; and/or integrating in-service training activities with the perinatal review meeting; and/or integrating in-service training with the implementation of clinical supervision; and/or self-directed learning and on-the-spot teaching during ward rounds. A record does need to be kept of topics that need to be covered and the topics actually dealt with, and a record kept for individual staff members, recording the training they have received and the topics that remain outstanding.

#### 4.3.3.2. Supervision

As stated previously in Table 4.23 above, facilitators placed special emphasis on the responsibilities of the shift and unit supervisors in implementing the principle of double-checking and in conducting record reviews, as these were perceived to be key activities in improving the

quality of care provided to pregnant women. For both ANC record and labour records, the following monitoring tools were developed:

a) A checklist to assist with the review of individual records (presented in Chapter 4 Appendix 3 D1-2)

b) A summary form to manually collate the scores of 20 records per month (presented in Chapter 4 Appendix 3 D3-4)

- A feedback form, set up in Microsoft Excel (presented in Chapter 4 Appendix 3 D5). The facilitators returned the results of the analysis to the RHMTs on the same day that the summary forms were received. The results of the analysis were provided in tabular and in graphic form per institution, highlighting areas that required attention. The analysis included:
- Total average score per record
- Average score per category in the record
- Average score per item in the checklist
- Progress over time

RHMTs that had members that were computer literate and who had access to a computer were provided with a computer disc containing the formatted Microsoft Excel spreadsheet for their institution, so that they could do the analysis themselves.

(c) Arising from the regular review of records, RHMTs developed guidelines for the monthly monitoring of records.

Table 4.24. summarises the extent to which Level 1 and Level 2 Hospitals conducted labour record reviews between January and July 2003. For example: in Capricorn District there are 8 hospitals, 4 of which conducted labour record reviews for 1 month or 2 months during the 7-month period and the other 4 hospitals conducted labour record reviews for 3 or 4 months during the 7-month period. In Mopane District, 6 hospitals conducted labour record reviews for 3 or 4 months, one hospital conducted labour record reviews for 5 or 6 months and one for the full 7 months of the 7-month period. Thus a total of 7 out of the 41 hospitals (17%) conducted no labour record reviews, 11 (27%) conducted labour record reviews for 1 or 2 months, 20 (49%) conducted labour record reviews for 3-4 months, 2 (5%) for 5-6 months, and 2 (5%) for the entire 7-month period.

Table 4.24. Summary of the implementation of labour record reviews: Jan-Jul 2003

| District | Number of hospitals that conducted labour record reviews for the number of months stated: | | | | |
|---|---|---|---|---|---|
| | 0 months | 1-2 months | 3-4 months | 5-6 months | 7 months |
| Capricorn (8 hospitals) | | 4 | 4 | | |
| Sekhukhune (6 hospitals) | 2 | 3 | 1 | | |
| Mopane (8 hospitals) | | | 6 | 1 | 1 |
| Bohlabela (4 hospitals) | 3 | | 1 | | |
| Vhembe (7 hospitals) | | 1 | 4 | 1 | 1 |
| Waterberg (8 hospitals) | 2 | 3 | 3 | | |

Recorded below are examples of the feedback on the review of records provided to the RHMTs:

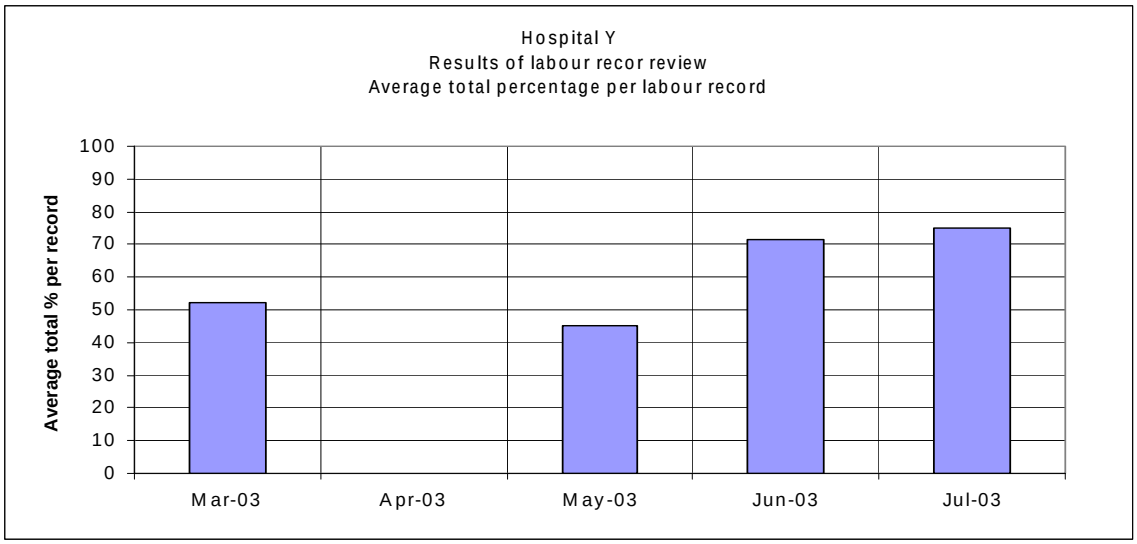
a) Feedback form provided to Hospital X in tabular form, showing achievements from the monitoring of labour recordings over the 7-month period (Table 4.25.)

b) Graphic feedback of labour record reviews provided to Hospital Y:
   - Total average score per record (Figure 4.6.) over a 5-month period
   - Average score per category in the record (Figure 4.7) over a 5-month period
   - Average score per item on the Labour Graph (Figure 4.8) for the 5-month period

(d) Graphic feedback, aggregated for the province, of the ANC record reviews conducted from May to July 2003, showing:
   - Average percentage per category in the ANC record (Figure 4.9)
   - Average percentage per item in the Examination category (Figure 4.10)
   - Average percentage per item in the Interpretation and Decision-making category (Figure 4.11)

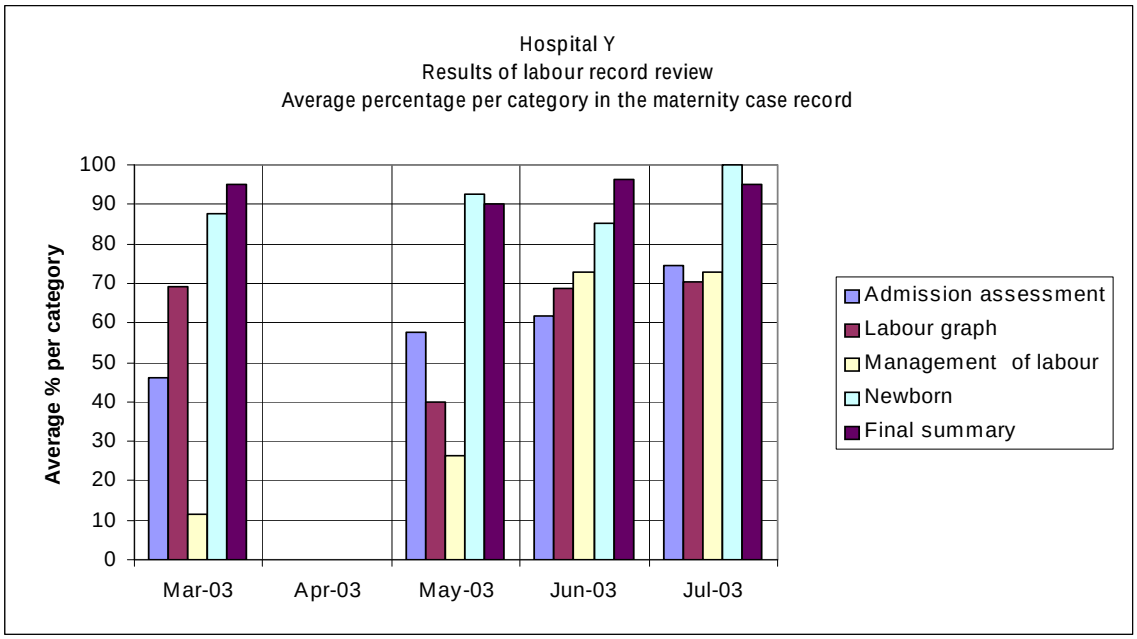
With regards to monitoring whether the principle of double-checking was being implemented, this was picked up trough the record review. Through the ANC record review, the percentage of records that demonstrate that double-checking has occurred (through the counter-signature of the person doing the double-checking) is 33%. Through the labour record review, 39% of records demonstrated double-checking had been implemented on admission to the labour ward, and 38% showed that double-checking had occurred 4-hourly.

Figure 4.6. Total average score per record Hospital Y March to July 2003




The figure above shows the gradual increase in the overall average percentage score per record in Hospital Y over the 5-month period. It provides some indication that with a regular review of records each month, followed by a discussion of problems that have been detected, and a plan to rectify these in the subsequent month, recordings in labour may improve

Figure 4.7. Average score per category in the labour record Hospital Y March to July 2003



The above figure shows that the categories that are weakest are the admission assessment, the labour graph and taking decisions on further management. Again improvements are noted over time as problem issues are discussed and resolved.

Figure 4.8. shows the weakest areas with regards to the recordings on the labour graph – all the items pertaining to maternal condition scored poorly. Risk factors are often not recorded, because midwives feel that they may occur at any stage. The record of drugs and fluids given is often not filled- in, “indicating that the women did not require any”.

Table 4.25. Tabular feedback provided to Facility X monitoring performance of labour recordings

| Results of labour record review | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **District: Mopane** | | | **Municipality:** | | | | | | **Institution: X** | | | | | | |
| | | **Number of records reviewed** | 20 | 20 | 20 | 20 | 20 | 20 | 20 | | | | | | 140 |
| | **Item #** | | Jan-03 | Feb-03 | Mar-03 | Apr-03 | May-03 | Jun-03 | Jul-03 | Aug-03 | Sep-03 | Oct-03 | Nov-03 | Dec-03 | **Average % per item** |
| **Admission assessment** | 1 | ANC record reviewed | 9.0 | 19.0 | 19.0 | 19.0 | 12.0 | 11.0 | 16.0 | | | | | | 75 |
| | 2 | Admission form complete | 9.0 | 19.0 | 19.0 | 19.0 | 20.0 | 20.0 | 20.0 | | | | | | 90 |
| | 3 | Diagnosis and management | 11.0 | 20.0 | 20.0 | 20.0 | 20.0 | 18.0 | 11.0 | | | | | | 86 |
| | 4 | Admission double checked | 11.0 | 20.0 | 20.0 | 20.0 | 11.0 | 20.0 | 11.0 | | | | | | 81 |
| | | **Average percentage** | 50.0 | 97.5 | 97.5 | 97.5 | 78.8 | 86.3 | 72.5 | | | | | | |
| **Labour graph** | 5 | Risk factors recorded | 18.0 | 12.0 | 20.0 | 20.0 | 16.0 | 20.0 | 20.0 | | | | | | 90 |
| | 6 | FHR 1/2 hrly | 19.0 | 20.0 | 20.0 | 20.0 | 15.0 | 14.0 | 11.0 | | | | | | 85 |
| | 7 | State of liquor | 15.0 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | | | | | | 96 |
| | 8 | Degree of moulding on PV | 18.0 | 20.0 | 20.0 | 20.0 | 19.0 | 20.0 | 15.0 | | | | | | 94 |
| | 9 | Contractions 1/2 hrly | 20.0 | 20.0 | 20.0 | 20.0 | 16.0 | 13.0 | 12.0 | | | | | | 86 |
| | 10 | Dilatation: LatPh 4hrly ActPh 2hrly | 20.0 | 20.0 | 20.0 | 20.0 | 15.0 | 20.0 | 20.0 | | | | | | 96 |
| | 11 | Dilatation plotted correctly | 20.0 | 20.0 | 20.0 | 20.0 | 14.0 | 16.0 | 16.0 | | | | | | 90 |
| | 12 | Level of head 4hrly | 20.0 | 20.0 | 20.0 | 20.0 | 18.0 | 17.0 | 13.0 | | | | | | 91 |
| | 13 | Maternal BP and pulse hrly | 19.0 | 18.0 | 20.0 | 20.0 | 15.0 | 15.0 | 13.0 | | | | | | 86 |
| | 14 | Maternal $T^0$ and urine 4hrly | 18.0 | 10.0 | 19.0 | 12.0 | 17.0 | 13.0 | 16.0 | | | | | | 75 |
| | 15 | Record of drugs and fluids | 19.0 | 11.0 | 20.0 | 14.0 | 17.0 | 19.0 | 14.0 | | | | | | 81 |
| | | **Average percentage** | 93.6 | 86.8 | 99.5 | 93.6 | 82.7 | 85.0 | 77.3 | | | | | | |
| **Management of labour** | 16 | Management recorded after PV | 20.0 | 20.0 | 20.0 | 20.0 | 18.0 | 18.0 | 13.0 | | | | | | 92 |
| | 17 | Summary of fetal condition | 19.0 | 19.0 | 19.0 | 19.0 | 15.0 | 20.0 | 13.0 | | | | | | 89 |
| | 18 | Summary of labour progress | 19.0 | 19.0 | 19.0 | 19.0 | 13.0 | 19.0 | 14.0 | | | | | | 87 |
| | 19 | Summary maternal condition | 19.0 | 19.0 | 19.0 | 19.0 | 13.0 | 20.0 | 13.0 | | | | | | 87 |
| | 20 | Decision on further action | 16.0 | 14.0 | 18.0 | 19.0 | 17.0 | 19.0 | 17.0 | | | | | | 86 |
| | 21 | Time of next review | 8.0 | 14.0 | 16.0 | 19.0 | 14.0 | 16.0 | 18.0 | | | | | | 75 |
| | 22 | Double-checking 4hrly | 14.0 | 13.0 | 13.0 | 15.0 | 10.0 | 8.0 | 6.0 | | | | | | 56 |
| | | **Average percentage** | 82.1 | 84.3 | 88.6 | 92.9 | 71.4 | 85.7 | 67.1 | | | | | | |
| **Newborn** | 23 | Form completed | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | | | | | | 100 |
| | | **Average percentage** | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | | | | | | |
| **Final summary** | 24 | Summary of labour completed | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | | | | | | 100 |
| | 25 | Active management of 3rd stage | 12.0 | 12.0 | 20.0 | 15.0 | 18.0 | 19.0 | 20.0 | | | | | | 83 |
| | | **Average percentage** | 80.0 | 80.0 | 100.0 | 87.5 | 95.0 | 97.5 | 100.0 | | | | | | |
| | | **Total score** | 413.0 | 439.0 | 481.0 | 469.0 | 403.0 | 435.0 | 382.0 | | | | | | |
| | | **Average score** | 20.7 | 22.0 | 24.1 | 23.5 | 20.2 | 21.8 | 19.1 | | | | | | |
| | | **Average total percentage** | 82.6 | 87.8 | 96.2 | 93.8 | 80.6 | 87.0 | 76.4 | | | | | | |

Figure 4.8. Average percentage per item on the labour graph Hospital Y : Consolidated report for March to July 2003

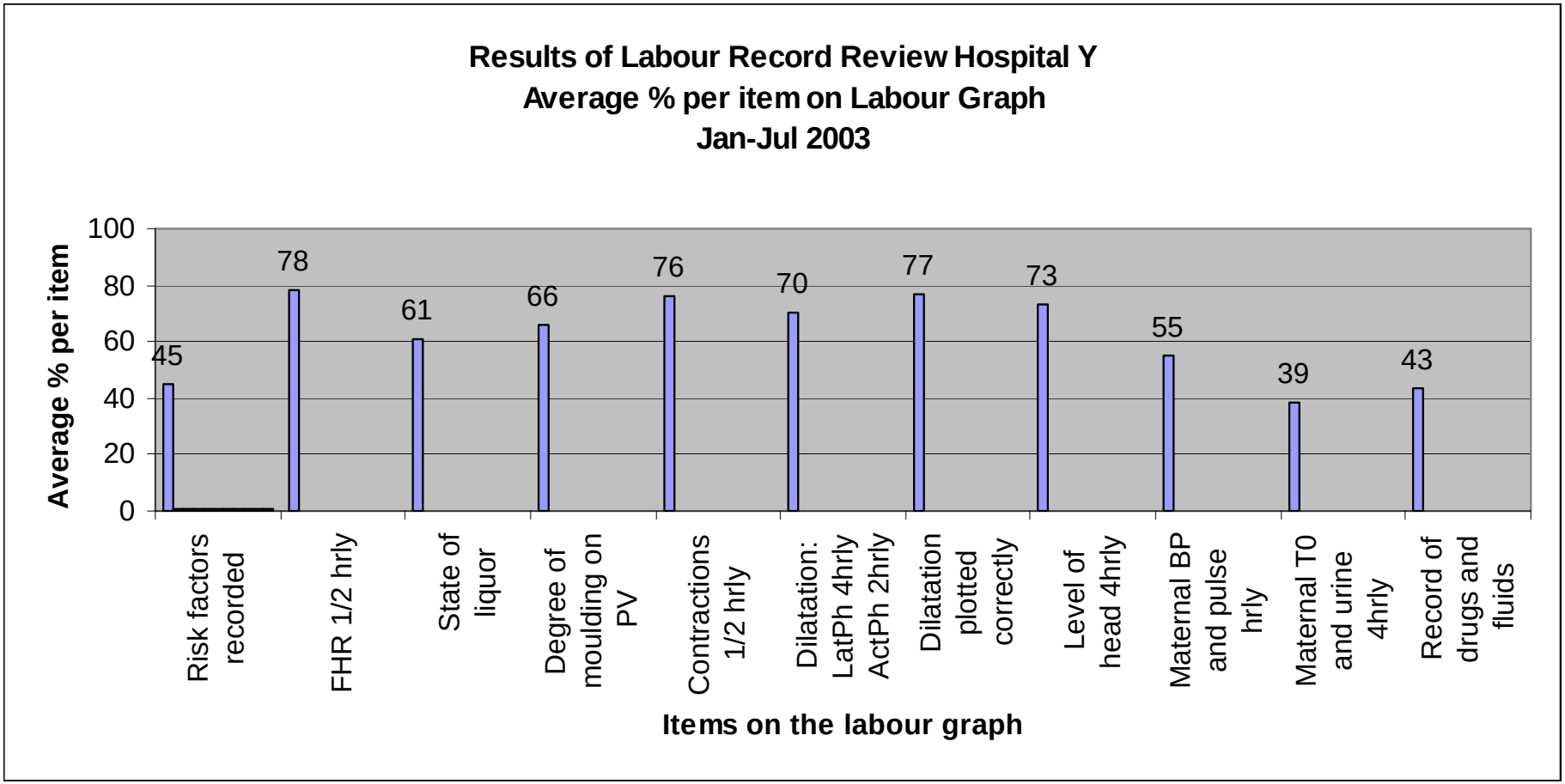
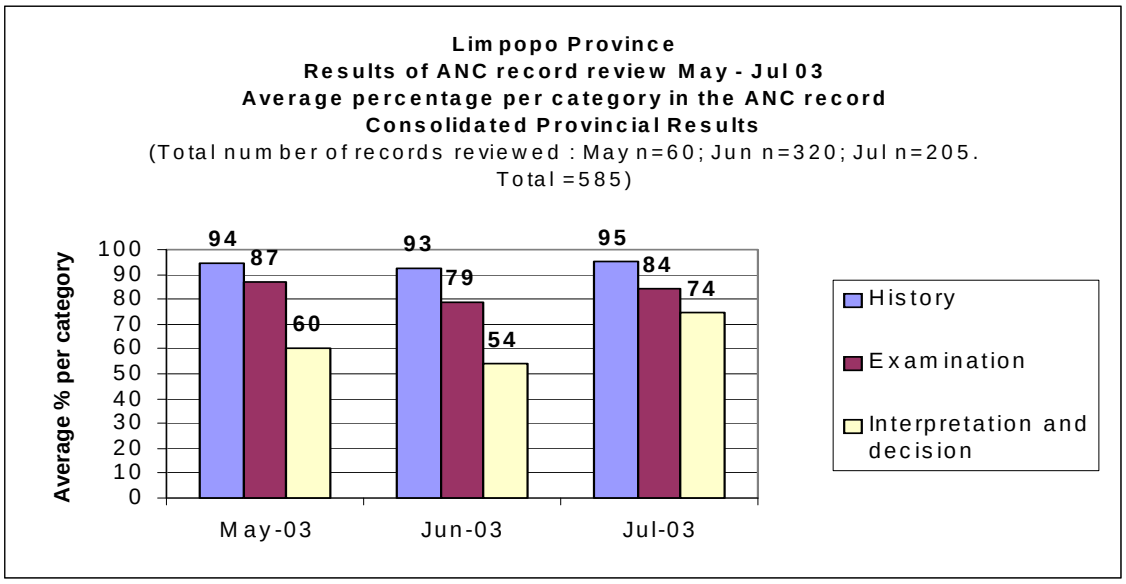
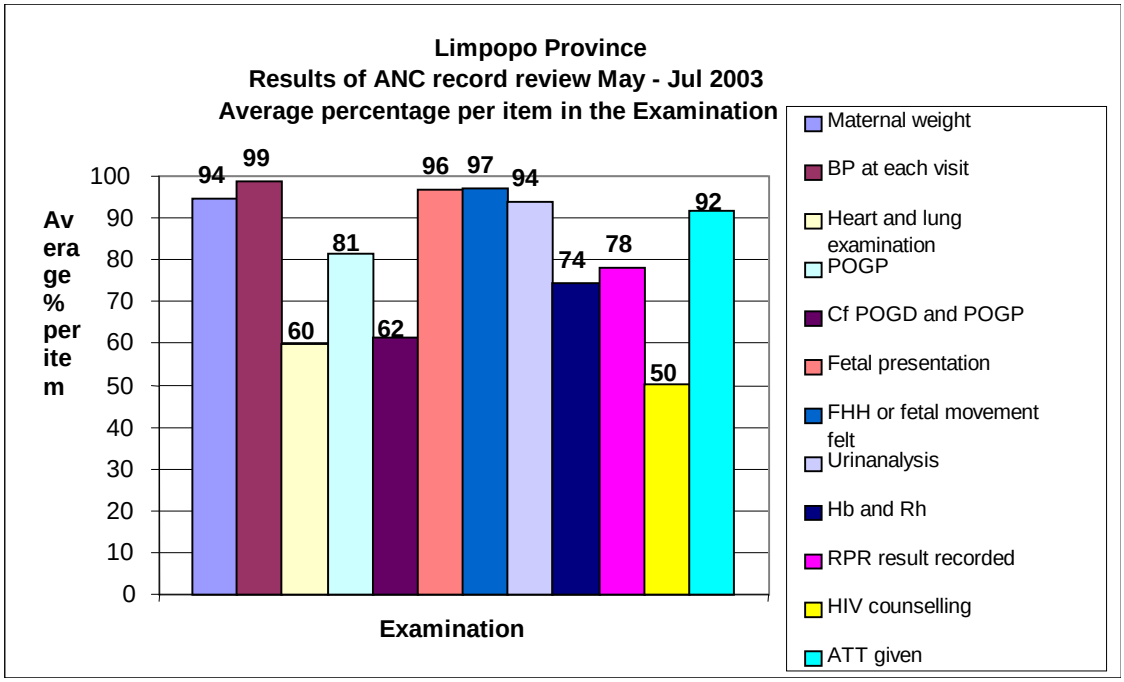


Figure 4.9. Average percentage score per category in the ANC record



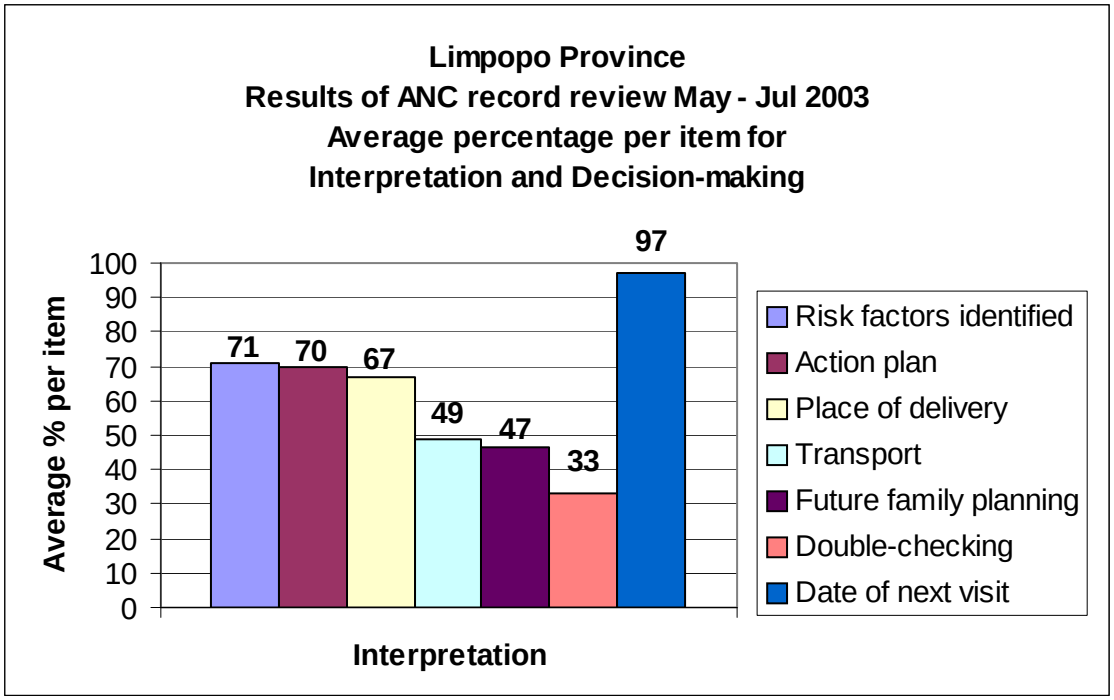

A similar picture emerges, as for labour recordings, where the interpretations and decisions score poorly.

Figure 4.10. Average percentage score per item in the Examination category of the ANC record



The graphic feedback vividly displays the weakest areas with regards to the examination of the pregnant woman *viz.* the examination of the heart and lungs (leading to poor detection of cardiac disease which has been identified as an avoidable cause of maternal death by the NCCEMD 2002); the comparison between period of gestation by palpation and the period of gestation by dates (leading to the poor detection of intra-uterine growth retardation); HIV counselling (indicating the poor implementation of the PMTCT programme).

Figure 4.11. Average percentage per item in the category 'interpretation and decision making'




The poor score on whether the midwife has discussed transport arrangements to get to the place of delivery indicates that midwives are not utilising ANC as an opportunity to help the woman plan for accessing the chosen delivery site. The poor score on future family planning indicates a fragmentation in reproductive and maternal health services. The poor score on double checking shows that provision for implementing the principle of double-checking at the 1st visit has not been made.

#### 4.3.3.3. Audit of the service

The Perinatal Audit Checklist (see Chapter 4 Appendix 3E-3) was the tool used for monitoring the implementation of the perinatal audit process by each RHMT. The following are the results of

monitoring from May to August 2003. Table 4.26. shows how many hospitals in each district returned a perinatal audit checklist and for how many months it was returned (the presumption being that if a checklist had not been returned for a month, the perinatal audit had not taken place that month). So for example: Capricorn District has a total of 8 hospitals, 4 of which did not return a checklist at all, 1 returned a checklist for one month, 2 returned a checklist for 2 months and 1 returned a checklist for 3 months. While the checklist is implemented at hospital level, the perinatal audit process needs to include an audit of the practice in the hospital and the referring clinics and health centres in its catchment area. The RHMTs can use the tool to monitor whether the hospitals and clinics and health centres in their municipalities are indeed conducting a perinatal audit, and if they are not, the RHMTs need to establish the reasons for this, and provide support to ensure that perinatal audit does occur.

Table 4.26. Number of hospitals that returned a perinatal audit checklist from May to August 2003

| District | | Cap | Sek | Mop | Boh | Vhe | Wat |
|---|---|---|---|---|---|---|---|
| Total number of hospitals | | 8 | 6 | 8 | 4 | 7** | 8 |
| No. hospitals returned checklist for the stated period | 0 months | 4 | 2 | 4 | 3 | | |
| | I month | 1 | 3* | | 1 | | 2 |
| | 2 months | 2 | 1 | 2 | | | |
| | 3 months | 1 | 1 | 1 | | | |
| | 4 months | | | 1 | | | |

* 2 hospitals combined their perinatal audit process
** Hospital names not identified on the forms but a total of 7 returns were received

From a more thorough analysis of the checklist, the RHMTs can obtain an indication of the quality of perinatal audit that is being conducted. Table 4.27. presents a district level analysis of perinatal audit checklists returned in the 4-month period. So for Capricorn District only 4 hospitals returned perinatal audit checklists (as may be seen from Table 4.26.) - a total number of 8 returns were received from these 4 hospitals combined. Ideally the RHMTs would need to track each hospital over time to see whether deficiencies in the perinatal audit process are being corrected.

Table 4.27. Analysis of perinatal audit checklist returns – May to August 2003

| District | | C | S | M | B | V | W |
|---|---|---|---|---|---|---|---|
| Total number of returns received | | 8 | 7 | 11 | 1 | 7** | 2 |
| First review of records | Done | 6 | 5 | 7 | 1 | 4 | 1 |
| | Not done | 2 | 2 | 4 | | 3 | 1 |

Table 4.27. : Analysis of perinatal audit checklist returns – May to August 2003 (Cont.)

| District | | C | S | M | B | V | W |
|---|---|---|---|---|---|---|---|
| Total number of returns received | | 8 | 7 | 11 | 1 | 7** | 2 |
| Preparatory meeting | Not held | 2 | 2 | 1 | | 2 | 1 |
| | Incomplete* | 3 | 3 | 8 | | 2 | |
| | Complete | 3 | 2 | 2 | 1 | 3 | 1 |
| * Items missing | | | | | | | |
| | Member of the team missing | | | | | | |
| | Records incomplete | | | | | | |
| | Stats for the month incomplete | | | | | | |
| | Data from hospital not included | | | | | | |
| | Data from clinics not included | 3 | 3 | 6 | 1 | | |
| | Data on home deliveries not included | 3 | | 4 | | | |
| | Form summarising deaths not complete | | | 1 | | | |
| | Not all deaths were reviewed and causes discussed | 1 | | | | 2 | |
| | Avoidable factors not discussed for all deaths | 1 | | | | 1 | |
| | Relevant preventive action not considered | 1 | | | | | |
| | Case studies not selected for discussion at the PRM | 1 | | 2 | | | |
| Perinatal Review Meeting | Not held | 2 | 0 | 1 | | 0 | 1 |
| | Incomplete* | 6 | 7 | 10 | | 6 | 1 |
| | Complete | 0 | 0 | 0 | | 1 | |
| * Items missing | | | | | | | |
| | Doctor not present | 3 | 3 | | | 4 | |
| | Hospital Midwives not present | 0 | 1 | 1 | | | |
| | Clinic midwives not present | 1 | 5 | 10 | | 1 | 1 |
| | Form summarising deaths not presented and discussed | 0 | 1 | 2 | | | |
| | Clinical management problem not discussed | 1 | 1 | 3 | 1 | | |
| | Lessons learned not listed | 1 | 1 | 1 | 1 | | 1 |
| | Research topics not identified | 3 | | 6 | 1 | 5 | |
| | Minutes of previous PRM not circulated and discussed | 4 | 4 | 4 | | 6 | 1 |
| | Presentation on overheads or handouts not done | 1 | 4 | 1 | | 1 | 1 |
| | Poor participation (<3/4 participated in discussion) | 1 | 1 | 1 | | 1 | |
| | Letter with recommendations not sent to managers | 2 | 4 | 5 | 1 | | |
| PPIP | Stats recorded in the PPIP | 6 | 6 | 9 | 1 | 6 | 2 |
| | Not done | 2 | 1 | 2 | | 1 | |

The analysis of the checklists that were returned indicates the following:

- The first review of records (i.e. within 24 hours of the death occurring) is happening in only about half of instances. This probably means that the documentation available for analysing deaths is often incomplete, leading to an inaccurate identification of the causes of death and of the avoidable factors.
- The preparatory meeting is held in 2/3rd of instances, but in most cases the data from the clinics is not included in the analysis of the monthly perinatal statistics.

- The perinatal review meeting was reported as not being held in 1/6th of the returns (for reasons like the doctor or midwife being on leave, or because there had been no deaths to review in a particular month). Where the PRM had been held, there were many deficiencies reported, the most important of which were: the doctor was not present at the PRM (i.e. in about half of instances, the midwives were conducting the PRM on their own); in most cases the clinic midwives were not part of the PRM; in most cases the minutes of the previous PRM were not circulated and discussed, nor had recommendations arising from the PRM been raised with the institutional managers (this indicates that preventive and corrective actions are not being planned nor implemented from month-to-month, resulting in repeated deaths from similar causes)
- In most cases the perinatal statistics had been recorded in the PPIP (Perinatal Problem Identification Programme), and in some instances, even when no other component of the perinatal audit process had been implemented (indicating that at times an individual responsible for recording the data in the PPIP does so in the absence of a full perinatal audit).

The facilitators observed, during the conduct of perinatal review meetings in the workshops, that the quality of analysis of individual deaths is often very poor – because the patient record is not complete, because the health workers are not knowledgeable enough to be able to critically analyse deaths and because of a propensity to identify patient related avoidable factors, even where such factors were not related to the death event.

#### 4.3.3.4. Referral systems

A qualitative monitoring tool was used to review the functioning of the referral system. The RHMTs were requested to identify the problems of referral between one level and the next, within three areas of concern:

- With regards to recognising the need for referral
- Accessing the referral facility
- Using the referral facility

The RHMTS identified the problems with regards to these three areas, and then proposed solutions that would facilitate referrals. The product of their review and their plan is presented overleaf in Table 4.28.

Table 4.28. Review and Plan for improving referral systems

| | Family/Community | | Clinic/ Health Centre | | Level 1, 2 and 3 hospitals | |
|---|---|---|---|---|---|---|
| | Problems | Interventions | Problems | Interventions | Problems | Interventions |
| Recognising need for referral | ▪ Do not recognise the urgency of the problem – lack knowledge on warning signs<br>▪ Do not recognise the cause / false perceptions on causation<br>▪ Lack of information<br>▪ Cultural and religious beliefs (taboos on sexual issues)<br>▪ Patients opt for alternative/traditional medicine<br>▪ Attitude of health workers and clients<br>▪ Fear of outcomes | ▪ Meet with community stakeholders<br>▪ Community health education on warning signs<br>▪ Health education through the media (e.g. Soul City) to overcome myths<br>▪ Education of traditional healers<br>▪ Integration of traditional healers in the health system<br>▪ Promote family and partners to attend ANC with pregnant woman | ▪ Inadequate knowledge, skills and experience of health workers<br>▪ Leading to inadequate/ incomplete assessment of patients<br>▪ Non-availability of/ non-compliance with protocols of management<br>▪ Over-referral due to lack of equipment | ▪ Monthly in-service education<br>▪ Review/ audit of referrals<br>▪ Double-checking by supervisor<br>▪ Develop protocols of management<br>▪ Review perinatal deaths | ▪ Lack of protocols<br>▪ Inexperienced staff<br>▪ Poor hand over reports<br>▪ Do not have access to consultant<br>▪ Poor monitoring<br>▪ Inadequate double-checking<br>▪ Insufficient personnel | ▪ Develop and implement protocols of management<br>▪ Develop and maintain good team relationships within the team and between institutions<br>▪ Flexible communication lines<br>▪ Implement supervision plan<br>▪ Review PNDs and give feedback |

Table 4.28. Review and Plan for improving referral systems (Cont.)

| | Family/Community | | Clinic/ Health Centre | | Level 1, 2 and 3 hospitals | |
|---|---|---|---|---|---|---|
| | Problems | Interventions | Problems | Interventions | Problems | Interventions |
| Access to the referral institution | ▪ Poverty<br>▪ Beliefs about the facility<br>▪ Distance<br>▪ Transport<br>▪ Attitudes of health workers<br>▪ Facilities not open 24 hours<br>▪ Fear of the unknown<br>▪ Decision to seek care deferred to other family members<br>▪ Communication system | ▪ Link with social welfare to assist with poverty<br>▪ Provide information regarding the services<br>▪ Establish a community loan system and community pool of available cars<br>▪ Discuss plans for transport at first and each visit<br>▪ Inform patients about the need to report early<br>▪ More 24-hr services | ▪ Delays by health workers in detecting and then responding to problems<br>▪ Delays on transport<br>▪ Poor communication systems (including due to theft of cables)<br>▪ Distance to referral facility<br>▪ Poor roads | ▪ In-service training<br>▪ Encourage pregnant women to save for transport costs throughout pregnancy<br>▪ Use protocols<br>▪ Ensure availability of emergency transport<br>▪ Record response time of emergency transport<br>▪ Liaise with Local Government about roads<br>▪ Community education re: theft of cables<br>▪ Get to know staff in the hospital | ▪ No High Risk facilities at Level 1 Hospital<br>▪ Availability of em transport/ Drunk drivers<br>▪ Non-functioning telephones/ switch-boards do not answer/ cell phones off<br>▪ Lack of doctors dedicated to maternity<br>▪ Lack of resources in referral hospitals<br>▪ Family refuses referral<br>▪ Inefficient admission procedures<br>▪ Problems at hand over times<br>▪ Referral institutions not accepting patients<br>▪ Coding system in emergency services inadequate | ▪ Implement protocols pf management<br>▪ Report on response time<br>▪ Fix telephone system<br>▪ Institute dedicated telephone lines<br>▪ Make available call lists<br>▪ Implement regular meetings between levels to review referrals<br>▪ Improve on and standardise the referral letters<br>▪ Provide training for paramedics<br>▪ Improve team-work (include switchboard operators)<br>▪ Doctors accountable to switchboard operators<br>▪ Monitor staff and discipline where necessary |

Table 4.28. Review and Plan for improving referral systems (Cont.)

| | Family/Community | | Clinic/ Health Centre | | Level 1, 2 and 3 hospitals | |
|---|---|---|---|---|---|---|
| | Problems | Interventions | Problems | Interventions | Problems | Interventions |
| Use of referral facility | ▪ Lack of/ Inadequate/ non-functional equipment<br>▪ Perceptions of poor quality of care in the facility<br>▪ Cultural and religious beliefs<br>▪ Language barriers<br>▪ Abuse of referral system – want to be seen by a doctor | ▪ Improve quality of care in the facility<br>▪ Education and collaboration wit traditional healers and leaders<br>▪ Employ interpreters | ▪ Very Junior Medical officers<br>▪ Lack of feedback<br>▪ No standardised referral forms<br>▪ Can't skip levels of care (must refer to Level 1 first) | ▪ Monitor the extent to which protocols of management are being followed<br>▪ Educate clients on early admission | ▪ Inadequate protocols of management<br>▪ Patients denied admission<br>▪ Late admission at clinic<br>▪ Lack of experienced staff | ▪ Protocols of management to be followed<br>▪ Monitor adherence to protocols of management<br>▪ Educate clients of early admission |

## 5. Conclusion

This chapter has reported the findings of Study Objectives 1-3, which has included:

- The indicators selected to conduct a baseline assessment of the quality of care (with the data collection tools to collect the data necessary to calculate the indicators) and the outcome of the application of these indicators in Limpopo Province;
- The factors that influence the quality of care, a set of essential indicators that will enable the measurement of the indicators (with the data collection tool to collect the data necessary for the calculation of the indicators) and the outcome of the application of these indicators in Limpopo Province;
- A description of the interventions selected to improve the quality of care, and the monitoring tools that were developed to monitor the implementation of the interventions.

The following chapter discusses these findings.

Chapter
5

# Discussion and Conclusions

## 1. Introduction

Reported in the previous chapter are the outcomes of action-research steps 1-5 (proposal, planning, implementation, observing and recording) for study objectives 1-3. The outcomes of action-research steps 6-8 (reflection, modifications, and formulating model) for study objectives 1-3 are recorded in this chapter. The findings for Objective 4 arise out of action-research step 9 and are reported in Chapter 6: Recommendations.

The overall aim of this study was to develop a useable and replicable model of intervention with Reproductive Health Management Teams (RHMTs) at municipal and district level that will lead to improvements in the quality of maternal health care at the primary level in South Africa. Inherent in the statement of the aim is the concept of the Reproductive Health Management Teams (RHMTs). The RHMTs were envisaged as the body responsible for overseeing and managing maternal health services for a defined geographical area (municipal or district). Being the 'prime movers', the fact that the success of the model hinges on the functionality of the RHMTs emerged during this study. Thus this chapter begins with a discussion on the concept of the Reproductive Health Management Team.

## 2. The concept of the Reproductive Health Management Team

### 2.1. Rationale for establishing Reproductive Health Management Teams

#### 2.1.1. Within the context of the transformation and restructuring of the health system

The National Department of Health of post-apartheid South Africa established a health system based on the Primary Health Care (PHC) Approach and the District Health System (DHS), with

the aim of transforming and restructuring the country's fragmented, inefficient and inequitable health system (Hall *et al.* 2002). This fragmentation also exhibited itself in maternal health services, with the fragmentation between clinics and hospitals, between midwives and doctors, between health services and support services, between public and private sectors, and between urban and rural facilities.

Key to the concept of the PHC Approach, and of particular relevance to effective maternal health care, is that "the PHC Approach is more than the provision of "primary level services" that are typically provided in clinics and mobile services. It envisages a seamless referral system from the community all the way to the most sophisticated health care available" (*Ibid.* p. 1). Critical to the establishment of DHS, as the most appropriate vehicle for the delivery of the PHC Approach, is the "health district" which has a decentralised health management team responsible for:

- "delivery of a comprehensive and integrated package of health care to the population
- planning, managing, implementing and monitoring health care delivery that is appropriate for the population
- ensuring equitable and cost effective use of resources
- establishing an appropriate referral system between parts of the district health system and with relevant services outside of the health district" (*Ibid.* p.1)

The White Paper on the Transformation of the Health System (accessed January 2002) states that the planning and implementation of MCWH (Maternal Child and Women's Health) programmes will be district-focused and that district health teams will be trained to enhance their capacity for planning, implementing, supervising, monitoring and evaluating MCWH services. It states that MCWH advisory committees will be established at the district level, which will comprise members with technical expertise as well as community and non-governmental representatives. The White Paper requires that districts should draw up annual plans, and monitor and evaluate the achievements against the plans, through the utilisation of health information systems and relevant surveys.

Thus RHMTs were established within the context of decentralised programme management described above, in recognition that District Health Management Teams are primarily responsible for the overall oversight and management of the health district, and that the Reproductive Health

Management Teams would be delegated particular responsibility for the maternal and women's health aspects of the MCWH programme. Because the RHMTs had not previously been called on to manage these services for a geographical area, the programme of training, facilitation and support was specifically focused on maternal health services, with a view that the RHMTs would add incrementally to their responsibilities as they felt ready to do so, the management of the other reproductive health service components, applying the principles developed in managing maternal health services.

The RHMTs were established as working teams (in the manner of a formally constituted working committee as opposed to a formally appointed management structure) that would be established at municipal and district level, and would be linked and accountable to the District Health Management Team. Key stakeholders were called on to be members of the RHMT, with a view to ensuring equitable, integrated services that would primarily address priority maternal health needs in the most cost-effective way (Boelen 2000).

### 2.1.2. Within the context of strengthening leadership of 'Safe Motherhood' programmes

Kwast and Bentley (1991) identify the development of a maternal health care team in order to achieve significant reductions in maternal mortality. They propose that the midwife should play a critical leadership function in the team, and to this end needs to develop broad-based skills: epidemiological, managerial, specialised technical, and teaching skills.

Kwast (1998) again reiterates the need for including management skill development in the training of nurses and midwives and the importance of the team approach in dealing with priority issues hindering the attainment of Safe Motherhood goals. She refers to team problem-solving activities that have been undertaken in several countries in Asia and Africa aimed at fostering a team approach between physicians, nurses, midwives, public health workers and social workers. She illustrates how the team approach can successfully resolve relatively minor problems that hinder the provision of quality care e.g. the replacement of a light bulb in an operating theatre restoring its functionality.

The Prevention of Maternal Mortality Network (1995) describes how multidisciplinary teams in eleven sites in West Africa, consisting of an obstetrician, midwife, social scientist and community physician as core members, conducted situation analyses of health system factors contributing to maternal deaths - with a view to developing appropriate intervention strategies to reduce maternal mortality.

