

***An Analysis of the Causes of, and Substandard
Care Associated with, Maternal Deaths
in the Lowland Districts of Lesotho
1994-1998***

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***A Thesis in Part Fulfilment of the Requirements for the Degree of Master of
Philosophy in Maternal and Child Health (M Phil MCH)
from the University of Cape Town***

November 2000

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DECLARATION

I, Givans K. Ateka, declare that this thesis embodies only my original work except where acknowledgement indicates otherwise and that no part of it has been, or is being submitted for a degree at this or any other university.

Signed:

Signed by candidate

Date: 28th November 2000

The work for this thesis was done in the Department of Paediatrics and Child Health of the University of Cape Town.

BY THE TIME¹

M. A. was a 30-year-old Para 2 Gravida 3 patient. She had attended Antenatal Care (ANC) clinic 9 times starting from 16 weeks of gestation. Her antenatal period had been uneventful.

By the time the night staff admitted her,

By the time the midwife examined her,

By the time the midwife documented mild contractions,

By the time the morning staff took over,

By the time they also documented mild contractions,

By the time they documented intact membranes,

By the time the night staff took over again,

By the time spontaneous rupture of membranes occurred,

By the time liquor was meconium stained,

By the time the patient became febrile,

By the time cervical dilatation was 4 cm,

By the time the fetal heart rate was irregular,

By the time the patient developed dyspnoea,

The patient died.

¹ “By the time” is a poem based on a true case history. It was adapted from “Confidential Enquiries into Maternal Deaths in the Netherlands 1983-1992” by Nico Schuitemaker.

DEDICATION

*To my mother Gladys Olesi; the only person I know whose courage rises with danger.
She taught me what it means to be determined.*

ACKNOWLEDGEMENTS

- ◆ *My co-investigators Drs. K. A. Orundami, B. Lugemba, E. Njagi, E. Hassan and Sr. Malope;*
- ◆ *UNICEF Lesotho Country Office for having sponsored my research;*
- ◆ *My supervisor, Prof. Herman de Groot who was by my side all along;*
- ◆ *Prof. Bob Pattinson who allowed me to adapt a form he designed for my data collection;*
- ◆ *Lesotho Ministry of Health and Social Welfare officials, Dr. T. Ramatlapeng, Dr. M. M. Moteetee and Ms. Nthabiseng Mokoae for supporting the research;*
- ◆ *The Christian Health Association of Lesotho (CHAL) Executive Secretary, Ms. Nchee for facilitating the participation of at least one CHAL hospital;*
- ◆ *All staff of the Child Health Unit and especially Mr. James Irlam and Dr. Michael Hendricks who were always there for me; and*
- ◆ *Last but by no means least, my wife and sons who had to adjust to my long hours of absence as I worked at the office.*

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- ◆ *Data collection sheet*
- ◆ *Ministry of Health and Social Welfare clearance*
- ◆ *Christian Health Association of Lesotho Clearance*
- ◆ *University Ethics Committee Approval*

EXECUTIVE SUMMARY

INTRODUCTION

Lesotho, like many other developing countries, has a high incidence of maternal deaths. Minimal research has however been undertaken to establish the actual maternal mortality rate. The result has been a very wide gap between the officially quoted figure (282/100,000 live births) and the various estimates that have been made over the years. It was only in 1997 that a survey based on active case finding revealed a maternal mortality rate of 738/100,000 live births. The researchers noted that not all cases of maternal deaths that occurred during the survey period might have been traced. The figure was however an eye opener to the magnitude of the problem in Lesotho.

One of the main limitations of the 1997 survey was that no attempt was made to establish the causes of the documented maternal deaths. This was the motivation behind the current research.

AIM AND OBJECTIVES

The initial aim was to establish an audit of causes of maternal mortality in Maseru district health facilities. This was subsequently changed to “An Analysis of the Causes of, and Substandard Care associated with, Maternal deaths in the Lowland districts of Lesotho” due to difficulties encountered in record retrieval.

The specific objectives were to review antenatal, intrapartum and postpartum case records for the period 1994-1998, with a view of identifying aspects of substandard care. In addition, other factors contributing to maternal deaths were to be identified and recommendations made accordingly.

METHODOLOGY

The research was based on a retrospective review of case records. The study design was descriptive. In each case, the stage at which the patient had made initial contact with health services was noted. The care provided from that time until the time of death was reviewed and the various factors that contributed to death identified. The factors were then classified under four categories namely: medical (service related), patient, administrative and infrastructural. Within each category, the factors were further classified as avoidable, probably avoidable or unavoidable. Based on these classifications, the overall quality of care was assessed. In total, fifty patient records were reviewed covering a five-year period between 1994 and 1998.

MAIN FINDINGS

- i. There was under-utilisation of antenatal care (ANC) services. Of the fifty cases reviewed, eighteen did not attend ANC at all, fifteen attended 1-3 times and only seventeen effectively utilised the service (made 4 or more visits).
- ii. The quality of ANC services was poor. Of the thirty-two patients who attended ANC at least once, twenty-six (81%) had no haemoglobin checks, twenty-one (66%) had no proteinuria checks and twenty-three (72%) had no glycosuria checks.
- iii. There were no guidelines for identification of high-risk patients during ANC.
- iv. There was inadequate monitoring of patients during the intrapartum period. Of the fifty records reviewed only five (10%) had a partogram chart.
- v. There were no patient management protocols in any of the hospitals.
- vi. There was very poor record keeping in most of the hospitals as evidenced from the low record retrieval. Even after extending the study to four districts, only fifty patient records were retrieved.
- vii. There was no comprehensive maternal mortality reporting system in place.

CONCLUSION

The research, the original aim of which was establishing an audit of causes of maternal mortality in Maseru district health institutions ended up identifying factors contributing to some of the deaths instead. Although the study was limited to a few lowland district health facilities, the information obtained provides an insight into the magnitude of substandard care meted out in Lesotho health institutions. This was evident from an overwhelming number of medical factors, which contributed to these deaths. It is clear that for any significant change to be noted in the high maternal mortality figures, the area that requires undivided attention is that of improving the quality of medical care provided by midwives and doctors.

RECOMMENDATIONS

- i. That the Perinatal Problem Identification Programme (PPIP) be introduced in all Lesotho hospitals.
- ii. That regular Perinatal audits be established in all hospitals.
- iii. That management protocols be drawn up for all the major complications of pregnancy, labour and the puerperium, for use in all the hospitals in Lesotho.
- iv. That nurse-anaesthetists based outside QE II hospital be involved in periodic refresher courses.
- v. That all midwives, other categories of nursing staff and doctors be involved in a Perinatal Education Programme.
- vi. That Lesotho institute a system of Confidential Enquiries into Maternal Deaths based on the South African and British models, to replace the current practice where the medical officer involved simply files a report.
- vii. That a Task Force be convened as a matter of urgency, to address the above mentioned recommendations.