The Global Advisory Group on Nursing and Midwifery (GAG/NM 2000) calls for the building and strengthening of the leadership capacities of nurses and midwives, in order to increase their involvement and contribution to health policy development, decision making and the management of health systems.

### 2.1.3. Within the context of new public sector management

The movement towards new public sector management (NPM), which arose out of the Griffith's report on a management inquiry conducted of the National Health System (NHS) in the United Kingdom in 1983 (Bolton 2004), has led to changes, two decades later, on the management of hospitals in South Africa. With the purpose of creating cost effective service provision and quality conscious health workers, general Hospital Managers have been appointed to head South African Hospitals, and Unit and Service Managers have been appointed to be in-charge of the major hospital sections and services. Quality promotion officers have been employed, responsible for establishing quality assurance programmes throughout the hospital. Of relevance is the emphasis on participative management strategies, inherent in the NPM, which requires the devolution of operational management responsibilities to operational teams (Bolton 2004). Kleinman (2004) reports on the benefits of participative and team management, the flattening of nursing management structures, and the encouragement of creative, team problem solving.

## 2.2. Definition of a functional Reproductive Health Management Team

The RHMTs themselves defined what represents a functional RHMT (Report of Workshop 5), as a team that:

- Provides leadership (develops a mission and a vision and sets performance standards for reproductive health services in the municipality and district)
- Plans, monitors and evaluates reproductive health services
- Supervises and oversees reproductive health services

- Reviews progress towards meeting programme objectives (reviews statistics with a view to monitoring quality of care, mortality rates, compliance of clients with care plans, achievement of performance standards)
- Identifies and resolves gaps in service delivery
- Identifies recurring problems and works together as a team in to resolve these problems
- Promotes constructive communication between members of the team
- Ensures in-service training on clinical guidelines and protocols of management
- Reports to district and institutional managers
- Provides feedback to clinic managers and support to improve staff skills, attitude and motivation
- Advocates for the need of reproductive health programmes and for the needs of health workers

## 2.3. Factors affecting the functionality of the teams

On reflection and analysis of what facilitated or hindered the ability of the RHMTs to function as a management team, the following are important for discussion:

### 2.3.1. The mandate of the RHMTs

Throughout the development and implementation of the model, the RHMTs expressed concerns about the incomplete mandate they had to institute and sustain changes that would improve the quality of maternal health care. This was despite the fact that many of the roles and actions expected of the RHMTS fell within the usual ambit of responsibility of the individual members of the RHMT, and despite reassurances by the facilitators that they indeed did have a mandate, as evidenced by the resources the province was investing in their training, development and support, and despite the ongoing support from the provincial MCWH directorate. The ongoing perception by the RHMTs of the incomplete mandate required further analysis by the facilitators with regards to the process for negotiating and communicating the mandate, and with regards to the nature of the mandate given by the facilitators and the provincial MCWH directorate.

#### 2.3.1.1. The process for negotiating and communicating the mandate

The National and Provincial MCWH Directorates commissioned the study. Within Limpopo Province, the facilitators and the provincial MCWH director met and negotiated the implementation of the study with the Director General of the Limpopo Province Department of

Health and Welfare, who gave approval and support to the study and its objectives, and district managers and institutional managers, who gave their approval and nominated and released representatives to participate in the study. In response to the concern about their limited mandate, a provincial workshop was held in January 2003 with institutional managers to discuss the organisational relationships of the RHMTs and their mandate. Agreement was reached about their role and their linkages. Two province-wide report-back meetings were held, one in September 2002 and the other in September 2003, in which district, institutional and PHC Mangers from the entire province participated and had an opportunity to give their feedback and input.

#### 2.3.1.2. The nature of the mandate provided by the facilitators

Collins Essential English Dictionary (Sinclair 1988) defines a mandate as: "the authority to carry out particular policies" and/or "a task that you are instructed to carry out." The nature of authority held by the facilitators also requires exploration. Harrap's English Mini Dictionary (Collin 1983) presents different meanings for the word authority, including: 'power', 'permission', 'ruling committee or group who exercise control', and 'expert'.

The facilitators gave the RHMTs the mandate ('*instruction*') to implement their newfound roles and responsibilities in managing maternal health services (roles and responsibilities which the RHMTs had themselves defined and planned). But the RHMTs did not easily accept (feel confident in) the mandate given them by the facilitators. This may be understood from the perspective that the facilitators were indeed located outside of the health system hierarchy in Limpopo Province, that they were 'trainers/researchers' from an academic institution in another province, whose only contact with RHMTs was limited to that within the workshops (a 2-day workshop every 2 months). Feedback on implementation was built into these workshops, but the main aim of the feedback was not for accountability purposes, but rather for reflection on what had been achieved/not achieved and why/why not, to inform the development of the model.

The facilitators were invited to work in Limpopo Province as *experts* in developing and implementing programmes to improve the quality of maternal health care. This was based in their previous experience in doing such in another province. Thus the 'authority' of the facilitators was based in their *expertise, their knowledge, skill and previous experience* in working alongside

RHMTs, enabling such teams to assess and respond to issues affecting the quality of maternal health care at primary level.

The Limpopo Department of Health, through its MCWH Directorate, gave the facilitators 'authority' (*official permission*) to establish RHMTs and to share their knowledge and skills with the RHMTs. This was done in an endeavour to enable the facilitators to introduce new ways of managing maternal health services, which would in turn lead to improvements in the provision of maternal health care.

The 'authority' of the facilitators, however, did not lie in the *power to make decisions* about actually changing official policies and practice (i.e. in making the implementation of new knowledge and skills mandatory). Moreover the facilitators did not have the 'authority' *to exercise control* over the RHMTs, with regards to what they did or did not do (i.e. could not hold them accountable for (non) implementation).

#### 2.3.1.3. The nature of the mandate given by the MCWH Directorate

The MCWH Directorate did give the RHMTs the mandate to develop, and then implement, changes to improve the quality of maternal health care. Given that the MCWH had the support of the Director General of the Department of Health and Welfare in Limpopo Province, this should have constituted the MCWH Directorate as an authority who had the power to instruct, and hold accountable, the RHMTs on behalf of their employer (the Department of Health). But it appears that the RHMTs still did not fully accept (feel confident) and respond to this authoritative mandate.

An analysis of the authority of the MCWH Directorate reveals that:

- The Directorate is an 'authority' (expert) in all matters pertaining to reproductive health, including maternal health, and is responsible for developing provincial policies, and organising province-wide training programmes that will ultimately lead to an implementation of the provincial policies and programmes.
- The Directorate does have some, but not full, 'authority' (power to exercise control) over the municipal RHMTs, which is evidenced by the visits conducted by the Director to institutions to check on and monitor the extent to which provincial MCWH policies are being implemented at service delivery level and monitor the quality of maternal health care provision.

- But the authority of the MCWH Director is also limited – she is not the direct 'line' manager of the members of the RHMTs. The individual members of the RHMTs are directly accountable to hospital managers and PHC Managers, who in turn are directly accountable to the provincial level Chief Directors of Hospital services and of Primary Health Care services respectively. The latter Chief Directors determine service delivery, and rely on the MCWH Director for technical advice only.
- In order to negotiate a full mandate for the RHMTs, the MCWH Directorate would need to approach PHC and institutional managers through the provincial Chief Directors.

### 2.3.2. The composition of the RHMTs

The proposed composition of the RHMTs, both at municipal and district level, was thoughtfully developed so that those who already held management authority and responsibility for maternal health services were represented. Thus the composition proposed was as follows:

At municipal level:

- The midwife in charge of the maternity unit in each Level 1 Hospital (i.e. the maternity unit manager)
- The doctor in charge of maternity in each Level 1 Hospital
- The CCLOs (Chief Community Liaison Officers) responsible for supervising the clinics in the municipality
- One or two senior midwives from the clinics

At district level:

- The midwife in charge of the maternity unit at the Level 2 Hospital (i.e. the maternity unit manager)
- The obstetrician, based at the Level 2 Hospital
- The district PHC manager, based in the district health office
- Where relevant, representatives from academic institutions (university nursing departments and nursing colleges) in the district. This so that there could be a creative interaction between practice and education settings.

As previously stated, at the beginning of the programme, the district level representatives opted to participate in the Municipal RHMTs of the municipality in which the Level 2 Hospital was situated, rather than establish a separate District RHMT. At the end of the programme, all participants appreciated the value of a district level team, and suggested that, in addition to the above, its composition include one representative from each Municipal RHMT.

With regards to the municipal RHMTs, many of the Level 1 maternity unit managers delegated the responsibility of participating in the teams to a midwife from the unit. This was an acceptable arrangement where the unit manager delegated the responsibility of being a member of the RHMT to a senior midwife and, in the nature of appropriate delegation, remained accountable for the implementation of RHMT activities, and gave her full support to the delegated senior midwife for such implementation in the maternity unit. It was a most unacceptable arrangement where the unit manager 'sent a midwife to the workshops', abdicated all responsibility for implementation, regarded the participation of the midwife as 'her thing' and not something that had relevance for the whole maternity unit and therefore required support from the unit manager. In some RHMTs, a similar dynamic arose with the CCLOs and the PHC managers, and the clinic representatives on the RHMTs felt frustrated by their inability to implement changes in clinics from the wider municipality and district.

### 2.3.3. Accountability for change

The question must be asked about the extent to which the RHMTs wanted to take authority and power to initiate and then be accountable for change. This highlights the interplay and tension between 'internal' accountability and 'external' accountability, the internal and external motives for implementing change or for maintaining the status quo, the internal and external supportive mechanisms for introducing and sustaining change. The full exploration of the personal versus the organisational dynamic of implementing change was beyond the scope of this study, but does nevertheless need to be acknowledged as a factor that may have facilitated or hindered the functioning of the RHMTs.

### 2.3.4. Leadership

It was very evident that the nominated leader (co-ordinator) of the team exerted significant influence on the group and its performance. Some RHMTs had very enthusiastic leaders, who took very seriously the plans to improve the quality of care developed in the workshop. They

were committed to implementing them, and when and where they encountered problems, they dealt with these. They actively developed and maintained a relationship with their immediate line managers, which ensured support for the implementation and for problem solving.

Other RHMTs had team leaders who were less responsive. In some instances, the team was able to function despite the poor leadership, in other instances the team 'fell apart'.

Particularly demanding leadership situations included:

- Clinic and hospital-based representatives maintained acrimonious relationships with each other, each blaming the other for poor standards of care
- The team was made up of representatives of services that in the previous political dispensation had fallen under different authorities e.g. previously Transvaal Provincial Administration and previous homeland governments (Limpopo contains ex-Lebowa, ex-Venda and ex Gazankulu).
- Racial divisions

Facilitators played a mediator role in teams that were not able to work through and overcome their differences, in some cases successfully and in others less so.

### 2.3.5. Health system factors

The concept of the RHMT was introduced at a time when clinics were 'de-linking' from hospitals. Previously clinic supervisors had been based at the 'mother' hospital, and clinics had been accountable to the hospital. Further, their budgets and supplies were held and controlled at the 'mother' hospital. The de-linking process was an administrative process initiated at provincial level with the aim of separating the administration and management of the clinics from the hospital and delegating the responsibility for these functions to the district office (to the PHC manager).

Some clinic representatives were eager to sever administrative relations with the hospitals, as they had experienced situations in the past where clinics had not been provided all the resources they required to function effectively because these resources had been absorbed by the hospitals.

Facilitators tried to impress upon RHMTs that the separate administration of resources did not need to lead to functional fragmentation, and that the latter could be strengthened despite the administrative division of responsibilities.

### 2.3.6. Logistical support

RHMTS found it extremely difficult to function where they did not have access to logistical support e.g. a venue to meet, transport to carry out planned activities, lack of stationery and refreshments. It appeared that the RHMTs that had not maintained good linkages with their line managers experienced greater problems than those who had the full support of their line managers. In one district it seemed as if the line manager was actively opposing any initiative of the RHMTs.

## 2.4. Conclusions

2.4.1. The concept of Reproductive Health Management Teams, who are accountable to District Health Management Teams, and who would assume particular responsibility for the management of reproductive health services at district level, is a relevant concept for Limpopo Province and conforms to national policy for the management of reproductive health services at district level.

2.4.2. The concept is given support by the experiences of international bodies that have recorded considerable gains in the reduction of maternal deaths as a result of the establishment of multidisciplinary teams responsible for developing and implementing interventions aimed at reducing maternal mortality.

2.4.3. The concept of the Reproductive Health Management Team can lead to an integration of clinic and hospital-based services.

2.4.4. The delegation of programme management responsibilities to the Reproductive Health Management Teams is in keeping with the decentralisation policies of the South African Health System, with its emphasis on participative management and decision-making, and its concern with quality improvement.

2.4.5. The defined management responsibilities of Reproductive Health Management Teams does call on them to develop additional skills – particularly leadership and managerial skills and public health and epidemiological skills.

2.4.6. Reproductive Health Management Teams can implement their management responsibilities effectively only if full mandate to do so is given at all levels of the health

system – by provincial level managers, district level managers and institutional managers. The Provincial MCWH Directorate has a particular role in ensuring that the mandate has been negotiated and accepted at all levels of the health system. Reporting mechanisms need to be identified and formalised in keeping with the negotiated mandate.

2.4.7. In order to implement their full responsibilities, Reproductive Health Management Teams must have access to an efficient information system.

2.4.8. The proposed composition of the Municipal Reproductive Health Management Teams is acceptable as originally developed. The District Reproductive Health Management Team should include representatives from the Municipal Reproductive Health Management Teams, in addition to the District Obstetrician and Midwife in Charge of the Level 2 Maternity Unit.

2.4.9. Representation on the Reproductive Health Management Teams should be through the appointed managers/supervisors. If this is not possible, delegated representatives should be given full authority and support.

2.4.10. The leader of the Reproductive Health Management Team should be carefully selected and provided with full support to implement changes generated by the team to improve the quality of care. The support provided to the leader may be in the form of leadership training, or through supportive organisational processes, or through special mentoring to deal with unique conflict situations.

2.4.11. Active debate needs to occur within the health system, all the time refining the concept of integration, to ensure that administrative arrangements do not interfere with the provision of a seamless service to the users of maternal health services.

## 3. The indicators and method for a baseline assessment of the quality of maternal health care at municipal and district level

Donabedian (1988) provides a most holistic approach to defining the quality of care, which takes cognisance of the biomedical, psychosocial, health system, and equity paradigms. It is not immediately clear to what extent he embraces a public health approach. He does not provide a single definition of quality of care. He proposes that definitions of quality of care depend on the

perspective from which the definition is generated. He states that these perspectives are influenced by:

- Our location within the health system: definitions of quality of care can be formulated as a progression, from the performance of health care workers (technical and interpersonal), to the quality of health care facilities and amenities (largely the responsibility of health managers), to the contributions to care by the patients themselves and their families, and finally to the access of care by communities and the influence this has to the quality of care (i.e. "the social distribution of levels of quality in the community" (*ibid.* p1744)).
- Our definition of the concept health: whether our concept of health is defined narrowly, at a physical and physiological level, or more broadly to include psychological and social functioning.
- Who is evaluating the quality of care: health practitioners, health managers or patients
- Our approach to costs: whether we are happy with achieving technical quality despite the cost (maximalist approach), or whether we are happy to exclude care that, compared to the cost, only brings about minimal improvements in health (optimalist approach).

Loegering *et al..* (1994) identify quality with adherence to standard medical practice. Kwast (1998a) presents the World Health Organisation definition of quality of care: "the extent to which the care provided, within a given economic framework, achieves the most favourable outcome when balancing risks and benefits (*Ibid.* p.67). In a later article, Kwast (1998b) identifies that quality of care "fulfils the goals of the health worker, and is in accordance with the medical network and the client they are serving" (p.199)

Roemar and Aguilar (1988) provide a comprehensive definition and define quality of care as the proper performance (according to standards) of interventions that are known to be safe, that are affordable to the society in question and that have the ability to produce an impact on mortality, disability and malnutrition.

Boelan (2000) provides a definition of quality of care from user perspective. He writes: "recipients of health services normally expect their concerns to be addressed with humanity, respect and personal attention through a comprehensive array of services for their legitimate

aspiration to well-being" (p.11). He includes a health provider perspective on quality that is dependant on setting standards and norms for good practice.

In summary, definitions of quality of health care include: the definition and adherence to standards; which fulfil the goals of professional practice; are effective (in relation to morbidity and mortality outcomes); efficient (in relation to the use of resources); and responsive to the expectations of users of health services.

## 3.1. Rationale for measuring quality of maternal health care

Several authors agree that it is not sufficient to ensure available and accessible health care services to bring about reductions in maternal mortality ratios, but it is equally, if not more important to ensure good quality care (Acharya and Cleland 200; Bergstrom 2001; Jahn and De Brouwere 2001; Van Lerberghe and De Brouwere 2001; Koblinsky *et al.* 1999; Graham *et al.* 2001; Maclean 2003).

Within contexts where health services are available and accessible, it is often the quality of primary and referral delivery care that either contributes to or hinders the attainment of reductions in maternal mortality ratios. Factors that contribute to the quality of care are the responsiveness of health workers to the expectations and needs of clients (Van Lerberghe and De Brouwere 2001) and the environment within which health workers operate (Graham *et al.* 2001; Maclean 2003).

Koblinsky *et al.* (1999) provide the example of Malaysia, where the maternal mortality ratio dropped from 200 to 20 per 100 000 live births over a period of about 25 years. They attribute this largely to the provision of good quality 'low risk delivery centres', backed up by good quality referral care, and intensive quality assurance programmes backed up by public sector health authorities.

Graham *et al.* (2001) in analysing historical data and identifying correlations between variables, ascertain that "the correlation observed, both over time and cross-sectionally, emphasises the crucial importance of quality of care, reflecting both the skills of the provider and the environment

in which they are practiced – including the scientific knowledge and the availability of drugs" (*Ibid.* p.118).

## 3.2. Measuring quality of maternal health care

Graham and Campbell (1992) identify three main reasons for measuring the quality of maternal health care: "to establish the levels and trends of specific health outcomes; identify the characteristics and determinants of health outcomes; to monitor and evaluate the effectiveness of activities designed to influence health outcomes" (*Ibid.* p.968).

### 3.2.1. Dimensions of quality to be measured

Donabedian (1988) describes a three-part approach to measuring quality of care in which the following need to be assessed:

- Structure, which includes an assessment of material resources (facilities, equipment and financial resources), of human resources (the number and qualifications of personnel), and organisational structure (e.g. methods of peer review);
- Process, which denotes what is actually done in giving and receiving care (by practitioners and patients);
- Outcome, which denotes the effects of care on the health status of patients and populations. It includes improvements in the patients' knowledge and behaviours.

Di Prete Brown (1993) describes a systems approach to measuring the quality of care that is similar to, but expands the Donabedian approach. She identifies the following dimensions of the quality of care:

- Inputs: this includes all resources (personnel, equipment, information, money) and is equivalent to what Donabedian has named 'structure'
- Processes: this dimension includes the activities and tasks performed, and concurs with Donabedian's definition of process
- Outcomes: in order to allow greater precision in selecting indicators to evaluate the quality of care, Di Prete Brown divides outcomes into:
    - Outputs – defined as products and services provided
    - Effects – defined as changes in knowledge, attitudes, behaviour/practice of target group in the community
    - Impacts – defined as changes in health status

Bobadilla (1992) proposed that the following dimensions of maternal health care programmes need to be assessed: coverage, equity, quality of care, women's satisfaction, efficiency, and cost effectiveness all indicators of the overall quality of care.

A number of authors (Maine *et al..* 1997; Wardlaw and Maine 1999) adopt the UNICEF/WHO/UNFPA (1997) series of questions that would guide the assessment of the quality of maternal health care. The approach is to focus primarily on essential obstetric care, i.e. the care required to deal with life-threatening obstetric complications, as these would be the conditions that would lead to maternal death. The questions indicate a public health orientation, and deal primarily with what Di Prete Brown calls inputs, process, outputs and outcomes. Maine *et al..* (1997) and Wardlaw and Maine (1999) discourage the use of impact indicators for measuring the quality of maternal health care, as these would largely be maternal mortality rates, for which complete and reliable information can only be collected over longer periods of time and at great cost. Impact indicators are seen to be limited in their usefulness to identify problem areas and thus to identify areas where action is required (*Ibid.)*. The proposed planning questions are :

- Are life-saving services available?
- How many women are using life-saving services?
- How many life-saving procedures are being performed?
- What is the quality of the care provided?

Pattinson (1995, 1996, undated) advocates for the use of impact measures, accompanied by an in-depth audit of perinatal and maternal deaths, and severe acute maternal morbidity (SAMM) in order to monitor the quality of maternal health care. According to Pattinson (*Ibid.*), an analysis of the deaths and SAMM will permit an identification of the major disease processes, the management of these disease processes and the avoidable factors that have contributed to the deaths and to SAMM. This in turn would lead to the identification of areas of action for improvements in the quality of care in the medical personnel, the health system and the patient's health seeking behaviour.

Graham and Campbell (1992) and Graham *et al..* (2001) advocate the importance of taking several balanced measures – to measure outcomes (which acknowledge both the positive and negative dimensions of health), morbidity (for every death there are several cases of maternal morbidity), and operational issues (which measure programme inputs and outputs and are essential for programme management and performance evaluation).

### 3.2.2. Criteria for selecting indicators to measure the quality of care

Indicators are not a direct measure of quality, but rather are indirect measures of trends in the dimensions of quality reported in the above section, and thus can indicate sub-standard care. (Loegering *et el*, 1994; Di Prete Brown 1993). Loegering *et al.* (1997 p.126) identify two types of indicators: " A sentinel event indicator (which) measures a serious, undesirable, and sometimes unavoidable process or outcome, such as a maternal death. No matter how infrequently this event occurs, the quality of care should be reviewed. A rate-based indicator measures patient care events that require further assessment only if the rate of occurrence shows a significant increase/decrease within an institution over time or exceeds/falls below predetermined threshold levels … if the rate is higher/lower than local or national standards, a review of care should be performed."

There are different ways of defining a standard: theoretical – where according to current understanding of the programme and its components it is possible to define theoretical standards; best possible – where standards are derived empirically, through randomised controlled trials. This presents difficulties because the contexts in which programmes are applied differ so vastly; and best achievable – where best achievable outcome is determined in a given population with the resources available (Bobadilla 1992). UNICEF/WHO/UNFPA (1997) have set certain 'acceptable levels' of achievement for each of the indicators they proposed, but emphasise that these should provide a guide, rather than be used as targets that must be achieved. The South African National Department of Health has established norms, standards and targets for the South African context for the indicators contained within the national health plan (Directorate: Health Systems Research and Epidemiology, 1999).

The criteria for selecting indicators are presented below:

- Indicators must be able to register changes in the quality of care in a relatively short period of time, so that it is possible to provide prompt feedback and initiate actions that will improve the quality of care (Wardlaw and Maine 1999). Thus indicators of input, process, and output are preferred to impact indicators because they yield useful information over shorter periods of time.
- For monitoring to be an ongoing exercise, indicators need to be calculated from data that is relatively inexpensive to gather and would provide the minimum amount of information needed for decision making by programme planners and policy makers (*Ibid.*)
- It is best to select indicators that rely on data collected in health facilities rather than on population-based surveys, as then indicators can be measured at lower cost and more frequently and through routine collection and reporting (*Ibid.*)
- Indicators should serve several purposes so that they can be used for a situation analysis, periodic evaluation and for ongoing monitoring of progress (*Ibid.*)
- The inputs, processes, outputs and outcomes measured must be linked to the desired impact. Measuring the capability of a health unit to perform certain specific health interventions, combined with some indicators of how well these interventions are being carried out, must be linked to the desired impact (*Ibid*; Garner *et al.* 1990; Loegering *et al.* 1997)
- Loegering *et al.* (1994) suggest that indicators selected must be assessed for face validity (i.e. ease with which the indicator is understood, its relevance to users, and its potential as a performance measurement tool, the variation in indicator terms and definitions that can occur); the sources of indicator data and the ability of health facilities to collect and transmit indicator data; capability to analyse the data and provide feedback; ability to integrate new indicators into monitoring activities, reliability of the data and the validity of indicators in identifying opportunities to improve patient services.
- There are differing opinions reported in the literature with regards to impact measures. Wardlaw and Maine (1999), Garner *et al.* (1990), Bobadilla (1992), Maine *et al.* (1997), McGinn (1997), UNICEF/WHO/UNFPA (1997), Kwast (1998c), Pathak *et al.* (2000) report problems in using impact indicators, mainly due to underestimates in mortality and morbidity rates, the expense and the long time it takes to collect information (because before any comparison can be made, thousands of deaths need to be studied), and the inability of information on the rates to point to immediate areas of intervention. Pattinson *et al.* (1995),

Pattinson (1996, undated) make a case for using mortality data. Their approach is to measure deaths, as they believe that deaths are the tip of the iceberg, that for each death are many severely ill women and babies. Because the major causes of morbidity are also the major causes of mortality, if reductions in mortality rates are demonstrated, there ought to be concomitant reductions in morbidity. To this end a number of refined impact indicators have been developed. But they go beyond just tracking the rates. An in-depth analysis of each death is encouraged in order to identify the causes of death and the avoidable factors. Thus preventive measures and areas of intervention are identified.

- A combination of input, process, outcome and impact indicators produces the most useful results. Inadequate essential resources can lead to poor impact, but availability of resources does not necessarily guarantee a satisfactory outcome. Input indicators are useful when explaining why a programme is not producing the expected outcomes (Bobadilla 1992)
- At national level indicators must be able to track improvements in health status. At a local level, indicators must enable effective monitoring and evaluation of programmes. For this, a core set of local level indicators is needed in order to monitor and evaluate and compare across districts (NCCEMD 2000).
- Graham and Campbell (1992) state that the selection of indicators should be appropriate for the purpose for which the information is needed.

## 3.3. Critique of measuring quality of care in this study

### 3.3.1. Reflections on the value of the baseline assessment

- Conducting the baseline assessment was an introduction for the Reproductive Health Management Teams (RHMTs) to the management of a programme at primary level
- For most teams, it was the first time that hospital- and facility-based personnel met to evaluate and plan jointly for comprehensive service delivery
- The indicators selected added a public health dimension to the work of clinic and hospital workers. The indicators extended the involvement of the RHMTs beyond the health facility to the population living in the geographic area served by their health facilities
- The RHMTs were able to identify gaps and areas of unmet need. They themselves were surprised by some of the findings: "We discovered the reality in service provision." "It made us aware of the real situation of our services." "It gave us a clear picture of what is

happening around us concerning maternal health, (even though) not all the findings are accurate."

- Measuring the indicators through the baseline assessment necessitated the definition of targets and standards against which the findings of the baseline assessment would be compared. For most RHMTs, this was the first time that service targets and standards had been discussed

### 3.3.2. Reflections on the resources required for the baseline assessment

- Human resources: Some RHMTs were able to involve other colleagues in their activities, which encouraged greater ownership of the programme. "We met as a team and established a bigger committee, delegated responsibilities according to clinics. We met again to condense the information gathered." This could be built into the replication strategy (e.g. establish a core team and an extended team thus encouraging the involvement of other workers).
- Skills: All teams felt that they were adequately equipped to conduct the baseline assessment. They felt that the workshop helped them. "We were work-shopped (*sic*) before the baseline assessment. Meeting held for report and skill transfer to those who didn't attend the workshop." Members of the team complemented each other, so that where some members found the calculations and interpretations difficult, other members were able to assist them. "Calculations were difficult. The rest was easy. As a team we were doing fine as we complemented each other in our assignment."
- Time: Conducting the baseline assessment was not a full-time activity. Data was collected in the midst of their routine activities and sometimes after hours. "Hospital staff was checking on the maternity records, PHC (staff) was checking clinic records." "Due to shortage of staff and transport, we had to do it after hours." Most RHMTs were able to collect all the relevant data comfortably in the time between workshops (6-8 weeks). This was particularly the case in those teams that planned their data collection and delegated different tasks to each member of the team, and then met to collate the findings for their municipality. "Every individual in the team was given a specific task to do and then report back." "We divided ourselves according to the number of health facilities in our municipality and we made sure that every person doing the evaluation does not work in that facility." "We divided ourselves into three groups, with each group allocated 6 clinics. We then met after three weeks to

compile a final report." One team was not able to complete the task because "the only problem was the interruption by the cholera epidemic." In one municipality the baseline was not completed because "we haven't formed a team. The hospital and the clinics have never met as a team."

- Transport: This was required to collect data from the clinics (particularly to conduct exit interviews). Some teams were not able to access transport. "Most of the time the assessors (team members) were given second choice, this making it difficult to reach target clinics or hospitals." This suggests that when initiating a programme, managers should be alerted to the times within the programme when certain resources will be required.
- Stationery: photocopying of data collection tools proved to be difficult for some RHMTs. Again: Need to alert managers that the RHMTs would need to photocopy data collection tools. Maps were required to determine the distribution of health facilities. Most teams were able to access these successfully for their municipality. To determine accurately the number and distribution of health facilities, and to make an adequate evaluation of adequacy, also required a map of the districts and the province. Modification: Establish links with the Geographic Information System Unit to obtain these maps.

### 3.3.3. Reflections on the indicators used in the baseline assessment

- The RHMTs felt that the indicators provided them with a sufficient picture of the quality of maternal health care in their municipality. When asked if there were too many, too few or enough most felt they were enough. "The indicators basically covered every aspect of maternal health care. They were comprehensive." "We were able to identify our strengths and weaknesses in the service therefore (identified) ways of improving." "They covered a wide area e.g. ANC and intrapartum (care)." The indicators "were enough to indicate to us areas of shortcomings."
- When asked to compare the effort in collecting data for an indicator compared to the value of the information, all RHMTs felt that all the indicators should be kept. One municipality did not have health centres and so wanted to discard the indicators measuring the availability of Basic-EOC facilities.
- Availability of EOC facilities should be a provincial level activity, conducted in collaboration with representatives from the district (rather than municipal) RHMTs, district managers, the provincial directorate for hospital services, the provincial directorate for primary health care

services, and the provincial directorate for maternal, child and woman's health. Interventions to improve the availability and distribution of EOC facilities need to be aligned with capital works budgets.

- It was difficult to encourage the RHMTs to calculate institutional delivery coverage based on deliveries occurring in B- and C-EOC facilities, excluding those that had taken place in clinics. The rationale for excluding clinic deliveries did not appear to be well understood by RHMTs (i.e. the need to focus on the availability of basic and comprehensive essential obstetric care for the management of complications. Some EOC functions not appropriate to ensure at clinic level.)
- Particular difficulty was experienced in interpreting coverage for obstetric complications. RHMTs wanted the percentage to be low, because they felt that this demonstrated that the service was performing well if low percentages of women with obstetric complications were being seen. It was difficult for the majority to understand that a high percentage indicated that women with complications were using the service rather than complicating at home and not reaching the service.
- Late admission in labour was often quoted as a reason for perinatal and maternal mortality. It would be useful to establish the proportion of women who indeed are admitted >5cm dilatation and the reasons for this.
- RHMTs struggled to calculate expected deliveries because they did not know the birth rate and were not able to find it for themselves. Once they were given the birth rate, the majority still struggled to calculate the number of expected births in their catchment area.
- The indicator on the turn around time for blood results will become redundant once the on-site test for syphilis becomes available.
- It may have been useful to identify which items were missed on exit interview after the 1st ANC visit, rather than to just establish what proportion of interviews did not meet 100%.
- It was impossible to establish the waiting time in facilities, between arrival in the facility and the onset of emergency treatment, as times are not recorded in the maternity record. A special prospective study needs to be set up, but perhaps this is not a priority at the early stages of programme development.
- Case fatality rate – the numbers are too small to make any conclusions about the quality of care. A better option may be to assess severe acute maternal morbidity (SAMM), and include mortality index. This is only feasible to collect as Level 2 and Level 3 hospitals, but must

include all maternal deaths. Another approach is to identify the proportion of near-miss events. May not be meaningful to collect at municipal level, where it may be sufficient to focus on perinatal deaths and the causes and avoidable factors leading to the deaths.

- Data collection tools need to be modified to include low birth weight rate to assist with the calculation of the perinatal care index.
- Should introduce a data collection tool to determine client satisfaction with intrapartum care.
- The baseline assessment omitted indicators of post-natal care and neonatal care – these need to be developed and included in future.

### 3.3.4. Challenges in improving the reliability and use of information for planning and decision making

It was not possible to validate all the data collected by the RHMTs. Certainly there was much incomplete data in this baseline assessment. These are some of the reasons given by the RHMTs:

- Key activities are not being carried out, and so it was not possible to collect data on them (e.g. perinatal review meetings)
- Health workers do not record or under report certain data (e.g. obstetric complications and maternal deaths)
- There are poor linkages between clinics and hospitals
- Some essential procedures are not being carried out e.g. some hospitals do not provide caesarean sections
- Incomplete data collection tools provided by the facilitators (e.g. to calculate perinatal care index)

The facilitators identified the following factors that affected the reliability of the data and the use of the information:

- Clinic-based services fall under the district office, whereas hospital based services are directly accountable to the provincial level. This administrative fragmentation demonstrates itself in functional fragmentation. Thus service managers often have a narrow, facility-based management focus. The challenge is to enable the RHMTs to plan, monitor and evaluate a full maternal health service for a target population in a designated geographical area.

- The fragmentation mentioned above is perpetuated in the fragmentation of information systems. There is not yet consolidated reporting on a common set of municipal and district level maternal health indicators.
- Quality of data is related to use – amongst most health workers, there is not yet a culture of using information for decision-making. Thus the full value of accurate and timely information is not appreciated, and as a result there is very little effort put into ensuring good quality data.
- Many health workers still struggle with the tension in their role of providing quality individual care and ensuring equity in service provision to a population. Thus they often find it difficult to understand, interpret and use population based indicators.
- Management responsibilities within the health system are not yet fully decentralised and thus managers are not being called on to really manage. Thus managers are not yet placing due importance on the need for complete, reliable and timely information in support of their management role.

## 3.4. Commentary on the outcomes of measuring quality of care in this study

Given the constraints of incomplete and inaccurate data, the facilitators felt that overall the baseline assessment led to the identification of what are indeed key issues for maternal health care provision in Limpopo Province. The following is a more detailed commentary on the indicators measured in the baseline assessment.

### 3.4.1. Availability of Basic and Comprehensive Essential Obstetric Care (EOC) facilities

On the surface, comparing against the target set by UNICEF/WHO/UNFPA (1997), it would appear that there is a severe undersupply of functioning Basic – EOC facilities (i.e. health centres) and an oversupply of Comprehensive – EOC facilities (i.e. Level 1 Hospitals). If all the health centres that are designated (but not functioning) as such, were upgraded so that they could fulfil all the Basic-EOC functions, the province would not be too far off the target for the number of B-EOC facilities per population as stated by UNICEF/WHO/UNFPA (*Ibid.).* Given the number of C-EOC facilities is greater than the recommended target, there is a possibility that some Level 1 Hospitals could become health centres.

To validate this finding, this indicator does need to be measured thoroughly at a provincial level, with complete oversight of all the facilities in the province, their distribution and their respective catchment areas.

### 3.4.2. Antenatal care coverage

The overall provincial ANC coverage rate of 53% is much lower than the national target and the SADHS (1998) finding that nationally 94% of women attend ANC. The discrepancy may indicate that in Limpopo Province the ANC Coverage is lower than the national average. Data routinely collected through the District Health Information System (DHIS) shows that the reported ANC coverage for Limpopo province for the Year 2000/2001 was 69.4% (Stoops, personal communication, August 2002). The discrepancy between the data provided by the DHIS and the data collected by the RHMTs may be as a result of incomplete data collection by the RHMTs or may reflect that there are also a proportion of women who receive their ANC from the private sector or from neighbouring provinces.

The analysis of ANC coverage by district shows that the range is between 29% and 86%. This information needs to be validated. Again it is not clear to what extent incomplete data collection contributed to the extremely low figures. Albeit from incomplete information, it would seem that Limpopo Province falls short of the national target for ANC coverage of 90%.

### 3.4.3. Percentage ANC visits < 20 weeks

An aggregate was calculated for each district and the percentage of women that initiate their antenatal care before the 20$^{th}$ week of gestation ranges between 29% and 38%. These figures are similar to each other and are similar to the 29% reported through routine data collection with the DHIS (Stoops, personal communication August 2002). The low percentage of women who do start their ANC before the 20$^{th}$ week may be due to inadequate health information to the public about the importance of early admission to ANC, cultural factors which encourage delay in publicising the pregnant status of women, and/or incomplete documentation of women's gestational age at time of 1$^{st}$ ANC visit.

### 3.4.4. Institutional delivery coverage

In the way this indicator should be measured, it includes deliveries in Basic- and in Comprehensive-Essential Obstetric Care facilities. It excludes deliveries in clinics. The high

variation between municipalities (the range is between 26% and 140%) is difficult to interpret. Any of the following reasons may account for low or high institutional delivery coverage - some municipalities do not have fully functional B-EOC or C-EOC facilities leading to high referral rates to Level 2 and Level 3 hospitals; there is cross-border migration from Zimbabwe into Limpopo Province. The reliability of the population figures is uncertain - this may under or overestimate the expected number of births in a year leading to an inaccurate denominator for calculating institutional delivery coverage. Other factors that are not known are the proportion of home deliveries and the proportion of women who deliver in neighbouring Gauteng.

### 3.4.5. Percentage women with listed obstetric complications who are treated in a Basic or Comprehensive EOC facility

The denominator for this indicator is calculated on the basis that 15% of all expected deliveries will develop an obstetric complication or emergency. The high variation between municipalities indicates that the data is probably not accurate. The low coverage rates for women with obstetric complications are probably due to under reporting/recording of obstetric complications. Although the Limpopo Province maternity register does provide a space to record obstetric complications, in order to improve the reporting, there is a need to develop common definitions for the major obstetric complications, and a uniform way of recording them in the maternity register, and a format for collating the data on a monthly basis.

### 3.4.6. Percentage 1st ANC visitors tested for RPR and blood results returned within 2 weeks

Data to calculate this indicator is not routinely available. A special survey was required. It is difficult to ascertain the true measure, as many RHMTs did not collect the data required. Amongst the municipalities that did collect the data, high variations were observed - from 0% (because do not collect blood due to lack of transport) and 100% because the laboratory was on the same premises.

A comparison with other data sources was done. The Saving Babies 2001 report (MRC Unit for Maternal and Infant Health Care Strategies *et al.* 2001) report that the test was not taken or results for syphilis was not known for between 35% and 83% of perinatal deaths in the PPIP sentinel sites. Health System Trust (1998) reports that the syphilis test available in 84% of clinics

and mean turn-around-time for results was 11 days. Reagon *et al.* (2004) report that 9% of facilities had an on site syphilis test.

### 3.4.7. Adequacy of emergency transport

Data to calculate this indicator is not routinely available. A special survey was required. It was difficult to ascertain the true situation, as many RHMTs did not collect the data. High variations were experienced between those municipalities for which data was collected – from 11% to 100% A comparison with other data sources (Edwards-Miller 1998) reveals that 65% had a response time less than 1 hour. 80% of Level 1 Hospitals that returned the Facility Review Form report a response time less than 1 hour (see Table 4.20).

### 3.4.8. Caesarean section rate per total population

Overall the reported caesarean section rate is within the stated range. The high variation between municipalities is due to some facilities designated as C-EOC not conducting caesarean sections because of a non-functioning operating theatre, or the non-availability of blood, or the shortage of medical doctors. The indications for caesarean section not reviewed, so a judgement cannot be made about the appropriateness of the procedure. It is difficult to compare with other data sources, which report an institution-based rate as opposed to the population-based rate reported here.

### 3.4.9. Quality of education and discussion at the 1st ANC visit

A quick review of questionnaires revealed that all respondents had been given a return date. Problems were reported by clients with regards to the information given them and in the attitudes of the personnel. The factors that hinder staff from providing adequate education to clients were reported as: the integration of services (one client, in one room, with one provider) has limited the opportunities for group education, has led to staff shortages and high workloads, with not enough time to provide individual education. Although this reason was commonly expressed, it needs to be empirically tested.

### 3.4.10. Quality of labour records

Low score on the labour records were attributed to shortages of staff, lack of experienced staff, lack of familiarity with the new maternity record, inadequate monitoring of patients in labour, inadequate documentation of assessments.

### 3.4.11. Waiting time between decision and commencement of caesarean section in Comprehensive-EOC facilities

The times of admission and commencement of treatment are not documented in the maternity record. RHMTs were thus not able to collect data. A special prospective survey is required.

### 3.4.12. Case Fatality Rate

Seems to be within range. The reliability of data is questionable when one recognises that there is under recording and reporting of obstetric complications and maternal deaths.

### 3.4.13. Anaesthetic death rate

There is under recording and reporting of anaesthetic deaths due to inadequate operative and anaesthetic records, so these results may not be reliable. High anaesthetic death rates are probably due to young, inexperienced community service doctors needing to perform caesarean sections without supervision or appropriate back-up support.

### 3.4.14. Maternal Mortality Rate

There is severe under reporting of maternal deaths – this data on maternal deaths is not inclusive of maternal deaths that occur in other wards, at home, in other provinces. There is also under reporting of maternal deaths that occur within maternity wards i.e. deaths not notified.

### 3.4.15. Perinatal Mortality Rate

Overall rates for district and province hide fluctuations in Perinatal Mortality Rates (PMR) between municipalities (17/1000 to 40/1000). Very low PMR are sometimes due to high referral rates and under reporting of perinatal deaths.

### 3.4.16. Percentage perinatal deaths due to avoidable causes

This indicator is difficult to measure because there are incomplete records to ascertain the cause of death and what were the avoidable factors. There is also an inadequate analysis of perinatal deaths – leading to a majority of deaths being categorised as unavoidable. Also perinatal review meetings not being held in all institutions, and therefore the avoidable factors are not being identified.

### 3.4.17. Perinatal Care Index

Low Birth Weight Rate was omitted from the data collection tools and thus RHMTs did not collect the data necessary to calculate the PCI – there was a need to revise data collection tools. From the PPIP information for Limpopo Province (Saving Babies 2001) the PCI for PPIP sites was 2.80, which indicates poor perinatal care.

## 3.5. Conclusions

3.5.1. The emphasis on improving the quality of maternal health care was appropriate, as internationally, quality improvements have been shown to lead to significant reductions in maternal deaths

3.5.2. When assessing quality of care, different dimensions must be assessed: the quality of the service that is being provided compared with established performance standards, the extent to which the environment enables the proper provision of care, the extent to which users are utilising services, and the effect of services on overall health status.

3.5.3. The planning questions proposed by UNICEF/WHO/UNFPA (1997) are useful in structuring the information that arises from the baseline assessment.

3.5.4. Conducting the baseline assessment was a key initial activity – it introduced RHMTs to their management responsibilities; it promoted the integrated evaluation and planning of maternal health services in a geographical area; it introduced RHMTs to the public health approach; it alerted RHMTs to problems in the service of which they were previously unaware; it exposed RHMTs to service norms, standards and targets; and it facilitated the establishment of collegial relationships amongst members of the team.

3.5.5. With careful planning and organisation of resources (human and material), a baseline assessment can be carried out part-time, within the midst of routine activities, in a relatively short period of time. Within this study, the RHMTs conducted the baseline assessment within 6-8 weeks. Perhaps 12 weeks would be a more realistic time frame and could lead to a more complete collection of data.

3.5.6. RHMTs struggled to calculate, interpret and use population-based indicators – this indicates the need for further training in public health skills.

3.5.7. There appears to be a cycle between deficiencies in the services leading to the poor availability of information, and the poor use of information leading to service deficiencies. A culture of ‘information for action’ is still sadly lacking.

3.5.8. Information needs to be analysed by the level in the health system that will use the information.

3.5.9. The collection and analysis of the data by the RHMTs motivated them to complete the planning process and to implement the plans.

3.5.10. Within the limitations of the indicators, and in the availability and the completeness of data, it was still possible to identify the key issues in the provision of maternal health care.

# 4. Indicators to measure the factors influencing the quality of care

## 4.1. Staffing

### 4.1.1. Availability of midwifery personnel

Nursing shortages result from an increasing demand for nurses outstripping static, or a more slowly growing, supply (Buchan 2000). Shortages in nursing staff are a worldwide concern. The situation is serious – "demand continues to grow, while projections for supply point to actual reductions in the availability of nurses" (Buchan 2000). Developing countries fare more poorly than developed countries, and rural areas experience greater shortages than urban areas (Kowalewski and Jahn, 2001; GAG/NM, 2000).