CHAPTER 1: BACKGROUND TO LESOTHO

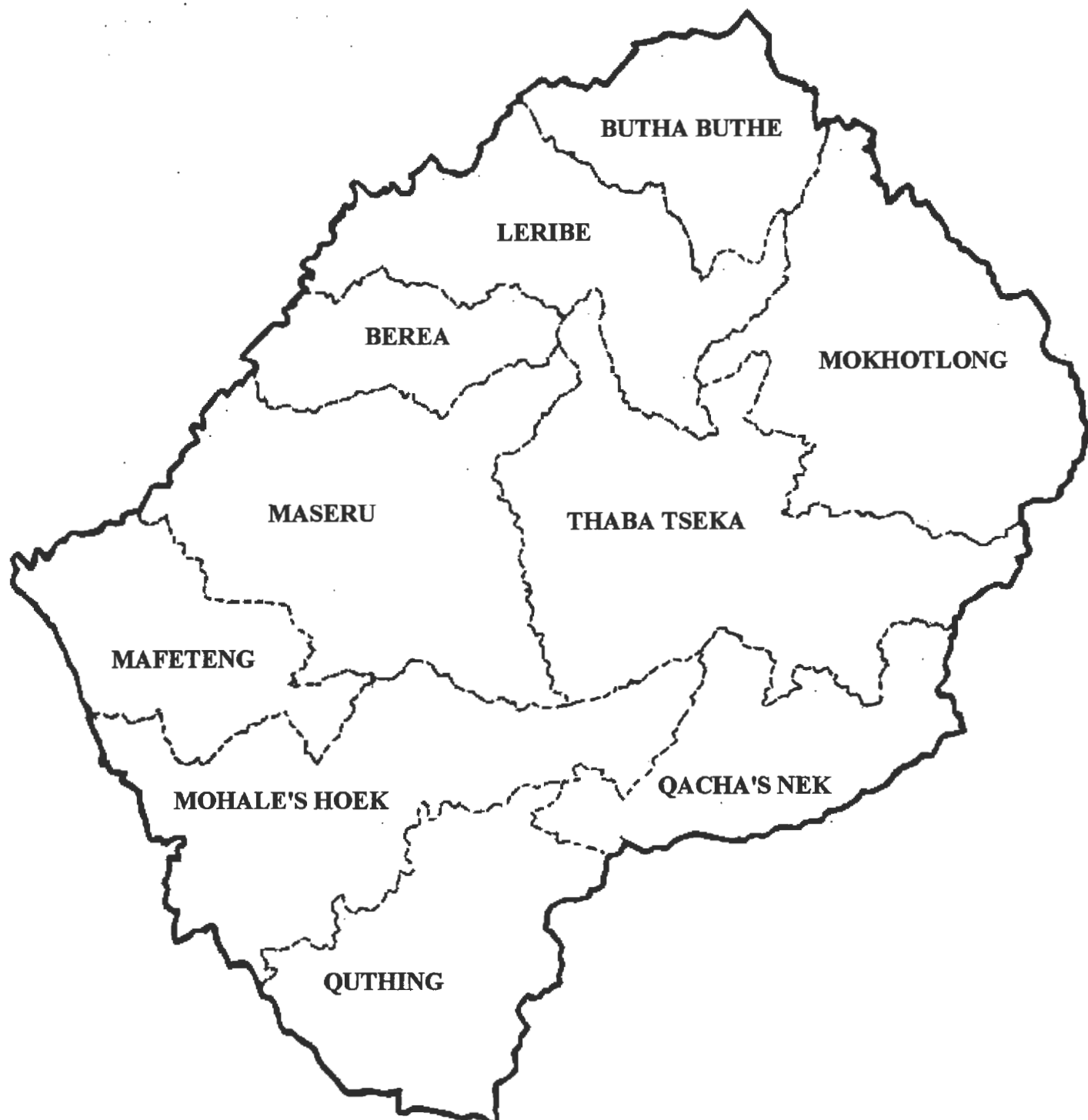
Lesotho is a landlocked country completely surrounded by the Republic of South Africa. It lies between longitudes 27° to 30° east and latitudes 28° to 31° south. Its surface area is roughly 31,000 km² with a population of close to 1.9 million (1996-census report).

The country has a limited resource base; water being the only major natural resource. The economy is heavily dependent on agriculture, labour exporting (particularly to the South African mines) and external funds. Poor returns from agriculture due to erratic rainfall and soil erosion is one of the main reasons for the upsurge in rural-urban migration.

Life expectancy as estimated during the 1996 census is 51.7 years for men and 61.6 years for women.

Lesotho is administratively divided into ten districts (see the map overleaf). These are geographically divided into mountainous and lowland. Four out of the five lowland districts namely Maseru, Mophale's Hoek, Mafeteng and Leribe were covered by the research. Berea is the only lowland district that did not participate in the exercise for reasons to be highlighted later.

For purposes of health care delivery, the country is subdivided into 19 Health Service Areas (HSAs) comprising of a level 1 hospital, satellite clinics and in some cases, health posts. Apart from the referral hospital, Queen Elizabeth II, no other hospital has any specialists. Obstetric patients with complications that cannot be managed in the district hospitals are referred to Maseru.



THE TEN DISTRICTS COMPRISING LESOTHO

CHAPTER 2: LITERATURE REVIEW

Maternal death is not a chance event but a culmination of factors, some of which may have been operational from the time the affected woman was conceived. This makes maternal deaths an indicator of the quality of health care available to a given community. Maternal mortality rates in the modern day developed world for instance have not always been low. In 18th century rural France, the maternal mortality rate was well over 1,000/100,000 live births (WHO Global Factbook, 1991). As recently as 1920, the United States of America had a maternal mortality rate of 800/100,000 live births.

Whereas every pregnancy poses a potential risk to the life of the mother, there are factors obtaining in the developing countries that compound the natural risk of pregnancy several times over. Thus a rate of 700/100,000 live births means that a woman's chance of dying each time she becomes pregnant is about 1 in 140 (WHO Global Factbook, 1991). Such figures are common in the developing world. By contrast, the risk of dying for a woman in Scandinavia is about 1 in 25,000.