In developed countries the nursing staff crisis revolves around the problem of replacing an aging workforce, and of increasing the numbers that enter the profession (Buchan 2002; O'Neil and Seago 2002). Atencio *et al.* (2003) report that in the US, in the year 2000, one third (1/3) of registered nurses were above 50 years of age, with the mean age being 43.3 years. In addition they report that there is a decrease in the number of nurse educators, and as a result a decline in the number of nurses that the nursing schools are admitting and graduating. This provides background to the active recruitment of South African nurses by developed countries, particularly the United Kingdom, the United States, Australia and Canada (Vujicic *et al.* 2004).

With regards to developing countries, the availability of registered nurses and midwives is affected by migration of nurses to the private sector, and to developed countries, and by mortality attributed to AIDS (WHO 2002; Bergman 2003). Nursing shortages threaten the overall

performance and effectiveness of the health system, and as such are not only a problem for nursing, but require health system wide solutions. (Buchan 2002; WHO 2002)

Internationally, as a direct or indirect consequence of health sector reform, and the need to contain costs while at the same time ensuring equity and quality of care for identified health priorities; and because the human resource allocation of the budget in the health sector accounts for up to 75% of its expenditure; and because nurses form the largest staff group and make up the highest labour cost; there has been a greater awareness of the need to review the availability of nurses, nurse staffing levels, nurse workloads and skill mix. (Buchan *et al.* 2000; Boelen, 2000; Hughes 1999)

#### 4.1.1.1. Rationale for measuring the availability of midwifery personnel - the need for midwives for the provision of quality maternal health care

The major causes of maternal mortality near to the time of delivery have been identified as obstructed labour, eclampsia, puerperal sepsis and obstetric haemorrhage (De Bernis *et al.* 2003; AbouZhar 1998 in Graham *et al*. 2001*)*. These obstetric complications account for a significant percentage of maternal deaths that could have been avoided through the provision of primary or secondary prevention by a skilled attendant (De Bernis *et al.* 2003; Graham *et al.* 2001). The professionalisation of delivery care is seen to have been key in reducing maternal mortality rates, both in developed and developing countries (Van Lerberghe and De Brouwere 2001, Graham *et al.* 2001, Kowaleski and Jahn 2001, Kwast and Bergstrom 2001). This justifies and underscores the international development target to ensure that 80% of all births be assisted by a skilled attendant, where a skilled attendant is defined as someone with midwifery skills (for example a doctor, midwife, nurse) who has been trained to proficiency in the skills necessary to manage normal deliveries and diagnose, manage or refer complications (WHO/UNFPA/UNICEF/World Bank 1999).

Historically, the delivery care provided particularly by skilled midwives in the community has resulted in improved maternal outcomes, as opposed to care that has been provided exclusively by doctors in hospital settings (De Bernis *et al.* 2003; Van Lerberghe and De Brouwere 2001), and as compared to the low impact of training traditional birth attendants on reducing maternal

mortality (Bergstrom and Goodburn 2001). Graham *et al.* (2001) have proposed that midwives could attend exclusively to 85 out of every 100 births.

Ensuring sufficient coverage of the population by skilled attendants in developing countries is hindered by the scarcity of resources required to ensure that there are a sufficient number of midwives to deliver this care and to ensure practice environments that enable the effective implementation of skilled care (Kwast 1988, in Van Lerberghe and De Brouwere 2001; Graham *et al.* 2001; Maclean 2003).

"Strengthening the skills of midwifery-trained personnel working in the community has been endorsed by WHO and the World Bank as a cost-effective strategy (to reduce maternal mortality and morbidity). Evidence suggests that countries which have made the most improvements and invested in the health and care of women in pregnancy, childbirth and the puerperium, are also the ones who have invested in and developed the skilled midwifery-trained practitioners." (Sherratt 1999 p.231)

"For quality maternity care to be developed, a sufficient number of educated and skilled midwives is crucial." (Sherratt 1999 p.232)

#### 4.1.1.2. Measuring the availability of midwives

There is a dearth of information and evidence in the local and international literature on staffing for obstetric services. While there are frequent reports of midwifery shortages, there is a paucity of information regarding (a) the extent of these shortages; (b) what would be appropriate staffing norms for obstetric services; and (c) what is the current magnitude of midwife workloads. Several reports attribute poor maternal and perinatal outcomes to staffing shortages (Practising Midwife 2003a, 2003b and 2004, Venamore 2003, Tucker *et al.* 2003). In Limpopo Province, in analysing the reasons for the poor quality of obstetric care, the major concern raised by the RHMTs was the staffing shortage, and the resultant increase in workload. This prompted the need to include in the management responsibilities of the RHMTs, measurements of staffing shortages and workloads.

#### 4.1.1.2.1. Population based measures of availability of personnel

Population-based measures of the availability of staff compare the professional-to-population ratio. Kwast and Bentley (1991) state that developing countries, in their general human resource planning, aim to have 1 midwife per 5000 population (i.e. 20:100 000 population).

In South Africa, in 2003 there were 96 715 professional nurses registered with the South African Nursing Council; 7 006 (7%) of these were in Limpopo Province. Of these, 5 541 (79%) were in the public sector. The public sector professional nurse-to-population ratio in Limpopo Province for 2003 was 119.3:100 000, compared to 107.1:100 000 for the country (HST 2004). As a comparison, in the USA the ratio is said to be 972:100 000 population, while in China, India and Pakistan the ratio is 99, 45 and 34 respectively (Global Nursing Shortage, undated).

This nurse-to-population measure does not provide an indication of the specific availability of midwives, which is of direct relevance to maternal health services, as not all nurses have been trained in midwifery. In addition, of the nurses who are qualified to function as midwives many may not be, nor may want to be, working in maternity. A further limitation of provincial and national ratios of personnel-to-population is that they do not reveal differences in the distribution of the staff – particularly between urban and rural areas (Kwast and Bentley 1991), and per population density.

Are population-based measures of availability of staff relevant for RHMTs managing maternity services at municipal level? This study did not identify, nor attempt to measure the overall availability of midwives at municipal or district level in Limpopo Province. It may be argued that measuring the overall availability of practicing midwives in particular would be complex, for minimal returns, especially within the current context where RHMTs have limited ability to meaningfully intervene to correct the situation (either by training or initiating strategies to retain and recruit additional midwives – at present functions of higher levels in the health system, which are governed by broader public sector policies). If evidence suggested that non-availability of midwives was limiting access to deliveries being attended by skilled midwives, it may become necessary for RHMTs to measure and monitor the overall availability of midwives per municipal area and to compare the situation across geographical locations within a district and within the

province. This would be important information for advocacy initiatives that the RHMTs could well implement from district level.

A more relevant and valuable population-based measure of the availability of midwives may then be the ratio of Practicing Midwives-to-Expected Births in municipal areas and districts, noting the distribution of midwives between urban and rural settings, and between private sector and public sector maternity services.

#### 4.1.1.2.2. Institution-based measures of availability of personnel

This study identified and applied institution-based measures of availability of staff, each of which has limitations. The measures included the vacancy rate and the percentage midwife posts filled.

The vacancy rate (or percentage posts vacant) is a commonly used measure in health services. The South African Review 2003/2004 (HST 2004) provides the percentage vacant posts in the public sector, aggregated for all health professionals. In 2003 this was 31% for South Africa as a whole, and 13% for Limpopo Province specifically. Limpopo Province has one of the lowest vacancy rates for public sector posts. This is probably due to the public sector being the largest employer in Limpopo Province.

### 4.1.1.3. Critique of measuring the availability of midwives in this study

In this study, the overall vacancy rate for professional nurses in Limpopo Province was found to be 16.7% for 2003 (mean 21.2%), higher than the vacancy rate aggregated for all health professionals as reported above by HST (2004). The data obtained from the Provincial Human Resource Directorate was not specific to midwives and to maternity services but, because it was disaggregated per district, provided contextual information that indicated geographical inequalities, showing more severe vacancy rates in rural districts. Professional nurse vacancy rates in the urban districts of Limpopo Province for 2003 (which range between 4.5% and 9.5%) compare favourably with reported vacancy rates for nurses in the USA in the same year (which are reported to be between 12% and 15% (Atencio *et al.* 2003; AHA 2004). The vacancy rates for the rural districts range between 30.4% and 45.3% and are similar to nurse vacancy rates reported for Africa (Global Nursing Shortage, undated).

The 'percentage midwife posts filled' is of greater relevance to obstetric services. Measurement of this indicator appeared to show that Level 1 Hospitals have a high percentage of midwife posts filled (93.8%, aggregated for all the Level 1 Hospitals that responded – i.e. a 6.2% vacancy rate for midwife posts). However, there appear to be distinct differences in the more rural districts, which appear to have a smaller percentage of filled posts, ranging from 56% to 80% (i.e. a 44% - 20% vacancy rate for midwife posts). Surprisingly, the pattern for Level 2 Hospitals seems to indicate that, overall, they have a lower proportion of midwife posts filled (only 62.9%), and that the same urban/rural trend does not apply. These findings need to be validated by the RHMTs and the Provincial MCWH Directorate by including all Level 1 and Level 2 Hospitals in the measurement of this indicator. If the results were to be validated, the reasons for Level 2 Hospitals having higher midwife vacancy rates than Level 1 Hospitals would need to be further explored by the RHMTs and by the Provincial MCWH Directorate.

It would be valuable to establish the relationship between staffing levels and perinatal and maternal outcomes. One would expect poorer outcomes linked to higher vacancy rates. Data currently available attributes the majority (55%) of maternal deaths in Limpopo Province to Level 1 Hospitals, and 17% to Level 2 Hospitals (NCCEMD 2002). Furthermore the majority of health care provider related problems contributing to preventable maternal deaths occurred at Level 1 Hospitals (*Ibid.*). On the surface, there appears to be incongruity between midwife vacancy rates and the level of care where maternal deaths occur. But both sets of data need to be treated with caution – it is believed that there is severe under-reporting of maternal deaths in Limpopo Province (NCCEMD, 2002) and the data on vacancy rates arising from this study is incomplete.

Both the overall vacancy rate and the percentage midwives posts filled may well have been calculated on the basis of an "abnormal" denominator. It is unknown whether the current posts established, and thus available to be filled, are indeed sufficient. The number of posts available to be filled may have steadily diminished over the years, as a result of vacancies not being filled and posts frozen. A retrospective longitudinal study may reveal whether this is indeed the case.

Furthermore, the rationale for the allocation of the number of posts to an institution needs to be made explicit. The range in the number of midwife posts allocated to Level 1 Hospitals, that on the surface seem similar with regards to the average number of deliveries they conduct per

month, is large, for example ranging from 7 – 32 in hospitals that conduct ≤ 200 deliveries per month (See Chapter 4 Table 4.11.). In the absence of staffing norms, and in the absence of longitudinal information, it may be difficult for RHMTs to establish the sufficiency of the number of posts allocated that are indeed available to be filled.

Given the current situation, the main use by the RHMTs of information provided by the overall vacancy rate and the percentage midwife posts filled is to be able to monitor the retention and recruitment of staff over time.

### 4.1.2. Midwife workloads

Workload refers both to the quantity of the work to be carried out and the nature of the work (Burke 2003). "Excessive workload occurs when an employee perceives that he or she has too many tasks to do in a period of time" (*Ibid*. p.99) "Workload assessment is an attempt to predict the nursing time and skills required to provide nursing care" (Hughes 1999)

Kwast and Bentley (1991) use a population based approach to defining workload: If the ratio of midwives to population is 1:5000, and the birth rate is 40/1000, the workload for one midwife would be approximately 200 deliveries per year, or 16-17per month.

#### 4.1.2.1. Rationale for measuring workloads: the consequences of excessive workloads for quality of care

The RHMTs reported that the poor quality of maternal care was a consequence of high midwife workloads. The possibility of high workloads contributing to the poor monitoring of women in labour has also been considered by the National Committee for the Confidential Enquiries into Maternal Deaths (NCCEMD), who, in its triennial report (2002), included in one of its key recommendations that staffing norms be established for each level of obstetric care, with December 2004 being the target date for this task to be completed. This recommendation was made despite staffing shortages being rarely mentioned as an avoidable factor contributing to maternal deaths. The authors postulate that: "this may be due to a lack of adequate staffing; health care providers at the institution not thinking of inadequate staffing because they have become so used to the shortage that they regard it as normal; or a lack of information available to the assessors for them to allocate it as an avoidable factor." (*Ibid*, p.13) A benchmark is required

to assess whether current staffing levels do indeed constitute high midwife workloads, which may in turn explain the inadequate monitoring of patients –constituting 20% of avoidable factors leading to preventable maternal deaths (*Ibid*.) – and poor quality of maternal care generally. To date (November 2004) staffing norms for obstetric services in South Africa have not yet been published.

In the absence of staffing norms, the question remains unanswered as to whether the poor quality of care provided in the maternity units of Limpopo Province is as a result of excessive workloads. Testing the association between workloads and quality of obstetric care was beyond the scope of this study. In the local literature, there are no quantitative studies that describe midwife workloads in South Africa, nor studies that analyse the association between workloads and outcomes. Qualitative studies that have been conducted in labour wards (Fonn *et al.* 1998; Jewkes *et al.* 1998) report that nurses identify staffing shortages as a 4th priority problem (after lack of resources, poor health sector management and low salaries); and show that patients interviewed report being neglected during their labour, not because the midwives were busy, but because they were sleeping, chatting, and watching television (*Ibid.*).

Internationally, there are also few studies that have been conducted to test the association between high workloads and poor maternal and perinatal outcomes. One study by Tucker *et al.* (2003), conducted in labour wards in Scotland to test the association between midwife workloads and neonatal outcomes, concluded that increased workloads do lead to detrimental outcomes, albeit that the effect may be small.

On the other hand, several nursing workload studies have been conducted in medical, surgical and intensive care units, and have conclusively established the deleterious effects of high workloads. It has been established that high workloads lead to higher preventable mortality and morbidity; interfere with the monitoring of patients, the early detection of complications and the timely initiation of interventions to save lives; contribute to job dissatisfaction, stress and burnout; and to the poor retention and high turn-over of staff (Trueland 2004; Burke 2003; Curtin 2003; Aiken *et al.* 2002; Rothwell *et al.* 1992).

#### 4.1.2.2. Measuring workload

The main indicator of nurse workload has been the nurse-to-patient ratio. The literature describes different approaches to measuring this ratio: activity-based, dependency-based, and event-based (Hughes 1999; Campbell *et al.* 1997). In a review of the different methods, Hughes (1999) concludes that each of the methods has not yet provided inter-and intra-reliability and that they are not sensitive enough to accommodate: severity of illness, the ability of nurses to meet several needs simultaneously, the patient-driven (rather than nurse-directed) demands on time; the degree of experience and level of expertise; and the recognition that "when there is more to do nurses will probably work harder and faster until a limit is reached" (Hughes, 1999 p. 320).

Additional factors that add to the complexities of calculating workloads are: the organisation of shifts (Hideki *et al.* 1999; Rothwell *et al.* 1992); availability of support staff (Ormandy *et al.* 2004); degree of technical support provided by new bedside technology (Adomat and Hicks 2003); locus of control in determining the nature of what needs to be done and when (Adomat and Hicks 2003; Paxton 1996); level of collaboration between doctors and nurses (Curtin 2003; AHRQ 2001); predictive and actual absenteeism rates (Trueland 2004).

Hughes (1999) states that if the quality of care has declined, then the nurses involved in delivering the care need to be assessed; it may be that a higher workload has been a contributory factor, but there is no way of assigning this as a cause unless workload has been measured. Thus, despite the difficulties associated with measuring workloads, workload information is still needed.

#### 4.1.2.3. Critique of measuring workload in this study

"One answer may be to accept that the methods (to measuring workload described above) provide, at best, an indicator of nursing workload. An indicator is a poor form of measurement. However, if workload measurements are routinely collected, then the large amount of data can be subjected to rigorous statistical analysis thus allowing trends and unusual occurrences to be indicated. If the workload assessment is being used as an indicator then the least intrusive method is desirable." (Hughes 1999, p. 321). Thus Hughes recommends the measurement of the most time consuming activities – admissions, patient-related activities and discharges – and

to monitor these over time to relate changes in workload indicators to changing quality of care indicators.

This study measured the midwife-to-delivery ratio, which is a significant patient-related activity in obstetric services. The main limitation with the measurement of the indicator in this study was the selection of the numerator, which included the FTEs (Full Time Equivalents) for all midwives allocated to maternity. The numerator should rather have been limited to the FTEs of midwives allocated specifically to labour ward, in order to get a true midwife-to-delivery ratio. This would only be possible to measure in Level 1 Hospitals that have a separate labour ward and staff specifically allocated to it, and in Level 2 Hospitals.

Following Hughes' (1999) recommendation of measuring important events, additional workload measures in Level 1 and Level 2 maternity units would be the midwife-to-admission ratio and the midwife-to-discharge ratio. In order to assess the effect of changing workloads on the quality of care, the quality indicators against which these workload indicators may be monitored could include: the quality of record-keeping, and perinatal and maternal outcomes.

#### 4.1.2.4. Staffing norms

Staffing norms are intricately linked to desirable, acceptable and cost-effective workloads that produce the most favourable health outcomes. The interpretation of workload indicators needs to include a comparison against established staffing norms, to assess whether current workloads are acceptable or not, and to help to interpret outcome measures against workload measures.

Staffing norms are usually expressed as nurse-to-patient ratios, although Blegen *et al.* (1998) argue that the focus should be on actual registered nurse hours of care per patient per day. O'Brien-Pallas *et al.* (1992) propose that nurse-to-patient ratios may be used as proxy measures of actual or needed hours of care by patients per day. Midwife-to-patient ratios would seem to be a simpler and more practical measure of staffing norms.

A 'norm' may be a standard to be achieved or a rule to be implemented, but it may also be the average that is attained in a given context (Microsoft Thesaurus).

#### 4.1.2.4.1. Staffing norms as a 'standard' to be achieved

There are no published norms (standards) for maternity units, neither internationally nor nationally, with regard to the desirable midwife-to-patient ratio or with regard to the desirable actual midwife hours of care per patient per day. Presumably different norms will need to be established for Level 1 versus Level 2 units, based on the number of women in the latent phase of labour versus women in the active phase; number of normal deliveries versus complicated deliveries versus emergency deliveries; antenatal versus delivery versus postnatal admissions; neonatal admissions and the nursing of well neonates versus sick neonates (where the neonatal unit is attached to the labour ward).

Nurse staffing research conducted mainly in intensive care units and in medical and surgical units gives support to a ratio of 4-6 patients in most acute care hospital settings, with no more than one or two per nurse in areas of where patients are highly dependant on nursing care (Aiken *et al.* 2002; Curtin 2003; Adomat and Hicks 2003; ManagedHealthCare.Info 2002). Stone *et al.* (2003) state that the difficulty in implementing these recommended nurse staffing norms is related to continued lack of agreement regarding what are optimal patient-staffing ratios and to lack of agreement as to whether mandated nurse-patient ratios will actually achieve the desired improvements in quality of care, with the real possibility that rigid adherence to mandated staffing norms may indeed hinder the quality of care. Curtin (2003) stresses that recommended staffing ratios must be modified in each setting according to the levels of experience, organisational characteristics, and the quality of clinical interaction between the members of the team (doctors, nurses and administrators).

Nevertheless, it is desirable to have a particular standard stated upfront against which comparisons may be made. As further research is done and new information and knowledge are generated, and as individual practice setting are analysed, standards may be adjusted accordingly.

Can these published staffing norms be used as a guide for obstetric services? It is proposed that women in the active phase of labour may be likened to what the Intensive Care Society in the United Kingdom refers to as patients requiring High Dependency Unit care (Adomat and Hicks 2003). These patients require "close observation, but not necessarily the continuous presence of

a nurse at the bedside" (*Ibid.* p. 403). Patients thus categorised are assessed as needing one nurse for two patients.

It is further proposed that women in the latent phase of labour may be likened to patients in general medical and surgical wards who require regular surveillance, toward the early detection of complications and the timely implementation of appropriate interventions. Aiken *et al.* (2002) in assessing surgical services showed that "the odds of patient mortality increased by 7% for every additional patient in the average nurse's workload in the hospital and that the difference from 4 to 6 and from 4 to 8 patient per nurse would be accompanied by 14% and a 31% increases in mortality respectively" (p.1991). In their study, Aiken *et al.* (2002) performed a number of analyses that seemed to indicate that their findings would be applicable to a variety of in-patient settings, although they did not specifically mention maternity services. Their results "do not directly indicate how many nurses are needed to care for patients or whether there is some maximum ratio of patients per nurse above which hospitals should not venture" (*Ibid.* p.1992). However they lend support to hospital nurse staffing legislation passed in the state of California, which aims to implement nurse-to-patient ratios of 4-5 patients per nurse.

#### 4.1.2.4.2. Staffing norms as an 'average' in a given context

In this study, workloads were assessed for all Level 1 and Level 2 Hospitals that submitted the Facility Review Form and which provided the data necessary to calculate the midwife-to-delivery ratio. From this data it was possible to establish the 'average' situation in Limpopo Province. This information is of value in that it indicates which hospitals fall below the 'average' for the Province and provides managers with a focus as to where limited resources should be invested to rectify poor staffing levels. The thesis is that as staffing levels are improved in these 'below average' institutions, the overall average for the Province will be lifted and new hospitals identified which fall below this new average, again providing a focus for where resources should be used to improve staffing levels and reduce workloads.

For example: because in the Level 1 Hospitals that returned the Facility Review Form the spread of the data did not follow a normal distribution for the midwife-to-delivery ratio, the median and the interquartile range were used to determine the 'average' situation in Limpopo Province. Amongst Level 1 Hospitals that submitted data, the median midwife-to-delivery ratio was 2.4, and the

interquartile range was 1.4 to 2.85. The RHMTs would be able to immediately ascertain which hospitals fall outside of the interquartile range, and therefore require attention. Thus the RHMTs would be particularly concerned with the three hospitals that fall below the 25th percentile, and had a higher workload (i.e. Hospitals D and L where the ratio is 1.3 and especially Hospital P where the ratio is 0.9). If they were able to correct the workloads in these hospitals, they would then be in a position to re-calculate the standard deviation/interquartile range for all the hospitals in the province, and again identify the hospitals that fell outside the 'norm' with a view to correcting the workloads in these hospitals. Thus workloads would be gradually corrected.

However the question would still remain as to what are the desirable, ideal/standard workloads to be achieved.

### 4.1.3. Allocation of staff

There is recognition that within the health sector, the resources available are insufficient to meet all health care needs and demands, and that decisions need to be made about how resources should be distributed (Green 1999). How planning is carried out to allocate these limited resources may be influenced by a variety of factors: "These include the organisational structure, the stated or constituted aims of the organisation, the relative power of different groups within the organisation and their own aims, the political or ideological climate of the country, and the relationship between the organisation and its users or consumers" (Green 1999 p.18-19)

Human resource planning aims to ensure that there "is the right number of personnel with the appropriate skills available in the right place at the right time" (*Ibid.* p 260). Amongst the many problems in human resource planning are distributional difficulties (*Ibid.*). This is of particular importance where there are concerns about equity.

#### 4.1.3.1. Rationale for measuring allocation of midwifery posts

The concern about the allocation of human resources arose on analysis of the data on staffing. Discrepancies were evident in the allocation of midwifery posts to Level 1 Hospitals, that on the surface appeared similar with regards to the average number of deliveries conducted per month. For example in the hospitals that conducted $\leq$ 200 deliveries per month the range of midwifery

posts allocated ranged between 7 and 32. Also with regards to the availability of advanced midwives in these hospitals, the range was between 0 and 6.

The number of human resources allocated will have bearing on workload, which in turn influences the quality of care.

#### 4.1.3.2. Measuring the allocation of midwifery posts

Green (1999) identifies three approaches relevant to the public sector. The first is a needs-based approach (based on demographic and epidemiological data); the second is a population based approach (i.e. personnel-to-population ratios) and the third is a service target approach (which involves setting service targets and assessing the personnel required to meet these targets).

#### 4.1.3.3. Critique of measuring allocation of midwifery posts in this study

The study has just described the number of midwife posts allocated to each Level 1 Hospital that returned the Facility Review Form. It has further highlighted possible inequities with regards to the allocation of midwife posts. The differences need to be explored in greater depth – what approach to human resource planning was used in allocating the posts to the various Level 1 Hospitals? What was the rationale for allocating the number of posts as they have been? What are the resultant differences in workloads, and do a fewer number of allocated posts in similar hospitals translate to higher workloads. What is the relationship between the ability to fill posts and the number allocated?

#### 4.1.3.4. Commentary of the outcomes of measuring allocation of midwifery posts

With regards to midwifery, two count indicators were reported: the first, the number of established midwife posts allocated to Level 1 Hospitals. The allocations per hospital were compared according to the average number of deliveries conducted per month in the hospitals; the second, the number of Advanced Diploma Midwives (ADMS) in each Level 1 Hospital. The availability of ADMs was also compared according to the number of deliveries conducted per month.

With regards to the allocated number of established midwife posts, inconsistencies were noted, with a wide range in the number of established posts in hospitals that on the surface appear quite

similar. The main concern is regarding the rationale behind allocation decisions, and whether the principle of equity is being observed. To assess whether the allocation is indeed equitable, the RHMTs would need to refer back to population-based measures of the availability of midwives compared to the number of expected births.

With regards to the number of ADMs per hospital, again inconsistencies were observed. The MCWH Directorate has established a target of having at least two ADMS per hospital (Nyathikazi, Personal Communication). The majority of hospitals have attained this target. But in order to ensure that there is an ADM available on duty in each shift, either as a consultant or supervisor/in-charge of shift, there would need to be at least six (6) ADMs in each hospital (to accommodate for days off and periods of leave). Only one hospital (Hospital H) has achieved this. It would appear that the decision to send midwives for advanced training is largely dependant on institutional managers, and RHMTs would need to advocate for more midwives to undergo this specialist training. Institutional managers would require supporting evidence from RHMTs motivating this expenditure, both in terms of training costs, and service costs incurred by the absence of the worker while on training.

#### 4.1.3.5. Measuring the allocation of medical doctors to maternity

The measurement of the allocation of medical doctors to maternity is a measure of the provision of medical coverage and medical supervision for the maternity unit. The quality of maternal health care does need to be interpreted against this indicator. There may be sufficient provision of competent midwives, but there may not be the necessary medical support to ensure that maternal and perinatal deaths are prevented. It is of concern that overall 40% of Level 1 Hospitals, and 45% of Level 1 Hospitals that conduct more than 100 deliveries per month, do not have a doctor allocated to the maternity unit. This would have implications for nurse-doctor team relations and for the continuity of care for patients. It may also mean that doctors are not getting time to develop sufficient expertise in maternity.

#### 4.1.3.6. A note on the midwife-to-bed ratio

The midwife-to-bed ratio was initially proposed as a workload indicator, but recognising the limitations of using it as a workload measure (as discussed in Chapter 4 Section 3.3.5.1.2 (a) ) it could be more useful as an allocative measure. As a measure of allocation, it would be best to

change the numerator from the number of filled midwife posts, to the number of established midwife posts in maternity as a whole. The denominator would then include all maternity unit beds. If a specific allocative analysis was required for labour ward, the numerator would become the number of established labour ward midwife posts and the denominator the number of dedicated labour ward beds.

An analysis of the data used to calculate the midwife-to-bed ratio shows that, as in the case of the number of midwives posts allocated to hospitals, there is a wide range in the allocation of the number of beds in what appear to be similar Level 1 Hospitals. (See Chapter 4 Table 4.9) The rationale for the allocation of beds to Level 1 Hospitals also requires further investigation.

To assess the equitable distribution of beds, population based measures of the availability of beds may need to be used for the catchment population of each facility i.e. maternity beds-to-expected births ratio, and labour ward beds-to-expected birth ratio.

### 4.1.4. Staff rotation and experience of staff (midwifery and medical)

Staff rotation is defined as "a reciprocal exchange of staff between two or more clinical areas, for a predetermined period of time" (Richardson *et al.* 2003 p.84). There are both advantages and disadvantages to staff rotation. From the perspective of institutional managers, staff rotation is a very attractive organisational management strategy, because it aims to ensure a multi-skilled and flexible workforce. In the light of an ever-increasing shortage of staff in general, and an ever shrinking pool of experienced staff in particular, institutional managers use rotation as a strategy for increasing the pool of nurses and doctors that have a diverse range of clinical experiences, and whom, when necessary, could be deployed to units that become understaffed from time to time. Staff rotation is also used as a training strategy, providing staff with learning opportunities in a range of clinical practice settings, both during formative training and ongoing in-service training (Dunn and Burnett 1995 in Richardson *et al.* 2003; Taylor *et al.* 1995).

Richardson *et al.* (2003) report on the advantages of rotation from the perspective of staff. These include: assistance with career progression; facilitation of networking; maintenance of clinical skills; building on experience.

Disadvantages associated with staff rotation are: that staff become established in units and do not want to leave the security of a familiar environment (Richardson *et al.* 2003); staff need to change their professional style of relating to suit the differing needs of patients in the various clinical units (G.C. Undated); staff are supervised by different unit managers, each with different ideas about what should be done and how (J.A. Undated); nurses and doctors have difficulty in adjusting to each other and establishing effective team relations (J.A Undated); fear of working in an unfamiliar setting (Richardson *et al.* 2003); staff perceive that they are forced to rotate against their wishes into units that they do not want to work in (*Ibid.*). The latter seems to be a particular problem within Limpopo Province where information from RHMTs and the Director of MCWH indicates that often nurses are rotated into maternity unit as a punitive measure.

#### 4.1.4.1. Rationale for measuring rotation of staff – the link between rotation and the quality of care

RHMTs considered staff rotation practices to be disadvantageous for the quality of care provided in maternity units in Limpopo Province. The main concern of the RHMTs was that too frequent rotation brought inexperienced nurses and doctors into maternity, and just as they reached a level of experience adequate for functioning effectively, they were rotated out again.

The concern concurs with reports in the literature that link the length of experience with the quality of care. "A strong inverse relationship has been found between number of years of experience that nurses have on their clinical units and patient mortality (Stone 2003 p.122). Tourangeau *et al.* (2002 in Curtin 2003) investigated the link between patient mortality in acute care hospitals and experience of nursing staff and established that "in urban community hospitals, each additional mean year of nurse experience was associated with six fewer patient deaths for every 1000 discharged patients. In non-urban community hospitals, each additional hospital mean year of nurse experience on the clinical unit was associated with four fewer patient deaths for every 1000 discharged patients" (*Ibid.* p. 7)

In situations where nurse to patient ratios are adequate, but there are higher ratios of 'pool staff' (i.e. relief nurses) to 'regular staff' (i.e. nurses permanently assigned to the unit), the quality of care is compromised (Robert *et al.* 2000 in Stone *et al.* 2003).

Ashcroft *et al.* (2003) observed the use, and its consequences, of team midwifery systems, where each shift had two midwives who remained on the labour ward to provide expert support while the other midwives were rotated, and as a result worked in labour ward infrequently (two to four shifts a month). The midwives felt that this was insufficient to maintain their skills and confidence. Occasionally inexperienced midwives were expected to care for complicated, high-risk patients. In busy periods, experienced senior midwives in charge of the shift were unable to provide the necessary support and supervision for less experienced colleagues. This resulted in a high proportion of 'near miss' and adverse events.

Thus the length of allocation in a clinical unit and experience in the area of clinical practice is a factor in the provision of quality maternal health care.

#### 4.1.4.2. Measuring staff rotation and experience of staff

Determining the length of allocation to a unit may be done by interviewing staff or through an examination of duty rosters (Ashcroft *et al.* 2003; Richardson *et al.* 2003; Stone *et al.* 2003).

Proficiency in essential and life saving obstetric procedures would need to be assessed for each midwife and doctor working in the labour ward. This may be done through the periodic administration of OSCEs or implementation of clinical drills. These would reveal individual needs for further training and development.

Developing a collective measure of overall competency levels is more complex, but necessary for planning and allocating resources to programmes aimed at upgrading skills. Length of allocation to the unit may be regarded as a proxy measure for experience, which in turn may be regarded as an indirect measure of the overall competency in the unit.

#### 4.1.4.3. Critique of the measurement of staff rotation and experience in this study

The Facility Review Form required the midwife-in-charge of the unit to indicate how many of the staff (both midwifery and medical) allocated to the maternity unit in the last month had worked in the unit for the periods specified (< 6 months; up to 1 year; up to 2 years; up to 5 years and more than 5 years). While the answers to the question provided an overview of the average length of allocation to maternity, it did not indicate the length of allocation of midwives in the labour ward

specifically, nor did it establish the distribution of 'experienced' midwives across the shifts. This would be important information for institutional and unit managers and needs to be monitored month-by-month.

#### 4.1.4.4. Commentary on the outcomes of measuring staff rotation and experience in this study

The findings amongst Level 1 and Level 2 Hospitals that returned the Facility Review Form were surprising and indicated that in all hospitals, a considerable majority of midwives, 61% and 86% respectively, has spent at least one year in maternity, and 25% and 65% respectively had spent more than 5 years in maternity. The majority of hospitals (75%) had doctors who had been in maternity for more than 6 months, and just over half of the hospitals had doctors who had worked in maternity for more than 1 year. On the surface, and in the absence of standards/norms to indicate desirable allocation periods, these findings do not seem to corroborate the perception that there is too frequent rotation of personnel in the maternity units. As stated above, it may well be necessary for the RHMTs to assess rotation practices with regards to labour ward specifically, which would only be possible in Level 1 Hospitals that have a separate labour ward, and in Level 2 Hospitals. It would be interesting to understand why there is incongruence between the perception of the RHMTs of too frequent rotation and the findings that indicate the contrary.

If the quality of care is compromised despite a high proportion of midwives who have been in maternity for a lengthy period of time, then it would also be valuable to ascertain the relationship between a lengthy ('too long') allocation and the quality of care. Perhaps there is an optimum period of allocation, during which the necessary skills, experience and competence are developed, and after which staff are no longer challenged and stimulated and become 'burnt out'. Atencio *et al.* (2003) found an interesting relationship between length of experience and the sense of autonomy experienced by nurses. "Nurses with 5 years of experience or less perceived a greater sense of autonomy, and had a more positive view of the tasks they were performing than seasoned nurses … It confirms Letvak's (2002) findings of older nurses who desire increased autonomy" (*Ibid.* p. 267). A confounding factor may well be the quality of leadership and supervision in the unit and its influence on sense of autonomy, and motivation to maintain and improve service standards.

### 4.1.5. Absenteeism rates

The Scottish National Health System (NHS) incorporates 'predictive absence allowances' (i.e. the amount of time a full-time nurse or midwife will typically not be on duty due to annual leave, sickness and study leave) into its human resource planning (Trueland 2004). The minimum allowance, inclusive of all leave types, is set at 21% (*Ibid.*).

Absenteeism has been defined by (Bamford *et al*. 2000 p.1) as "staff taking time off that has not been scheduled or staff taking more leave than is necessary or reasonable." It is often debatable how much leave is 'reasonable'. Concerns about absenteeism arise more from the pattern and circumstances of the leave taken, rather than the actual total amount of leave that an individual takes. Nevertheless absenteeism rates of less than 3% are regarded as the norm (*Ibid.*).

Daviaud (undated) identifies the categories of 'time on-duty' and 'time off-duty'. His analysis of 'time on-duty' includes time spent on core functions (i.e. seeing patients) and time spent on other activities (e.g. administrative activities). 'Time off-duty' includes annual leave, sick leave and days attending training events. While he does not provide guidelines about standard/acceptable levels of time spent on each, his analysis compares time usage against workloads, and across facilities, and thus detects unacceptable patterns which require further investigation and may be suggestive of the need to re-organise work, to re-deploy staff, and/or to employ support personnel.

Bamford *et al.* (2002) identify staff related and management related causes of high absenteeism. The staff related issues include: unpleasant work environment; personal problems; family related problems; and economic pressures (where staff are absent because they are holding down additional jobs). Management related issues include: poor leadership; lack of systems and processes in the workplace; delays in dealing with staff problems; low staff morale; and poorly trained managers. Taunton *et al.* (1995) identified the role of the manager, and organisational policies to discourage absenteeism and provide incentives for attendance, as the major factors in determining absenteeism levels.

#### 4.1.5.1. Rationale for measuring absenteeism rates – the link with the quality of care

The RHMTs did not identify high absenteeism rates as a problem affecting quality of care. The facilitators identified the issue, based on anecdotal evidence that absenteeism rates and 'time off-duty' have been increasing, specifically due to HIV/AIDS related illness, to increasing number of meetings and workshops organised by higher level managers, and to uncoordinated study leave.

Facilitators expected that high absenteeism rates would exacerbate staffing shortages, and would thus contribute to poor provision of quality of care. So they felt it important to measure absenteeism levels.

#### 4.1.5.2. Measuring absenteeism rates

Bamford *et al.* (2000) recommend that the percentage of number of days not worked of the number of days that should have been worked be calculated, to give an absenteeism rate. The number of scheduled work days exclude the number of scheduled leave days (i.e. days for annual leave, study leave, or maternity/paternity leave). Alternatively they state that absenteeism rates may be calculated on the basis of hours lost (i.e. the percentage of hours lost of the hours scheduled to be worked).

The data required to perform these calculations is obtainable form the duty rosters in each unit.

#### 4.1.5.3. Critique of the measurement of absenteeism rates in this study

As stated in the results section, no meaningful data was obtained from either Level 1 or Level 2 Hospitals. The formulation of the question was probably too complex for the midwives-in-charge to establish exactly what was being asked of them. It would still be worthwhile for RHMTs to measure this indicator, and to perform the analyses recommended by Bamford *et al.* (2000) and Daviaud (Undated), as mentioned above.

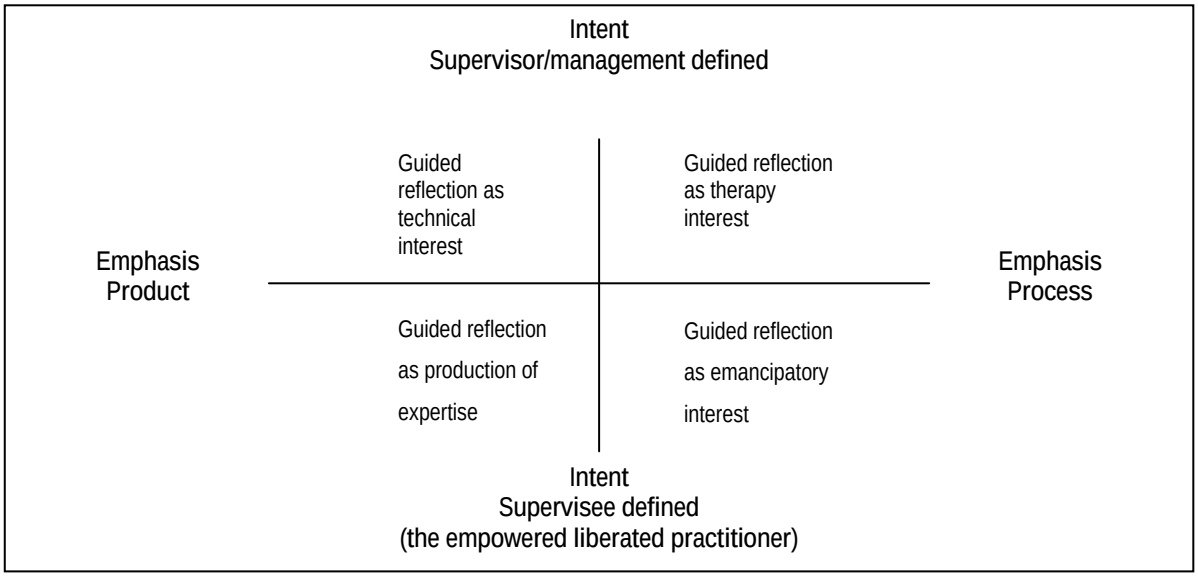
## 4.2. Supervision

In reviewing the literature (Consedine 2000, Lyth 2000, Hughes and Richards 2002, Hyrkas *et al.* 2002, Beggren and Severinsson 2003, Jones and Edwards 2003, Maclean 2003) it would appear

that the various definitions of clinical supervision proposed, reflect different emphases of the supervision process. Some define supervision as a line management function, concerned with implementing safe practice according to specified standards. Others reflect a more 'psychotherapeutic' process, concerned with the professional support and development of the practitioner. Proctor (1991, in Lyth 2000 and in Heath and Freshwater 2000) proposes that there are three key elements to supervision within nursing. These are "normative (organisational and quality control), formative (education and development) and restorative (support for staff)" (*Ibid.* p. 725). It would appear that within midwifery practice supervision would need to accomplish each of these elements proposed by Proctor.

Heath and Freshwater (2000) discuss a conceptual model for analysing the 'intent' and the 'emphasis' of different supervision processes as developed by Johns (1996). On the 'intent' axis, a continuum is depicted between the intent of the supervision being defined by the supervisor/manager on one end, and by the supervisee on the other end. On the 'emphasis' axis, the emphasis of supervision is placed on a continuum between product and process. Four quadrants emerge, depending on the combination of intent and emphasis, as depicted in Figure 5.1. The model assumes that guided reflection "is at the heart of the clinical supervision" (Heath and Freshwater 2000 p.1299).

Figure 5.2. The intent-emphasis axis of guided reflection




Reproduced from Heath and Freshwater (2000) p.1299

Clinical supervision that has primarily a technical interest monitors performance standards, and is the form of supervision most implemented in the supervision of midwifery. Supervision that aims to develop proficient practitioners has a technical orientation, but focuses on developing skills that take the practitioner from 'unconscious technical competence' to 'conscious proficient practice'.

Clinical supervision that roots itself in counselling and psychotherapy enhances self-awareness, particularly as transference and counter-transference responses and behaviours in relation to patients are reflected on and analysed. Heath and Freshwater (2000) argue that with greater self-awareness and increased ability to reflect, health workers will become more able to improve practice on their own, and thus become empowered/emancipated practitioners.

### 4.2.1. Rationale for measuring supervision – the link between supervision and the quality of care

"The process of supervision ensures that a high quality of care is delivered and that appropriate standards of care are met and are implemented as expected of today's health service. Supervision of midwives is valued along with professional self-regulation as it supports public protection. This is achieved by promoting good practice, preventing poor practice and intervening in incidences of unacceptable practice" (Jones and Edwards 2003 p. S39).

The RHMTs identified inadequate supervision as a contributory factor leading to the overall poor quality of care. This link between poor supervision and poor quality of care has been established by a number of authors (Diwan *et al.* 1996, in Lyth 2000; English National Board 1999 and Gorzanski 1997, in Hughes and Richards 2002; Jones and Edwards 2003; Maclean 2003). In recognition of this link, supervision within midwifery practice in the United Kingdom has been a statutory requirement since 1902, and principally comprises the monitoring of midwifery practice and monitoring of clinical outcomes, which are benchmarked against nationally agreed standards (Lyth 2000; Jones and Edwards 2003).

In countries where there is little evidence that any kind of supervision is occurring; and where it does occur, but is of policing rather than a supportive nature, the Maternal Mortality Ratio remains high (Maclean 2003). Supportive supervision reduces the isolation and lack of relevant continuing education experienced by midwives (especially for those practicing in more remote

areas), and is an essential component of an enabling environment that promotes skilled attendance (*Ibid.*).

Jones and Edwards (2003) identify that midwifery supervision contributes to: risk management – i.e. the reporting of critical incidents and 'near miss' events which enables staff to identify and correct mistakes; the development and implementation of local policies and protocols; the provision of relevant training; the implementation of evidence-based care. Additional benefits identified through a review conducted by Lyth (2000) include: increased skills and knowledge leading to more effective problem solving; increased confidence, and reduction in stress levels and burnout, leading to reduced absenteeism rates; reduction in complaints by staff and improved staff morale; increased participation in reflective practice and self-directed learning.

But Lyth's review (*Ibid.*) also identifies authors (Wolsey and Leach 1997, Palsson *et al.* 1996) who are less convinced of the benefits of supervision and call for more rigorous research towards providing relevant evidence that improved supervision does actually promote quality care.

### 4.2.2. Barriers to the implementation of supervision

While the potential benefits of supervision for quality of care have been recognised, the RHMTs identified factors that negatively influence the implementation of supervision. These included: lack of a supervision plan (leaving supervisors unclear about what their roles are), no incentives or career pathways for supervisors, and lack of support by line/institutional managers for the implementation of corrective actions recommended by supervisors.

Barriers to supervision identified in the literature include, and add to, the hindering factors identified by the RHMTs. The barriers identified in the literature include: inadequate preparation of supervisors to equip them for their supervisory roles, leading to lack of clarity regarding the purpose of supervision and poor supervisory skills (Jones and Edwards 2003, Lyth 2000); punitive rather than supportive implementation of supervision (Jones and Edwards 2003, Maclean 2003); the perception of supervision as a management tool (Jones and Edwards 2003, Hughes and Richards 2002, Lyth 2000, Consedine 2000);

### 4.2.3. Measuring supervision

From various studies reported in the literature, some of the dimensions of supervision that have been measured are as follows:

- Whether supervision is occurring or not (Maclean 2003)
- The ability of midwives to access supervision (Hughes and Richards 2002)
- Who carries out the supervision (Duerden 1995 in Jones and Edwards 2003)
- Attitudes of supervisees towards supervisors (*Ibid.)*
- Style of supervision (Beggren and Severisson 2003)
- Factors that influence supervision (Hyrkas *et al.* 2002; Cottrell 2002)
- Effect of supervisory tools on the supervision process and its outcomes (Loevinsohn *et al.*1995)
- Supervisor skills that are valued by supervisees (Lyth 2000)
- Effects of supervision (Berg *et al.* 1994, Palsson *et al.* 1996 and Hallberg (1994) - in Lyth 2000)
- The integration and the potential of guided reflection in the supervision processes (Yearly 2003; Heath and Freshwater 2000; Johns 1999)

The methods used to measure the above dimensions are mainly drawn from qualitative methodologies.

### 4.2.4. Critique of the measurement of supervision in this study

The indicators identified for use by the RHMTs measure whether regular supervision is occurring. Using Proctor's model, they reflect the normative goal of supervision, aimed at the maintenance of performance standards, in order to ensure the provision of the best quality of care and the best clinical outcome for the patient. The formative and restorative goal of supervision, aimed at increasing the expertise of midwives and supporting them in their practice and as professionals, is subsumed in the process of conducting supervision - double-checking and review of patient records (both in ANC and IPC) aim at identifying staff competencies in the examination, recording of observations, and management of the patient; as limitations are identified, so the supervisor can, in a supportive way, educate and develop the skills of the midwives; as successes are identified, so the midwives may be affirmed.

The perinatal audit process would provide the team as a whole, under the guidance of the supervisor, the opportunity to reflect on and analyse their practice. The indicators measuring the perinatal audit process monitor whether each component of the audit is being implemented, and aim at ensuring that the reflection and analysis are indeed based on a thorough and methodical review of the practice. But the ultimate benefit of the perinatal audit is dependant on the quality and depth of reflection and analysis, and the action that follows this. Supervisors need to have reflective and analytical skills, so that they may guide the reflection and analysis of the team. The study did not identify an indicator aimed at the collective, routine measurement of the quality and depth of analytical skills of the supervisor and the team. The practicability of collecting meaningful data for such an indicator is questioned. Rather the RHMTs would need to assess qualitatively the reflective and analytical skills of the supervisors and team members in each individual facility and respond to the development needs of the supervisor and the team in this regard. Ultimately the analysis of the supervisor and her team need to be lead to the accurate identification of problems hindering the quality of care, and identify effective solutions for their resolution, which will result in improvements in quality of care and in clinical outcomes.

### 4.2.5. Commentary on the outcome of measuring supervision in this study

A baseline assessment could be obtained for the implementation of double-checking only. The results indicate that supervision is not implemented regularly. The reasons provided need to be verified and dealt with. Improvements in this indicator could be compared with measurements of the quality of care, to see if there is any indication of a positive relationship between them.

## 4.3. Referral systems

The term referral is used in different ways. It may be used to denote the handover of care of a patient to a senior colleague or to another member of the multi-professional team; or it may indicate the advice of a health worker to the patient to attend a higher-level health facility, whether the advice is followed or not; or it may used to mean the emergency transfer of a patient to a higher-level health facility. Jahn and De Brouwere (2001) use the term to indicate “any upward movement of the health care seeking individuals in the health system” (*Ibid.* p. 230).

An effective referral system is an essential component of a health system that adheres to the Primary Health Care (PHC) approach, and subscribes to the principle of treating patients at the

lowest level of care required to deliver the most effective treatment at the minimum of cost (King 1996, in Jahn and De Brouwere 2001; Stefanini 1999, in Murray *et al.* 2001). Within the South African health system, the district is the recognised peripheral level of care, and is served by a district hospital and a number of clinics and health centres. "A well coordinated referral system, with access to transport and facilities, is essential for the provision of care to all pregnant women in the district." (DOH 2002 p. 7)

In its Guidelines for Maternity Care, the Department of Health (2002) describes the levels of maternity care within the South African health system, which should be linked by an effective referral system, and their functions. These are described as follows: The clinic is primarily intended to provide antenatal care to low and intermediate risk women and postnatal checks. Problems should be referred to the district/Level 1 Hospital. In addition to these functions, the health centre is intended to provide treatment of the common problems of pregnancy, a 24-hour labour and delivery service for low risk women, including the ability to perform an assisted delivery by vacuum extraction. Again problems would be referred to the district/Level 1 Hospital. The district/Level 1 Hospital is designated to serve as the referral centre for clinics and health centres in the district and generally should provide: antenatal care for women at high risk; treatment for the problems of pregnancy (including admission to hospital); 24-hour labour and delivery service for intermediate and high risk women; vacuum extraction, caesarean section and manual removal of the placenta; regional and general anaesthesia; blood transfusion; essential special investigations; postnatal care, including complications and postoperative care; and postpartum sterilisation. A Level 1 Hospital would refer complicated problems to a Level 2 Hospital, which, in addition to the Level 1 functions, should: manage severely ill pregnant women; provide specialist supervision of the care of pregnant women; and conduct prenatal diagnosis (e.g. genetic amniocentesis). The Level 3 Hospital in addition should provide specialist combined clinics (e.g. cardiac and diabetes pregnancy clinics), advanced prenatal diagnosis and management of extremely ill or difficult obstetric patients.

Foundational to a functioning and effective referral system are:

- "An adequately resourced referral centre
- Communications and feedback systems
- Designated transport

- Agreed setting-specific protocols for the identification of referral criteria and standards in the management and transfer of women who have complications
- Personnel trained in their use
- Teamwork between referral levels
- A unified record system
- Mechanisms to ensure that patients do not bypass a level of the referral system i.e. good patient information, and structured fee and exemption systems."

Murray *et al.* (2001)

Referrals may be categorised according to: who is referring (institutional or self-referral), according to the stage of pregnancy/delivery (antenatal, intrapartum or post natal), and according to whether it is an elective or emergency referral (Jahn and De Brouwere, 2001).

### 4.3.1. Rationale for measuring referral systems – the relationship between referral systems and the quality of care

The RHMTs identified the inadequate functioning of the referral system as contributory to the poor quality of care. They identified problems in three of the essential requirements for an effective referral system mentioned above. These included: problems in the availability of, distribution of, and familiarity with, guidelines and protocols of management; problems in the relationships between health personnel at the different levels of care, resulting in refusals to accept referrals and in no feedback being given to the referring facility; problems in the availability and responsiveness of emergency services (identified as part of inadequate support services).

A malfunctioning referral system is recognised as a barrier to providing midwives and doctors with an enabling environment in which to practice effective obstetric care (Maclean 2003). "It is widely accepted that substantial reductions in maternal mortality and severe morbidity are impossible to achieve without an effective referral system for complicated cases. Early detection and referral to higher levels of care might also substantially reduce the complications of childbirth, including birth asphyxia, that have been found to contribute to up to one-third of neonatal deaths in some developing countries" (Murray *et al.* 2001 p. 353). The "back-up function of referral is of particular importance in pregnancy and childbirth, as a range of potentially life-threatening complications

require management and skills that are only available at higher levels of care" (Jahn and De Brouwere 2001 p. 230)

The NCCEMD (2002) identified 41.5% of avoidable factors contributing to maternal deaths in the 1999–2001 triennium as being administrative, with a significant proportion of maternal deaths reflecting inadequacies in the foundational requirements for effective referral systems identified above by Murray *et al.* (2001). These included: transport problems between institutions (in 12.9% of assessable deaths); lack of intensive care facilities, lack of availability of blood for transfusions, drugs and laboratory facilities – all indicating poorly resourced referral centres (in 11.2% of assessable deaths); lack of appropriately trained personnel (in 22.3% of assessable deaths); communication problems (in 5.6% of assessable deaths). Thus 52% of administrative problems contributing to maternal deaths can be linked to poorly functioning referral systems.

The problem is compounded when recognising that 32.6% of patient related avoidable factors contributing to maternal deaths resulted from delay in seeking medical help, where lack of transport to access the care may have indeed caused the delay (NCCEMD 2002).

Thus a functioning and effective referral system is an important component in the delivery of quality maternity care.

### 4.3.2. Measuring the functionality and effectiveness of referral systems

Murray *et al.* (2001) propose a mixture of indicators that can be used at district level to monitor referral systems. These include some of the UNICEF/WHO/UNFPA (1997) indicators presented in Table 4.1. to monitor the quality of care. In addition Murray *et al.* (*Ibid.*) identify indicators intended to analyse whether patients are being managed at the appropriate level of care, and are being managed well.

Jahn and De Brouwere (2001) measure referral patterns through an analysis of district/Level 1 Hospital admissions. The analysis determines who referred the patient (self vs. institutional referrals), at what stage in pregnancy/delivery (antenatal, intrapartum or postpartum), and whether the referrals were elective or emergency referrals. They also present a model of the referral chain, but do not suggest measures to assess each component of their model.

Thaddeus and Maine (1994) suggest 'The three delays' model in analysing difficulties women have in accessing the appropriate level of care once there has been the onset of an obstetric complication. The first delay is in the decision to seek care, the second delay in identifying and reaching the appropriate facility, and the third delay in receiving adequate and appropriate treatment in the facility.

### 4.3.3. Critique of indicators proposed for use by the RHMTs

The RHMTs considered a number of measures to monitor the implementation of an effective referral system (See Chapter 4 Appendix 2D Table 4.2.9.). The measures proposed were influenced by the relative biases of hospital- and clinic/health centre-based workers. The emphasis of hospital-based workers was on measuring referral rates and on measuring whether referrals adhered to protocols of management. The aim of monitoring referral rates was to establish patterns of excessive referrals to what were perceived as already overburdened hospitals. Monitoring adherence to protocols of management aimed to ensure timely referrals for patients who should be managed at hospital level and to ensure the curbing of unnecessary referrals for patients whom the protocols stated could be managed at clinic/health centre level. The bias of the clinic-based workers was on communication – monitoring the proportion of referrals that receive feedback from the referral facility. Two indicators were finally agreed on:

- Percentage of referrals that adhere to protocols of management
- Percentage referrals that received feedback from the referral facility

Both indicators would need to be incorporated in the monthly audit process, which would require the participation of representatives from referring and referral facilities. As a pre-requisite for the first indicator to be measured, protocols of management would need to have been developed and distributed. For the second indicator to be measured, a feedback mechanism would need to have been established between referring and referral facilities. The forms presented in Table 3 in Chapter 4 Appendix 3E2 could be used to facilitate the monthly monitoring of these indicators.

Because these indicators were not actually measured, their critique is based on predicted advantages and disadvantages. These are discussed for both indicators together, as there would be similarities.

Adding the review of these indicators to the monthly audit process would: detect unnecessary or delayed referrals; detect correct referrals that were refused by the referral facility; strengthen knowledge and implementation of protocols of management, both for antenatal and intrapartum referrals; assist with the identification (and the addressing of) in-service training needs, particularly with regards to antenatal and intrapartum complications and emergencies, thus improving the quality of referral decisions; identify and deal with system issues that cause delays and poor feedback in the referral process.

The following pre-conditions would need to be met in order to maximise the value of monitoring these indicators: representatives of referring and referral facilities would need to participate in the review; the relationships between referring and referral facilities would need to be collegial and cordial; the doctor and midwife in-charge of maternity and the primary health care supervisor would need to review the referrals ahead of the audit meeting, in order to prepare a summary of the analysis of referrals, to detect emerging practice trends, and supervision and in-service training needs (general to all, and specific to individual, facilities); reliable communication mechanisms.

#### 4.3.4.1. Additional indicators for monitoring referral systems

Amongst the measures recommended in the literature (Murray *et al.* 2001 and Jahn and De Brouwere 2001), it may be useful to measure the appropriate use of District/Level 1 Hospitals and Level 2 Hospitals, by measuring the proportion of self-referrals arriving in normal labour, as a proportion of total deliveries in the referral facility. According to the policy in Limpopo Province, normal deliveries should be occurring in Health Centres (Nyathikazi, communication March 2004). Measurement of this indicator may contribute towards decisions about the organisation of services, either by increasing the number and distribution of Health Centres, or establishing a Basic EOC ward within a hospital. The appropriate use of facilities has both human resource planning and cost implications.

Murray *et al.* (2001) found some value in measuring intrapartum referral rates from clinics to District/Level 1 Hospitals. The benefits were mostly gained from comparing referral rates between clinics, and from analysing the variations in greater depth. They identified the variations as resulting from: "differences in population sector served, in workloads, in proximity to referral centre of ambulance depot, as well as staff factors such as experience and skill" (*Ibid.* p.357). They state that the interpretation of this indicator needs to be specific to the local context. For this reason the value of routine measurement of referral rates by RHMTs is questionable.

## 4.4. Support services

"Maternal haemorrhage consists of bleeding from the genital tract during pregnancy (antepartum), during or after delivery of the infant (intra- and postpartum). Although in developed countries antepartum haemorrhage is no longer a major cause of maternal mortality, it is still an important cause of maternal and perinatal morbidity. In contrast, postpartum haemorrhage continues to be a major cause of maternal death both in the developing as well as in the developed world (Abouzhar 2003 p. 5-6). Abouzhar states that although the formal definition of postpartum haemorrhage is blood loss of 500 ml or more within 24 hr after delivery and/or within 42 days following delivery, it is blood losses of 1000 ml or more that have greater clinical significance, as this leads to anaemia and clotting defects (*Ibid.)*.

Thus replacement of blood is a critical life saving emergency obstetric care function that needs to be available at the referral facility (Jahn and De Brouwere 2001). Emergency transport between health facilities is a critical support service function that facilitates access to life saving skills and procedures.

### 4.4.1. Rationale for measuring support services – the link between support services and the quality of care

The RHMTs reported that many maternal deaths in Limpopo Province occur because of delays in the response time of emergency services and a shortage of blood and blood products.

In the analysis of the maternal deaths due to haemorrhage, the National Committee for the Confidential Enquiries into Maternal Deaths (2002) found that delays in transport was associated directly in a significant proportion of maternal deaths. The problem of transport between

institutions contributed to 1 in 3 deaths due to postpartum haemorrhage and to 1 in 4 deaths due to antepartum haemorrhage. Thus they recommend that: "emergency transport facilities must be available for all women with complications (at any site)" (*Ibid.* p.18).

The Committee also recommends that "blood must be available at every institution where caesarean section is performed" as "the availability of emergency blood for women with obstetric haemorrhage is life saving. For a number of maternal deaths where blood transfusion was urgently required, it was not available. The excess of deaths at level 1 hospitals due to obstetric haemorrhage is in part due to the lack of blood availability" (*Ibid*. p.18).

### 4.4.2. Measuring support services

The availability/accessibility of emergency services is measured by the response time. The response time refers to the time from placing a call for emergency services to the time of arrival of the ambulance to the facility placing the request. The National Committee for the Confidential Enquiries into Maternal Deaths (2002) recommends that the time from call to arrival of ambulance at site be recorded (with the target specified that 50% of ambulances should arrive at the site within one hour of call, by December 2004).

With regards to the availability of blood, the National Committee for the Confidential Enquiries into Maternal Deaths (2002) suggests that monitoring occur of the percent of applicable institutions that have blood available (with the target of 100% by December 2004).

These are similar to the indicators selected in this study.

### 4.4.3. Critique of the indicators proposed in this study

In this study, the indicators selected to measure the availability of emergency services and blood include:

- Percentage facilities where the emergency response time is >1hour
- Proportion of facilities that have emergency blood (emergency blood is defined as Fresh Whole Blood)
- Proportion of facilities that have essential blood products (definition of blood products includes Frozen Dried Plasma, Packed Cells and Platelets)

#### 4.4.3.1. Percentage facilities where the emergency response time is >1hour

Facilities that are the furthest away from an ambulance depot experience the greatest difficulties in accessing emergency services and experience the longest delays in emergency response times. Measuring the facilities that experience delays of greater than one hour was felt to be an adequate measure, as this measure helps to identify the facilities that on the whole experience difficulties in accessing emergency services.

Within the facilities that report a response time greater than 1 hour, individual calls may be monitored prospectively to ascertain the actual response time for each call, analysing any difference between the times of day or week or month that the calls are made.

#### 4.4.3.2. Proportion of facilities that have emergency blood and blood products

The most critical blood products required to avoid maternal deaths are Fresh Whole Blood (FWB) and Frozen Dried Plasma (FDP). Packed cells are only needed in situations where there is an insufficient supply of FWB. If blood products are not available within a facility, they need to be easily accessible from a blood bank or from a neighbouring facility.

Two indicators were selected to measure the availability of blood, to distinguish between the availability of FWB and essential blood products. This helps to differentiate between those facilities that have no blood or blood products available versus those that have a limited availability.

### 4.4.4. Commentary on the measurement of the availability of support services in this study

#### 4.4.4.1. Availability of emergency services

The findings show that for the majority of Level 1 Hospitals, (12 out of the 15 that responded i.e. 80%) there is a response time of $\leq$ 1 hour. Three hospitals reported response times of between 2 hours and 7 hours. This shows that on the whole the Level 1 Hospitals that returned the Facility Review Form do not experience difficulties. The situation would need to be analysed more carefully for the three hospitals that reported delays in response time. The same applies to the Level 2 Hospitals that report response times of 2 hours.

Analyses that would need to be carried out include:

- A description of the time of the call (in the day, day of the week, time of the month)
- The location of the ambulance depot in relation to the Level 1 Hospital
- Reasons for the delay in response time (e.g. no emergency vehicle available; no emergency personnel available; emergency services attending to other calls; non-prioritisation of maternal complications etc.)
- Indications for emergency referral to the next level

Depending on the outcome of the analysis, appropriate interventions would then need to be designed.

#### 4.4.4.2. Availability of blood

The results showed a variable picture with regards to the availability of blood and blood products. It became evident which facilities have no blood or blood products. With regards to these facilities, the distance from the blood bank was established indicating which of these facilities potentially had immediate access to blood and blood products and which had no access. The findings also showed which hospitals had limited access to blood and blood products.

It would appear from the results that there is no immediately obvious rationale for the allocation of blood and blood products. Hospitals of similar size (with regards to the average number of deliveries conducted per month) had varying allocation with regards to the number of units of FWB and with regards to the allocation or not of Frozen Dried Plasma or Packed Cells. None of the Level 1 Hospitals had platelets. Distance from the blood bank also did not appear to be a factor in determining the allocation of the amount of blood stored in a hospital. The information produced by these indicators does appear to be useful for managers with regards to helping them review the situation and identifying facilities where the problem of non-availability is present.

## 4.5. Planning, organisation and coordination of facilities

"Antenatal care is one of the four pillars of safe motherhood, as formulated by the Maternal Health and Safe Motherhood Programme, Division of Family Health, of the World Health Organisation (WHO). The other three are family planning, clean/safe delivery, and essential obstetric care" (Bergsjo 2001, p. 36). Family planning services were not a focus of this study.

Clean/safe delivery and the availability of essential obstetric care were measured when assessing the quality of care and have already been discussed. This section discusses antenatal care, in particular the availability of high-risk antenatal care in Level 1 Hospitals.

Antenatal care attempts to ensure, through antenatal preparation, the best possible pregnancy outcome for women and their babies. The Department of Health (2002) has identified a list of pre-existing risk factors that it classifies as 'High Risk' and will require antenatal care and delivery at a hospital. It also identifies pre-existing risk factors of 'Intermediate Risk' that will require antenatal care at a health centre and delivery at a hospital. It lists risk factors that may arise during pregnancy that will require either non-urgent or urgent referral to hospital.

In many Level 1 Hospitals pregnant women, identified by clinic midwives as being at high risk and referred to the hospital for further management, are often seen in the general out patients department (OPD) by a doctor who may have limited obstetric experience (at times less than the clinic midwives referring the patient). The service should be organised so that a doctor/midwife with more advanced obstetric skills and experience, backed up by the appropriate resources, should provide high-risk antenatal care to the referred high-risk patient.

### 4.5.1. Rationale for measuring the availability of High-Risk Antenatal Care – the link with the quality of care

The RHMTs identified the poor provision of high-risk antenatal care as a contributory factor to the poor quality of maternal health care. In the literature, the evidence for the impact of antenatal care on maternal mortality, albeit high-risk antenatal care, is mixed.

In 1978 the WHO developed the "Risk Approach" to antenatal care, as a screening strategy to reduce maternal mortality. In this approach, women with the highest probability of suffering from abnormalities and complications during pregnancy or delivery are identified and referred for appropriate action to a hospital facility (Bergsjo 2001, Dujardin *et al.* 1995; Fortney 1995; Yuster 1995). The identification of risk may occur on admission to antenatal care and/or during the antenatal care period. On admission, the previous obstetric history is a better predictor of possible complications than demographic characteristics (Fortney 1995). During pregnancy, potentially life threatening conditions may arise (bleeding, spotting, hypertension, oedema,

proteinuria) which need to be dealt with or which are suggestive of the need for the mother to give birth in a hospital where there are resources to manage appropriately the possible sequelae of her condition (*Ibid.)*.

Fortney (1995) points out that "it is not uncommon for risk to be correctly identified and noted, but no action (or inappropriate action) follows" (*Ibid.* p.S53). Dujardin *et al.* (1995) described one of the factors that lead to inaction - the poor compliance with the referral decision that a woman should deliver in a hospital. They found that only 1 in 3 referred women actually complied with the referral decision to deliver in a hospital.

While the value of antenatal care is recognised for the individual clinical care of the pregnant woman who has medical complications, several authors have stressed the ineffectiveness of antenatal care as a public health measure in contexts where most women do not deliver in health facilities. In these instances, antenatal care as a screening mechanism is ineffective due to its low sensitivity and specificity (Fortney 1995; Yuster 1995; Vanneste 2000; Oakley 1984 and Maine *et al.* 1991 in Van Lerberghe and De Brouwere 2001; Bergsjo 2001). "No amount of screening will separate those women who will from those who will not need emergency medical care" (Maine *et al.* 1991 in Van Lerberghe and De Brouwere 2001, p. 25). The risk approach identifies a large number of high-risk women who will not go on to develop complications of emergencies. At the same time it misses an equal or greater number who will (Yuster 1995).

"The poor predictive value of risk factors and obstacles to follow-through with referral advice should not detract from the important role of antenatal care for important identification of complications, and as an important opportunity for providing information on danger signs and when and where to go should they appear. Complications such as high blood pressure, severe anaemia, malpresentation, cardiac disease, intrauterine growth retardation and HIV should be identified during antenatal visits. Equally important, the care providers can educate their clients to recognise danger signs, of those complications that are more likely to develop suddenly or when the health worker is not present, such as antepartum haemorrhage, postpartum haemorrhage and obstructed labour. However it is crucial to keep in mind that even early detection is helpful only when appropriate advice is given, the patient and the patient's family heed the advice, and services to treat the condition exist" (Yuster 1995 p.S61).

In summary: antenatal care needs to be available and accessible for all women, as does essential obstetric care, as it is not possible to predict which women will develop an obstetric complication or emergency. High-risk antenatal care at the Level 1 Hospital needs to be available and accessible for those women who have pre-existing high-risk factors, and for those that develop risk factors during pregnancy and require either urgent or non-urgent transfer to the Level 1 Hospital. The high-risk antenatal clinic needs to be staffed by skilled midwives and doctors who are backed up by an enabling practice environment (Maclean 2003).

### 4.5.2. Measuring the availability of high-risk antenatal care

Two approaches would measure the availability of high-risk antenatal care: the first (facility-based) would be to measure the provision and the organisation of high-risk antenatal care within the Level 1 Hospital to ensure that it is optimally responsive to the needs of women who are referred. Criteria that need to be met by the high-risk clinic are established and the presence of these criteria will indicate the provision of high-risk care.

The second (patient-based) would be to review the antenatal care records of women, to assess whether they had a pre-existing high-risk factor or had developed a high-risk factor during their pregnancy; and whether they had been referred to a high-risk antenatal clinic; and whether they had accessed high-risk antenatal care. Because risk factors may develop any time during the pregnancy, and because antenatal care records are patient-held, this measure would need to be taken at the time of delivery. This would exclude women who had received antenatal care (including high-risk antenatal care) but delivered at home.

### 4.5.3. Critique of measuring the availability of high-risk antenatal care in this study

Because the RHMTs had identified that there was inadequate provision of high-risk antenatal care at the referral hospital, the first measure was selected in this study. Of-course the provision of high-risk antenatal care does not ensure that midwives identify all women who have or develop high-risk factors, that they refer them, and that once referred pregnant women access the referral service.

### 4.5.4. Commentary on the outcomes of measuring the provision of high-risk antenatal care in this study

Of the hospitals that returned the Facility Review Form, it was found that the majority (75%) of Level 1 Hospitals do have a high-risk antenatal clinic, staffed by the doctor responsible for maternity and an experienced or advanced midwife. Typically urgent referrals are seen at any time. Non-urgent referrals would be seen on specific high-risk antenatal days, run either once or twice per week. Less typically, all high-risk referrals (including non-urgent) would be seen on any day. Typically the location of the high-risk antenatal clinic would be in the maternity unit. Less typically, it would be located in the OPD.

Of the hospitals that returned the Facility Review Form, four hospitals did not make provision for a high-risk antenatal care clinic. In two of these there was no maternity unit, nor dedicated maternity staff. Attention would need to be focused on the remaining two hospitals to assess and deal with the constraints they face in providing high-risk antenatal care. No conclusions may be drawn about the overall provision of high-risk antenatal care in the Province, as it may be possible that the hospitals that did not return the Facility Review Form do not make adequate provision for high-risk care.

## 4.6. Conclusions

4.6.1. It was important to identify the factors that influence the quality of care, as the provision of quality care is dependant on an 'enabling environment'.

4.6.2. The conceptual framework developed for this study accommodates and helps to categorise the major influencing factors identified by the RHMTs.

4.6.3. Many of the factors influencing the quality of care result from failures in the management of the health system. The most important management related factors identified by the RHMTs include:

4.6.3.1. Staffing shortages

4.6.3.2. Poor supervision

4.6.3.3. Poor provision of in-service training

4.6.3.4. Poor referral systems

4.6.3.5. Inadequate support services

4.6.3.6. Poor planning and co-ordination of health facilities

4.6.4. Baseline measurements of factors related to the management of the health system should be conducted at the same time as baseline measurements of the quality of care. This serves a dual purpose: firstly, to identify deficiencies in the management of the health system, so that these may be addressed; and secondly, to track changes (positive or negative) with regards to these factors, which will allow a comparison with the changes that are occurring in the quality of care (either positive or negative) to see whether the changes occur in the same direction.

4.6.5. The following conclusions are reached with regards to the measurement of the influencing factors:

4.6.5.1. Staffing: Although the RHMTs do not have authority to make staffing related decisions, they do need to monitor staffing situations and their influence on the quality of care. They do have a responsibility to report staffing issues, backed up by information, to institutional, district and provincial level managers who do have the authority to make staffing decisions. Thoroughly collected, analysed and well presented information should be a powerful advocacy tool for RHMTs to motivate for decisions that will change practices that affect staffing for maternity services.
The RHMTs need to monitor the availability of midwives, midwife workloads, the allocation of staff between institutions, rotation practices, and absenteeism rates.

With regards to the availability of staff, a suitable population-based measure would be the midwife-to-expected births ratio. The primary motive for monitoring this population-based measure of the availability of midwives would be to ensure that there is an equitable distribution of midwives between municipal areas within a district, and between districts within the province. Vacancy rates (i.e. the percentage vacant midwife posts) are an indicator of the retention and recruitment ability. Reasons for high vacancy rates need to be established and appropriate strategies implemented to correct these.

Event-based measures of workload are most appropriate and the measures suggested through this study are: the midwife-to-admissions ratio, the midwife-to-

discharge ratio and the midwife-to-delivery ratio. The first two can be measured for the maternity unit as a whole, while the last must be a measure of the midwives specifically allocated to the labour ward. In the absence of provincially and nationally declared standards of acceptable workloads, the 'average' for the province may be calculated, and units identified that fall below the average, that they may be targeted for immediate intervention to raise them to a level similar to other units in the province.

Analyses need to be conducted in the province with regards to the allocation of midwife, advanced midwife and medical posts per institution, to ensure that there is an equitable allocation of posts. The number of allocated posts would need to be compared to the number of beds (for an analysis of the maternity unit as a whole) and compared to the number of deliveries, with regards to midwife posts allocated specifically to labour ward.

The length of allocation of staff to units has been shown to be related to the quality of care provided, and thus length of allocation may be regarded as a proxy indicator of experience. Further analysis is required to establish the distribution of experienced staff across the shifts. Further analysis is also required to determine whether lengthy periods of allocation contribute to staff feeling less autonomous and 'burnt out'.

Absenteeism rates deserve to be measured, especially since high absenteeism rates may contribute to relative staff shortages and excessive workloads. Both unscheduled leave and the proportion of time spent on 'other activities' (administrative work, meetings, workshops) need to be monitored.

4.6.5.2. Supervision: The link between poor supervision and poor quality of care has been established by a number of authors. The assessment of supervision firstly needs to establish that supervision is indeed occurring on a regular basis. Secondly, it needs to establish that key supervisory activities are being performed. With regards to measuring the latter, the focus in this study was on measuring whether the principle

of double-checking is being implemented, and whether record reviews and service audits are being conducted.

4.6.5.3. Referral systems: The indicators proposed in this study to measure the referral process will need to be measured prospectively and would need to be incorporated in the audit process. These indicators are: the percentage of referrals that adhere to protocols of management; and the percentage of referrals that receive feedback from the referral facility. An additional indicator proposed in the literature that may be useful in Limpopo Province is to analyse the appropriate use of facilities (i.e. measuring the proportion of self-referrals who have a normal labour, as a proportion of total deliveries in Level 1 and Level 2 Hospitals. An analysis of these may well lead to the establishment of normal delivery units within these facilities, staffed solely by midwives, as opposed to requiring the attention of highly specialised staff who need to be released to deal with abnormalities, complications and emergencies.

4.6.5.4. Support services: the provision of skilled attendance at delivery, backed up by an effective referral system, has been shown to be critical for the reduction of maternal mortality rates. The main problem experienced by RHMTs was timely access to the higher-level referral facility because of the inadequate emergency services response time. Thus the need to measure emergency services as a key support service in the provision of quality maternal health care. The proportion of facilities that experience emergency services response times < 1 hour was used as an indicator of the ability to access the referral facility.

The replacement of blood loss is a life saving procedure for women who experience obstetric haemorrhage. Thus measuring and monitoring the availability of emergency blood (Fresh Whole Blood and blood products) was proposed as another important measure of the availability of support services.

4.6.5.5. Planning, organisation and coordination of facilities: the availability of Basic and Comprehensive Essential Obstetric Care was measured during the baseline assessment of the quality of care. The service should make provision for High Risk

antenatal care at the Level 1 Hospital, where skilled midwives and doctors will manage pregnant women who have pre-existing high risk factors, or who develop high risk factors during their pregnancy. Thus the measure: proportion of Level 1 Hospitals that have a High Risk ANC clinic.

# 5. A programme of intervention, with its monitoring and evaluation procedures, that will address the factors that influence the key issues

## 5.1. In service training

There is agreement that there should be provision for appropriate, regular in-service training for midwives and doctors in order to ensure that that they develop proficiency in emergency obstetric care skills (Walker 1992 p.S8; WHO/UNFPA/UNICEF/World Bank 1999). In a review of the literature aimed at identifying training strategies and projects that have been implemented to meet these training needs, Penny and Murray (2000) identify a number of approaches that have been adopted, both to teach, and to evaluate the effectiveness of such training.

Penny and Murray (*Ibid.*) identify that training must develop problem-solving, analytical skills as well as practical clinical skills. Competency-based approaches are effective for clinical skill development, as they place emphasis on hands-on repetitive practice. Training programmes that are problem-centred as opposed to subject-centred, assist with the development of problem-solving skills.

With regards to evaluating the effectiveness of training interventions, Penny and Murray (*Ibid.*) identify that the following approaches are used: learner assessments (measuring whether learner expectations have been met and the extent to which they feel comfortable in performing certain procedures, pre- and post-training); community assessments (through exit interviews of service users, monitoring their satisfaction with the service, pre- and post-training); trainer assessments of skill acquisition (through written examinations or practical tests, pre- and post-training); and proxy assessments for health outcomes. While the approaches mentioned seem to assess knowledge and skill, they do not seem to explicitly assess problem-solving and analytical skills.

## 5.2. Rationale: the link between in-service training and the quality of care

The Perinatal Education Programme (PEP) was developed in recognition of the need to improve the knowledge of midwives, particularly of those practicing in remote areas of South Africa, in order to reduce perinatal and maternal mortality rates (Theron 1999). The PEP is a self-directed, distance-education programme dealing with the common causes of maternal and perinatal death. It uses a problem-oriented approach and a question-and-answer method and is implemented in the work site of learners, with the assistance of a co-ordinator. The PEP has been recommended for national implementation in South Africa, and has been shown to improve the cognitive knowledge of midwives who have completed the course.

McDermott *et al.* (2001) compared two models of in-service training, which were evaluated according to knowledge, confidence in skills and skill assessment (testing skills essential to the prevention of perinatal and maternal mortality). The more intensive in-service training model achieved better results in all three areas. Elements in addition to the training that may have contributed to this success were the site preparation that occurred prior to the training, the higher volume of deliveries that occurred in these training sites, a number of supporting training activities of other members of the team, and a follow-up process. The internship model allowed midwives to work in the hospital under the guidance of a clinical instructor. There was some site preparation, but there were not all the components of the intensive in-service training model. Of concern in this study is that while all midwives trained showed improvements in all areas assessed, certain skills (bimanual uterine compression and neonatal resuscitation) still did not reach acceptable levels of skill in either model.

## 5.3. Commentary on the implementation of the in-service training intervention in this study

The studies quoted above (Theron 1999 and McDermott *et al.* 2001) have been implemented in relatively small areas of operation – involving three towns and three districts respectively. The study reported by McDermott *et al.* (2001) requires very intensive support and considerable back-up structures and processes in the health system to sustain the training inputs.

In Limpopo Province the challenge was to reach midwives and doctors throughout the whole province. Thus a train-the-trainer approach was used, with emphasis on developing analytical skills (through the analysis of cases) and on the protocols of management. There was recognition that the train-the-trainer model was inherently weakened by not being able to ascertain the level of competency of the trainers. Furthermore, full coverage of all health workers, and sustaining the in-service training by the RMTS were recognised as significant challenges. Therefore the facilitators proposed that in-service training and skill development is best integrated in routine quality assurance activities – supervision and audit of the service. The supervisor must be able to identify and address the training needs of the individual midwives under her supervision, and the district obstetrician must be able to identify and address the training needs of medical doctors in the Level 1 maternity units. It then becomes the responsibility of the district RHMT and the provincial MCWG Director to monitor that in-service training programmes are being implemented at the local level, and are dealing with priority conditions leading to perinatal and maternal mortality.

## 5.4. Supervision

A review of supervision and its relevance to quality of care has been presented in Section 4.2. Here is discussed the supervision intervention, and in particular the emphasis placed on double-checking and the review of records.

In the development of the job description, RHMTs described double-checking as the responsibility of the supervisor in charge of a shift. Double-checking was defined as the routine review of the findings for a patient at key stages in the care of that patient, by the supervisor or someone more experienced. In antenatal care, the key stages were identified as the 1st ANC visit, to double-check the plan for the care of the pregnancy, and the 36th week visit, to double-check the plan for delivery. During the labour the key stages were identified as the admission examination, and every 4 hours (during the conduct of ward rounds).

The review of records was described as the responsibility of the unit manager and required that she review 20 records per month (i.e. 5 ANC records per week in the case of a clinic manager, or 5 labour records per week for the maternity unit manager). These records were to be randomly selected, and the checklists used to monitor their completeness.

### 5.4.1. Rationale: Link between record reviews and double-checking and the quality of care

#### 5.4.1.1. Double-checking

The recommendation for double-checking arose from the facilitators, as a strategy to counteract missed opportunities and substandard care, reported in the Saving Mothers report (NCCEMD 2002), and observed in the perinatal review meetings conducted in the workshops. It was proposed as an opportunity for the more senior/experienced practitioner to identify anything that had been missed in the examination of the woman and to double-check the accuracy of interpretations and the appropriateness of the management plan.

#### 5.4.1.2. Record reviews

The National Committee for the Confidential Enquiries into Maternal Deaths found that in just under three quarters of maternal deaths at the primary level there was evidence of substandard care by health providers (NCCEMD 2002). Both the ANC record and the record of labour used in Limpopo Province are structured so that they prompt the health worker with regards to the important items that need to be assessed and recorded during antenatal and perinatal care respectively. "When completed properly, the obstetric record should provide valuable information for early detection of problems during pregnancy, labour delivery and the puerperium that might threaten the lives of both mother and baby" (Fako *et al.* 2004).

The ANC record and the labour record are evidence of the care the woman received, and it may be said that if something was not recorded, then it was not done. Thus a record review constitutes an appraisal of the care that the woman received.

The NCCEMD (2002) has endorsed record reviews by including in one of its ten key recommendations that "correct use of the partogram should become the norm in each institution conducting births. A quality assurance programme should be implemented, using an appropriate tool" (*Ibid.* p.19), and it refers readers to the tools included in the Saving Babies Report 2001, which are early versions of the ANC and labour record review checklists developed by the facilitators.

## 5.4.2. Commentary on the implementation of the intervention

### 5.4.2.1. Double-checking

In the previous section, it was reported that only 20% of Level 1 Hospitals always double-check the findings on admission, and 10% always double-check the findings 4-hourly. The remainder reported that they only sometimes double-check, both on admission and 4-hourly. With regards to percentage of patients whose findings were double-checked, the labour record reviews reveal that 38% of records were double-checked on admission and 39% 4-hourly. 33% of ANC records were double-checked. The RHMTs attributed the incomplete implementation of double-checking to staff shortages, questioning the practical viability of this intervention. The value of double-checking does need to still be tested empirically, with regards to its effectiveness to reduce missed opportunities and substandard care.

### 5.4.2.2. Record reviews

The checklist for the ANC record review allows for the monitoring of the completeness of each of three categories: the history taking, the physical examination (including laboratory examinations) and the interpretations and decisions regarding the further management of the pregnancy. The labour record review allows for monitoring the completeness of the admission assessment, the labour graph, the record of management of the labour, the assessment of the newborn and the final summary of labour.

In addition both checklists permit the monitoring of individual items in each of the categories mentioned. The supervisors, identifying the weak categories and individual items, are able to identify appropriate corrective actions, whether intervention is required in the health system, or where support, mentoring and further training are required. For example: the category that scored most poorly both in the ANC and labour record was the one pertaining to interpretations and decision-making on management. This indicates that midwives are good at recording findings, but are not interpreting the findings to develop an appropriate management plan. This may be as a result of a tradition where midwives record and doctors make decisions, or it may be a reflection of the lack of competency to interpret, diagnose and take appropriate action. If as a result of the first, the supervisor will need to convene a team meeting where the role of the midwife is discussed and agreed on by all members of the team. If as result of the lack of skill, then the supervisor will teach and mentor. Another example may be drawn from the analysis of

individual items. In the ANC record review, items that commonly scored poorly in the examination category included the recording of blood results. This may well be an indication of malfunctioning on-site blood testing equipment, or poor support from, or poor communication with, the laboratory service to which the blood samples are sent. The identification of this weakness in the record review will lead the supervisor to uncover the reasons and will lead to appropriate corrective action to ensure that the problems do not recur.

While the tools are perceived to be valuable[7] supervisory tools, of concern is that record reviews were not fully 'institutionalised'. Clinic supervisors conducted ANC record reviews very sporadically. Labour ward supervisors in only 10% of hospitals seem to have seriously implemented labour record reviews, while 50% implemented them half the time. The major reason provided by the RHMTs for incomplete implementation was again attributed to shortages of staff, necessitating to an even greater extent the measurement of the staffing indicators.

## 5.5. Audit of the service

Clinical audit has been defined as the retrospective scrutiny of clinical events aimed at detecting mismanagement and at avoiding the adverse outcomes of clinical management; as action-orientated research, aimed at putting findings into operation in order to correct mismanagement and to improve norms, with a focus on avoidability issues (Bergstrom 2001). Crombie *et al.* (1997 in Ronsmans 2001 p. 208) defines audit as "the systematic and critical analysis of the quality of medical care, including the procedures used for diagnosis and treatment, the use of resources and the resulting outcome and quality of life for the patient". The ultimate purpose of audit is to optimise clinical performance and provide the best possible service to patients (Ronsmans 2001).

Ronsmans (*Ibid*.) describes the audit cycle, which starts with the review of current practice, setting standards against which the practice is compared, identify deficiencies and implement changes to improve the provision of care.

In reviewing current practice, audit in maternal health services has usually focused on the review of death events, or severe morbidity. Audit can also be applied to review 'near miss' events

[7] The value of the checklist in improving the quality of supervision, and thus the quality of care still needs to be tested empirically. A study to this end is being implemented between January 2005 and April 2006 in KwaZulu-Natal.

(where mortality and morbidity were only just avoided), ward routines, adherence to protocols of management, timeliness of interventions, appropriateness of referral, availability of essential facilities, equipment, drugs and supplies, attitudes of staff and patient-provider relationships (Bergstrom 2001; Ronsmans 2001). "Perinatal audit should not imply only the identification of mismanagement, but also the identification and appreciation of good and laudable perinatal management" (Bergstrom 2001 p.43). Thus Bergstrom (*Ibid.*) advocates for the term 'perinatal care audit' as opposed to 'perinatal mortality audit'.

Ronsmans (2001) states that audit crosses professional boundaries, and includes the involvement of a wide range of professionals who influence the quality of care provided: doctors, midwives, social workers, and administrators.

Bergstrom (2001) stresses the importance of quality information for a successful audit: "A complete and high-quality data collection procedure on a daily basis is *sine qua non* for a successful perinatal audit. The daily collection activities should be followed by regular (weekly or fortnightly) summaries of data for careful case-by-case scrutiny aiming at avoidability analyses. If these audit sessions are too infrequent, the staff involved tend to forget about details, findings and circumstances important for the correct interpretation of the events … although a responsible individual could prepare these steps in the audit procedure, the proper avoidability discussion should follow from a plenary discussion involving all health staff" (*Ibid.* p41).

Bergstrom (2001) lists further requirements for successful perinatal audit:

- An emphasis on local control i.e. carried out as an internal activity
- A non-threatening atmosphere
- The setting of ambitious but achievable objectives to improve the quality of care
- Competent chairperson who can listen and hear the concerns of all members of the team, can encourage the participation of all involved, can summarise progress, identify similarities and compromises during disagreements, mediate between those with different perspectives, and relieve tensions when they arise.

Bergstrom (2001) identifies that a good audit is dependant on a competent perinatal team, and requires the contribution of skilled team leaders.

### 5.5.1. Rationale: the link between audit and the quality of care

Many authors advocate the use of audit to monitor and improve the quality of maternal health care (De Bernis 2003; Bergstrom 2001; Wilkinson 1995; Bhatt 1989). Ronsmans (2001) points out that, while audit has become part of routine practice, and although conducting audits is all about improving the quality of care, there is little evidence about the effectiveness of audit actually bringing about change, contributing to improvements in the quality of care, and ultimately leading to improved perinatal outcomes. The lack of evidence pertains to the difficulties of measuring changes and attributing these to audits. The measurement difficulties lie in the variety of approaches to audit, and that audits are highly context specific, making it difficult to extrapolate findings to other settings. Furthermore, where beneficial effects of audit have been shown, these have been small, making the evaluation of audit very difficult, as small effects would take large and costly trials to prove that they are due to the intervention (*Ibid.*).