2.1 FACTORS COMPOUNDING THE RISK OF PREGNANCY

These are well documented in literature and include:

- i. Age of the woman: At menarche, there is approximately 4% more height and 12-18% more pelvic growth to be attained. Obstructed labour with possible maternal death is therefore a greater risk for women who become pregnant during their teens. Girls aged 15-19 years die more from pregnancy related causes than from any other cause (UNICEF Progress of Nations Report, 1998). The other extreme of age is not any safer since the risk of maternal mortality also increases with advanced age. In the United States for instance, the maternal mortality rate for women aged 40-44 years is 10 times that of women aged 24 and 25 years (WHO Global Factbook, 1991).

- ii. **Parity:** Studies from many countries show that whatever the age of the mother, the second and third deliveries are most trouble-free; the risk of serious complications increasing thereafter. Even in a developed country like Portugal, women giving birth for the fifth time are three times more likely to die than women undergoing their second births are (WHO Global Factbook, 1991).
- iii. **Inadequate Spacing between Pregnancies:** Pregnancy, delivery and lactation all exert additional physiological demands on the woman's body. Unless adequate time is allowed for recovery in-between deliveries, the risk of maternal mortality is increased.
- iv. **Mother's Stature:** There is a correlation between height and pelvic size. Women of small stature are therefore particularly susceptible to obstructed labour. In a Nigerian study of a sample of women having their first babies, 40% of those under 1.45 meters required operative delivery due to a small pelvis, whereas the proportion was 14% for women between 1.45 and 1.59 meters and < 1% for women who were 1.6 meters and taller (Mbizvo et al, 1993).

2.2 CAUSES OF MATERNAL DEATHS

The International Classification of Diseases (ICD-9 and 10) defines maternal death as "The death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and the site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes" (WHO Safe Motherhood Needs Assessment, 1997). Maternal deaths are further categorised as either direct or indirect. The direct causes refer to those diseases or complications, which occur only during pregnancy. These include abortion, ectopic pregnancy, hypertensive diseases of pregnancy, antepartum and postpartum haemorrhage, obstructed labour and puerperal sepsis.

Indirect causes on the other hand are those diseases, which may be present even before pregnancy but are aggravated by the condition. These include heart disease, anaemia, essential hypertension, diabetes mellitus, certain haemoglobinopathies and acquired immunodeficiency syndrome.

These factors are universal irrespective of the stage of economic development within which the individual mother happens to find herself. It is evident that for appropriate intervention, every country or health institution should assess its own situation to elucidate, which of these causes are at play.

A review of the relevance, effectiveness and impact of United Nations Population Fund (UNFPA)-supported Safe Motherhood Strategies for instance revealed that:

- i. Factors leading to maternal deaths were not identified specifically enough for selection of a pertinent strategy;
- ii. Lack of needs assessment led to projects which had too broad a scope for effective intervention;
- iii. The strategies selected to reduce maternal mortality were not the most effective; and
- iv. The strategies selected to reduce maternal mortality were not comprehensive (UNFPA Safe Motherhood Evaluation Findings, 1999).

Maine et al broaden the argument for needs assessment further. They state that in societies where maternal mortality is high, there are usually many problems which include poverty, illiteracy, low status of women, poor sanitation, poor nutrition, poor transportation and inadequate medical services. Ideally all these problems should be solved for effective reduction of maternal mortality but this is not feasible for most countries in the foreseeable future. We therefore have to narrow our needs assessment to 3 or 4 feasible activities, which will substantially reduce maternal deaths within a reasonably short span of time (Maine et al, 1997).

The authors then develop a very basic but strong argument outlining the progression of events that culminate in maternal death. First, the woman must be pregnant. Second, she must develop a medical problem. Third, the medical problem must either be treated inadequately or be untreatable. They conclude the argument on an optimistic note that at least 9 out of 10 serious obstetric complications can be successfully treated with medical procedures that have been available for decades.

Their logical proposed interventions given the flow of the argument are:

- i. Reduce the likelihood that a woman will become pregnant;
- ii. Reduce the likelihood that a pregnant woman will experience a serious complication of pregnancy or childbirth; and
- iii. Reduce the likelihood of death among women who experience complications.

In a nutshell, Maine et al are underscoring the importance of family planning, antenatal care and close monitoring of labour. All these are services, which are widely available in Lesotho but grossly under-utilised.

2.3 MATERNAL MORTALITY IN AFRICA

Reports on maternal mortality in Africa are very few and far apart. Only 29 governments of developing countries were able to provide the United Nations with estimates of their national maternal mortality for the year 1988 (WHO Global Factbook, 1991). The situation is unlikely to have changed for the better over the years.