"The lack of evidence that medical audit can be effective should not necessarily be taken to prove that audit does not work however. Audit can never be the sole stimulus to change as it acts alongside other educational initiatives. Ongoing critical enquiries into the quality of care of maternity services are important, as they are an expression of the continuous improvement of such services. This is particularly relevant for obstetric facilities in developing countries, where there is increasing evidence that the services offered fall short of acceptable standards" (*Ibid.* p.222)

### 5.5.2. Commentary of the 'audit' intervention as implemented in this study

#### 5.5.2.1. The components of perinatal audit

The components of perinatal audit, as presented in this study (see Chapter 4 Appendix 3E-1), take cognisance that perinatal audit is an ongoing, participative process, fulfilling many purposes. Firstly, the practitioners involved in providing the care in the case study under review, ensure that the documentation is complete. This is done as soon as possible after the event leading to mortality or morbidity, but at least within 24 hours, to ensure that important information is not forgotten. It was important to point out to the RHMTs that this did not involve changing the recordings that had been made during the management of the patient, but against the date of the review, recording additional information and comments, that would be of assistance when the

record would be reviewed with the purpose of attributing causes of death and identifying avoidable factors.

Secondly, the leaders of the maternity unit (the doctor in-charge and the midwife in-charge) and the person responsible for collating the monthly statistics discuss each fetal/neonatal and maternal death, with a view to identifying the primary and final causes of death, and the avoidable factors (health worker, patient or administrative related factors). This ensures an in-depth analysis of each death, leads to the identification of problems contributing to the death, and assists with identifying actions that require implementation, to prevent a death for similar reasons occurring in the future. This step is the essence of a thorough perinatal review.

Thirdly, the above summary and the monthly statistics are presented to the monthly perinatal review meeting, which is attended by all available doctors and midwives (hospital and clinic-based). This feedback is important in ensuring accountability in the service. In addition this meeting provides the opportunity to discuss the avoidable factors, and enables the development of plans for the implementation of corrective actions, whether these need to take place within the hospital or within the clinics.

Fourthly, capturing and analysing all information arising from the perinatal audit in the PPIP (Perinatal Problem Identification Programme) allows for an epidemiological analysis of trends, both with regards to the causes of death and the avoidable factors.

It is a thorough process, supporting Bergstrom' s (2001) requirements for successful audit.

#### 5.5.2.2. Guidelines for preparing for perinatal review meetings

The guidelines for preparing for perinatal review meetings built on the process described above were developed with the purpose of ensuring that the perinatal review meeting is of high standard, enables accountable feedback, and becomes an effective educational experience. To this end, in addition to reviewing clinical events, RHMTs were also encouraged to review the indications for referral from one level to the next, compared against the protocols of management, and to report on the results of the record reviews and the deficiencies noted in recordings.

The forms developed to assist the RHMTs with compiling all the information required in the perinatal review meeting, were adapted from forms already in use, in an attempt to reinforce their usage.

#### 5.5.2.3. The perinatal audit checklist

The perinatal audit checklist is a useful monitoring tool to establish: whether the audit is indeed occurring; which components of the audit are being implemented; what are the gaps hindering successful audit (with particular emphasis on the inclusiveness of the audit, with regards to participation of all role players and the analysis of community-, clinic- and hospital-based data); and whether corrective actions are being identified and communicated to relevant stakeholders.

It was interesting to note that in many instances, the statistics were recorded in the PPIP without other components of the audit having been carried out. This is probably a reflection of an intensive drive to encourage the use of the PPIP prior to the start of this study. So it is encouraging to note that capturing information in the PPIP has become 'ritualised' in Limpopo Province. There is deep concern however about the quality of information that is being captured outside of a full, formally conducted, and participative audit.

#### 5.5.2.4. Reflections arising from the perinatal review meetings

Facilitators had an opportunity to observe and facilitate at least two perinatal review meetings each month, for the duration of the study. The lack of skilled and competent leadership to assist in the perinatal audit process in level 1 Hospitals was sorely felt, compromising the quality of the audit. Due to incomplete documentation, to poor interpretation of documentation, and to poor analysis of the deaths, incorrect causes of death were identified, and inappropriate avoidable factors were identified in many of the fetal/neonatal and maternal deaths. In some cases, it was not possible to establish a cause of death.

This begged the question if one of the roles of the district obstetrician should not be to facilitate the perinatal audit process in the Level 1 Hospitals in its catchment area. This would contribute to a more thorough review of perinatal care, consolidate the use of protocols of management in the district and ensure a more satisfying educational experience for those attending the perinatal review meeting.

## 5.6. Referral system

A discussion on referral systems and the link with quality of care has been presented in Section 4.3. Here is discussed the intervention implemented to improve referral systems. The focus of the intervention was to facilitate the referrals between the levels of care. To this end an emphasis was placed on developing protocols of management guiding practitioners on when to refer patients to the next level of care in their management of the patient, and on developing principles to ensure effective transfer between the levels of care.

### 5.6.1. Rationale: link between referral guidelines and quality of care

From the review of maternal deaths conducted by the National Committee on Confidential Enquiries into Maternal Death (2002), it became evident that many health workers are not following standard protocols in the management of the major conditions causing maternal deaths. The Committee thus recommended that the guidelines that had been developed by the Department of Health (2002) should be displayed and used in all institutions where women deliver (NCCEMD 2002). The committee lists the most important protocols that need to be displayed: hypertension, obstetric haemorrhage, septic abortion, puerperal sepsis, HIV/AIDS and resuscitation (*Ibid.*).

The first intervention in this study, with regards to referral systems, was to develop a set of clinical protocols of management. Throughout the intervention period, during the in-service training activities and the perinatal review meetings, protocols for managing the major obstetric complications and emergencies were developed. These were based on the national Guidelines for Maternity Care in South Africa (2002). Developing protocols of management was intended to bring together all providers (clinic, Level 1 Hospital and Level 2 Hospital) to discuss and agree upon protocols of management for each district, in order to:

- Describe in detail the care to be provided at each level of the health system, for the listed obstetric complication and emergencies
- Provide a guide with regards to the skills, equipment and drug supplies required at each level of care, in order to implement the protocols of management for that level of care.
- Where the context did not support the implementation of the guidelines (because the necessary skills, equipment and drugs were not available or not adequate) then either to implement an agreed upon strategy to ensure improvements in the situation, so that the

protocols could be adhered to, or to modify the protocols of management so that there would be agreed upon modified criteria for referral to accommodate the local context.

Agreed upon protocols that were officially signed by the district obstetrician, would then be distributed and displayed in all facilities. This was intended to eliminate the *ad hoc* acceptance or rejection of referred patients by the referral facility, and to minimise inappropriate referrals from the referring facilities and ensure that patients received the care they required, at the correct level and during transfer.

### 5.6.2. Commentary on the implementation of the referral system intervention

The RHMT is an ideal structure to facilitate the development, adoption, publicising and training in, the protocols of management applicable to all the (referring and referral) facilities in a specific geographic area. And yet the development of agreed upon protocols was implemented seriously by only some RHMTs. Problems with regards to delays in referrals and refusal to accept referrals were still being reported regularly, which prompted the development of further guidelines/principles for effective referrals. These principles were developed for referrals between levels of care and for referrals within a facility (see Chapter 4 Appendix 3F-1). The principles developed pertained to protocols of management, communication requirements for effective referral, the consultation and documentation that is needed on referral, transport requirements, the requirements in managing the patient and principles in monitoring and evaluating the referral system.

The subsequent qualitative monitoring of referrals revealed that many problems affecting referrals persisted, and that the implementation of the principles was incomplete. Incomplete implementation was attributed to staffing shortages, which kept practitioners in their clinical settings, unable to take time out to meet and develop protocols of management, and to address the interpersonal issues affecting the efficiency and effectiveness of referrals.

An important role of the RHMTs must then be to hold all practitioners accountable to the protocols of management and to the principles for effective referrals. The RHMTs need to have the

authority to fulfil this role, and by virtue of their composition (inclusive of midwives and doctors in charge and of clinic supervisors) this authority should easily be claimed by the RHMTs.

## 5.7. Conclusions

### 5.7.1. In-service training intervention

5.7.1.1. Regular in-service training activities must be implemented to ensure that the skills to deal with the major causes of perinatal and maternal death are developed and maintained.

5.7.1.2. In addition to developing practical, clinical skills, training programmes must also aim to develop analytical and problem-solving skills. The evaluation of the training must evaluate the extent to which each of these dimensions has been developed.

5.7.1.3. The content of training needs to conform to, and needs to reinforce, protocols of management.

5.7.1.4. To be effective, in-service training programmes require the support of functioning and fully equipped facilities, and the opportunity to implement the skills often.

5.7.1.5. Most in-service training programmes that have been shown to be successful have been implemented on a small scale. Their effectiveness in reaching greater coverage, and their sustainability has not been proven.

5.7.1.6. Regular in-service training is best done as part of routine quality assurance activities – supervision and audit of the service. Thus greater effort needs to be invested in developing supervisors who are able to identify and address the training needs of individual midwives and under their supervision. District Obstetrician need to take responsibility for identifying and addressing the training needs of individual medical doctors in the Level 1 maternity units.

5.7.1.7. The role of the district RHMT and the provincial MCWH Director is to ensure that supervisory activities and service audits are indeed assessing and addressing staff competency development needs.

### 5.7.2. Supervision

5.7.2.1. Supervision is happening very irregularly, in the clinics, in Level 1 and in Level 2 maternity units.

5.7.2.2. As a supervisory activity, double-checking has the potential to minimise missed opportunities and substandard care, but this needs to be tested empirically.

5.7.2.3. The checklists to assist with the review of ANC records and labour records are very useful supervisory tools: they assist with monitoring the overall completeness of the records, and in addition they help to identify which items in the records are poorly recorded. In response to the identified weaknesses, supervisors can introduce targeted interventions (e.g. in-service training). With regular review of the records trends and progress made with regards to record keeping may be tracked.

5.7.2.4. The reason given for the incomplete implementation of the supervisory activities was attributed to staffing shortages. This reason does need to be investigated more thoroughly, firstly through the measurement of indicators proposed in this study, and secondly, if necessary, with on-site observations in those facilities that have not implemented any supervision, as there may be other underlying factors contributing to the lack of implementation

### 5.7.3. Audit of the service

5.7.3.1. Despite the lack of evidence with regards to the effectiveness of service audits, this is largely due to measurement difficulties, as opposed to the lack of usefulness of audit. Perinatal care audit does need to conducted regularly, and all components of audit described need to be attended to in order to ensure that a good quality audit is implemented.

5.7.3.2. The perinatal audit checklist is a useful tool to establish where perinatal care audit is not occurring, or where it is being implemented incompletely. It also provides an indication as to the quality of the audit.

5.7.3.3. The greatest concern with regards to conducting perinatal care audits is to ensure that a quality audit is being conducted. The lack of skilled and competent leadership at Level 1 Hospitals to assist with the audit is of great concern. The district obstetrician should become responsible for facilitating perinatal review meetings in each of the municipalities in the district. This will ensure a quality audit, will provide opportunities for training and will reinforce adherence to protocols of management.

### 5.7.4. Referral system

5.7.4.1. It was appropriate to emphasise the development, publication and adherence to protocols of management, and to use these to establish what care should be provided at

what level, and at what stage does the patient need to be referred to the next level of care.

5.7.4.2. The principles and guidelines for effective referral were basic reminders as to what would facilitate the referral of a patient from one level to the next.

## 6. Conclusion

This chapter has discussed:

- The concept of the RHMT and its relevance to the management of maternal health services at primary level
- The indicators and method for assessing the quality of maternal health care at primary level; the application of these to conducting a baseline assessment of the quality of maternal health care in Limpopo Province; and the outcomes of the baseline assessment
- The factors that were identified as influencing the quality of maternal health care; the indicators and method for measuring them; and the outcomes of measuring them in Limpopo Province
- The interventions that were implemented by the RHMTs to improve the quality of maternal health care; the tools for monitoring the interventions; and the outcomes from using these monitoring tools.

The discussion on each was concluded with final reflections that need to be considered when replicating the model in other provinces. The following chapter draws these together into a list of recommendations.

Chapter
6

# Recommendations

## 1. Introduction

The overall aim of the study was to develop a useable and replicable model of intervention with Reproductive Health Management Teams (RHMTS) at municipal and district level that would lead to improvements in the quality of maternal health care at the primary level. In this chapter are presented the recommendations that arise from the study with regards to replicating the intervention programme in other provinces. This fulfils the requirement of the fourth study objective and its research question, which was:

What has been learned from this study that can be applied to other provinces, with regards to:

a) Conducting a baseline assessment of the quality of care
b) Identifying and measuring factors that influence the quality of care
c) Implementing, monitoring and evaluating a programme of intervention that will address the factors that influence the quality of care

Because it emerged from this study that the success of the model hinges on the functionality of the RHMTs, this section begins with the recommendations that pertain to the RHMTs.

## 2. Recommendations with regards to the RHMTs

2.1. The concept of the RHMT is relevant for the management of reproductive health services at municipal and district level. The concept of the RHMT promotes the principle of integration in management and service delivery.

2.2. RHMTs need to be established at both municipal and district level. The municipal RHMT would be responsible for reproductive health services in an operational area, inclusive of the Level 1 Hospitals, health centres and clinics in a municipality. The district RHMT would

be responsible for reproductive health services in the district (which represents the most peripheral administrative unit in the health system), and would include representatives from the municipal RHMTs, the District Obstetrician and Midwife-in-Charge of the Level 2 Hospital in the District, and the representative from the District Health Management Team (DHMT) responsible for Maternal, Child and Woman's Health (MCWH) in the district. The latter will ensure an accountable link between the RHMTs and the DHMT.

2.3. The delegation of programme planning, monitoring and evaluation to RHMTs is in keeping with the decentralisation policies of the South African health system. In order for RHMTs to fully implement these responsibilities, representation on the RHMTs should be through the appointed managers/supervisors (e.g. the unit manager of the maternity unit, the PHC supervisor responsible for the clinics, the doctor in-charge of maternity) who would ordinarily be called on to oversee reproductive health care services.

2.4. Also, for RHMTs to fulfil their responsibilities fully they need additional skills, which include leadership, managerial and public health skills. A plan needs to be developed to enable RHMTs to develop these skills.

2.5. RHMTs can implement their management responsibilities fully if mandated to do so by the DHMT and institutional managers, and if they have the support of the full range of provincial level managers. The Provincial MCWH Directorate has a particular responsibility in ensuring that the mandate has been negotiated and accepted at all levels of the health system.

2.6. The leader of the RHMT needs to be carefully selected and provided with full support to implement changes to improve the quality of reproductive care. The nature of the support may include leadership training, supportive organisational processes or mentoring to deal with unique conflict situations.

## 3. Recommendations with regards to conducting the baseline assessment

3.1. The conceptual framework developed for this study provides a useful guide to consider all the dimensions that may have an impact on the quality of care.

3.2. When conducting a baseline assessment, this needs to include a baseline measurement and a comparison against norms and targets for the following dimensions of quality:

- The health status of mother and baby. The most appropriate measures for this include the perinatal and mortality rate, the percentage of deaths that are due to avoidable causes, and the perinatal care index.
- The availability, functionality and distribution of basic and comprehensive essential obstetric care facilities and high-risk antenatal care (ANC) clinics. The availability and distribution of facilities is best measured at provincial level. The functionality needs to be monitored at municipal and district level, with feedback to the provincial level (e.g. in the instance where a theatre is not functional because of a department of works responsibility)
- The utilisation of the service by the target users. This should include measures of coverage for ANC, institutional deliveries, and obstetric complications and emergencies. Utilisation patterns of women with regards to when they initiate ANC and when they seek admission to labour ward also need to be monitored, as late initiation of ANC and delayed admission to labour wards have been identified as factors contributing to avoidable perinatal and maternal deaths.
- The performance of essential activities and procedures. Indicators selected reflect whether there is adequate laboratory and emergency support and whether caesarean sections are being performed.
- The quality of service provision. Highly recommended indicators are those that measure the quality of recordings in ANC and in labour. For meaningful information to be obtained for the other indicators used in this study (waiting time for the commencement of emergency caesarean section, case fatality rate and anaesthetic death rate), the quality of recording and documentation needs to improve considerably.

3.3. Conducting a baseline assessment is a good introduction for the RHMTs to their management responsibilities, and alerts them to problems they may have otherwise been unaware of. With careful planning of resources, the baseline assessment may be implemented part-time within a relatively short period of time.

3.4. The baseline assessment must be integrated with interventions to improve the information system for reproductive health services.

## 4. Recommendations with regards to identifying and measuring factors that influence the quality of care

4.1. Quality of care can only be provided within an enabling environment that includes supportive health policies, effective organisation and management of the health system, committed and skilled providers and users that engage in positive health promoting and seeking behaviours. The conceptual framework accommodates and helps to categorise the major factors that influence the quality of care.

4.2. Significant influence on the quality of care is exerted through how the health system is organised and managed – at institutional, district and provincial level. The most important management related factors that influence the quality of care are – staffing shortages, poor supervision, poor provision of in-service training, poor referral systems, inadequate support services and the poor planning and organisation of health facilities. Baseline measurements of these factors should be conducted at the same time as baseline assessments of the quality of care.

4.3. The following factors need to be measured, utilising indicators recommended through the study:

- Although RHMTs would not have the authority to make many staffing related decisions, they do need to monitor staffing situations and their influence on quality of care in order to advocate for quality improvements. Staffing situations also impact on the ability of the RHMTs to implement interventions to improve the quality of care, so it is recommended that the following are measured: the availability of midwives and doctors, midwife workloads, the allocation of staff between institutions, rotation practices, and absenteeism rates.
- Measures of supervision need to establish whether supervision is indeed occurring and whether key supervisory activities are being implemented, particularly with regards to record reviews.
- Measures of the effectiveness of the referral system need to be made prospectively and are best done through the regular perinatal care audit. This will include an assessment of the proportion of referrals that adhere to the protocols of management and the proportion of referrals that have received feedback from the referral facility.
- The responsiveness of emergency services and the availability of blood transfusion services.

- The provision of a high-risk ANC services

## 5. Recommendations with regards to the intervention strategies

5.1. Interventions are required at all levels of the health system in order to improve the quality of care. It is recommended that RHMTs deal with issues that fall within their area of influence. Included are: the provision of in-service training, implementation of effective supervision, audit of the service, and the interventions aimed at improving the referral system. District and provincial level managers need to implement interventions that will improve the availability, functionality and distribution of ANC and essential obstetric care services, the availability and distribution of staff, and the availability and distribution of emergency services and blood transfusion services.

5.2. With regards to in-service training, it is recommended that in-service training activities should aim to develop both analytical and clinical skills, and that the skill development should occur within the context of routine quality assurance activities, particularly supervision and perinatal care audit. There may be need for very specific targeted workshops to develop clinical and practical skills. To be effective the content of training needs to conform to, and needs to reinforce, protocols of management and needs to be backed-up by an enabling environment in which skills may be implemented (i.e. functioning and fully equipped facilities). Local in-service training activities require the support of the district RHMT, the District Obstetrician and the provincial MCWH Director.

5.3. With regards to supervision, the checklists developed to monitor the quality of record keeping in ANC and in labour are useful supervisory tools. It is recommended that they be used to assist with monitoring the overall completeness of the records, but also in order to identify which are the individual items that are scoring most poorly and the reasons for this, so that the supervisor may implement suitable corrective actions.

5.4. It is recommended that all the components of perinatal care audit developed in this study be implemented to ensure the quality of the audit. It is also recommended that the District Obstetrician take particular responsibility for facilitating and providing leadership to the perinatal audits conducted within each of the municipalities in the district. The perinatal

audit checklist is a useful tool to monitor where perinatal care audits are not occurring and provides an indication as to the quality of audit being conducted.

5.5. Effective referral systems hinge on the adherence to protocols of management and on the implementation of basic principles that facilitate the transfer of the patient from one level of care to the next.

## 6. Conclusion

The model to improve the quality of maternal health care developed in Limpopo Province is possible to implement within the context of health services in South Africa. A limiting factor to full implementation may well be staffing shortages, although this study did not set out to establish the degree of influence that staffing shortages do actually exert. The real challenge to full implementation, however, lies in the ability of managers at different levels to work together to support quality service delivery, and for providers to deliver an integrated, comprehensive service to pregnant women. Municipal and district level Reproductive Health Management Teams, with a full mandate and good leadership, managerial, clinical and public health skills, have the potential to address the most critical factors at the local level that are influencing the quality of care.

# References


- AbouZhar C (1998) Maternal mortality overview. *In:* Graham *et al.* (2001) Can Skilled attendance at delivery reduce maternal mortality in developing countries? Studies in Health Service Organisation and Policy Vol.17 pp.97-130
- Abouzhar C (2003) Global burden of maternal death and disability British Medical Bulletin Vol.67 pp.1-11
- Acharya LB and Cleland J (2000) Maternal and child health services in rural Nepal: does access or quality matter? Health Policy and Planning Vol. 15(2) pp.223-229
- Adar J and Stevens M (2000) Women's Health. Chapter 21 *In:* South African Health Review 2000. Health System Trust, Durban.
- Adeyi O and Morrow R (1996) Concepts and methods for assessing the quality of essential obstetric care. International Journal of Health and Planning and Management Vol.11 pp. 119-134
- Adomat R and Hicks C (2003) Measuring nursing workload in intensive care: an observational study using closed circuit video cameras. Journal of Advanced Nursing Vol.42 pp.402-412
- AHA News (2004) Nurse recruitment push brings big changes. News article.
- Aiken LH Clarke SP Sloane DM Sochlaski J Silber JH (2002) Hospital nurse staffing and patient mortality, nurse burnout and job dissatisfaction. Journal of the American Medical Association Vol. 288 pp.1987-1933
- Ande B. Chiwuzie W. Akpala W. et al (1997) Improving obstetric care at the district hospital, Epkoma, Nigeria. International Journal of Gynaecology and Obstetrics Vol. 59 Supplement 2 S47-S53
- Argyris C and Schon DA (1974) Theory in Practice: Increasing professional effectiveness Jossey-Bass, San Francisco
- Ashcroft B. Elstein M Boreham N Holm S. (2003) Prospective semi-structured observational study to identify risk attributable to staff deployment, training, and updating opportunities for midwives. British Medical Journal Vol.327 pp.584-588. Downloaded on 17 December 2004 from: http://bmj.bmjjournals.com/cgi/reprintform

- Atencio BL. Cohen J and Gorenberg B (2003) Nurse retention: is it worth it? Nursing Economics Vol. 21(6) P262-269
- Badger TG (2000) Action research, change and methodological rigour. Journal of Nursing Management Vol. 8 (4) pp.201-208
- Bamford L. Klein B and Engelbrecht B (2000) How to monitor and address absenteeism in District Hospitals. Kwik-Skwiz #25 Initiative for Sub-District Support, Health Systems Trust. Durban.
- Barron P and Asia B (2001) The District Health System. Chapter 2 *In:* South African Health Review 2001 Health Systems Trust.
- Baum (1995) Researching public health: Behind the qualitative-quantitative methodological debate. Social Science and Medicine Vol.40 (4) pp.459-468
- Bergman N (2003) The nursing crisis: projections and possible responses. Presentation to The 22nd Conference on Priorities in Perinatal Care in South Africa.
- Berggren I Severnsson E (2003) Nurse supervisors' actions in relation to their decision-making style and ethical approach to supervision. Jouranl of Advanced Nursing Vol. 41 pp.615-622
- Bergsjo P (2001) What is the evidence for the role of antenatal care strategies in the reduction of maternal mortlity and morbidity? Studies in Health Services Organisation and Planning Vol.17 pp.35- 54
- Bergstrom S (2001) Quality and audit of maternity care. Chapter 3 *In*: Maternity care in developing countries. Edited by: Lawson JB Harrison KA and Bergstrom S. RCOG Press, London.
- Bergstrom S (2001) Quality and audit of maternity care. Chapter 3 In: Maternity Care in Developing Countries. Edited by Lawson JB Harrison KA Bergstrom S. RCOG press.
- Bergstrom S and Goodburn E (2001) The role of traditional birth attendants in the reduction of maternal mortality. Studies in Health Service Organisation and Policy Vol. 17 pp.77-96
- Bhatt RV (1989) Professional responsibility in maternity care: role of medical audit. International Journal of Gynaecology and Obstetrics Vol. 30 pp.47-50
- Blegen MA, Gooden CJ, Reed L (1998) Nurse staffing and patient outcomes. Nursing Research Vol. 47 (1) 43-49 *In:* Curtin LL (2003) An integrated analysis of nurse staffing and related variables: effects on patient outcomes. Online Journal of Issues in Nursing Vol. 8(3)

- Bless C and Higson-Smith C (1995) Fundamentals of Social Research Methods: An African Perspective. 2nd Edition. Juta and Co, Ltd.
- Bloom S Lippeveld T Wypij D (1999) Does antenatal care make a difference to safe delivery? A study in urban Uttar Pradesh, India. Health Policy and Planning Vol.14 pp.38-48
- Bobadilla JL (1992) Evaluation of Maternal health programmes: approaches, methods and indicators. International Journal of Gynaecology and Obstetrics Vol.38 S67-73
- Boelen C (2000) Towards Unity for Health – Challenges and opportunities for partnership in health development. A working paper. World Health Organisation, Geneva.
- Bolton SC (2004) A simple matter of control? NHS Hospital Nurses and New Management. Journal of Management Studies. Vol.41(2) pp.317-333
- Buchan J (2000) Global nursing shortages. British Medical Journal Vol. 324 pp.751-752
- Buchan J and Edwards N (2000) Nursing numbers in Britain: The argument for workforce planning. British Medical Journal Vol. 320 pp.1067-1070
- Bundred P and Buchan I (1997) The future of health care systems. British Medical Journal Vol. 315 (7113) p. 952
- Burke RJ (2003) Hospital restructuring, nursing staff satisfaction and work experiences. Health Care Manager Vol.22 (2) pp.99-107
- Campbell T Taylor S Callaghan S Shuldahm C (1997) Case mix type as a predictor of nursing workload. Journal of Nursing Management Vol.5 pp.237-240
- Collin PH Editor (1991) Harrap's English Mini Dictionary. Harrap, Edinburgh.
- Conroy CB (1995) Policy change and its application to Safe Motherhood programming. International Journal of Gynaecology and Obstetrics Vol. 48 Supplement S129-S137
- Consedine M (2000) Developing abilities: the future of clinical supervision. Journal of Psychiatric and Mental Health Nursing. Vol.7 pp.467-474
- Cottrell S (2002) Suspicion, resistance, tokenism and mutiny: problematic dynamics relevant to the implementation of clinical supervision in nursing. Journal of Psychiatric and Mental Health Nursing Vol.9 pp.667-671
- Crabtree BJ and Miller WL (1992) Doing qualitative research. London: Sage Publications
- Crombie IK Davies HTO Abraham SCS Florey C Du V (eds) (1997) The audit handbook. Improving health care through audit. New York: John Wiley and Sons.

- Curtin LL (2003) an integrated analysis of nurse staffing and related variables: effects on patient outcomes. Online Journal of Issues in Nursing Vol. 8(3) 9p
- Daviaud E (Undated) Are nurses deployed optimally in your primary health care services? Do you need all the nurses full-time? A tool to address these issues. Unpublished paper.
- Day C and Gray A (2001) Health and Related Indicators. Chapter 17 *In:* South African Health Review 2001 Health Systems Trust.
- De Bernis L Sherratt DR Abouzhar C Van Lerberghe W (2003) Skilled attendants for pregnancy, childbirth and postnatal care. British Medical Bulletin Vol.67 pp.39-57
- De Dijn H (1997) Kwaliteit en respek in de zorg (Quality and respect in care) Tijdschrift voor Geneeskunde and Ethiek Vol. 7 pp.40-44 quoted in Kwast B.E. (1998c) Quality of care in reproductive health programmes: monitoring and evaluation of quality improvement. Midwifery Vol. 14 p.199-206
- Denzin NK and Lincoln YS (1994) Introduction: Entering the field of qualitative research. In Denzin Norman K. and Lincol Yvonna S. (1994) *Editors* Handbook of Qualitative Research. Sage Publications.
- Department of Health (1998) South Africa Demographic and Health Survey 1998. Department of Health, MRC, Measure DHS+
- Department of Health (1999) Year 2000 Health Goals, Objectives and Indicators: Definitions, data sources and responsibilities. Department of Health, Pretoria.
- Department of Health (2001) Policy and management guidelines for the common causes of maternal deaths. Department of Health South Africa.
- Department of Health (2002) Guidelines for maternity care in South Africa: A manual for clinics, community health centres and district hospitals. Department of Health, Pretoria.
- Dick B (1999) What is action research? Online at http://www.scu.edu.au/schools/gcm/ar/whatisar.html
- Diprete Brown L. (1993) "Assessing the quality of service." Module 6, User's guide, Primary Health Care Management Advancement Programme. Aga Khan Univeristy, Aga Khan Foundation, Aha Khan Health Services, University Research Corporation/Centre for Human Services.
- Directorate Health Systems Research and Epidemiology (1999) Year 2000 Health goals, objectives and indicators. Definitions, data sources and responsibilities. Department of Health, Pretoria.

- Diwan S Berger C and Ivy C (1996) Supervision and quality assurance in long-term case management. Journal of Case Management Vol. 5 pp.65-71 In: Lyth GM (2000) Clinical supervision: A concept analysis. Journal of Advanced Nursing. Vol. 31 pp.722-729
- Djan J.O. Kyei-Faried S. Twum S. et al (1997) Upgrading obstetric care at the health centre level, Juaben, Ghana. International Journal of Gynaecology and Obstetrics Vol.59 Supplement 2 S83-S90
- Donabedian A (1988) The quality of Care: How it can be assessed? Journal of the American Medical Association Vol. 260 1743 – 1748
- Dujardin B Clarysse G Criel B De Brouwere V Wangata N (1995) The strategy of risk approach in antenatal care: evaluation of the referral compliance. Social Science and Medicine Vol.40 pp.529-535
- Dunn SV and Burnett P (1995) The development of a clinical learning environment scale. Journal of Advanced Nursing Vol.22 pp.pp.1166-1173
- Edwards-Miller J (1998) Measuring quality of care in South African Clinics and Hospitals. Chapter 14 *In:* South African Health Review 1998 Health Systems Trust, Durban.
- Elliott J (1991) Action-Research for Educational Change. Milton Keynes, UK Open University press. In Smith LM (1994) Biographical method. In Denzin Norman K. and Lincol Yvonna S. (1994) *Editors* Handbook of Qualitative Research. Sage Publications.
- Fako TT Forcheh N Ncube E (2004) Prospects of safe motherhood in Botswana: midwifery training and nurses' ability to complete the Botswana obstetric record. Social Science and Medicine Vol.58 pp.1109-1120
- Fonn S and Xaba M (1995) Health Workers for Change: A manual to improve quality of care. Woman's health Project, Johannesburg, South Africa and UNDP/World Bank? WHO Special programme for Research and Training in Tropical Diseases.
- Fortney JA (1995) Antenatal risk screening and scoring: a new look. International Journal of Obstetrics and Gynaecology Vol.50 Suppl.2 pp.S53-58
- Garner P Thomason J Donaldson D (1990) Quality assessments of health facilities in rural Papua New Guinea. Health Policy and Planning. Vol.5 pp.49-59
- GC (undated) Emotional Flap? Why not rap? Letter to Advice, p.r.n. Nursing77 October.
- Ghandi M (1999) Audit of perinatal mortality and acute maternal morbidity in Northern KwaZulu Natal. A research report. Health Systems Trust, Durban.

- Global Advisory Group in Nursing and Midwifery (2000) Executive Summary 6th meeting. World Health Organisation, Geneva.
- GlobalNursingShortages Accessed 12th October 2004. Available on: http://www2.uic.edu/mmialk1/GlobalNursingShortages/gns/gns.htm
- Goodburn EA Hussein J Lema V Damison H Graham W (2001) Monitoring obstetric services: putting the UN guidelines into practice in Malawi. I: developing the system. International Journal of Gynaecology and Obstetrics Vol.74 pp.105-117
- Gorzanski C (1997) Raising the standards through supervision. Modern Midwife. Vol. 7 pp.11-14 In : Hughs A and Richards J (2002) Accessing midwifery supervision. British Journal of Midwifery. Vol. 10 pp.161-164
- Graham WJ and Campbell OMR (1992) Maternal health and the measurement trap. Social Science and Medicine Vol.35(8) pp.967-977
- Graham WJ, Bell JS and Bullough CHW (2001) Can skilled attendance at delivery reduce maternal mortality in developing countries? Studies in Health Service Organisation and Policy Vol. 17 pp97-130
- Green A (1999) An introduction to planning in developing countries. 2nd Edition. Oxford Medical Publications. Oxford University Press. United Kingdom.
- Hall W Haynes R McCoy D (2002) The long road to the District Health System. Legislation and structures for the DHS in South Africa: An appraisal as at August 2002. Health System Trust, Durban.
- Hallberg IR and Norberg A (1993) Strain among nurses and their emotional reactions during 1 year of systematic clinical supervision combined with the implementation of individualised care in dementia nursing. Journal of Advanced Nursing Vol. 18 pp.1860-1875 In: Lyth GM (2000) Clinical supervision: A concept analysis. Journal of Advanced Nursing. Vol. 31 pp.722-729
- Hamilton D (1994) Traditions, preferences and postures in applied qualitative research. In Denzin NK and Lincoln YS (1994) *Editors* Handbook of Qualitative Research. Sage Publications.
- Hampshire AJ (2000) What is action research and can it promote change in primary care? Journal of Evaluation in Clinical Practice Vol.6 (4) pp.337-343
- Heath H and Freshwater D (2000) Clinical supervision as an emancipatory process: avoiding inappropriate intent. Journal of Advanced Nursing Vol. 32(5) pp.1298-1306

- Hideki F Masaya T Heihachiro A (1999) nurses' workload associated with a 16-h night shift on the 2-shift system. Comparison with the 3-shift system. Psychiatry and Clinical Neurosciences Vol. 53
- Hughes M (1999) Nursing workload: an unquantifiable entity. Journal of Nursing Management Vol. 7(6) pp317-323
- Hughs A and Richards J (2002) Accessing midwifery supervision. British Journal of Midwifery. Vol. 10 pp.161-164
- Hussein J Goodburn EA Damisoni H Lema V Graham W (2001) Monitoring obstetric services: putting the UN guidelines into practice in Malawi: 3 years on. International Journal of Gynaecology and Obstetrics Vol.75pp.63-73
- Hyrkas K. Appelqvist-Schmidlechner K. Paunonen-Ilmonen M. (2002) Expert supervisors' views of clinical supervision: a study of factors promoting and inhibiting the achievements of multi-professional team supervision. Journal of Advanced Nursing Vol. 38(4) pp.387-397
- Ifenne D. Essien E. Golji N et al (1997) Improving the quality of obstetric care at the teaching hospital, Zaria, Nigeria. International Journal of Gynaecology and Obstetrics Vol.59 Supplement 2 S37-S46
- JA (undated) Changing ways. Letter to Advice, p.r.n. Nursing77 October.
- Jaffre Y Prual A (1994) Midwives in Niger: an uncomfortable position between social behaviours and health care constraints. Social Science and Medicine Vol.38 pp.1069-1073
- Jahn A and De Brouwere V (2001) Referral in pregnancy and childbirth: Concepts and strategies. Studies in Health Service Organisation and Policy Vol. 17 pp.229-246
- Jewkes R Abrahams N Mvo Z (1998) Why do nurses abuse patients? Reflections from South African Obstetric Services. Social Science and Medicine Vol.47 pp.1781-1795
- Johns C (1999) Reflection as empowerment? Nursing Enquiry Vol. 6 pp.241-249
- Johns C. (1996) Visualising and realising caring in practice through guided reflection. Journal of Advanced Nursing Vol. 24 pp. 1135-1143 *In:* Heath H and Freshwater D (2000) Clinical supervision as an emancipatory process: avoiding inappropriate intent. Journal of Advanced Nursing Vol. 32(5) pp.1298-1306
- Jones K and Edwards D (2003) ten years of midwifery supervision. British Journal of Midwifery Vol.11 pp.s38-39

- Kamara A. (1997a) Developing a network: the PMM process. International Journal of Gynaecology and Obstetrics Vol. 59 Supplement 2 S27-S35
- Kamara A. (1997b) Lessons learned from the PMM Network experience. International Journal of Gynaecology and Obstetrics Vol. 59 Supplement 2 S253-S258
- Katzenellenbogen JM Joubert G Abdool karim SS (1997) Epidemiology: A manual for South Africa. Oxford University Press
- King M (1996) Medical care in developing countries. Oxford University Press. Oxford. In: Jahn A and De Brouwere V (2001) Referral in pregnancy and childbirth: Concepts and strategies. Studies in Health Service Organisation and Policy Vol. 17 pp.229-246
- Kleinman CS (2004) Leadership: A key strategy in staff nurse retention. The Journal of Continuing Education in Nursing Vol. 35 (3) pp.128-132
- Koblinsky MA Campbell O Heichelheim J (1999) Orgnaising delivery care: what works for safe motherhood. Bulletin for the World Health Organisation. Vol.77(5) pp.399-406
- Kowaleski M and Jahn A (2001) Health professionals for maternity services: experiences on covering the population with quality maternity care. Studies in Health Service Organisation and Policy Vol. 17 pp131-149
- Kwast BE (1988) Unsafe Motherhood: a monumental challenge. A study of maternal mortality in Addis Ababa. Leiderdorp, The Netherlands. *In:* Van Lerberghe W and De Brouwere V (2001) Of blind alleys and things that have worked: hitory's lessons on reducing maternal mortality. Studies in Health Service Organisation and Policy Vol. 17 pp7-33
- Kwast B and Bergstrom S (2001) Training professionals for safer motherhood. Chapter 4. *In:* Lawson JB Harrison KA and Bergstrom S. Editors (2001) Maternity care in developing countries. Royal College of Obstetricians (RCOG) Press. London.
- Kwast B.E. (1998a) Quality of care in reproductive health programmes: concepts, barriers and improvements – an overview. Midwifery Vol. 14 pp.66-73
- Kwast B.E. (1998b) Quality of care in reproductive health programmes: education for quality improvement. Midwifery Vol. 14 pp.131-136
- Kwast B.E. (1998c) Quality of care in reproductive health programmes: monitoring and evaluation of quality improvement. Midwifery Vol. 14 pp.199-206
- Kwast BE and Bentley J (1991) Introducing confident midwives: Midwifery education – action for Safe Motherhood. Midwifery Vol. 7 pp.8-19

- Kwast BE and Bentley J (1991) Introducing Confident midwives: Midwifery education – Action for Safe Motherhood. Midwifery Vol.7 pp.8-19
- Kwast BE and Koblinsky MA (1995) Starting maternity care programmes in developing countries to reduce maternal mortality. Contemporary Review of Obstetric and Gynaecology Vol. 7 pp220 – 225
- Lakhana S (2002) Limpopo Provincial Report *In:* Medical Research Unit for Maternal and Infant Health Care Strategies, PPIP Users, and the National Department of Health (2002) Saving Babies 2002: Third Perinatal Care Survey of South Africa.
- Lather P (1986) Issues of validity in openly ideological research: between a rock and a soft place. Interchange Vol.34(4) 63-84
- Leigh B. Kandeh H.B.S. Kanu M.S. et al (1997) Improving emergency obstetric care at a district hospital, Makeni, Sierra Leone. International Journal of Gynaecology and Obstetrics Vol. 59 Supplement 2 S55-S65
- Letvak S (2002) Retaining the older nurse. *In:* Atencio BL. Cohen J and Gorenberg B (2003) Nurse retention: is it worth it? Nursing economics Vol. 21(6) P262-269
- Loegering L, Reiter RC, Gambone JC (1994) Measuring the Quality of Health Care. Clinical Obstetrics and Gynaecology. Vol. 37 No. 1 p122-136
- Loevinsohn BP Guerrerp ET Gregorio SP (1995) Improving primary health care through systematic supervision: a controlled field trial. Health Policy and Planning Vol.10 (2) pp.144-153
- Logie DL Woodroffe J (1993) Structural adjustments: the wrong prescription for Africa. British Medical Journal Vol.307 pp.41-44 In: Kwast B.E. (1998a) Quality of care in reproductive health programmes: concepts, barriers and improvements – an overview. Midwifery Vol. 14 pp.66-73
- Lucas AO (1997) History of the Prevention of Maternal Mortality Network. International Journal of Gynaecology and Obstetrics Vol. 59 Supplement 2 S11-S13
- Lyth GM (2000) Clinical supervision: a concept analysis. Journal of Advanced Nursing Vol. 31 (3) pp.722-729
- Maclean G (2003) The challenge of preparing and enabling “skilled attendants” to promote safer childbirth. Midwifery Vol. 19 pp163-169

- Maine D Akalin MZ Ward VM Kamara A (1997) The Design and Evaluation of Maternal Mortality Programs. Centre for Population and Family Health, School of Public Health, Columbia University.
- Maine D Rosenfield A McCarthy J Kamara A and Lucas AO (1991) Safe Motherhood Programs: options and issues. New York, Columbia University. In: Van Lerberghe W and Be Brouwere V (2001) Of blind alleys and things that have worked: history's lessons on reducing maternal mortality. Studies in Health Service Organisation and Planning Vol.17 pp. 7-33
- Maine D (1997a) The strategic model for the PMM Network. International Journal of Gynaecology and Obstetrics Vol. 59 Supplement 2 S23-S25
- Maine D (1997b) Lessons for programme design from the PMM projects. International Journal of Gynaecology and Obstetrics Vol. 59 Supplement 2 S259-S265
- McCarthy J (1997) The conceptual framework of the PMM Network International Journal of Gynaecology and Obstetrics Vol. 59 Supplement 2 S15-S21
- McCarthy J and Maine D (1992) A framework for analysing the determinants of maternal mortality. Studies in Family Planning Vol. 23 pp.23-33
- McDermott J Buffington ST Prenggono D Achadi E (2001) Two models of in-service training to improve midwifery skills: How well do they work? Journal of Midwifery and Women's Health Vol.46 (4) pp.217-225
- McGinn T. (1997) Monitoring and evaluation of PMM efforts: what have we learned? International Journal of Gynaecology and Obstetrics Vol. 59 Supplement 2 S245–S251
- McKinlay JB (1993) The promotion of health through planned socio-political change: challenges for research and policy. Social Science and Medicine. Vol. 36 p 109. In Baum (1995) Researching public health: Behind the qualitative-quantitative methodological debate. Social Science and Medicine Vol. 40 issue 4 pp.459-468
- Medical Research Unit for Maternal and Infant Health Care Strategies, PPIP Users, and the National Department of Health (2002) Saving Babies 2002: Third Perinatal Care Survey of South Africa.
- Meyer J, Pope C and Mays N (2000) Using qualitative methods in health related research. British Medical Journal Vol. 320 (7228) pp.178-181

- MRC Unit for Maternal and Infant Health care Strategies, PPIP Users and national Department of Health (2000) Savings Babies: A Perinatal Care Survey of South Africa. Health Systems Trust.
- MRC Unit for Maternal and Infant Health care Strategies, PPIP Users and national Department of Health (2001) Savings Babies 2001: 2nd Perinatal Care Survey of South Africa. Department of Health.
- MRC Unit for Maternal and Infant Health care Strategies, PPIP Users and national Department of Health (2000) Savings Babies 2002: Third Perinatal Care Survey of South Africa. Department of Health
- Murray SF, Davies S, Phiri RK, Ahmed Y (2001) Tools for monitoring the effectiveness of district maternity referral systems. Health Policy and Planning Vol. 16(4) pp.353-361
- Narasimhan V, Brown H, Pablos-Mendez A *et al.* (2004) Responding to the global human crisis. The Lancet. Vol. 363 pp. 1469-1472
- National Committee for the Confidential Enquiries into Maternal Deaths (1999) Saving Mothers: Report on Confidential Enquiries into Maternal Deaths in South Africa 1998 Department of Health, Pretoria.
- National Committee for the Confidential Enquiries into Maternal Deaths (2002) Saving Mothers 1999-2001. Department of Health, Pretoria.
- National Committee on Confidential Enquiries into Maternal Deaths (NCCEMD) (2000). A review of the maternal deaths in South Africa during 1998. South African Medical Journal Vol. 90 pp367 – 373
- O'Brien-Pallas L Cockerill R and Leatt P (1992) Different systems, different costs? An examination of the compatibility of workload measurement systems. Journal of Nursing Administration Vol. 22 pp.17-22 *In:* Stone PW Tourangeau AE Duffield CM Hughes F Jones CB O'Brien Pallas L Shamian J (2003) Evidence of nurse working conditions: a global perspective. Policy, politics and nursing practice Vol. 4 (2) pp120-131
- O'Neil E and Seago JA (2002) Meeting the challenges of nursing and the nation's health. Journal of the American Medical Association Vol.288 (16) pp. 2040-2041
- Oakley A (1984) The capture womb. A history of the medical care of pregnant women. Basil Blackwell, Oxford. In: Van Lerberghe W and Be Brouwere V (2001) Of blind alleys and things that have worked: history's lessons on reducing maternal mortality. Studies in Health Service Organisation and Planning Vol.17 pp. 7-33

- Olukoya A.A. Ogunyemi M.A. Akitoye C.O et al (1997) Upgrading obstetric care at a secondary referral hospital, Ogun State, Nigeria. International Journal of Gynaecology and Obstetrics Vol. 59 Supplement 2 S67-S74
- Ormandy P Long A Hulme CT Johnson M (2004) The role of the senior health care worker in critical care. Nursing in Critical Care Vol. 9 pp.151-159
- Oyesola R. Shehu A.T. Ikeh A.T. Maru I. (1997) Improving emergency obstetric care at a state referral hospital, Kebbi State, Nigeria. International Journal of Gynaecology and Obstetrics Vol. 59 Supplement 2 S75 – S81
- Palsson M Hallberg IR Norberg A and Bjorvell H (1996) Burnout, empathy and sense of coherence amongst Swedish district nurses before and after systematic clinical supervision. Scandinavian Journal of Caring Sciences Vol. 10 pp.19-26 In: Lyth GM (2000) Clinical supervision: A concept analysis. Journal of Advanced Nursing. Vol. 31 pp.722-729
- Pathak LR Kwast BE Malla DS Pradhan AS Rajlawat R Campbell BB (2000) process indicators for safe motherhood programmes: their application and implications as derived from hospital data in Nepal. Tropical Medicine and International Health Vol.5(2) pp.882-890
- Pattinson RC (1996) Define the problem before proclaiming the solution. HST Update Issue no.16. Health Systems Trust.
- Pattinson RC (2002) Major maternal morbidity in South Africa. (Unpublished draft)
- Pattinson RC (Editor) (1998) Report on the Confidential Enquiry into Maternal Deaths in South Africa 1998. Department of Health.
- Pattinson RC, deJong E, Pistorius LR, Howarth GR, de Wet H, Bremer P, Hay IT, Delport S (1995) Practical application of data obtained from a Perinatal Problem Identification Programme South African Medical Journal Vol. 85 (3) pp.131-132
- Paxton F Porter M and Heaney D (1996) Evaluating the workload or practice nurses: a study. Nursing Standard Vol.10 pp.33-38
- Penn-Kekana L Blaauw D (2002) A rapid appraisal of maternal health services in South Africa: A health systems approach. Centre for Health Policy.
- Penny S and Murray S (2000) Training initiatives for essential obstetric care in developing countries: a 'state of the art' review. Health Policy and Planning Vol. 15(4) pp.386-393
- Philpott RH and Voce AS (2000 – 2002) Zululand Health District, Maternal Health Programme, Monthly Workshop Reports. Unpublished.

- PMM Network (1997) About the PMM Network. International Journal of Gynaecology and Obstetrics Vol. 59 Supplement 2 S3-S6
- Practising Midwife (2003) Midwife shortages put women at risk: 'near miss' and 'accidents waiting to happen' frequent. News article
- Practising Midwife (2004) Poor care contributes to baby deaths. Report cites weak leadership and midwife shortages. News article.
- Prevention of Maternal Mortality Network (1995) Situation Analyses of Emergency Obstetric Care: Examples from eleven operations research projects in West Africa. Social Science and Medicine Vol. 40 pp.657-667
- Proctor B (1991) Supervision: a co-operative exercise in accountability. In: Lyth GM (2000) Clinical supervision: A concept analysis. Journal of Advanced Nursing. Vol. 31 pp.722-729
- Reagon G Irlam J and Levin J (2004) The National Primary Health Care Facilities Survey 2003 Health Systems Trust.
- Reason P (1994) Three approaches to participatory inquiry. In Denzin Norman K. and Lincoln Yvonna S. (1994) *Editors* Handbook of Qualitative Research. Sage Publications.
- Revans R (1983) The ABC of Action Learning Chartwell-Bratt Ltd. Kent, England
- Richardson A Douglas M Shuttler R Hagland MR (2003) critical care staff rotation: outcomes of a survey and pilot study. Nursing in Critical Care Vol.8 pp.84-89
- Richardson A, Douglas M, Shuttler R, Hagland MR (2003) Critical care staff rotation: outcomes of a survey and pilot study. Nursing in Critical Care Vol. 8(2) pp. 84-89
- Robert J Fridkin SK Blumberg HM Anderson B White N Ray SM et al (2000) The influence of the composition of the nursing staff on primary bloodstream infection rates in a surgical intensive care unit. *In:* Stone PW Tourangeau AE Duffield CM Hughes F Jones CB O'Brien Pallas L Shamian J (2003) Evidence of nurse working conditions: a global perspective. Policy, politics and nursing practice Vol. 4 (2) pp120-131
- Roemer MI Montoya-Aguilar C (1988) Quality assessment and assurance in primary health care. WHO Offset Publication no. 105, World Health Organisation, Geneva
- Ronsmans C (2001) How can we monitor progress towards improved maternal health care? Studies in Health Services Organisation and Policy Vol.17 pp.317-342
- Ronsmans C (2001) What is the evidence for the role of audits to improve the quality of obstetric care? Studies in Health Service Organisation and Planning Vol.17 pp. 207 – 227

- Rosenfield A (1997) The history of the Safe Motherhood Initiative. International Journal of Gynaecology and Obstetrics Vol. 59 Supplement 2 S7-S9
- Rosenfield A and Maine D (1985) Maternal mortality – a neglected tragedy: where is the M in MCH? Lancet Vol. 2 pp.83-85
- Sabitu K Alti-Mu'azu M Musa AA Ifenne DI Essein ES Golji NG Adidu V Mukaddas M (1997) The effect of improving maternity services in secondary facilities, Zaria, Nigeria. International Journal of Gynaecology and Obstetrics Vol.59 Supplement 2 S83-90
- Sarantakos S (1993) Social Research MacMillan Education Australia Pty Ltd.
- Schon DA (1983) The reflective practitioner Basic Books, New York
- Schon DA (1987) Educating the reflective practitioner: Toward a new design for teaching and learning in the professions. Jossey-Bass Higher Education series. Jossey-Bass Inc. San Francisco
- Schwandt TA (1994) Constructivist, interpretivist approaches to human enquiry. In Denzin Norman K. and Lincol Yvonna S. (1994) *Editors* Handbook of Qualitative Research. Sage Publications.
- Seneh et al (1997) From abandoned warehouse to life-saving facility, Pakro, Ghana. International Journal of Gynaecology and Obstetrics Vol. 59 Supplement 2 S91-S97
- Sherratt D (1999) Why women need midwives for safe motherhood. Safe Motherhood Initiatives : Critical Issues. Edited by Berer M and Ravindran S. Blackwell Science.
- Sinclair J Editor in Chief (1988) Collins Essential English Dictionary Collins Publishers, London
- Smit J Beksinska M Ramkissoon A Kunene B Penn-Kekana L (2004) Reproductive Health. Chapter 5 *In:* South African Health Review 2003/2004. Health Systems Trust, Durban.
- Smith H and Garner P (2002) Better Births Initiative: A programme for action in middle and low income countries. Making childbirth safer through promoting evidence based care. Global Health Council.
- Smith LM (1994) Biographical method. In Denzin Norman K. and Lincol Yvonna S. (1994) *Editors* Handbook of Qualitative Research. Sage Publications.
- Statistics South Africa (2003) Census in Brief. Statistics South Africa, Pretoria
- Stefanini A (1999) District Hospitals and strengthening referral systems in developing countries. World Hospital Vol. 30 pp.14-19 In: Murray SF, Davies S, Phiri RK, Ahmed Y

(2001) Tools for monitoring the effectiveness of district maternity referral systems. Health Policy and Planning Vol. 16(4) pp.353-361

- Stone PW Tourangeau AE Duffield CM Hughes F Jones CB O'Brien Pallas L Shamian J (2003) Evidence of nurse working conditions: a global perspective. Policy, Politics and Nursing Practice Vol. 4 (2) pp120-131
- Stoops N (2002) Telephone call with Norah Stoops. August 2002.
- Taunton RL, Hope K, Woods CQ, and Bott MJ (1995) predictors of absenteeism among hospital staff nurses. Nursing Economics Vol.13 (4) pp. 217-230
- Taylor A Andriuk ML Langlois P Provost E (1995) Staff rotation: implications for occupational therapy. Canadian Journal of Occupational Therapy. Vol.42(4) pp.208-211
- Thaddeus S and Maine D (1994) Too far to walk: maternal mortality in context. Social Science and Medicine Vol.38 pp.1091-1110
- The Prevention of Maternal Mortality Network (1995) Situation analyses of emergency obstetric care: examples from eleven operations research projects in West Africa. Social Science and Medicine Vol. 40(5) pp.657-667
- Theron G (1999) Improved cognitive knowledge of midwives practising in the Eastern Cape Province of the Republic of South Africa through the study of a self-education manual. Midwifery Vol.15 pp.66-71
- Torbet WR (1981) Teaching action inquiry. Collaborative Inquiry 5. In Reason P (1994) Three approaches to participatory inquiry. In Denzin Norman K. and Lincol Yvonna S. (1994) *Editors* Handbook of Qualitative Research. Sage Publications.
- Tourangeau AE, Giovanetti P, Tu JV, Wood M (2002) Nursing related determinants of 30-day mortality for hospitalised patients. Canadian Journal of Nursing Research Vol. 33(4) pp. 71-88 *In:* Curtin LL (2003) an integrated analysis of nurse staffing and related variables: effects on patient outcomes. Online Journal of Issues in Nursing Vol. 8(3) 9p
- Trueland J (2004) Scottish workload report receives warm welcome. Nursing Standard Vol.18 (34)
- Tucker J Parry G Penney G page M Hundley V (2003) Is midwife workload associated with quality of process care (continuous electronic fetal monitoring (CEFM)) and neonatal outcome indicators? A prospective study in consultant-led labour wards in Scotland. Paediatrics and Perinatal Epidemiology Vol. 17 p369-378

- UNICEF/WHO/UNFPA (1997) Guidelines for monitoring the availability and use of obstetric services. UNICEF/WHO/UNFPA.
- Urassa E Massaw S Linmark G (1997) Operational factors affecting maternal mortality in Tanzania. Health Policy and Planning Vol. 12 pp.50-57
- Van Lerberghe W and Be Brouwere V (2001) Of blind alleys and things that have worked: history's lessons on reducing maternal mortality. Studies in Health Service Organisation and Planning Vol.17 pp. 7-33
- Van Lerberghe W and De Brouwere V (2001) Of blind alleys and things that have worked: hitory's lessons on reducing maternal mortality. Studies in Health Service Organisation and Policy Vol. 17 pp7-33
- Vanneste AM Ronsman C Chakraborty J De Francisco A (2000) Prenatal screening in rural Bangladesh: from prediction to care. Health Policy and Planning Vol.15 pp.1-10
- Varkevisser CM Pathmanathan I Brownlee A (1991) Designing and conducting Health System Research projects. Health System Research Series Vol. 2 Part 1. International Development Research Centre, Canada.
- Venamore J (2003) Midwife shortages increase the risks. Lamp Vol.60 p.32
- Vujicic M, Zurn P, Diallo K, Adams O, Dal Poz M (2004) The role of wages in the migration of health care professionals from developing countries Human Resources for Health Vol. 2 p.3. Available from: http://www.human-resources-health.com/content/2/1/3. Accessed 25th November 2004)
- Walker J (1992) Report from the Second ICM/WHO/UNICEF pre-congress Workshop on Midwifery Education – Action for Safe Motherhood. International Journal of Gynaecology and Obstetrics Vol.38 S7-8
- Wardlaw T and Maine D (1999) Process Indicators for Maternal Mortality Programmes. Safe Motherhood Initiatives : Critical Issues. Edited by Berer M and Ravindran S. Blackwell Science.
- Waterman H (1998) Embracing ambiguities and valuing ourselves: issues of validity in action research. Journal of Advanced Nursing. Vol. 28 Issue 1 pp.101-105
- Werner D and Bower (1991) Helping health workers learn. Hesperian Foundation, Palo Alto, California.
- WHO/UNFPA/UNICEF/World Bank (1999) Reduction of maternal mortality: a joint statement. World Health Organisation. Geneva

- Wilkinson D (1995) Avoidable perinatal deaths in a rural hospital: Strategies to improve quality of care. Tropical Doctor Vol. 25 pp.16-20
- Wolsey P and Leach L (1997) Clinical supervision: a hornet's nest? *In:* Lyth GM (2000) Clinical supervision: a concept analysis. Journal of Advanced Nursing Vol. 31 (3) pp.722-729
- World Health Organisation (2000) World Health Report: Health Systems – Improving Performance World Health Organisation, Geneva.
- www.2.uic.edu/~mmialk1/GlobalNursing Shortage/gns/gns.htm) Accessed 12 October 2004
- Yearly C (2003) Guided reflection as a tool for CPD British Journal of Midwifery Vol.11 pp.223-226
- Yuster EA (1995) Rethinking the role of the risk approach and antenatal care in maternal mortality reduction. International Journal of Obstetrics and Gynaecology Vol.50 Suppl.2 pp.S59-61

# Appendices

# Chapter 3: Appendix 1

# Chapter 4: Appendix 1

## Appendix 1A – Data collection tools

### ANC FORM 1: Exit interview schedule for the 1st ANC Visit

This form is intended to lead you through the exit interview that you will conduct with clients that attend the clinic for Antenatal Care for the first time. Please do not tell the health workers in the clinic about the nature of the questions in this questionnaire. It may bias the results.

Please conduct the interview as the client exits the clinic i.e. after she has seen the midwife, has had all tests done, has received any medication, and is now on her way home. Please conduct the interview in the client's preferred language.

Follow the process outlined below:

1. Stop each pregnant woman as she leaves the clinic.
2. Ask if she came to the clinic for ANC. If the answer is yes, then go to question 3.
3. Ask if this is her first visit to the clinic for this pregnancy. If the answer is yes, then proceed with the interview.
4. Explain to her that you are conducting a study to determine what is the quality of care given to women who have received antenatal care for the first time. Ask her whether she would be willing to answer some questions. Explain to her that she would remain anonymous and that she should feel free to answer questions honestly, but as accurately as she can. Explain to her that her participation would not have a negative effect on her further treatment and care in the clinic. Explain to her that the results of the research would be available from the clinic after about 4 months, and that if she were interested in the results she could obtain them from the clinic then.
5. If she agrees to be interviewed, please proceed to ask the questions and complete the form

---

Name of clinic: …… Date of interview: ……

| | | |
|---|---|---|
| 1. Did the nurse discuss with you warning signs that would tell you that you should report immediately to the clinic or hospital? *Ask the patient to list what these signs are. Listen out for draining of liquor, contractions before term, any abnormal bleeding, decreased fetal movements. Tick the Yes box if it is apparent that these were discussed.* | YES | NO |
| 2. Did the nurse discuss with you the place where you would like to deliver? | YES | NO |
| 3. Did the nurse discuss with you the transport arrangements that you would make in getting to the place of delivery? | YES | NO |
| 4. Did the nurse advise you when to return for your next visit? | YES | NO |
| 5. Were you satisfied with the attitude of the nurse that attended to you | YES | NO |

Please score 1 for each YES to get a total score out of 5

| | |
|---|---|
| TOTAL SCORE: | $\frac{\text{(Total score)}}{5}$ X 100 = _____ % |

# ANC FORM 2: Checklist for ANC Record Review

In the ANC clinic at clinics, health centres, and hospitals, examine a total of 100 antenatal records as the clients leave the antenatal clinic, to see whether the necessary information and decisions have been recorded.

For each ANC record, give 1 point for each of the bulleted items listed below that have been recorded. Half points can be given where a recording is incomplete. Record your scores for each item for a total of 20records on the summary sheet provided.

## History

1. Age, parity and gravidity
2. Details of previous pregnancies, including causes of deaths and indications for operations
3. Previous illnesses that might influence this pregnancy, including cardiac, renal and diabetic disease
4. History of the present pregnancy
5. The LMP and the EDD
6. The estimated period of gestation by dates (POGD) correctly recorded or plotted on the antenatal graph at each visit.

## Examination

7. Maternal weight
8. Blood pressure recorded at each visit
9. Examination of heart and lungs
10. Estimation of period of gestation by palpation (POGP) (using SFH in cms and fetal size) recorded, or plotted on the graph.
11. Estimation whether POGP = POGD, or whether there is evidence of IUGR
12. Fetal presentation recorded from 36 weeks onwards
13. Fetal heart heard or fetal movements felt
14. Urinalysis for proteinuria and glycosuria
15. Haemoglobin and Rh group
16. Syphilis test result recorded
17. Has the client been counselled for HIV testing?
18. Has tetanus toxoid been given?

## Interpretations and decisions

19. Identification and recording of risk factors
20. Record of action plan, including interventions and referral if indicated
21. Decision on place for delivery discussed with mother
22. Transport arrangements for when she goes into labour discussed with mother
23. Decision taken by mother re future family planning
24. Have the findings at first visit and 36 weeks visit been double-checked and counter-signed by an ADM, senior experienced midwife or doctor?
25. Date of next visit.

This will give a maximum score of 25 points.

Record the total score for each record on the summary sheet provided.

Summary of ANC record review  Clinic:  Date:  Name of reviewer:

| | Record # | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Item # | | | | | | | | | | | | | | | | | | | | | |
| HISTORY | 1 - Age, P and G | | | | | | | | | | | | | | | | | | | | | |
| HISTORY | 2 - Hx prev preg | | | | | | | | | | | | | | | | | | | | | |
| HISTORY | 3 - Prev illnesses | | | | | | | | | | | | | | | | | | | | | |
| HISTORY | 4 - Hx pres preg | | | | | | | | | | | | | | | | | | | | | |
| HISTORY | 5 - LMP and EDD | | | | | | | | | | | | | | | | | | | | | |
| HISTORY | 6 - POGD correct | | | | | | | | | | | | | | | | | | | | | |
| EXAMINATION | 7 - Maternal weight | | | | | | | | | | | | | | | | | | | | | |
| EXAMINATION | 8 - BP at each visit | | | | | | | | | | | | | | | | | | | | | |
| EXAMINATION | 9 - Heart and lung exam | | | | | | | | | | | | | | | | | | | | | |
| EXAMINATION | 10 - POGP recorded | | | | | | | | | | | | | | | | | | | | | |
| EXAMINATION | 11 - Cf POGD and POGP | | | | | | | | | | | | | | | | | | | | | |
| EXAMINATION | 12 - Fetal presentation | | | | | | | | | | | | | | | | | | | | | |
| EXAMINATION | 13 - FHH or FM felt | | | | | | | | | | | | | | | | | | | | | |
| EXAMINATION | 14 – Urinanalysis | | | | | | | | | | | | | | | | | | | | | |
| EXAMINATION | 15 - HB and Rh | | | | | | | | | | | | | | | | | | | | | |
| EXAMINATION | 16 - RPR result recorded | | | | | | | | | | | | | | | | | | | | | |
| EXAMINATION | 17 - HIV counselling | | | | | | | | | | | | | | | | | | | | | |
| EXAMINATION | 18 - ATT given | | | | | | | | | | | | | | | | | | | | | |
| INTERP & DECISIONS | 19 - Risk factors | | | | | | | | | | | | | | | | | | | | | |
| INTERP & DECISIONS | 20 - Action plan | | | | | | | | | | | | | | | | | | | | | |
| INTERP & DECISIONS | 21 - Place of delivery | | | | | | | | | | | | | | | | | | | | | |
| INTERP & DECISIONS | 22 – Transport | | | | | | | | | | | | | | | | | | | | | |
| INTERP & DECISIONS | 23 - Future FP | | | | | | | | | | | | | | | | | | | | | |
| INTERP & DECISIONS | 24 - Double checked | | | | | | | | | | | | | | | | | | | | | |
| INTERP & DECISIONS | 25 - Date of next visit | | | | | | | | | | | | | | | | | | | | | |
| INTERP & DECISIONS | Total out of 25 = | | | | | | | | | | | | | | | | | | | | | |
| INTERP & DECISIONS | X 4 = % | | | | | | | | | | | | | | | | | | | | | |

# ANC FORM 3: Clinic checklist

This form is intended to guide you as you collect data on ANC in the clinic. There are three parts to this form. Please read carefully what you need to do to complete each part.

Name of clinic: …… Date form completed: ……

## Part 1: Quality of ANC

For this clinic please complete the following:

### Coverage for ANC

For this facility, from the routine monthly statistics, please obtain the annual figures for the period January to December 2001 for the number of 1st ANC visits

| | |
|---|---|
| Number of 1st ANC visits, Jan-Dec 2001 | |

### Timing of 1st ANC visit

For this facility, from the routine monthly statistics, please obtain the annual figures for the period January to December 2001 for the number of 1st ANC visits that occurred before 20th week of gestation.

| | |
|---|---|
| Number of 1st ANC visits < 20 weeks Jan-Dec 2001 | |

### Quality of 1st ANC visit

After having conducted all the exit interviews with the clients that have come for their 1st ANC visit in this facility, count all the "ANC Form 1 – Exit interviews" that have scored 100%

| | |
|---|---|
| Number of 1st ANC visits who score 100% | |

Record the total number of interviews conducted

| | |
|---|---|
| Number of interviews conducted | |

### Quality of ANC records

After having reviewed the ANC records in this clinic record the following:

| | |
|---|---|
| Number of records that score 90 – 100% | |
| Number of records that score 70 – 89% | |
| Number that score < 70% | |

| | |
|---|---|
| Total Number of ANC records reviewed | |

## Part 2: Laboratory support for the ANC Clinic

During your visit to the clinic, please review their blood results book for the three-month period September, October and November 2001.

For this period, please determine the number of RPR blood results for 1st visits that were returned to the clinic within 2 weeks of the blood sample being taken.

| | |
|---|---|
| Number of RPR blood results returned within 2 weeks, Sep – Nov 2001 | |

From the routine monthly data, please establish what were the number of 1st ANC visits from September, October and November 2001

| | |
|---|---|
| Number of 1st ANC visits, Sep – Nov 2001 | |

## Part 3: Emergency transport support for the ANC clinic

During your visit to the clinic, please review the emergency transport request book for the three-month period - September, October and November 2001

For this period, please determine the number of emergency requests that were met within one hour, from the time of calling the ambulance, to the time that the ambulance arrived in the clinic to fetch the client.

| | |
|---|---|
| Number of emergency calls met within 1 hour, Sep – Nov 2001 | |

Please determine the total number of emergency calls made from this clinic from September to November 2001

| | |
|---|---|
| Total number of emergency calls made, Sep – Nov 2001 | |

Thank you

# IPC FORM 1: Checklist for EOC (Essential Obstetric Care) Facility

This form is designed to help you establish which of your health centres and hospitals are functioning either as a Basic Essential Obstetric Care (B-EOC) Facility or as a Comprehensive Essential Obstetric Care (C-EOC) Facility. Complete this form for each health centre, Level 1 Hospital and Level 2 (district) Hospital in your municipality.

Date of assessment: …… Conducted by: ……

Obtain the following information from the most senior health worker in the health facility.

1. Name of facility: ……
2. Location of facility: ……
   (In which district, in which town)
3. Name of informant: ……
4. Role/Job Title of Informant: ……
5. Type of facility (Tick one)

Level 2 (District) Hospital ☐ Level 1 Hospital ☐ Health Centre ☐

6. Services

| *Tick YES or NO for each of the following items (a-i)* | | |
|---|---|---|
| Were the following services performed at least once in the last 3 months? | Yes | No |
| a) Parenteral antibiotics | | |
| b) Parenteral oxytocics | | |
| c) Parenteral sedatives/anticonvulsants | | |
| d) Manual removal of placenta | | |
| e) Resuscitation of the newborn | | |
| f) Assisted vaginal delivery | | |
| g) Blood transfusion | | |
| h) Caesarean section | | |
| i) Removal of retained products | | |

Box: Determination of EOC status (Tick only one)

☐ If all of a-i = Yes tick this box:
Comprehensive EOC

☐ If all of a-f = Yes AND g, h or i = No, tick this box:
Basic EOC

☐ If any of a-f = No, tick this box:
Not EOC

# IPC Form 2: Checklist for labour record review

Examine 100 (or fewer, if this is not possible) consecutive labour records. Do this after labour has been completed. Use the following scoring system for each patient's record:

For each 'yes' answer, score 1 point on the summary sheet provided. You can give half points where the information is incomplete.

## Admission assessment form

1. Is there evidence that the health worker has reviewed and summarised the ANC record and listed the maternal and fetal risk factors?
2. Check the items on the admission form. Are all completed?
3. At the end of the form, is there a decision on diagnosis and management?
4. Were the admission findings checked and counter-signed by an Advanced Midwife (or doctor or experienced midwife if no ADM available)?

## Labour graph

5. Is the list of risk factors recorded at the top of the labour graph?
6. Has the fetal heart rate been recorded half-hourly?
7. Has the state of the liquor (as recognised by a pad check) been recorded at least 4-hourly?
8. Has the degree of moulding been recorded when a P.V. has been done?
9. Have the contractions been recorded half-hourly?
10. Has the cervical dilatation been recorded at least 4-hourly during the Latent Phase and at least two-hourly in the Active Phase.
11. Has the cervical dilatation been plotted in relation to the lines drawn for the Latent and Active Phases, and for the Alert and Action Lines?
12. Has the level of the head in relation to the brim of the pelvis been recorded at least 4-hourly since admission?
13. Have the maternal BP and pulse been recorded at least hourly?
14. Have the maternal temperature and urinary output been recorded at least 4-hourly?
15. Is there a record of drugs and IV fluids given?

## Management of Labour Form (Found on a page separate from the Labour Graph)

16. Is this recorded after doing each vaginal examination, or at least 4-hourly?
17. Is the summary of fetal condition recorded?
18. Is the summary of labour progress recorded?
19. Is the summary of maternal condition recorded?
20. Is the decision on further action recorded?
21. Is the time of next intended review stated?
22. Were these assessments checked 4-hourly by an ADM (or doctor or senior midwife)?

## The assessment of the newborn

23. Has this form been completed

## Final Summary of Labour

24. Has this form been completed?
25. In the third stage of labour, is there a record that active management was carried out?

This will give a maximum score of 25 points. Record the total score for each record on the summary sheet provided.

**Name of Facility:** **Date of review**

**Name of reviewer:**

| | Item # | | Record # 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | Total (add horizontally) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Admission assessment** | 1 | ANC record reviewed | | | | | | | | | | | | | | | | | | | | | |
| | 2 | Admission form complete | | | | | | | | | | | | | | | | | | | | | |
| | 3 | Diagnosis and management | | | | | | | | | | | | | | | | | | | | | |
| | 4 | Admission double checked | | | | | | | | | | | | | | | | | | | | | |
| **Labour graph** | 5 | Risk factors recorded | | | | | | | | | | | | | | | | | | | | | |
| | 6 | FHR 1/2 hrly | | | | | | | | | | | | | | | | | | | | | |
| | 7 | State of liquor | | | | | | | | | | | | | | | | | | | | | |
| | 8 | Degree of moulding on PV | | | | | | | | | | | | | | | | | | | | | |
| | 9 | Contractions 1/2 hrly | | | | | | | | | | | | | | | | | | | | | |
| | 10 | Dilatation: LP 4 hrly AP 2 hrly | | | | | | | | | | | | | | | | | | | | | |
| | 11 | Dilatation plotted correctly | | | | | | | | | | | | | | | | | | | | | |
| | 12 | Level of head 4hrly | | | | | | | | | | | | | | | | | | | | | |
| | 13 | Maternal BP and pulse hrly | | | | | | | | | | | | | | | | | | | | | |
| | 14 | Maternal $T^0$ and urine 4hrly | | | | | | | | | | | | | | | | | | | | | |
| | 15 | Record of drugs and fluids | | | | | | | | | | | | | | | | | | | | | |
| **Management of labour** | 16 | Management recorded after PV | | | | | | | | | | | | | | | | | | | | | |
| | 17 | Summary of fetal condition | | | | | | | | | | | | | | | | | | | | | |
| | 18 | Summary of labour progress | | | | | | | | | | | | | | | | | | | | | |
| | 19 | Summary maternal condition | | | | | | | | | | | | | | | | | | | | | |
| | 20 | Decision on further action | | | | | | | | | | | | | | | | | | | | | |
| | 21 | Time of next review | | | | | | | | | | | | | | | | | | | | | |
| | 22 | Double-checking 4hrly | | | | | | | | | | | | | | | | | | | | | |
| **Newborn** | 23 | Form completed | | | | | | | | | | | | | | | | | | | | | |
| **Final summary** | 24 | Summary of labour completed | | | | | | | | | | | | | | | | | | | | | |
| | 25 | Active management of 3rd stage | | | | | | | | | | | | | | | | | | | | | |
| | | **Total score (add vertically)** | | | | | | | | | | | | | | | | | | | | | |

# Appendix 1B – Summary sheets

## Summary sheets for the Municipality

## Part 1: Background information

Name of person completing the form: ……
Date when form completed: ……

1. Name of district: ……
2. Name of Municipality: ……

3. What is the total population living in this Municipality?

4. What are the expected pregnancies in one year in this Municipality
   (i.e. Total population X Birth Rate [2.4%])

## Part 2: Summary of data for all ANC clinics

For each clinic, health centre and hospital in this Municipality, please complete the table below. The data may be obtained from ANC Form 3 – Clinic Checklist.

| Name of facility | Type of facility* | Data Items | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Number 1st ANC visits Jan – Dec 2001 | No. 1st ANC visits <20 weeks Jan-Dec 2001 | No. of 1st ANC visits who score 100% on exit interview | No. Interviews conducted | No. RPR blood results returned within 2 weeks Sep – Nov 2001 | No. 1st ANC visits Sep – Nov 2001 | No of emergency requests met within 2 hours, Sep – Nov 2001 | Total no. of emergency requests made, Sep – Nov 2001 |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| Sub-Total | | | | | | | | | |
| If there are more ANC clinics in your municipality, complete additional summary forms and then Add all the Sub-total to get the municipal TOTAL | | | | | | | | | |

*Type of facility – please use the following code: C = Clinic HC = Health Centre CH = Community Hospital DH = District Hospital

## Part 3: Calculation of ANC Indicators

Please calculate the following indicators with the TOTAL numbers recorded for each data item above:

| Indicator | Calculation | Achievement for the Municipality |
|---|---|---|
| % 1st ANC visits before 20 weeks | No. of 1st ANC visits < 20 weeks Jan – Dec 2001 / Total no. 1st ANC visits X 100 | |
| % Pregnant women who have attended ANC at least once | No. of 1st ANC visits in one year Jan – Dec 2001 / No. of expected pregnancies in S-DU in the same year X 100 | |
| % 1st Visits that meet predetermined standard | No. of 1st ANC visits that score 100% on exit interviews / Total no. of exit interviews conducted X 100 | |
| % 1st ANC visits tested for RPR and results returned within 2 weeks | No. of 1st ANC visits blood results for RPR received during Sep-Nov 2001 / Total no. of 1st ANC visits Sep-Nov 2001 X 100 | |
| Adequacy of emergency transport | No. of emergency transport requests met within 2 hours Sep – Nov 2001 / Total no. of requests made Sep–Nov 2001 X 100 | |
| Quality of ANC records | How many score:<br>90-100%<br>70-89%<br>< 70%<br>How many records did you review in total?<br>What were the most commonly missed items? | |

## Part 4: Summary of IPC data for Municipality

Please review the monthly statistics for each EOC facility in your municipality, and record the following:

| Name of Facility | Type of facility* (*Hospital Health Centre, Clinic) | Data Items | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Total No. Deliveries | Total no. perinatal deaths | No. avoidable perinatal deaths due h/worker and admin | Low Birth Weight babies (<2,5kg) | No. women admitted ≤ 5cm dilatation | No. complicated obstetric cases | No. Obstetric deaths from selected causes* | No. Caesarean Sections | No. a anaesthetic deaths during C/S | Total no. of maternal deaths (all causes) |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| Sub-Total 1 | | | | | | | | | | | |
| If complete more than 1 sheet, add sub-totals and record Total | | | | | | | | | | | |

* Selected causes of death include: Haemorrhage (antepartum or postpartum), pre-eclampsia/eclampsia, prolonged/obstructed labour, ruptured uterus, puerperal sepsis

## Part 5: Calculation of IPC Indicators

| Indicator | Calculation | Achievement for the Municipality |
|---|---|---|
| Perinatal Mortality Rate | Total number of perinatal deaths / Total number of deliveries X 1000 | |
| % Perinatal deaths due to avoidable causes | Total number of perinatal deaths due to avoidable factors / Total no of perinatal deaths X 100 | |
| Perinatal Care Index | % Low Birth Weight babies / Overall PMR | |
| Institutional delivery coverage | No of deliveries that take place in B- or C-EOC\facilities / Total no of expected deliveries in SDU X 100 | |
| % Early admissions (≤ 5cm dilatation) | No. admissions ≤ 5cm dilatation / Total no. admissions X 100 | |
| % women with obstetric complications treated in B-EOC or C-EOC facility | No of complicated obstetric cases / Total expected complications in SDU X 100 | |
| Caesarean Section rate per total population | No of C/S in the SDU / Total no of expected deliveries in SDU X 100 | |
| Accuracy of labour records | No. that score 90-99%<br>No. hat score 70-89<br>No. that score < 70%<br>Total no. records reviewed | |
| Case fatality rate | No of obstetric deaths due to selected causes / Total no of complicated obstetric cases X 100 | |
| Anaesthetic death rate | No of maternal deaths due to anaesthetics / Total no of women given anaesthetics X 100 | |
| Availability of Functioning B-EOC Facility per 500 000 population | No. of B-EOC facilities | |
| Availability of Functioning C-EOC Facility per 500 000 population | No. of C-EOC facilities | |
| Number of facilities that perform some but not all signal functions of B-EOC | No that have some but not all B-EOC signal functions | |
| Number of facilities that perform some but not all signal functions of C-EOC | No that have some but not all signal functions of C-EOC facilities | |

# Appendix 1C – Major problems arising from baseline assessment

## Method for listing major problems

The RHMTS were asked to:

- Review the findings of the baseline assessment for their municipality
- Compare their findings against the norms and targets and identify where these were not met
- Provide an interpretation for why there was a discrepancy
- List possible problem areas that were considered to be major problems.
- The lists were collated to establish how common the problems were amongst the municipalities

## Major problems identified by the RHMTs

| Major problem | No. municipalities |
|---|---|
| High Maternal Mortality Rate | 5 |
| Under reporting of maternal deaths | 10 |
| Maternal deaths due to anaesthetic procedures | 2 |
| High PMR | 10 |
| Perinatal review meetings not held | 7 |
| High % perinatal deaths due to avoidable causes | 9 |
| Where perinatal review meetings are held, the quality of the analysis is poor | 3 |
| High Perinatal Care Index | 5 |
| Low institutional delivery coverage | 11 |
| High institutional delivery coverage | 4 |
| Inadequate labour records | 12 |
| No information on accuracy of labour records | 8 |
| Waiting time between admission and treatment for obstetric complications not recorded | 5 |
| Delays between admission and treatment of obstetric complications | 2 |
| Low C/S rate | 2 |
| C/S not done | 3 |
| High C/S rate | 3 |
| Incomplete coverage of obstetric complications | 4 |
| Under reporting of obstetric complications | 14 |
| High case fatality rates | 1 |
| High Anaesthetic death rate | 2 |
| Poor number and distribution of B-EOC facilities | 7 |
| Poor number and distribution of C-EOC facilities | 6 |
| HPCSA and National DOH regulations (non-availability of blood and certain procedures) that affect rural hospitals | 3 |
| Low ANC coverage | 10 |
| Late booking for ANC (>20 weeks) | 20 |
| Substandard care in the 1st ANC visit | 16 |
| Delayed return of RPR results | 12 |
| Non data on RPR results | 12 |

## Major problems identified by the RHMTs (Cont.)

| Major problem | No. municipalities |
|---|---|
| Delayed response of emergency transport | 10 |
| No data on emergency response | 17 |
| Staff shortages | 3 |
| Lack of skills in intubation and resuscitation | 1 |
| Inadequate continuing education of health workers | 1 |
| Lack of /inadequate equipment | 1 |
| Inadequate buildings | 1 |
| Fragmentation of services | 2 |
| Inadequate referral system | 1 |
| Poor quality data for baseline assessment of ANC and IPC (including nor data on home deliveries) | 10 |
| RHMT not fully constituted | 1 |
| High flow of immigrants | 1 |

# Appendix 1D – Key issues arising from baseline assessment

## Method for identifying key issues

The major problems identified by the RHMTs are documented in Appendix 1C, as is the number of municipalities that identified a problem as major in their municipality.

An unmanageable number of major problems were listed. Thus the RHMTs were requested to select from their list of major problems 5 priority key issues. A key issue was defined as:

- A problem of high priority
- That is feasible to deal with
- That will make a big difference if solved
- That is key to quality of care and, if resolved, will unlock a number of other problems

A scoring system was used to arrive at the key issues: In each RHMT, from the list of major problems, each individual was encouraged to write down 5 priorities in order of priority. These priorities were recorded and given a score from each individual.

- A score of 5 was given for Priority 1
- A score of 4 was given for Priority 2
- A score of 3 was given for Priority 3
- A score of 2 was given for Priority 4
- A score of 1 was given for Priority 5

The total scores were added and the problems with the 5 highest scores would become the priority key issues. The key issues identified by all the municipalities are recorded below - the number of municipalities that prioritised each key issues is also reflected.

## Identified key issues

| Key issues | No. municipalities |
|---|---|
| Under reporting of maternal deaths and complications | 3 |
| Poor labour records | 16 |
| Perinatal reviews not held | 2 |
| High PMR | 5 |
| High % of PNDs due to avoidable factors (incl. Poor perinatal care) | 7 |
| Non-reporting of complications | 3 |
| High C/S rate | 1 |
| Low C/S rate | 2 |
| High anaesthetic death rate | 1 |
| Late booking for 1st ANC visit | 14 |
| Poor quality of 1st ANC visit | 17 |
| Poor return of RPR results | 11 |
| Inadequacy of emergency transport | 8 |
| Under utilisation of ANC services | 3 |
| Under utilisation of IPC services | 3 |
| Over utilisation of IPC services | 2 |

## Identified key issues

| Key issues | No. municipalities |
|---|---|
| Fragmentation of services | 1 |
| Shortage of human resources | 1 |
| Inadequate capacity building of staff | 1 |
| Client satisfaction not known | 1 |
| Unavailability of fully functional health facilities (including no C/S, non-availability of bloods) | 9 |
| Clinics not doing deliveries | 1 |
| No health centres | 1 |
| Build RHMT | 1 |
| Inadequate data for baseline assessment | 5 |
| High influx of immigrants | 1 |

Common key issues were grouped and the following short list of key issues was developed:

- Poor quality of the 1st ANC visit, which is compounded by late booking for this visit, and poor return of RPR results.
- Poor labour records. This is emphasised by related key issues i.e. the high percentage of perinatal deaths due to avoidable factors, high perinatal care index, high perinatal mortality rate and high maternal mortality rate.
- Non-availability of emergency transport
- Non-availability, poor distribution and inaccessibility of functional health facilities (hospitals and health centres)

# Chapter 4: Appendix 2

## Appendix 2A – Standards of Care

The standard to be met for both the 1st ANC visit and the management of labour is simply that all components of care be carried out completely and accurately. The RHMTs identified the major components of care in the 1st ANC visit and in the management of labour and the associated activities. These are reproduced form Tables … to … for ANC and Table … for management of labour. The work of the RHMTs conforms to, and expands on what is contained in the Guidelines for Maternity Care in South Africa developed by the National Department of Health (2002).