Although developing countries are lumped together with reference to maternal mortality, the distribution is not even. It is estimated for instance that more than 600 women die in pregnancy or childbirth in sub-Saharan Africa every day (Novicki, 1996). Perhaps the highest maternal mortality rate so far documented in this region was 1020/100,000 live births from two rural and deprived areas of the Gambia (Boerma & Mati, 1989).

2.3.1 Maternal Mortality in Kenya

In Kenya, population-based data are available from one longitudinal study in the 1970s. A majority of non-hospital studies of maternal mortality have been based on vital registration systems, which require high inputs in terms of manpower and finances (Boerma & Mati, 1989).

A study conducted in the coastal province of Kenya in 1987 using the Networking method covered 3,835 women aged 15-44 years. Interviews to determine factors affecting child health in the context of a Child Survival and Development Program were carried out, with one question on maternal mortality. Of the total number of interviewees, 1,012 women (26%) recalled one maternal death whereas 191 (5%) recalled two or more. A network of 345 deaths was thus established corresponding to an average of four recalls per maternal death.

By eliminating deaths, which had occurred outside the study clusters and those which had occurred more than five years back, 52 households with maternal mortality were selected for an interview about the cause of death and the fate of the last born. The commonest causes of death were identified as haemorrhage, sepsis, obstructed labour/ruptured uterus and eclampsia (Boerma & Mati, 1989).

2.3.2 Maternal Mortality in the Gambia

The Sisterhood Method of estimating maternal mortality is more elaborate than the Networking Method. It is an indirect technique for deriving population-based estimates of maternal mortality first used in 1987 in the Gambia (Graham et al, 1989). It uses the proportions of adult sisters dying during pregnancy, childbirth, or puerperium reported by adults during a census or survey.

The method is based on the premise that the proportion of sisters dying during pregnancy, childbirth or puerperium reported in a census or survey by respondents of a certain age is related to the probability of dying from maternal causes by age. The estimated maternal mortality from the Gambia data was 1,005/100,000 live births, which compares well with figures obtained from the continuous population register of 1,050 and 950/100,000 live births for 2 districts in the same country. The study did not however establish causes of the reported maternal deaths.

2.3.3 Maternal Mortality in Zimbabwe

A study conducted in Zimbabwe using a multiple source confidential reporting network for all maternal deaths revealed a maternal mortality rate of 168/100,000 live births for a rural setting and 85/100,000 live births for an urban setting (Mbizvo et al, 1993). This marked disparity can largely be explained in terms of the better infrastructure and therefore accessibility of health services in urban as compared to rural areas.

The major direct causes of deaths in the rural setting in order of importance, were haemorrhage, abortion complications, puerperal sepsis and eclampsia. The same causes were responsible for deaths in the urban setting but in a different order with eclampsia coming first, followed by abortion complications, puerperal sepsis and haemorrhage.

It is not surprising that abortion complications rank high on the list irrespective of the setting. In a 12-year review of abortion-related deaths in Nigeria, 89% were from illegal abortions. A separate study also in Nigeria found out that illegally induced abortions were the most significant cause of maternal deaths accounting for 33% of deaths (Mbizvo et al, 1993).

2.3.4 Maternal Mortality in South Africa

South Africa is ahead of many other African countries in addressing the problem of maternal mortality. The Government has shown commitment by declaring Maternal Mortality a notifiable medical condition (South African Government Gazette notice of 3rd October 1997).

A year after this declaration, the first report on Confidential Enquiries into Maternal Deaths in South Africa was released. Several provinces were involved in piloting the process of notification with some starting in August 1997 and more coming on board gradually. For this reason, the report was heavily biased by cases from KwaZulu Natal and Gauteng whereas there was under-reporting from the more rural areas of the country.

In total, 133 maternal deaths were reported from 7 provinces. The first five causes of maternal deaths were identified as:

- i. Hypertensive conditions in pregnancy (20%);
- ii. Non-pregnancy related infections, mainly AIDS (18%);
- iii. Obstetric haemorrhage (14%);
- iv. Early pregnancy losses, mainly septic abortions (12%); and
- v. Pre-existing maternal diseases, mainly cardiac disease (11%).

Instituting a system of Confidential Enquiries into Maternal Deaths is a major milestone in the quest for improving maternal health care in South Africa. Reports on Confidential Enquiries into Maternal Deaths in the United Kingdom are widely credited with having played a major role in lowering the Maternal Mortality Rate (van Coeverden de Groot, 1994).