## Standards of Care for the 1st ANC Visit

Table 1: Components and activities of the 1st ANC visit

| Components care of the 1st ANC Visit | | Activities |
|---|---|---|
| Confirmation of pregnancy | | Whenever a patient comes for confirmation of pregnancy, this should become her first antenatal visit and should be dealt with accordingly. Ideally the 1st ANC visit should be in the first trimester but at least <20 weeks). If the purpose of her visit is to seek termination of her pregnancy, counsel her and if necessary refer her to TOP services. |
| History taking | Personal history | Name, age, address, religion, marital status, next of kin, language, citizenship, occupation, family doctor |
| | Past obstetric history | Number and duration of previous pregnancies. Health during pregnancies. Number of previous deliveries, number of abortions, still births, neonatal deaths, live babies, causes of deaths. Mode of delivery. Indications for any operative deliveries, with details of any complications. Duration of labour, particularly the second stage. Type of labour – spontaneous or induced? Third stage – PPH? Health during puerperium - sepsis/psychosis? |
| | Present pregnancy | LMP, quickening, EDD, period of gestation by dates. |
| | Gynaecological history | Menstrual pattern, PV discharges, STIs and treatment (did she complete the course of treatment?), type of contraceptive used |
| | Medical history | Diabetes, hypertension, cardiac or renal disease, asthma, allergies, TB. Use of drugs: alcohol, tobacco of any form, any other substance abuse. |
| | Family history | Source and level of income. |
| | Social history | Level of education |
| General examination | General appearance | Nutrition, gait, stature, oedema, pallor, varicosities, height, deformities |
| | Vital signs | Temperature, pulse, BP. |
| | Abdominal | Inspection, palpation, auscultation.<br>Shape, size (HOF and SFH) scars, oedema, any enlarged viscera, fetal movement, lie, presentation, position, abdominal girth, fetal heart. |
| | Vulva | Warts, scars, discharges |
| Routine investigations | | Blood for haemoglobin, blood grouping, Rhesus, RPR. Urine for glucose, protein, blood. Counselling and voluntary testing for HIV. |
| Special investigations | | Ultrasonography and X-ray when indicated |
| Diagnosis | | High risk or low risk? Name risk factors. |

Table 1: Components and activities of the 1st ANC visit (Cont.)

| Components care of the 1st ANC Visit | Activities |
|---|---|
| Health education | General and specific - Personal hygiene, diet and fluids, exercise, rest, warning signs, how to take medication, date of follow-up visit,place of delivery, transport to be used for delivery, inform the woman about the findings in the ANC visit<br>Importance of attending ANC, danger signs in pregnancy, signs of onset of labour, avoidance of substance abuse. Breast feeding. |
| Treatment /Medications | Routine and as necessary<br>Prophylaxis: Anti-tetanus toxoid, iron and folic acid. |
| Referral | Refer all patients to the doctor or the ADM for double-checking of findings at the first visit. Refer all high-risk patients to the high-risk antenatal clinic. |
| Planning for subsequent visits and delivery based on the findings | Where to attend ANC? Where to deliver? Transport. Frequency of visits |
| Recording | Complete ANC card with all relevant information and decisions. |

A plan for the client's antenatal care needs to be discussed with her at the first visit. The recommended schedule of visits is as follows (DOH, 2002):

Table 2: Management of the low risk multigravida

| Visit # | Gestational age (weeks) | Specific objectives |
|---|---|---|
| 1 | 6 – 20 | Risk assessment, gestational age, blood tests<br>Double-checking of final assessment |
| 2 | 24 – 28 | Multiple pregnancy, hypertension, risk for pre-term labour |
| 3 | 32 – 34 | Fetal growth and hypertension |
| 4 | 36 – 38 | Fetal growth, lie, presentation, hypertension, anaemia<br>Double-checking and plan for delivery |
| 5 | 40 – 42 | Fetal growth, lie, presentation, hypertension, post dates |

Table 3: Management of the low risk primagravida

| Visit # | Gestational age (weeks) | Specific objectives |
|---|---|---|
| 1 | 6 – 20 | Risk assessment, gestational age, blood tests<br>Double-checking of final assessment |
| 2 | 24 – 28 | Multiple pregnancy, hypertension, risk for pre-term labour |
| 3 | 28 – 30 | Hypertension (checking blood pressure only) |
| 4 | 32 – 34 | Fetal growth and hypertension |
| 5 | 34 – 36 | Hypertension (checking blood pressure only) |
| 6 | 36 – 38 | Fetal growth, lie, presentation, hypertension, anaemia<br>Double-checking and plan for delivery |
| 7 | 38 – 40 | Hypertension (checking blood pressure only) |
| 8 | 40 – 42 | Fetal growth, lie, presentation, hypertension, post dates |

Table 4: Management of high risk pregnancies

| |
|---|
| ▪ High-risk clients should be referred to a HR clinic (in a B-EOC or C-EOC facility and be seen there by an ADM or doctor with obstetric experience and managed according to the protocols of management |
| ▪ Must ensure that there is a fully functioning high risk antenatal clinic in all hospitals |
| ▪ Should plan to deliver all high risk clients in hospitals |

# Standards of Care for the management of labour

Table 5: Components and activities in the management of labour

| Components of the management of labour | | Activities |
|---|---|---|
| Preparation for labour | | Health education as to what to expect in labour (stages of labour, rupture of the membranes, contractions, breathing, exercises, choice of position, diet and fluids during labour, companion during labour and delivery)<br>Aim for all deliveries to take place under supervision of trained personnel in health centres (low-risk) or hospitals (high-risk). Make provision for Mother's Waiting Areas. |
| Admission examination | Documentation | Ensure proper filling in of the admission form in the maternity record |
| | History taking | Take medical, surgical, obstetric, family, social history as above for ANC. Review ANC card. Take particular note of parity, RPR results, HIV status and other high-risk factors. |
| | Examination | General – hydration, evidence of pain or exhaustion, vital signs – BP, pulse, temperature<br>Abdominal – inspection, palpation, auscultation.<br>PV and speculum examination (if indicated) |
| | Investigations | Urinalysis, Hb, and others as indicated. |
| | Diagnosis and decisions on management | Based on the summary of findings above. Categorise into high and low risk and identify risk factors. Establish prognosis and decide on whether: progress as NVD, augmentation, C/S, referral. Provide psychological support, and teach breathing technique. |
| | Double-checking | The findings and decisions taken at the admission examination must be double-checked by a senior midwife (preferably an ADM) or experienced doctor. |
| Latent phase (Onset of true labour to 3cm dilatation, fully effaced) | Documentation | Record all findings on the latent phase section of the labour graph. |
| | Examination | 2-hourly – BP, pulse rate, uterine contractions, fetal heart rate<br>4-hourly – Temperature, vaginal examination |
| Active phase (Cervix 3cm dilated and fully effaced to10cmdilatation) | Documentation | Transfer recordings to the active phase section of the labour graph. Record all findings of maternal and fetal condition and progress of the labour on the labour graph, and nowhere else. |
| | Maternal condition | ½ -hourly – pulse rate<br>Hourly – BP<br>2-hourly – urine volume and test for ketones, proteins and sugar<br>4-hourly - temperature<br>Pain management – rubbing of back, position, allow free movement, and medication if necessary (Pethidine, Aterax, Entonox)<br>Identify problems – e.g. maternal exhaustion<br>Maternal support – e.g. birth companion of choice<br>Maternal nutrition and hydration |
| | Fetal condition | ½ -hourly – fetal heart rate, before during and after a contraction, noting any decelerations and their type.<br>2-hourly – colour of the liquor if membranes have ruptured<br>Determine the lie, presentation and position |
| | Progress of the labour | Hourly – frequency and duration of uterine contractions; level of the head on abdominal palpation in relation to the brim of the pelvis.<br>2-hourly – PV examination - cervical dilatation, caput and moulding |
| | Double-checking | Findings to be double-checked 4-hourly throughout labour by an experienced midwife or doctor. At that time, must interpret findings by summarising fetal condition, labour progress and maternal condition, make a diagnosis and record decision on further management. |

| Components of the management of labour | | Activities |
|---|---|---|
| Second stage (Full cervical dilatation till expulsion of baby) | Pelvic phase – from full cervical dilatation until the head reaches the pelvic floor | Allow head to descend onto pelvic floor if there is no fetal distress, delay or maternal distress. Continue observations as for the active phase of the 1st stage. Keep bladder empty.<br>Encourage bearing down only when fetal head is on the pelvic floor and mother has an urge to push |
| Second stage (Full cervical dilatation till expulsion of baby) Cont. | Expulsive phase – expulsion of the baby | Place mother in a suitable position<br>Show mother how to breath and push<br>Listen to fetal heart rate after each contraction<br>Protect perineum when head crowns<br>Do episiotomy only if necessary; under local anaesthetic – indications: delay, fetal distress, maternal distress, breech or assisted delivery, previous third degree tear, delivery of preterm baby with tight perineum<br>Deliver the baby, do the AGPAR score item by item.<br>Record time of onset of 2nd stage, bearing down and delivery |
| Third stage (Expulsion of placenta and membranes) | | Active management: Abdominal palpation to exclude previously undiagnosed second twin. Give oxytocin 10 units IM. When signs of placental separation, rub up the uterus and apply controlled cord traction, deliver placenta and examine for completeness and abnormalities. Expel clots, and estimate blood loss.<br>Encourage to void urine. Observe for tears. Suture tears and episiotomies. Position comfortably |
| 4th stage – after expulsion of placenta up to an hour post delivery | | Initiate breast feeding<br>Vital signs – T, PR, BP, measure fundal height, monitor for vaginal bleeding<br>Patient can have something to eat and then be transferred to PNC lying in ward |

# Appendix 2B – Deficiencies in the Provision of Care

## Deficiencies in the provision of care in the 1st ANC Visit

When comparing what should be done, with what is actually done, the RHMTs identified the following deficiencies in current performance:

Table 6: Current deficiencies in the provision of care in the 1st ANC visit

| | Deficiencies |
|---|---|
| 1st ANC visit | Incomplete history taking<br>Incomplete physical examinations<br>Incomplete investigations (high percentage of patients do not have RPR results)<br>Poor interpretation of findings<br>Inadequate and inaccurate decision-making<br>Poor record keeping<br>Poor identification, poor management and late referral of high risk clients<br>Inadequate health education (insufficient information provided to clients)<br>Inadequate pre-delivery counselling and preparation<br>Poor interpersonal relationships with clients (particularly teenagers and grand-multiparous women)<br>Inadequate planning of ANC visits (inadequate communication with client regarding the schedule of visits)<br>Incomplete coverage of ANC |

Table 7: Current deficiencies in the management of labour

| | Deficiencies |
|---|---|
| Management of labour | Inadequate pre-delivery counselling<br>Incomplete admission assessments and inadequate plan for labour and delivery<br>Inadequate use of the partogragh (by doctors and midwives), thus poor monitoring of the 1st stage of labour<br>Poor decision-making in the management of labour<br>Delays in detecting abnormalities, and then referring complications to senior personnel and the next level of care<br>Inability to predict labour outcomes<br>Failure to follow protocols of management and referral policy<br>Delays in medical/senior personnel/next level of care responding to calls for help/referrals<br>Double-checking of patients' findings on admission and 4-hourly in labour not done consistently<br>Poor aseptic technique<br>No birthing companions, and poor support for, and communication with, the woman during labour<br>Poor relationships with women in labour (particularly teenagers and grand-multiparous women) |

# Appendix 2C – Causes of poor performance

The RHMTs identified the causes (both immediate and underlying) to the above deficiencies. These are reproduced in the first two columns of Table … below. The facilitators grouped the causes and categorised them according to the influencing factors described in the conceptual framework. These groupings and categories are reproduced in the third and fourth column of Table … below.

Table 8: Factors causing poor quality of maternal care

| Immediate causes | Underlying causes | Influencing factor | Category of influencing factor |
|---|---|---|---|
| Poor understanding of the purpose of routine patient care activities resu8lting in incomplete and inappropriate application of knowledge | ▪ Poor quality training (basic and post-basic)<br>▪ Inadequate in-service training | Staffing – Training | Management of the health system<br><br>Provider behaviours |
| Absolute shortages in numbers of staff per category (nursing and medical) | ▪ High migration to private sector/ urban areas/overseas<br>▪ Inadequate retention and recruitment strategies | Staffing –<br><br>Retention<br><br>Recruitment<br><br>Distribution<br><br>Placement<br><br>Allocation<br><br>Utilisation<br><br>In-service training | Current policies that govern the Public Sector, in general, and the Health Sector, in particular, result in problems in the training, retention, and recruitment of staffing. The South African Nursing Council policies also have an impact E.g. has not made provision for ADMs to be recognised a specialty area of practice.<br><br>Management practices at province, district, institution and unit level result in problems in the distribution, placement, allocation and utilisation of staff. Management practices also affect the in-service training and further professional development of staff. |
| Relative shortages of staff (nursing and medical) | ▪ Poor planning and co-ordination of leave and off duties<br>▪ Inappropriate allocation of responsibilities (e.g. non-nursing duties, all patients in OPD seen by doctors)<br>▪ 'Supermarket' approach in ANC clinics | | |
| Shortage of experienced staff | ▪ Inadequate placement and utilisation of staff with specialised experience and skill<br>▪ Frequency of rotation and rotation practices that do not permit overlap and continuity<br>▪ New staff not inducted<br>▪ ADMs not trained in Limpopo province<br>▪ Existing ADMs not placed correctly<br>▪ Lack of targeted, integrated and coordinated in-service training plan | | |

Table 8: Factors causing poor quality of maternal care (Cont.)

| Immediate causes | Underlying causes | Influencing factor | Category of influencing factor |
|---|---|---|---|
| Inadequate supervision of patient care | ▪ Inadequate support for supervisors – no training to equip supervisors for their role; no incentives for fulfilling supervisory role; institutional managers do not provide support for the implementation of corrective actions recommended by supervisors<br>▪ No plan to support the implementation of adequate supervision | Supervision of staff –<br>Of patient care<br>Of health worker performance | Policy<br>Provincial HRM<br>Provincial Nursing Services Directorate<br><br>Management of the health system<br>Institutional level |
| Audit of the service not well established i.e. ANC and labour records not reviewed; no first review of deaths within 24 hours of death occurring; limited preparatory meetings; inconsistent and poorly attended perinatal review meetings. | ▪ Poorly conducted PRMs<br>▪ Role of PRM undervalued<br>▪ Limited availability of district obstetricians<br>▪ Lack of support from managers to make audit of the service mandatory | Audit of the service<br><br>Monitoring quality of care | Policy<br>Provincial MCWH Directorate<br>Institutional level<br><br>Management of the service<br>District and Institutional levels |
| Inadequate adherence to referral guidelines and protocols | ▪ National Maternity Care guidelines not well distributed<br>▪ Protocols of management not developed, not formally adopted, not distributed, not updated<br>▪ Adherence to protocols not monitored | Referral system<br><br>Protocols of management<br><br>Lines of communication | Management of the health system<br>Provincial MCWH Directorate<br>District, institutional and ward level<br><br>Provider behaviours<br>Attitudes<br><br>Policy<br>Provincial and district level |
| Inadequate follow-up and feedback between referring and referral practitioners/ facility | ▪ Poor relationships between midwives and doctors<br>▪ Poor relationships between health providers at 1st, 2nd, 3rd level of care<br>▪ Lack of cooperation between private and public providers | Relationships between referral levels | |
| Inadequate emergency services to support emergency referrals | ▪ Non availability of ambulances<br>▪ Poor allocation of ambulances<br>▪ Poor utilisation of ambulances<br>▪ Poor availability of adequate trained emergency personnel | Support services<br><br>Availability<br>Allocation<br>Utilisation<br>Co-ordination<br>Monitoring performance | Policy<br>National and provincial EMS and laboratory services<br><br>Management of the health system<br>Provincial, district and institutional level |

Table 8: Factors causing poor quality of maternal care (Cont.)

| Immediate causes | Underlying causes | Grouping | Category of influencing factor |
|---|---|---|---|
| Inadequate collection of blood specimens and communication of results | ▪ Inadequate on-site testing facilities<br>▪ Poor availability of transport<br>▪ Inadequate co-ordination of transport<br>▪ Inadequate transportation of specimens<br>▪ Non-availability/non-functional telephone and fax machines | Support services<br>Monitoring performance | Management of the health system<br>Provincial, district and institutional level |
| Equipment not available, insufficient, of poor quality, not functional | ▪ Non-professional workers make decisions about what equipment to purchase<br>▪ Inadequate tendering process<br>▪ Inadequate maintenance plan<br>▪ Inadequate communication between health professionals and stores | Equipment, drugs and other materials<br><br>Selection<br>Ordering<br>Procurement<br>Supply<br>Distribution<br>Maintenance<br>Stock management<br>Monitoring use | Policy<br>Provincial and institutional<br><br>Management of the health system<br>Institutional level<br>Ward level |
| Non-availability of appropriate drugs | ▪ Protocols of management and EDL list do not always conform<br>▪ Poor stock management | | |
| Non-availability of blood in level 1 and level 2 Hospitals | ▪ Change in blood bank policy<br>▪ Centralised blood bank | | |
| Lack of stationary and maternity records | ▪ Poor stock management and ordering procedures | | |
| No provision of mother's waiting areas (MWAs) and Inadequate space and poor organisation of the physical environment | ▪ Planners of health facilities have not accommodated the need for labour companions and MWAs | Planning, organisation and co-ordination of health facilities<br>Infrastructure<br>Planning<br>Co-ordination<br>Monitoring<br>Evaluation<br>Feedback | Management of the health system<br>District and institutional level<br><br>Policy<br>Provincial MCWH |
| ANC clinics not open after hours and on weekends | ▪ Poor planning of service provision | | |

Table 8: Factors causing poor quality of maternal care (Cont.)

| Immediate causes | Underlying causes | Grouping | Category of influencing factor |
|---|---|---|---|
| Poor time management and 'crisis' management | ▪ Poor monitoring, evaluation, and feedback processes<br>▪ Poorly defined lines of communication and accountability (between health providers and institution managers, and with district and provincial managers)<br>▪ Poor flow of information<br>▪ Many uncoordinated workshops and meetings<br>▪ Lack of clarity on priority objectives | As above | As above |
| Lack of discipline | ▪ Code of conduct not implemented<br>▪ Nepotism in staff appointments<br>▪ Supervisors do not enforce discipline because their subordinates often have a higher social status in the community than them<br>▪ Autocratic leadership | Accountability | Management of the health system<br>Institutional level<br>Trade unions<br>Hospital Boards |
| Low morale, lack of commitment to providing quality care, lack of interest, burn out syndrome | ▪ No staff appraisals<br>▪ Lack of incentives for high standard of work<br>▪ Inadequate support and supervision | Supervision | Management of the health system<br>Institutional level |
| | ▪ "Lack of belief that we can make a difference"<br>▪ "Lack of reflection on performance"<br>▪ Not nurturing the active, living spirit within oneself"<br>▪ "No conscience"<br>▪ "Lack of initiative and responsibility" | Provider attitudes | Provider behaviours<br>Skills and attitudes<br>Personal development |
| Delays in attending 1st ANC visit and in admission into labour<br>Non-conformance to schedule of visits | ▪ Service has lost credibility – "last resort"<br>▪ Client not satisfied with the service<br>▪ Transport and monetary constraints<br>▪ Resistance to changing cultural beliefs | Attitudes of clients<br>Client satisfaction<br>Client constraints and limitations | Management of the health system<br><br>Socio-economic factors<br><br>User behaviours |

## Appendix 2D – Objectives and concomitant measures identified by the RHMTs

Arising from the planning process, the RHMTs developed objectives for resolving the influencing factors. Linked to these objectives, they identified the possible measurements required to monitor and evaluate the achievement of the objectives. These are reproduced in Table ... below.

Table 9: Measures of the influencing factors

| Areas of intervention | Objectives to be achieved | Measure required |
|---|---|---|
| Staffing<br>For the management of labour<br>For the provision of ANC | Ensure sufficient, experienced midwives, advanced midwives and doctors in each shift | Existing staff numbers (by category, including doctors) in clinics, health centres and hospitals in each municipal area compared with established posts, compared with norms i.e. vacancy rate<br>Work load – number of midwives compared to number of deliveries; number of midwives compared to number of beds<br>Current level of skill and experience of available personnel<br>Numbers of staff that have left within the last year, with reasons for leaving<br>Number of new staff recruited to replace staff that have left<br>Current leave and off-duty system with an analysis of current practice with regards to the granting of leave and off duties<br>Absenteeism rates<br>Current practice with regards to allocation and rotation of staff<br>Budget available for staffing costs<br>Degree of health worker satisfaction |
| Supervision<br>In clinics providing ANC<br>In labour wards | Develop and implement a plan for supervision of:<br>Individual patient care<br>Staff<br>Facilities<br>Services<br>Inclusive of:<br>Standardised supervisory procedures and tools<br>Job description for supervisors<br>Training of supervisors<br>Transport for supervisory activities (where applicable) | Proportion of facilities that implement the principle of double-checking in ANC (1st visit and 36th week visit)<br>Proportion of patients that are double-checked in labour (on admission and 4-hourly)<br>Proportion of clinics and maternity units that have received monthly supervisory visits in the last 6 months<br>Proportion of facilities where supervision includes:<br>Monthly review of records<br>Assessment of staff competencies<br>Assessment of available resources (equipment, drugs)<br>Review of indicators of quality of care |

Table 9: Measures of the influencing factors (Cont.)

| Areas of intervention | Objectives to be achieved | Measure required |
|---|---|---|
| Perinatal audit | Implement effective:<br>1st review of records within 24-hours of perinatal or maternal death<br>Monthly preparatory meeting<br>Monthly perinatal review meeting<br>6-monthly epidemiological analysis of trends | Proportion of facilities that conduct:<br>1st review of records<br>Preparatory meeting<br>Monthly perinatal review meeting<br>6-monthly epidemiological analysis<br>Proportion of facilities that in their perinatal audit process:<br>Identify causes of death<br>Identify avoidable factors<br>Have adequate attendance and participation at perinatal review meetings (inclusive of doctors and midwives, hospital and clinic staff)<br>Identify actions to prevent further deaths<br>Distribute the minutes of the Perinatal review meeting<br>Use the PPIP (paper-based and computer-based) |
| Referral system | Develop, distribute and encourage adherence to protocols of management, including referral procedures specific to each district. | Referral rate (with indications for referral and documented outcome of referral)<br>% referral with feedback<br>% Referrals adhere to guidelines and protocols<br>% Perinatal deaths and % maternal deaths due to lack of adherence to protocols of management<br>% Facilities with Medical Officer allocated to maternity |
| In-service training<br><br>(Inclusive of assessments, investigations, interpretation of findings, appropriate decision making<br><br>Target: midwives (including supervisors) and doctors (including private practitioners) | Increase adherence to protocols of management and referral guidelines<br><br>Improve management of:<br>Low and high risk ANC clients<br>Normal and abnormal labour<br>Obstetric complications and emergencies | Coverage for in-service training<br>Midwives (normal and abnormal labour)<br>Doctors (complications and emergencies)<br>Proportion RHMTs with in-service training plan (including process for determining learning needs)<br>Range of educational topics covered in perinatal review meetings over a 12-month period<br>Attendance rates at perinatal review meetings<br>Average time spent in maternity before rotation to another ward |
| Health education | Improve the quality of health education and information provided to users of the ANC clinic | Methods and materials for health education currently used |
| Early 1st ANC visit (< 20 weeks) | Promote early attendance for 1st ANC visit | Percentage of clients attending ANC for their 1st visit <20 weeks<br>Reasons for delays in attending ANC |
| Early admission in labour | Promote early admission by dealing with causes of delays (carry out study to determine the causes of delay) | Proportion of clients admitted >5cm dilatation<br>Reasons for delay in admission |

Table 9: Measures of the influencing factors (Cont.)

| Areas of intervention | Objectives to be achieved | Measure required |
|---|---|---|
| Personal development | Promote committed, self developed midwives and doctors who render quality care, enjoy their work and achieve job satisfaction.<br>Promote good working relationships between midwives and doctors | % Midwives and doctors that have completed the Health Worker for Change programme<br>Summary of the quality of team relationships in the health facilities and its effect on quality of care |
| Support services | Ensure sufficient blood and blood products are available in hospitals | Availability of blood<br><br>Availability of emergency transport |
| ANC services | Ensure provision of:<br>Laboratory support for ANC clinics<br>High Risk ANC clinic<br>Protocols of management<br>Ensure efficient flow of patients within 'supermarket approach' | RPR Results: Turn Around Time<br><br>Proportion of level 1 hospitals with High Risk ANC clinic<br><br>Availability of protocols of management for High Risk ANC<br><br>Referral rate to High Risk ANC clinic |

# Appendix 2E – Facility Review Form

- This form has been designed to assist with the collection of outstanding information with regards to factors that most influence the quality of maternal health care.
- Please could the Unit Manager (or delegate) complete this form
- Please write the name of the facility at the top of each page
- If you have any queries about ho to complete the form, please phone Anna Voce on 082 973 6280
- Please fax the completed form by 7th November 2003 to Mrs Flora Moloise (For Attention: Lerato Manyathela). Please do meet this deadline so that feedback can be given to you during the November site visits. Please use the following fax number: 015 291 5626.

| | | | |
|---|---|---|---|
| Date today: | | Name of person completing the form: | |
| | | Contact telephone number: | |

## 1. General Information

| | | | |
|---|---|---|---|
| Facility name: | | Municipality: | |
| Type of facility: (Level 1, 2 or 3) | | | |

| | | |
|---|---|---|
| How many maternity beds are there in this facility? | In Antenatal Ward? | |
| | In Labour Ward? | |
| | In Postnatal ward? | |

| | | |
|---|---|---|
| Do you have a High Risk ANC Clinic in this facility? | Yes | No |
| When does it operate? | | |
| What is the total number of High Risk ANC clients that have been seen in the High Risk ANC clinic in the last 3 months? | | |

## 2. Perinatal Statistics

| | | |
|---|---|---|
| In the last 12 months, what has been the TOTAL number of: | Births | |
| | Assisted deliveries | |
| | Caesarean sections | |
| | Maternal deaths | |
| | Still births (FSB & MSB) | |
| | Early Neonatal deaths | |

## 3. Obstetric Complications

| In the last 6 months, which of the following complications have been managed at this facility? | | Tick one box for each item | |
|---|---|---|---|
| | Severe anaemia | Yes | No |
| | Antepartum haemorrhage | Yes | No |
| | Pre-eclampsia | Yes | No |
| | Eclampsia | Yes | No |
| | Postpartum haemorrhage | Yes | No |
| | Abortion complications | Yes | No |
| | Retained placenta | Yes | No |
| | Breech presentation | Yes | No |
| | Sepsis | Yes | No |
| | Ectopic pregnancy | Yes | No |
| | Ruptured uterus | Yes | No |

## 4. Referrals to the next level of care

| For the last month, list the indications for referral to the next level of care: | Case # | Age | Parity | Indication for referral | Outcome |
|---|---|---|---|---|---|
| | 1 | | | | |
| | 2 | | | | |
| | 3 | | | | |
| | 4 | | | | |
| | 5 | | | | |
| | 6 | | | | |
| | 7 | | | | |
| | 8 | | | | |
| | 9 | | | | |
| | 10 | | | | |
| | 11 | | | | |
| | 12 | | | | |
| | 13 | | | | |
| | 14 | | | | |
| | 15 | | | | |
| | 16 | | | | |
| | 17 | | | | |
| | 18 | | | | |
| | 19 | | | | |
| | 20 | | | | |

## 5. Emergency services

| | Tick one box | |
|---|---|---|
| Are on-call services for the care of obstetric complications available at night and on weekends? | Yes | No |
| Are on-call services for caesarean section available at night and on weekends? | Yes | No |

| | |
|---|---|
| Once you decide to refer an obstetric emergency, how long does it take for an ambulance to arrive? | |
| Which is your referral hospital? | |
| How far is your referral hospital from your facility (in kilometres)? | |

| Who, apart from the driver usually accompanies an emergency referral to the next level of care? | Tick one box |
|---|---|
| Patient is not accompanied (driver only) | |
| A paramedic | |
| A nurse/midwife | |
| A family member | |
| Other (please specify) | |

## 6. Availability of blood and blood products

| | |
|---|---|
| How many units of Fresh Whole Blood are kept in your facility? | |
| Where are they kept? | |
| What is the distance between your facility and the blood bank (in kilometres)? | |

| Are the following blood products available in your facility? | | Tick one box | |
|---|---|---|---|
| | Frozen dried plasma | Yes | No |
| | Packed cells | Yes | No |
| | Platelets | Yes | No |

| | | |
|---|---|---|
| Have there been any maternal deaths due to insufficient blood in the last 12 months in your facility? | Yes | No |

## 7. Staffing establishment

### Nursing personnel in the maternity unit

| Category of personnel | Number of posts on establishment | | Number of posts filled | |
|---|---|---|---|---|
| | Full time | Part time | Full time | Part time |
| Professional nurses | | | | |
| Enrolled nurses | | | | |
| Enrolled Nursing Assistant | | | | |
| Other (please specify) | | | | |

### Medical personnel in the maternity unit

| Category of personnel | Number of posts on establishment | | Number of posts filled | |
|---|---|---|---|---|
| | Full time | Part time | Full time | Part time |
| Specialist obstetrician | | | | |
| Medical Officer | | | | |
| Community service doctor | | | | |
| Intern | | | | |
| Other (please specify) | | | | |

### Medical personnel in the whole hospital

| Category of personnel | Number of posts on establishment | | Number of posts filled | |
|---|---|---|---|---|
| | Full time | Part time | Full time | Part time |
| Specialists | | | | |
| Medical Officer | | | | |
| Community service doctor | | | | |
| Intern | | | | |
| Other (please specify) | | | | |

## 8. Staff competencies

| | |
|---|---|
| How many Professional Nurses in your unit have the Advanced Diploma in Midwifery (ADM)? | |
| How many doctors are able to perform a caesarean section? | |
| How many doctors are able to give a general anaesthetic? | |
| How many are able to give a spinal anaesthetic? | |
| How many are able to do a hysterectomy? | |
| How many are able to manage a ruptured ectopic pregnancy? | |

## 9. Allocation of staff

### Nursing personnel in the maternity unit

| | |
|---|---|
| How are the shifts usually organised in your maternity unit? (How many days on-duty how many days off-duty?) | |

| If you take an average per day of the last month, how many nurses were on duty at the following times? (Please take note of overlapping shits) | During the day | Number | During the night | Number |
|---|---|---|---|---|
| Professional nurses | 07h00 – 13h00 | | 19h00 – 07h00 | |
| | 13h00 – 19h00 | | | |
| Enrolled nurses | 07h00 – 13h00 | | 19h00 – 07h00 | |
| | 13h00 – 19h00 | | | |
| Enrolled Nursing Assistants | 07h00 – 13h00 | | 19h00 – 07h00 | |
| | 13h00 – 19h00 | | | |

## 10. Rotation of personnel

### Nursing personnel in the maternity unit

| Of the nursing personnel allocated to the maternity unit this month, how many have been in the maternity unit for: | | |
|---|---|---|
| Professional nurses | < 6 months | |
| | Up to 1 year | |
| | Up to 2 years | |
| | Up to 5 years | |
| | More than 5 years | |

### Medical personnel in the maternity unit

| Of the following medical personnel allocated to the maternity unit this month, how many have been in the maternity unit for: | | |
|---|---|---|
| Specialist Obstetrician | < 6 months | |
| | Up to 1 year | |
| | Up to 2 years | |
| | Up to 5 years | |
| | More than 5 years | |
| Medical officer | < 6 months | |
| | Up to 1 year | |
| | Up to 2 years | |
| | Up to 5 years | |
| | More than 5 years | |

## 11. Scheduled and unscheduled leave

In order to get an idea of what type of leave is being taken, and of what the absenteeism rate is in your maternity unit please complete the table below. In order to keep the identity of each individual confidential, please allocate a number (starting from 1) to each nurse that has worked in the unit in the last three months. Then for that nurse complete the table. Please remember to include nurses on both day and night duty.

Please note:

- Scheduled workdays = work days in the month – scheduled leave days
  (So if in one month there were 30 workdays and Professional Nurse # 1 (PN 1) took 7 days scheduled leave, her scheduled work days for that month = 30 – 7 = 23)
- Scheduled leave refers to:
  - Annual leave
  - Study leave
  - Maternity and paternity leave
- Unscheduled leave refers to:
  - Sick leave
    (a) With medical certificate
    (b) Without medical certificate
  - Family responsibility leave
  - Absent (leave without official permission)

| | Scheduled work-days | | | Unscheduled leave | | |
|---|---|---|---|---|---|---|
| | Jul | Aug | Sep | Jul | Aug | Sep |
| PN 1 | | | | | | |
| PN 2 | | | | | | |
| PN 3 | | | | | | |
| PN 4 | | | | | | |
| PN 5 | | | | | | |
| PN 6 | | | | | | |
| PN 7 | | | | | | |
| PN 8 | | | | | | |
| PN9 | | | | | | |
| PN 10 | | | | | | |
| PN 12 | | | | | | |
| PN 13 | | | | | | |
| PN 14 | | | | | | |
| PN 15 | | | | | | |

| | Scheduled work-days | | | Unscheduled leave | | |
|---|---|---|---|---|---|---|
| | Jul | Aug | Sep | Jul | Aug | Sep |
| EN 1 | | | | | | |
| EN 2 | | | | | | |
| EN 3 | | | | | | |
| EN 4 | | | | | | |
| EN 5 | | | | | | |
| EN 6 | | | | | | |
| ENA 1 | | | | | | |
| ENA 2 | | | | | | |
| ENA 3 | | | | | | |
| ENA 4 | | | | | | |

## 12. Relief personnel

| | | |
|---|---|---|
| Is there a relief system in place in your facility to substitute for workers who have taken unscheduled leave? | Yes | No |

## 13. In-service training

| Do a quick check on the professional nurses allocated to the maternity unit this month. How many have received in-service training on: | | |
|---|---|---|
| High Risk ANC – including:<br>▪ Pre-Eclampsia/Eclampsia<br>▪ Intrauterine Growth Retardation<br>▪ Haemorrhage<br>▪ Multiple pregnancy<br>▪ Breech presentation and transverse lie<br>▪ Previous Caesarean Section<br>▪ Medical disorders in pregnancy<br>▪ Preterm labour | Never | |
| | In the past year | |
| | In the past 2 years | |
| | In the past 5 years | |
| | Do not know | |

| Do a quick check on the professional nurses allocated to the maternity unit this month. How many have received in-service training on: | | |
|---|---|---|
| Obstetric complications and emergencies – including:<br>▪ Retained placenta<br>▪ Antepartum and postpartum<br>▪ Pre-eclampsia/Eclampsia<br>▪ Fetal distress<br>▪ Prolonged labour<br>▪ Pueperal sepsis<br>▪ Cord prolapse<br>▪ Shoulder dystocia<br>▪ Neonatal resuscitation | Never | |
| | In the past year | |
| | In the past 2 years | |
| | In the past 5 years | |
| | Do not know | |

## 14. Supervision

| How do you do double-checking in your maternity unit? | Tick the relevant box(es) |
|---|---|
| Never | |
| On admission - never | |
| On admission – sometimes | |
| On admission – always | |
| 4-hourly – never | |
| 4-hourly - sometimes | |
| 4-hourly - always | |
| Other – please specify | |

| How do you do labour record reviews in your maternity unit? | Tick the relevant box(es) |
|---|---|
| Never | |
| At the end of every day | |
| At the end of every week | |
| At then end of every month | |
| Other – please specify | |

# Chapter 4: Appendix 3

## Appendix 3A – Objectives, strategies and activities for the identified areas of intervention

### 1. In-service training

#### Definition of the problem

Poorly planned in-service training programme, resulting in staff that lack skills and experience, causing inadequate identification of high-risk clients, inadequate decisions on the further management of the client and inadequate management of complications.

#### Objectives

- Implement a training programmes for midwives – antenatal clinic visit schedule, screening for high risk clients, management and treatment of low-risk and high-risk clients, protocols of management (including referral), client information, dealing with obstetric complications
- Implement a training programme for doctors – screening for high risk clients, management and treatment of high risk clients, protocols of management (including referral), client information, dealing with complications
- Implement a training programme for private practitioners – antenatal clinic visit schedule, screening for high risk, protocols of management and referral of high-risk
- Implement a training programme for traditional birth attendants and traditional healers – screening for high-risk, warning signs, referral
- Implement a training programme for supervisors – to enable them to check the quality of care provided

#### Strategies

- Use maternity guidelines and protocols of management, and the Saving Babies and the Saving Mothers reports, as a guide of the material to be covered
- Use PRMs as in-service training opportunities
- Use Perinatal Education Programme (PEP)
- Design and run short courses for important topics e.g. antenatal clinic visit schedule for clients, use of partogram, management of complications
- Provide CPD points, awards, and certificates

#### Plan for sustainability

- Review staff allocation system – to increase time spent in maternity and antenatal clinic
- Allocate people to maternity who are interested in maternal health care
- Spot-checking and supervision
- Develop provider portfolios (CV detailing the skills of the individual provider)

#### Measures of achievement

- Skills audit to identify training needs
- Range of topics covered in PRM over one year
- Attendance at PRM
- Record audits to determine the percentage of records that are complete
- % Midwives and doctors that have undergone training to deal with obstetric complications

### Action plan for in-service training in ANC

| Priority objectives | Activities |
|---|---|
| Implement a training programme for midwives to deal with antenatal clinic visit schedule, screening for high risk clients, management and treatment of low-risk and high-risk clients, protocols of management (including referral), information to be provided to clients | Conduct workshops on the guidelines and protocols of management (with pre-test and post-test)<br>Teaching to be done in Perinatal Review Meetings<br>Monthly supervision to the clinics with mentoring and spot-teaching |

### Action plan for in-service training in Labour

| Priority objectives | Activities |
|---|---|
| Implement a training programme for midwives | Conduct training on:<br>Normal labour and the puerperium<br>Abnormalities in the first and second stage of labour<br>Immediate care of the newborn<br>Abnormalities of the 3rd and 4th stage of labour |
| Implement a training programme for doctors | Conduct training on complications and emergencies in obstetrics |
| Implement a training programme for TBAs | Encourage learning from each other about helpful assistance during delivery and harmless and harmful practices. |

## 2. Supervision

### Definition of the problem

Inadequate supervision of ANC i.e. inadequacies in the following:

- Supervision of individual patient care i.e. Double-checking: of 1st visit and 36 week visit in ANC and on admission and 4-hourly in labour.
- Supervision of staff i.e. Audit of ANC records and Labour records, and Competencies (as detected through record audit and PRMs)
- Supervision of facilities i.e. Equipment, drugs, budgets
- Supervision of services i.e. Monitoring quality of care indicators (e.g. Perinatal Mortality Rate)

### Objectives

- Develop, implement and monitor a supervision plan that ensures all aspects of supervision are addressed
- Ensure that standardised supervisory procedures and tools are developed, available and implemented by end of 2003
- Develop a job description for supervisors (must include organogram and lines of accountability of supervisors)
- Develop criteria for the identification of the knowledge, skills, attitudes and training needs of supervisors
- Develop a plan for transport in the municipality/district – to accommodate transport needs of supervisors (encourage management to be supportive to reproductive health care supervisors)

### Strategies

- Establishment of a supervisors' forum

- Develop job description for supervisors
- In-service training of supervisors
- Establish incentives/career pathway for supervisors

## Measures of achievement

- What percentage of patients in the ANC clinics in the municipal area are double-checked
  (a) 1st visit and
  (b) 36th week visit?
- What percentage of patients in labour in the health facilities are double-checked
  (a) on admission and
  (b) 4-hourly, day and night
- What proportion of clinics and maternity units have received monthly supervisory visits in the last 6 months?
- In what proportion of clinics has the supervision visit included:
  - Audit of ANC records
  - Assessment of staff competencies
  - Assessment of resources in the clinic
  - Review of quality of care indicators
- In what proportion of maternity units has the supervision included:
  - Audit of Labour records
  - Assessment of staff competencies
  - Assessment of resources in the maternity unit
  - Review of quality of care indicators

## Action plan for the supervision of labour

| Priority objectives | Activities |
|---|---|
| Develop, implement and monitor a supervision plan that ensures all aspects of supervision are addressed | Determine levels of supervision<br>Skill audit to ensure availability of senior/experienced midwives<br>Allocation of senior staff to each shift (medical and nursing)<br>Develop job descriptions for overall supervisors and for shift supervisor<br>Ensure that standardised supervisory procedures and tools are developed, available and implemented<br>Ensure availability of guidelines and protocols of management<br>Training of nursing and medical supervisors in:<br>Management of normal and abnormal labour – 1st, 2nd and 3rd stage (including use of the partograph, double-checking and audit of labour records)<br>Management of emergencies |

## Action plan for the supervision of ANC

| Priority objectives | Activities |
|---|---|
| To develop, implement and monitor a supervision plan for ANC | Integrate and standardise supervision guidelines and protocols<br>Ensure availability of guidelines and protocols of management for antenatal care<br>Ensure that double-checking is done for every client that has come for her 1st and 36th week visit (by senior midwife, visiting ADM or by referral to High Risk Clinic)<br>Monthly audit of ANC records<br>Monthly supervisory visits to monitor staff performance, stocks and equipment in facilities<br>Monthly tracking of key indicators to monitor the quality of the service (e.g. percentage blood results returned within 2 weeks, percentage ANC records complete, etc.) |

# 3. Perinatal audit

## Definition of the problem

- Perinatal Review Meetings not held, held irregularly, or are held but are of poor quality.
- Problems of attendance, preparation, participation and analysis of the data and problems presented
- Avoidable deaths are recurring

## Objectives

1. Ensure that all components of perinatal audit are implemented regularly and efficiently in every municipal area.
2. Improve the quality of the PRMs – analysis of problems, attendance, participation, presentation, learning
3. Publicise the minutes of the PRMs
4. Facilitate attendance by clinic representatives
5. Reduction in number of avoidable deaths to zero

## Strategies

- RHMT, district obstetrician and CCLO to ensure that the above critical components are happening
- Obtain support of the managers and participation of the doctors

## Measures of achievement

Not specified

## Action plan for perinatal audit

| Priority objectives | Activities |
|---|---|
| Ensure that all components of the perinatal audit are implemented | ▪ Monthly review of perinatal audit |
| Ensure that the PRM in particular occurs every month | ▪ Develop yearly schedule<br>▪ Ensure full participation of all relevant and available hospital- and clinic-based staff<br>▪ Invite district obstetrician to attend perinatal review meetings<br>▪ Develop a checklist to evaluate the quality of the perinatal review meeting<br>▪ Develop research projects for unresolved common problems and causes of perinatal deaths |

# Appendix 3B-1 – Summary of the In-service training intervention

| Topic | When topic introduced by facilitators | When training conducted by RHMTS | Feedback submitted |
|---|---|---|---|
| Normal labour and the puerperium | Workshop 5 | In-between workshops 5 & 6 | At workshop 6 |
| Management of abnormalities in the 1st and 2nd stage<br>▪ Delays in latent and active phase of labour<br>▪ Fetal distress<br>▪ Shoulder dystocia<br>▪ Cord prolapse | Workshop 6 | In-between workshops 6 & 7 | At workshop 7 |
| Immediate care of the newborn | Introduced in Workshop 7, as a 2-year programme of facilitation and training that will be conducted in 2003/2004 at the request of the Limpopo Province MCWH Directorate and MEDUNSA Department of Paediatrics. A team consisting of a Neonatologist, Community Paediatrician, Advanced Midwife with skills in neonatal science and a research assistant will conduct this programme. | | |
| Abnormalities of the 3rd and 4th stage | Workshop 7 | In-between Workshop 7 & 8 | At workshop 8 |
| Obstetric complications and emergencies<br>▪ The management of normal and abnormal labour<br>▪ Ante- and Post-partum haemorrhage<br>▪ Anaesthesia and resuscitation<br>▪ Hypertensive disorders in pregnancy<br>▪ Intrauterine growth retardation<br>▪ Multiple pregnancy<br>▪ Breech and transverse lie<br>▪ Preterm labour and prolonged rupture of the membranes<br>▪ Induction of labour<br>▪ Previous caesarean section<br>▪ Diabetes in pregnancy<br>▪ Cardiac disease<br>▪ Syphilis<br>▪ HIV/AIDS in pregnancy | Five one-day workshops were held with doctors, starting in May and finishing in September | N/A | N/A |

# Appendix 3B-2 – Summary of the feedback on the in-service training conducted by RHMTs on the management of normal labour

Summary of the feedback on the in-service training conducted by RHMTs on the management of normal labour

| | Capricorn District | Sekhukhune District | Mopane District | Bohlabela District | Vhembe District | Waterberg District |
|---|---|---|---|---|---|---|
| Coverage achieved | Only midwives trained<br>Percentages range between 21% and 65%.<br>Numbers not always reported. One RHMT reported training<br>53/122 midwives | Midwifes and enrolled nurses in mobile teams, clinics trained. Percentages range between 40% - 60%<br>Numbers trained: 29/74; 34/68 | Midwives and doctors trained<br>Percentages range between 23% and 74%<br>One RHMT reported training midwives and 23 doctors<br>One RHMT was not able to do any training | Midwives and doctors trained (including session doctors)<br>Percentages range between 12% and 37%., Numbers include: 33 + 35 + 45 midwives, 5+ 2 doctors | Clinic and maternity midwives, doctors, midwifery students, clinical instructors<br>Average percentage of health workers trained 50% (total of about 160 people) | Clinic and hospital staff (including night duty staff trained.<br>Average percentages 50% although one RHMT was not able to do any training<br>Numbers reported by one RHMT: 20/35 clinic nurses<br>7/15 hospital nurses |
| Organisation of training | Groups brought in to the hospital<br>Training conducted in clinics<br>On the spot teaching<br>Methods used:<br>Discussions | Lecture/Discussion repeated on two days<br>On the spot teaching<br>Teaching during PRMs<br>And during ward rounds, hand-over, and during visits to the clinics<br>Group training sessions held | Visiting local areas, 2 visits to each local area and 2 visits to the hospital<br>RHMT visited each local area, 1-day visit per local area.<br>Teaching during doctors' meeting<br>Teaching slotted into continuous medical education programme<br>Informal meetings eld | Participants brought into a central venue<br>Lectures<br>Case studies<br>Hands on<br>Group discussion<br>OSCE<br>Individual mentoring<br>Questionnaires<br>Demonstrations<br>Real life situation | Discussions with doctors after ward rounds<br>Centralised training in local hospital<br>Visits to clinics | Formal in-service training in local areas for clinic staff<br>Formal lecture by Level 2 Obstetrician<br>1:1 in-service (in clinics and hospital)<br>Through PRM meetings, clinic and ward meeting<br>Lecture at a central venue<br>Informal |
| Length of training | For one RHMT - Each session lasted 4 –6 hours repeated 3 times<br>For another: 1-6 hours duration<br>Another RHMT: 3-hour session repeated for different groups.<br>For a 4th RHMT 1-day training repeated twice | Training sessions were given once off and lasted between 45 minutes and 3-6 hours | Training session held once-off and lasted 2-5 hours, depending on the need | One RHMT held a one-day training<br>Another held a 30 minute session<br>Another varied the input according to need (between 1-6 hours)<br>Another RHMT held a two–day training session repeated with 12 people per training session | Varied from 2 hours to 2 days | Varied between 1-3 hours |

Summary of the feedback on the in-service training conducted by RHMTs on the management of normal labour (Cont.)

| | Capricorn District | Sekhukhune District | Mopane District | Bohlabela District | Vhvembe District | Waterberg District |
|---|---|---|---|---|---|---|
| How was effectiveness of training measured | Evaluating numbers reached<br>Evaluation of those already trained still in progress<br>Not effective in clinics because do not conduct deliveries- do not have experience in plotting the partogram | Participant comments were elicited – How did they feel about the training? And their participation was monitored.<br>Service related measures - % PNDs due to avoidable factors related to the management of labour; review of indications for referral | Not attended to | Participant participation and comments<br>Difficult to measure in the short term and until everybody is trained<br>Pre test and post test done<br>Increased number attended as people got to hear about the training<br>Monitoring maternity case records | Some used a pre-test and post-test; others used the labour record audit checklist; others reviewed referral procedures; participant evaluations; exercise to complete labour graph given | Through monitoring quality of care in supervisory visits<br>Improved confidence of midwives<br>Positive reports from managers<br>Monitoring quality of record keeping |
| Helping factors | Management support – provided venue, transport and released staff<br>ADM and clinical instructors assisted in facilitating the programme<br>Patients in labour ward<br>Good interpersonal relationships in RHMT<br>TURC handouts for each workshop | Background knowledge and experience of midwives<br>Developed a handout<br>Use of the 'pink book' (National Guidelines)<br>Management support<br>Nursing School Principal released the student midwives and tutors to attend | Record-based teaching – random selection of maternity records audited and used as a basis of teaching<br>Transport available and where not available, used own transport<br>Most midwives were very interested and participated very well<br>Stationery department helped with photocopying notes, newsprint and markers<br>Catering provided | Good team spirit amongst RHMT<br>Meetings with management and doctors to introduce what was going to be done<br>Perseverance despite hindrances<br>Each participant given a file<br>Commitment and dedication of RHMT members<br>Transport available<br>Stationery available<br>Invitations delivered to clinics in good time- response positive<br>Management support<br>Catering available | Support form managers; participants' enthusiasm; RHMT co-ordinated training; labour record checklist available | Good communication within the RHMT<br>Co-operation of hospital managers |

Summary of the feedback on the in-service training conducted by RHMTs on the management of normal labour (Cont.)

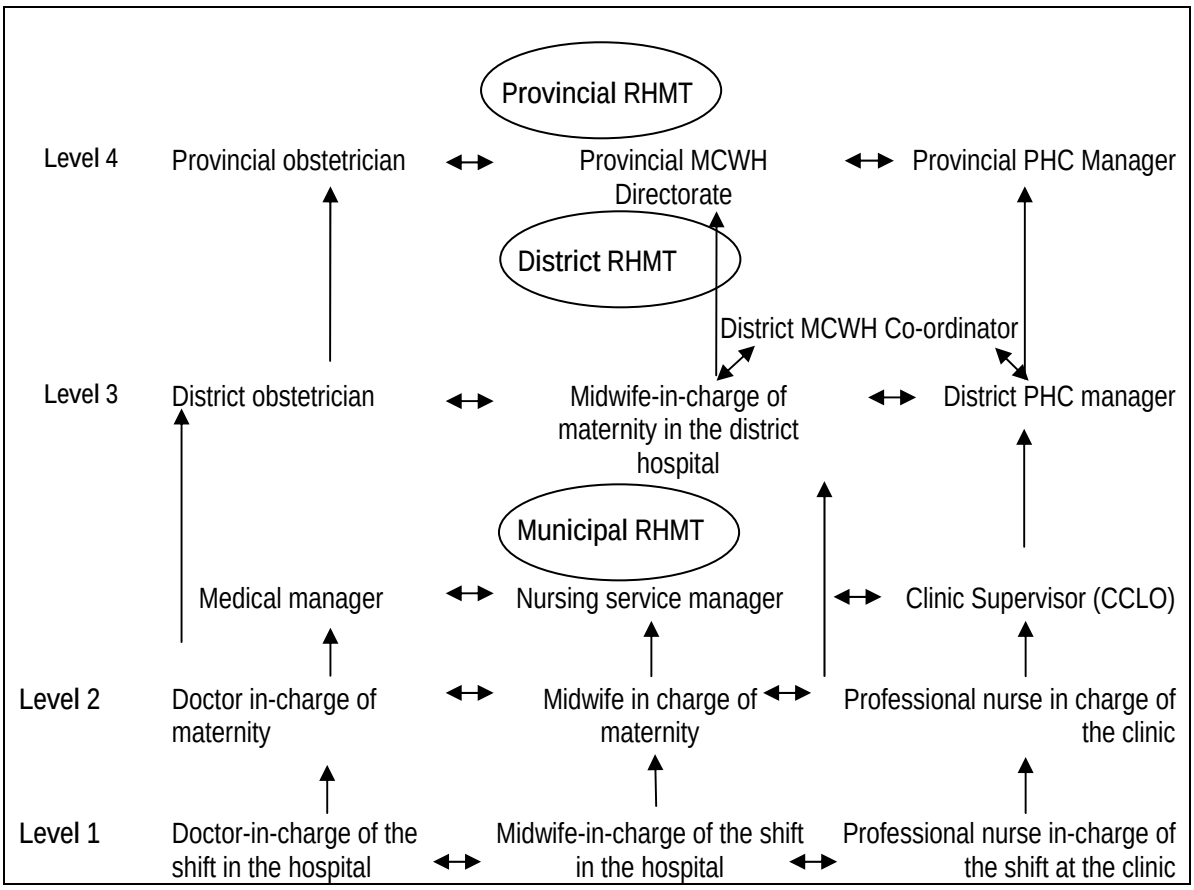
| | Capricorn District | Sekhukhune District | Mopane District | Bohlabela District | Vhembe District | Waterberg District |
|---|---|---|---|---|---|---|
| Hindering factors | Time and staff shortages, RHMT not complete, RHMT members not released to fulfil roles of the RHMT (f/t in the wards)<br>Transport<br>Festive season<br>Examinations<br>Attitudes toward the RHMT<br>No uniformity of off duties | Lack of transport<br>Staff shortages to share out training responsibilities<br>Many people on leave<br>RHMT not functional (some members are over-committed in other programmes)<br>Some RHMT members transferred to night duty<br>Lack of support from management<br>Leave and examination period<br>Shortages of resources<br>Clash of meetings and workshops<br>Shortage of stationery (e.g. maternity case records)<br>No catering | Some midwives had a negative attitude<br>Transport inadequate<br>Staff shortages<br>No support from clinic managers | Other activities within and outside hospital<br>Off duties not well co-ordinated<br>Staff on leave<br>Clashes with other training programmes<br>Meetings called that clashed with scheduled training | Festive season; inadequate materials; training not budgeted for; conflict with other programmes | Shortages of staff<br>Clash with other in-service training events<br>All student midwives on night duty<br>Transport problems<br>Doctors not interested<br>No time for follow-up |

Summary of the feedback on the in-service training conducted by RHMTs on the management of normal labour (Cont.)

| | Capricorn District | Sekhukhune District | Mopane District | Bohlabela District | Vhembe District | Waterberg District |
|---|---|---|---|---|---|---|
| Recommendations for future training | Monitor and evaluate training<br>Report on training in the perinatal meeting<br>Plan together with managers<br>Make managers aware of the roles of the RHMT<br>Conduct training on a larger scale to achieve coverage<br>Conduct ongoing evaluation visits<br>Continuous in-service training and evaluations scheduled<br>Plan off-duties | Have ongoing structured in-service training programme (e.g. Establish regular slot of 2-hour training with doctors and midwives)<br>Start a train the trainers programme<br>Evaluation of training should be planned: follow-up visits in the clinics and checking of records<br>Using guidelines on management of normal labour and puerperium as a training checklist.<br>Use a checklist to monitor content covered.<br>Inclusion of guidelines in the curriculum of nurses and doctors<br>Staff development unit to be more involved<br>Continue with on-the-job training<br>Incorporate ward doctors<br>Motivate at least one midwife from each clinic attend<br>Repeat the workshop placing emphasis on record keeping and partogram | On-going evaluation of case records<br>Follow-up support visits required<br>Negotiate with management for the release of doctors and midwives so that they\can attend training<br>Involve private practitioners – also to be trained<br>Ongoing training for remaining personnel | Extend time allocation for course<br>Invite doctors again<br>Organise catering<br>Organise ongoing in-service training programme<br>Continuous support from personnel management<br>Ensure adequate timing<br>Training of midwives allocated to OPD<br>Increase staffing in clinics and maternity<br>Awareness campaigns<br>Auditing records in clinics and maternity wards | Not specified | A leave plan should be developed and be applied during the festive season<br>Programme co-ordinator to develop joint plan for training over the year<br>Utilise retired personnel<br>Encourage advanced midwifery training<br>Group staff and provide them with the dates for their in-service training<br>Send out personal invitations and in good time<br>Restructure the RHMT<br>Schedule training sessions in advance |

# Appendix 3C-1 – Levels of supervision for maternal health services

Levels of supervision for maternal health services



## Appendix 3C-2 –Supervision matrix

The matrix depicted overleaf represents the job description of supervisors at each supervisory level, as developed by the RHMTs in Workshop 8. The tasks described apply to the supervision of both ANC services as well as to the supervision of delivery services. The input of 26 municipal RHMTs from the 6 districts in Limpopo Province was consolidated in the table below. This represents a significant consensus on what the perceived roles of supervisors are. This was tested in workshop 9 when RHMTs were asked to review their work and to agree to it and formally adopt it – which happened.

Supervision matrix describing the roles of supervisors at different supervisory levels

| | Purpose of supervision | | | | | |
|---|---|---|---|---|---|---|
| Levels of supervision | Quality of patient care | Staff support and development | Client satisfaction | Relationships with support systems | Economically viable service | Coverage |
| Shift – best done by the person in charge of each shift | Ensure sufficient staff coverage - number and experience<br>Mobilise the necessary staff in times of emergencies<br>Delegate responsibilities appropriately to co-workers on the shift<br>Double-check patients (ANC and labour)<br>Ensure patient is managed according to protocols<br>Ensure effective handover between shifts | Mentoring<br>Spot teaching<br>Spot checking<br>Delegate responsibilities to staff according to capabilities and training | Monitor each patient's comfort – by observation and by questioning<br>Treat each patient with caring and kindness. "Talk to patients!"<br>Ensure that patients' needs are dealt with promptly<br>Keep the patient informed about what is happening to her<br>Provide adequate pain relief<br>Encourage use of suggestion box<br>Ensure implementation of Batho Pele principles | Ensure that all equipment is working and that drugs and supplies are available<br>Ensure effective communication with support services<br>Identify who to communicate with in time of emergencies<br>Check availability and functionality of all the systems and personnel (laboratory, pharmacy, transport, x-ray, stores, kitchen, physiotherapy)<br>Ensure prompt return of blood test results | Ensure balanced patient to staff ratio<br>Control use of resources<br>Reduce wastage<br>Order supplies as needed<br>Ensure effective time management on shift<br>Monitor adherence to EDL | Ensure adequate staffing to meet the needs of all patients |
| Facility / Unit – best done by the facility / unit manager | Set standards for facility/unit<br>Monitor adherence to standards and protocols<br>Compile death reports (maternal and perinatal) | Ensure adequate orientation of new staff<br>Organise staff meetings (representative of medical and nursing staff)<br>Ensure effective staffing (manage off-duties) | Conduct exit interviews with patients<br>Interview staff – "happy staff will lead to happy patients"<br>Monitor the patients' suggestions | Monitor maintenance, replacement and procurement of equipment<br>Stock control<br>Be familiar with procedures | Ensure appropriate expendables and good quality equipment<br>Demonstrate optimal use of equipment<br>Ensure proper use of equipment and ensure adequate maintenance<br>Keep inventories | Motivation of adequate staff allocation to the unit<br>Monitor annual and study leave<br>Monitor absenteeism |

Supervision matrix describing the roles of supervisors at different supervisory levels (Cont.)

| | Purpose of supervision | | | | | |
|---|---|---|---|---|---|---|
| Levels of supervision | Quality of patient care | Staff support and development | Client satisfaction | Relationships with support systems | Economically viable service | Coverage |
| Facility / Unit – best done by the facility / unit manager (continued) | Conduct record reviews (ANC and labour) – score records, identify common problems and respond appropriately<br>Conduct all components of perinatal audit – analyse common causes of death and avoidable factors<br>Facilitate the PRM | Delegate responsibilities appropriately<br>Ensure all support systems are in place and in working condition.<br>Skills analysis<br>Compile in-service training programme<br>Nominate co-workers for further training and development<br>Performance appraisal<br>Provide positive recognition for work well done<br>Counselling of staff<br>Conflict management | Give feedback top patients and implement visible corrections for the concern they have raised<br>Liase with Clinic committee/hospital board<br>Ensure attractive environment for the patient | Establish good working relationship with support systems – develop agreed and written policies between unit and support services<br>Encourages team discussions with support systems – and monitor implementation of policies | Take part in budgeting and expenditure reviews<br>Conduct cost awareness exercises<br>Monitor expenditure against budgets<br>Ensure adherence to safety principles | |
| Municipal / Sub-district level – best done by the co-ordinator of the Municipal RHMT | Ensure availability of protocols of management in each facility<br>Measure impact of service delivery at municipal level<br>Track indicators of quality of care per facility in the municipality<br>Conduct municipal level PRM<br>Monitor trends in the municipality | Develop tools for performance appraisal<br>Identify common training needs in the municipality and organise municipal level training programmes<br>Motivate for incentives for staff | Monitor availability and accessibility of services<br>Monitor utilisation rates and patterns<br>Strengthen the community structures' capacity to be involved in planning services. | Provisioning<br>Emergency services<br>Arrange meetings with support structures at municipal level to monitor e.g. functionality of laboratory services and distribution of drugs and availability of blood | Co-ordinate services<br>Ensure that patient is managed at the lowest possible level of care<br>Costing exercises and budget planning<br>Maintain commitment register<br>Share resources e.g. transport<br>Don't overstaff<br>Adhere to protocols | Ensure staff coverage<br>Monitor ANC coverage; institutional delivery coverage; coverage for the treatment of obstetric complications; caesarean section rate per population; woman year protection rate |

Supervision matrix describing the roles of supervisors at different supervisory levels (Cont.)

| | Purpose of supervision | | | | | |
|---|---|---|---|---|---|---|
| Levels of supervision | Quality of patient care | Staff support and development | Client satisfaction | Relationships with support systems | Economically viable service | Coverage |
| Municipal / Sub-district level – best done by the co-ordinator of the Municipal RHMT (continued) | | Conduct community health awareness programmes that support the health messages provided by staff in facilities.<br>Encourage clinic committee involvement in problem solving | Hold regular meetings with Community Representatives and plan to respond to clients concerns<br>Organise Sub-district imbizo<br>Organise community surveys | | Ensure equitable and effective distribution of resources with municipality<br>Monitor performance of unnecessary procedures | |
| District – best done by the District MCWH Co-ordinator | Develop district protocols of management and review when necessary<br>Analyse district perinatal and maternal data<br>Ensure that PRMs are occurring in each municipal are and in each facility<br>Measure impact of service delivery at district level<br>Track indicators of quality of care per municipality in the district<br>Monitor trends in the district<br>Problem solve | Introduction of new programmes and policies (e.g. PMTCT)<br>Develop district level in-service training programme to address common learning needs in the district<br>Conduct institutional visits to check on the needs of staff<br>Release funds on time for training<br>Promote retention of staff<br>Attend to issues of staff housing, pension schemes and medical aid | Organise district imbizo | Provisioning<br>Monitor referral system<br>Conduct facility reviews<br>Ensure that support systems are functioning | Monitor use of resources<br>Release budget for equipment on time<br>Provide training in financial management | Same as above |

Supervision matrix describing the roles of supervisors at different supervisory levels (cont)

| | Purpose of supervision | | | | | |
|---|---|---|---|---|---|---|
| Levels of supervision | Quality of patient care | Staff support and development | Client satisfaction | Relationships with support systems | Economically viable service | Coverage |
| Province – best done by the provincial MCWH Directorate | Provide policy guidelines and monitor implementation<br>Develop standardised patient records<br>Conduct confidential enquiries into deaths<br>Monitor use of the PPIP and collate data for the province | Conduct institutional visits to check on needs of staff that will feed into provincial policies<br>Provide provincial level in-service training programmes for provincial level priorities<br>Organise conferences<br>Identify continuing and advanced professional development needs (e.g. need for ADMs) | Conduct institutional visits to monitor staff and client satisfaction<br>Implement a caring for the carer programme<br>Implement programmes for the personal development of workers<br>Organise ½ yearly and yearly imbizo | Provisioning guidelines for each level | Ensure equitable distribution of resources<br>Review budgets | Same as above |

# Appendix 3-D1 – Checklist for ANC Record Review

**INSTRUCTIONS**

- For each 'Yes' answer, score 1 point
- Score ½ points if the item is incomplete
- For missing items score 0
- Record the score on the ANC summary sheet

## History

1. Age, parity and gravidity
2. Details of previous pregnancies
3. Previous illnesses that might influence this pregnancy (e.g. cardiac, renal, diabetes).
4. History of the present pregnancy
5. The Last Menstrual Period and the Expected Date of Delivery
6. The estimated period of gestation by dates (POGD) correctly recorded or plotted on the antenatal graph at each visit

## Physical Examination

7. Maternal weight recorded at each visit
8. Blood pressure recorded at each visit
9. Examination of heart and lungs
10. Estimation of period of gestation by palpation (PGOP) using SFH in cms
11. Estimation whether POGP = POGD and if there is a discrepancy, the reason
12. Fetal presentation recorded from 36 weeks onwards.
13. Fetal heart heard or fetal movements felt
14. Urinalysis for protein and glucose
15. Haemoglobin and Rhesus group recorded
16. Syphilis test result recorded
17. Has the client been counselled for HIV testing?
18. Has tetanus toxoid been given correctly?

## Interpretations and decisions

19. Identification and recording of risk factors
20. Record of action plan, including interventions and referral if indicated
21. Decision on place for delivery discussed with mother and recorded
22. Transport arrangements for when she goes into labour discussed with mother and recorded
23. Decision taken by mother re future family planning and recorded
24. Have the findings at first visit and 36 weeks visit been double-checked and counter-signed by an ADM, senior experienced midwife or doctor?
25. Date of next visit recorded?

# Appendix 3-D2 – Checklist for Labour Record Review

**INSTRUCTIONS**

- Select 20 consecutive labour records for deliveries that have occurred this month, selecting a random starting point.
- Record the findings for each item on the summary form
- Give 1 mark for each completed item, ½ for an incomplete item and 0 for an item that has not been recorded.
- Exclude from the review the records of patients who were admitted at ≥ 8cm dilatation or who had an elective caesarean section. Proceed to the next consecutive patient.

## Admission assessment form

1. Is there evidence that the health worker has reviewed and summarised the ANC record and listed the maternal and fetal risk factors?
2. Check the items on the admission form. Are all completed?
3. At the end of the form, is there a decision on diagnosis and management?
4. Were the admission findings checked and counter-signed by an Advanced Midwife (or doctor or experienced midwife if no ADM available)?

## Labour graph

5. Is the list of risk factors recorded at the top of the labour graph?
6. Has the fetal heart rate been recorded half-hourly?
7. Has the state of the liquor (as recognised by a pad check) been recorded at least 4-hourly?
8. Has the degree of moulding been recorded when a P.V. has been done?
9. Have the contractions been recorded half-hourly?
10. Has the cervical dilatation been recorded at least 4-hourly during the Latent Phase and at least two-hourly in the Active Phase.
11. Has the cervical dilatation been plotted in relation to the lines drawn for the Latent and Active Phases, and for the Alert and Action Lines?
12. Has the level of the head in relation to the brim of the pelvis been recorded at least 4-hourly since admission?
13. Have the maternal BP and pulse been recorded at least hourly?
14. Have the maternal temperature and urinary output been recorded at least 4-hourly?
15. Is there a record of drugs and IV fluids given?

## Management of Labour Form (On a page separate from the Labour Graph)

16. Is this recorded after doing each vaginal examination, or at least 4-hourly?
17. Is the summary of fetal condition recorded?
18. Is the summary of labour progress recorded?
19. Is the summary of maternal condition recorded?
20. Is the decision on further action recorded?
21. Is the time of next intended review stated?
22. Were these assessments checked 4-hourly by an ADM (or doctor or senior midwife)?

## The assessment of the newborn

23. Has this form been completed?

## Final Summary of Labour

24. Has this form been completed?
25. In the third stage of labour, is there a record that active management was carried out?

## Appendix 3D-3 Summary sheet for ANC record review

**Summary of Quality Check on ANC records**

**Hospital/Clinic: … … … … … … … … … … … … … …** **Municipality: … … … … … … … … … … … … … …** **Date: … … … …**

| | Record # | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Item # | | | | | | | | | | | | | | | | | | | | | | |
| History | 1 | Age, parity and gravity | | | | | | | | | | | | | | | | | | | | | |
| | 2 | Hx of previous pregnancy | | | | | | | | | | | | | | | | | | | | | |
| | 3 | Previous illnesses | | | | | | | | | | | | | | | | | | | | | |
| | 4 | Hx of present pregnancy | | | | | | | | | | | | | | | | | | | | | |
| | 5 | LMP and EDD | | | | | | | | | | | | | | | | | | | | | |
| | 6 | POGD | | | | | | | | | | | | | | | | | | | | | |
| Examination | 7 | Maternal weight | | | | | | | | | | | | | | | | | | | | | |
| | 8 | BP at each visit | | | | | | | | | | | | | | | | | | | | | |
| | 9 | Heart and lung examination | | | | | | | | | | | | | | | | | | | | | |
| | 10 | POGP | | | | | | | | | | | | | | | | | | | | | |
| | 11 | Cf POGD and POGP | | | | | | | | | | | | | | | | | | | | | |
| | 12 | Fetal presentation | | | | | | | | | | | | | | | | | | | | | |
| | 13 | FHH or fetal movement felt | | | | | | | | | | | | | | | | | | | | | |
| | 14 | Urinanalysis | | | | | | | | | | | | | | | | | | | | | |
| | 15 | Hb and Rh | | | | | | | | | | | | | | | | | | | | | |
| | 16 | RPR result recorded | | | | | | | | | | | | | | | | | | | | | |
| | 17 | HIV counselling | | | | | | | | | | | | | | | | | | | | | |
| | 18 | ATT given | | | | | | | | | | | | | | | | | | | | | |
| Interpretation | 19 | Risk factors identified | | | | | | | | | | | | | | | | | | | | | |
| and | 20 | Action plan | | | | | | | | | | | | | | | | | | | | | |
| decision | 21 | Place of delivery | | | | | | | | | | | | | | | | | | | | | |
| | 22 | Transport | | | | | | | | | | | | | | | | | | | | | |
| | 23 | Future family planning | | | | | | | | | | | | | | | | | | | | | |
| | 24 | Double-checking | | | | | | | | | | | | | | | | | | | | | |
| | 25 | Date of next visit | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | |
| | | **Total score** | | | | | | | | | | | | | | | | | | | | | |
| | | **Percentage (Total X 4)** | | | | | | | | | | | | | | | | | | | | | |

## Appendix 3D-4 – Summary of labour record review

**Summary of labour record review**

**Hospital/Clinic:** … … … … … … … … … … … … … **Municipality:** … … … … … … … … … … … … **Date:** … … … … … … … … … ..

| | Record # | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Item #** | | | | | | | | | | | | | | | | | | | | | | |
| **Admission assessment** | 1 | ANC record reviewed | | | | | | | | | | | | | | | | | | | | | |
| | 2 | Admission form complete | | | | | | | | | | | | | | | | | | | | | |
| | 3 | Diagnosis and management | | | | | | | | | | | | | | | | | | | | | |
| | 4 | Admission double checked | | | | | | | | | | | | | | | | | | | | | |
| **Labour graph** | 5 | Risk factors recorded | | | | | | | | | | | | | | | | | | | | | |
| | 6 | FHR 1/2 hrly | | | | | | | | | | | | | | | | | | | | | |
| | 7 | State of liquor | | | | | | | | | | | | | | | | | | | | | |
| | 8 | Degree of moulding on PV | | | | | | | | | | | | | | | | | | | | | |
| | 9 | Contractions 1/2 hrly | | | | | | | | | | | | | | | | | | | | | |
| | 10 | Dilatation: LP 4 hrly AP 2 hrly | | | | | | | | | | | | | | | | | | | | | |
| | 11 | Dilatation plotted correctly | | | | | | | | | | | | | | | | | | | | | |
| | 12 | Level of head 4hrly | | | | | | | | | | | | | | | | | | | | | |
| | 13 | Maternal BP and pulse hrly | | | | | | | | | | | | | | | | | | | | | |
| | 14 | Maternal $T^0$ and urine 4hrly | | | | | | | | | | | | | | | | | | | | | |
| | 15 | Record of drugs and fluids | | | | | | | | | | | | | | | | | | | | | |
| **Management of labour** | 16 | Management recorded after PV | | | | | | | | | | | | | | | | | | | | | |
| | 17 | Summary of fetal condition | | | | | | | | | | | | | | | | | | | | | |
| | 18 | Summary of labour progress | | | | | | | | | | | | | | | | | | | | | |
| | 19 | Summary maternal condition | | | | | | | | | | | | | | | | | | | | | |
| | 20 | Decision on further action | | | | | | | | | | | | | | | | | | | | | |
| | 21 | Time of next review | | | | | | | | | | | | | | | | | | | | | |
| | 22 | Double-checking 4hrly | | | | | | | | | | | | | | | | | | | | | |
| **Newborn** | 23 | Form completed | | | | | | | | | | | | | | | | | | | | | |
| **Final summary** | 24 | Summary of labour completed | | | | | | | | | | | | | | | | | | | | | |
| | 25 | Active management of 3rd stage | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | |
| | | **Total score** | | | | | | | | | | | | | | | | | | | | | |
| | | **Percentage (Total X 4)** | | | | | | | | | | | | | | | | | | | | | |

## Appendix 3D-5 – Feedback forms

| Analysis of ANC Record Review | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **District:** | | **Municipality:** | | | **Facility:** | | | | | |
| | | Number of records reviewed | | | | | | | | |
| | Item # | | **03-May** | **03-Jun** | **03-Jul** | **03-Aug** | **03-Sep** | **03-Oct** | **03-Nov** | **03-Dec** |
| **History** | 1 | Age, parity and gravity | | | | | | | | |
| | 2 | Hx of previous pregnancy | | | | | | | | |
| | 3 | Previous illnesses | | | | | | | | |
| | 4 | Hx of present pregnancy | | | | | | | | |
| | 5 | LMP and EDD | | | | | | | | |
| | 6 | POGD | | | | | | | | |
| | | **Sub-total** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | **Average percentage** | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! |
| **Examination** | 7 | Maternal weight | | | | | | | | |
| | 8 | BP at each visit | | | | | | | | |
| | 9 | Heart and lung examination | | | | | | | | |
| | 10 | POGP | | | | | | | | |
| | 11 | Cf POGD and POGP | | | | | | | | |
| | 12 | Fetal presentation | | | | | | | | |
| | 13 | FHH or fetal movement felt | | | | | | | | |
| | 14 | Urinanalysis | | | | | | | | |
| | 15 | Hb and Rh | | | | | | | | |
| | 16 | RPR result recorded | | | | | | | | |
| | 17 | HIV counselling | | | | | | | | |
| | 18 | ATT given | | | | | | | | |
| | | **Sub-total** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | **Average percentage** | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! |
| **Interpretation** | 19 | Risk factors identified | | | | | | | | |
| **and** | 20 | Action plan | | | | | | | | |
| **decision** | 21 | Place of delivery | | | | | | | | |
| | 22 | Transport | | | | | | | | |
| | 23 | Future family planning | | | | | | | | |
| | 24 | Double-checking | | | | | | | | |
| | 25 | Date of next visit | | | | | | | | |
| | | **Sub-total** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | **Average percentage** | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! |
| | | | | | | | | | | |
| | | **Total score** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | **Average score** | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! |
| | | **Average total percentage** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

| Anaysis of labour record review | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **District:** | | | | **Municipality:** | | | | | **Institution:** | | | | | | | |
| | | **Number of records reviewed** | | | | | | | | | | | | | 0 | |
| | **Item #** | | Jan-03 | Feb-03 | Mar-03 | Apr-03 | May-03 | Jun-03 | Jul-03 | Aug-03 | Sep-03 | Oct-03 | Nov-03 | Dec-03 | **Total** | **Average % per item** |
| **Admission assessment** | 1 | ANC record reviewed | | | | | | | | | | | | | 0 | #DIV/0! |
| | 2 | Admission form complete | | | | | | | | | | | | | 0 | #DIV/0! |
| | 3 | Diagnosis and management | | | | | | | | | | | | | 0 | #DIV/0! |
| | 4 | Admission double checked | | | | | | | | | | | | | 0 | #DIV/0! |
| | | **Sub-total** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0 | |
| | | **Average percentage** | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | |
| **Labour graph** | 5 | Risk factors recorded | | | | | | | | | | | | | 0 | #DIV/0! |
| | 6 | FHR 1/2 hrly | | | | | | | | | | | | | 0 | #DIV/0! |
| | 7 | State of liquor | | | | | | | | | | | | | 0 | #DIV/0! |
| | 8 | Degree of moulding on PV | | | | | | | | | | | | | 0 | #DIV/0! |
| | 9 | Contractions 1/2 hrly | | | | | | | | | | | | | 0 | #DIV/0! |
| | 10 | Dilatation: LatPh 4hrly ActPh 2hrly | | | | | | | | | | | | | 0 | #DIV/0! |
| | 11 | Dilatation plotted correctly | | | | | | | | | | | | | 0 | #DIV/0! |
| | 12 | Level of head 4hrly | | | | | | | | | | | | | 0 | #DIV/0! |
| | 13 | Maternal BP and pulse hrly | | | | | | | | | | | | | 0 | #DIV/0! |
| | 14 | Maternal $T^0$ and urine 4hrly | | | | | | | | | | | | | 0 | #DIV/0! |
| | 15 | Record of drugs and fluids | | | | | | | | | | | | | 0 | #DIV/0! |
| | | **Sub-total** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0 | |
| | | **Average percentage** | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | |
| **Management of labour** | 16 | Management recorded after PV | | | | | | | | | | | | | 0 | #DIV/0! |
| | 17 | Summary of fetal condition | | | | | | | | | | | | | 0 | #DIV/0! |
| | 18 | Summary of labour progress | | | | | | | | | | | | | 0 | #DIV/0! |
| | 19 | Summary maternal condition | | | | | | | | | | | | | 0 | #DIV/0! |
| | 20 | Decision on further action | | | | | | | | | | | | | 0 | #DIV/0! |
| | 21 | Time of next review | | | | | | | | | | | | | 0 | #DIV/0! |
| | 22 | Double-checking 4hrly | | | | | | | | | | | | | 0 | #DIV/0! |
| | | **Sub-total** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0 | |
| | | **Average percentage** | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | |
| **Newborn** | 23 | Form completed | | | | | | | | | | | | | 0 | #DIV/0! |
| | | **Sub-total** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0 | |
| | | **Average percentage** | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | |
| **Final summary** | 24 | Summary of labour completed | | | | | | | | | | | | | 0 | #DIV/0! |
| | 25 | Active management of 3rd stage | | | 0.0 | | | | | | | | | | 0 | #DIV/0! |
| | | **Sub-total** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0 | |
| | | **Average percentage** | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | |
| | | **Total score** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0 | |
| | | **Average score** | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | |
| | | **Average percentage** | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | |

# Appendix 3E-1 – Components of perinatal audit

Critical components of perinatal audit

| Component | When | Who to attend | Purpose |
|---|---|---|---|
| 1. Meeting within 24 hours of every death | Within 24 hours of death | Dr in-charge (i/c), Midwife i/c, those involved in mx of patient. | Ensure all the information is recorded and available |
| 2. Preparatory meeting | A few days before PRM | Dr i/c, MW i/c, midwife responsible for the statistics | Audit the statistics, review all deaths for causes and avoidable factors, prepare presentations for PRM |
| 3. Perinatal Review Meeting | Monthly – scheduled for the year | All available midwives and doctors in ANCs and maternity. District obstetrician | Educational. Present statistics for previous month, details of maternal deaths, summary of all PNDs, review of 2 PNDs as case studies |
| 4. PPIP | Reviewed monthly and annually | Midwife doing statistics plus obstetric doctor | Epidemiological analysis of trends |

# Appendix 3E-2 – Guidelines for preparing a Perinatal Review Meeting

## Guidelines for preparing a Perinatal Review Meeting

### Introduction

- These guidelines have been developed after observing a number of presentations for the perinatal review meetings in the workshops. There has not been a uniform way of presenting, and the advantage of this has been that we have been able to glean ideas from each other about how to prepare for the perinatal review meeting. The guidelines are thus a bringing together of what has worked well and have been compiled to encourage a higher standard of presentation and a more effective audit of the service.
- All presentations should be made on overhead transparency ahead of time.
- Valid and accurate information for the perinatal review meeting can only be ensured if every perinatal and maternal death has been reviewed within 24 hours of the death and all deaths have been reviewed in a preparatory meeting.

### Overall statistics

- The statistics must be presented for at least the previous month, but preferably for the previous 12 months.
- The statistics presented should be inclusive of the hospital deliveries and those of its catchment area (the health centres/clinics and at home)
- The presentation of the statistics must be of total numbers and of the rates.
- The statistics are best presented in tabular form. An example is provided in Table 1 overleaf.

### Summary of perinatal and maternal deaths

- This is a very brief summary of all the perinatal deaths that have occurred in the previous month.
- The summary should provide just the information requested in each column of Table 2.
- The purpose is to enable a discussion of the quality of the service in that month rather than a detailed discussion of each patient.

### Summary of referrals to next level of care

- This is a very brief summary of the patients referred to the next level of care in the previous month
- The summary should provide the information requested in each of the columns in Table 3.
- This is to ensure that you have got a complete picture of the maternal health service during that month

### Details of maternal deaths

- All maternal deaths that have occurred in the previous 2 months must be presented in detail.

- Sufficient and accurate information must be provided to enable an informed discussion and to enable the identification of the cause of death and the avoidable factors. To this end it is imperative that the death is reviewed within 24 hours of the event.
- Very careful consideration needs to have been given to the causes of death and to the avoidable factors. To do this thoroughly it is essential that, in addition to the documentation of the events leading to the death, there is also a preparatory study of the subjects raised, by perusing the literature in textbooks and journals. The same applies to the presentation of perinatal and early neonatal deaths that are chosen for discussion.
- To answer any questions that may arise during the perinatal review meeting it is important to bring the patient's full record to the meeting. The true test of the adequacy of the presentation is that all questions can be answered.

### Details of perinatal deaths

- There is not sufficient time to discuss all perinatal deaths in detail in the perinatal review meeting (they would all have been discussed in detail at the preparatory meeting). Thus two perinatal deaths should be selected for presentation at the perinatal review meeting.
- The deaths selected should ideally be:
    - Preventable
    - Of educational value
    - Include a still birth and an early neonatal death
- The comments made above in point 4 pertaining to the completeness of the information and the further study of subjects raised by the death, also apply to perinatal deaths. This ensures an adequate depth of analysis and critical thought in discussing the case.

### Summary of record reviews

- Include in your presentation the summary of the record reviews of the previous two months. This should be inclusive of the labour record review and the ANC record review, guided by the checklists provided.
- Include an average of the total scores as well as an analysis of the individual items.
- Provide a brief description of what you are doing to improve the quality of record keeping

### Tips for preparing overhead transparencies

Transparencies need to be legible from the back of the room. Therefore:

- Write legibly, with just a few words in each line
- Have at most 6 – 8 lines on each transparency
- Where the case presentation includes the management of labour, please make a copy of the labour graph on a transparency (photocopied or hand drawn).

Summary of monthly statistics (adapted from the PPIP)

**Month:……**

| | | |
|---|---|---|
| **District:……** | **Municipality/sub-district:……** | |
| **Institution:……** | **Level of care: ……** | |
| **Month:……** | **Year:……** | **Rural/peri-urban/urban:……** |

**Perinatal deaths:**

| Weight category (gr) | Still born | | Neonatal death | | Alive on discharge | Total |
|---|---|---|---|---|---|---|
| | Fresh | Macerated | Early | Late | | |
| 500-999 | | | | | | |
| 1000-1499 | | | | | | |
| 1500 - 1999 | | | | | | |
| 2000 - 2499 | | | | | | |
| 2500+ | | | | | | |
| Total | | | | | | |

| | Hospital | Clinic | Home | In transit from home | Total |
|---|---|---|---|---|---|
| **Total births** | | | | | |
| Woman less than 20 years | | | | | |
| Woman more than 34 years | | | | | |

| | Negative | Positive | Unknown |
|---|---|---|---|
| **Syphilis status** | | | |

**Route of delivery**

| | | | |
|---|---|---|---|
| Normal vaginal delivery | | | |
| | Vacuum | Forceps | Total |
| Assisted birth | | | |
| | Elective | Emergency | Total |
| Caesarean section | | | |

| | |
|---|---|
| Number of woman attended ANC | |

| | Hospital | Clinic | Home | Total |
|---|---|---|---|---|
| Maternal deaths | | | | |

| **Indicators** | This month | Total previous year |
|---|---|---|
| **Perinatal Mortality Rate** (Total perinatal deaths/Total births X 1000) | | |
| **SB : ENND ratio** (MSB + FSB/ENND) | | |
| **Low birth weight rate** (Total birth weight < 2500gr/total births X 100) | | |
| **Perinatal Care Index** (Perinatal mortality rate/low birth weight rate) | | |
| **Casarean section rate** (Total Caesarean sections/total births X 100) | | |
| **Assisted delivery rate** (Total assisted births/total births X 100) | | |

| | | | |
|---|---|---|---|
| Compiled by: | | Signature: | |
| Date: | | Tel/Fax: | |

Monthly summary of perinatal deaths

| Monthly summary of perinatal deaths | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Hospital: …… | | | | | Municipality: …… | | | | Month: …… | Year: …… |
| Case # | Age | Parity | Birth wght | FSB/ MSB/ ENND | Causes of death | | Avoidable factors | | | Actions to be taken by management |
| | | | | | Primary cause of death | Final cause of death | Health worker related | Admin related | Patient related | |
| 1 | | | | | | | | | | |
| 2 | | | | | | | | | | |
| 3 | | | | | | | | | | |
| 4 | | | | | | | | | | |
| 5 | | | | | | | | | | |
| 6 | | | | | | | | | | |
| 7 | | | | | | | | | | |
| 8 | | | | | | | | | | |
| 9 | | | | | | | | | | |
| 10 | | | | | | | | | | |
| 11 | | | | | | | | | | |
| 12 | | | | | | | | | | |
| 13 | | | | | | | | | | |
| 14 | | | | | | | | | | |

Summary of referral to next level of care

## Summary of referrals to the next level of care

**Hospital: ……**

**Municipality: ……**

**Month: ……. Year: …….**

| Case # | Age | Parity | Indication for referral | Outcome |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
| 12 | | | | |
| 13 | | | | |
| 14 | | | | |
| 15 | | | | |
| 16 | | | | |
| 17 | | | | |
| 18 | | | | |
| 19 | | | | |
| 20 | | | | |

# Appendix 3E-3 – Perinatal Audit Checklist

It is recommended that this checklist be completed for each hospital, with its satellite clinics, each month. Give 1 mark for each 'Yes' answer.

Hospital……. Municipality……. District…….Month….Year……

| | | |
|---|---|---|
| **First review of records** | | |
| 1. Was a meeting held within 24-hours of every maternal and perinatal death, with a doctor and a senior midwife present, to ensure the completeness of the patient's records? | Y | N |
| **The preparatory meeting** | | |
| 2. Was a preparatory meeting held between the senior doctor and the senior midwife a few days before the Perinatal Review Meeting (PRM)? | Y | N |
| 3. Were the patient's records for each of the deaths sufficiently complete for review? | Y | N |
| **At the preparatory meeting, were the following done?** | | |
| 4. Were the statistics for the month completed and reviewed? | Y | N |
| Did these statistics include data from all deliveries from:- | | |
| 5. The hospital | Y | N |
| 6. The health centres and clinics | Y | N |
| 7. Home deliveries | Y | N |
| 8. Was the form summarising all deaths completed and reviewed? | Y | N |
| 9. Were all the deaths reviewed and causes discussed? | Y | N |
| 10. Were avoidable factors discussed for all deaths? | Y | N |
| 11. Was the relevant action considered and carried out? | Y | N |
| 12. Were case studies selected for discussion at the coming PRM? | Y | N |
| **The perinatal review meeting (PRM)** | | |
| 13. Was a PRM held at least once during the month? | Y | N |
| 14. Was at least one doctor present at the PRM? | Y | N |
| 15. Were midwives from the hospital present? | Y | N |
| 16. Were midwives from the clinics present? | Y | N |
| 17. Was the form summarising all the deaths presented and discussed? | Y | N |
| 18. Was at least one clinical management problem, arising from a maternal or perinatal mortality case study, discussed? | Y | N |
| 19. Were "lessons learned" listed at the end of the meeting? | Y | N |
| 20. Were any research topics identified? | Y | N |
| 21. Were the minutes of the previous PRM circulated, and discussed? | Y | N |
| 22. Were the statistics, the form summarising all deaths, and the summaries of the case studies presented on overhead transparencies or handouts? | Y | N |
| 23. Did the majority (more than ¾ ) participate in the discussion? | Y | N |
| 24. Was a letter listing the recommendations from this meeting, plus the minutes of the meeting, sent to the CEO, Medical Manager and Nursing Service Manager? | Y | N |
| **PPIP** | | |
| 25. Were the statistics for the month recorded in the PPIP? | Y | N |

Total out of 25 _____

# Appendix 3F-1 – Referral guidelines

## Principles for an effective and functional referral system

## Referrals between levels of care

### Protocols of management

- Protocols of management need to be available and need to define the care to be provided for each condition at each level of care
- The protocols will guide referring institutions in knowing which level to refer to
- Protocols of management will be provincially accepted and adapted locally at district and municipal/sub-district level.
- All stakeholders (community, clinic, hospital, referring and referral institution, and support services) need to jointly develop, and regularly review, the protocols of management and the guidelines for referral from one level of care to the next
- The protocols of management must be written and signed by senior representatives/personnel in the district
- Must be distributed and publicised in all facilities in the district. All stakeholders involved in the management of the patient need to have copies of the protocols of management.
- Protocols of management for important complications and emergencies should be displayed in visible locations in health facilities
- Protocols of management should be cost effective

### Communication

- The necessary communication infrastructure (telephone, fax machines) must be in place. This must include dedicated phone lines/numbers.
- There should be a clear coding system, known by all, to establish the level of urgency of referral
- Effective referrals are based on good interpersonal relationships between personnel in referring and referral institutions
- Know who is on call at the referral institutions/ establish who to speak to in referral institution
- For non-emergency referrals need to know on which day of the week to refer.
- Institute appointment system for non-emergency referrals

Consultation

- When making a referral to the next level of care, consult with a colleague for a second opinion
- When making an emergency referral, start by phoning the referral facility and communicate the problem clearly. Consultation should be viewed as part of the referral.

Documentation

- Thorough documentation must accompany the patient being referred: i.e. the full patient record (inclusive of all findings and laboratory results), letter describing the problem requiring referral, the risk factors, who the patient is being referring to, time of emergency call, time of response.
- Appropriate, standardised referral forms should be developed and used.
- The form should also allow the recording of the condition of patient during transit.
- The referral form should include a detachable portion for feedback to the referring practitioner/facility with follow-up instructions.
- Referrals should be within legal framework – consent forms should accompany a minor

Transport system

- There should adequate access to transport system. This should be organised ahead of time – within the health system for emergency referrals and within the community for elective and non-emergency referrals.
- Transport should be available on time
- Have clear protocols/procedures in each health facility for ordering transport
- Appropriate, standardised equipment for the adequate care of mother and baby should be in all ambulances
- Meet monthly with the Chief of the emergency station to discuss the emergency referrals of that month and to sort out any difficulties or misunderstandings that may have arisen

Management of the patient

- Early identification of who needs referral
- Consider geography, transport and distance. Predict possible problems and refer in good time to institute the necessary management at the referral facility.
- Ensure skilled accompaniment – midwife or appropriately trained paramedic to accompany the patient
- Stabilise patient before transfer and prescribe management for the journey (which must be stated in the protocol of management)

- Ensure that in referral institution there is the appropriately competent staff on duty or on call
- There should be a High Risk ANC at the hospital
- There should be medical ANC clinic at the Level 2 Hospital

Monitoring and evaluation

- Monitor adherence to protocols and report failure to adhere to facility/unit manager
- Monitor referral rates
- Monitor problems in referrals through monthly perinatal review meetings and problem solve

Information to users

- Consult with the family before referral – explaining the reason for the referral, where the patient is going, and what is likely to happen

## Referrals within a facility

- Adhere to protocols of management in the institution
- Midwife should conduct all necessary investigations and present full results from the investigations
- Midwife should consult with more senior/experienced midwife before consult with doctor
- Midwife should consult doctor according to the protocols of management or at any time she feels the need to consult
- Know who is on call
- Midwife should consult with more senior/experienced midwife before consult with doctor
- If doctors swap calls they must inform the midwives about the change
- When calling doctor – present problem, present what has been done, request advice or immediate attendance
- If the doctor is asked to come – must respond immediately
- Doctor to tell the midwife what to do in the meantime, while s/he is coming and to check with a telephone call how the situation is changing while he is on the way
- Doctor to listen carefully – and acknowledge that the nurse has been with the patient all the time and should know the patients full situation
- If doctors fail to respond to calls, report within the perinatal review meeting (even if the failure to respond does not result in death)
- Document time of call and time of arrival of doctor
- Present all necessary information – completely, precisely and clearly