The quality of maternal health care in South Africa is however not the same in all provinces. Western Cape province has always been ahead even before maternal deaths became notifiable. The Maternal Mortality Rate recorded for the triennium 1987-1989 in the Peninsula Maternal and Neonatal Service (PMNS) of Cape Town

for instance was 31/100,000 deliveries (van Coeverden de Groot, 1994). This is the lowest Maternal Mortality Rate recorded anywhere in Africa.

It is unfortunate that in the last few years, there has been an increase in deaths from postpartum haemorrhage in the PMNS, usually in association with domiciliary delivery in the informal settlements. The gains, which had been made in this region, may hence be steadily eroded unless the problem of informal settlements is comprehensively addressed.

The PMNS success story is largely as a result of the well-established Midwife Obstetric Units (MOUs), which have been operational since 1973. There are currently 5 MOUs situated in the most densely populated areas of the PMNS region. The concept of MOUs has ensured that thousands of low risk pregnant patients do not have to see a doctor at any time during their pregnancy, labour or puerperium (van Coeverden de Groot, 1993).

2.3.5 Maternal Mortality in Lesotho

As in many other developing countries, very few maternal mortality studies have been conducted in Lesotho. The officially quoted maternal mortality rate of 282/100,000 live births is based on a Rapid Evaluation Method Study of health indicators conducted in 1993 (Family Health Division, 1993). Results of a survey conducted in 1997 indicate a rate of 738/100,000 live births (Tlebere & Seipobi, 1997). The survey, which was based on active case finding, is bound to have revealed results closer to the actual figure.

The rate based on Health Statistics Unit data for 1997 is 542/100,000 live births (Health Statistics Unit Report, 1998). This rate is closer to the survey results than the earlier estimate officially quoted, lending support to the survey findings. In their revised 1990 estimates of maternal mortality, WHO and UNICEF give a rate of 610/100,000 live births for Lesotho. This compares poorly with the Southern African Regional rate of 260/100,000 live births (WHO & UNICEF, 1996).

It is worth noting that the WHO/UNICEF estimate comes close to the mean value of the two independent rates established in 1997. Even if we were to go by the officially quoted figure, it is still a matter of concern that 282 women in Lesotho die for every 100,000 live births.

As for notification, there is no comprehensive system of maternal mortality notification in Lesotho. All health facility maternal deaths are however reported to the ministry of health headquarters. The doctor involved in the management of the patient has to write a report explaining the circumstances surrounding the death. The limitation with this kind of notification is that the concerned doctors may not give incriminating details in cases where the medical care provided has been substandard.

2.3.5.1 The Lesotho Dilemma

Whereas accessibility to health facilities is assumed to improve the health status of a given population, the situation in Lesotho is different. Official data indicate that more maternal deaths occur among health facility deliveries than among home deliveries. Taking Maseru district for example, the table below shows documented maternal deaths over the period 1990-1996:

Table 1A: Reported Maternal Deaths in Maseru District 1990-1996

Year	Facility-based	Home-based
1990	5	-
1991	6	2
1992	10	5
1993	5	4
1994	3	1
1995	2	3
1996	4	-
Total	35	15

Although statistics specific for other districts could not be obtained, the pattern seen for reported maternal deaths nationally between 1988 and 1997 reflects a similar situation (see Table 1B below). The implication is that the other districts are facing the same dilemma.

Table 1B: Reported Maternal Deaths in Lesotho 1988-1997

Year	Facility-based	Home-based
1988	42	21
1989	29	25
1990	16	6
1991	13	14
1992	18	13
1993	16	11
1994	9	5
1995	8	9
1996	42	8
1997	24	10
Total	217	122

Source: Lesotho Ministry of Health Statistics Unit

This may partly be due to the likely underreporting of maternal deaths among home deliveries and partly due to referral bias. Patients attempting home deliveries resulting in complications are taken to hospital, which inflates facility-based deaths. Even with these possible biases in mind, communities can only have confidence in a health facility when a good proportion of the critically ill patients that end up in hospital survive.

2.3.5.2 Negative Feedback between Maternal/Perinatal Mortality
and Utilisation of Perinatal Services

That perinatal services are grossly under-utilised in Lesotho is a known fact; the current estimation of health facility deliveries being less than 40%. The problem of health institutional maternal mortality would have to be addressed first before any improvement can be realised in this regard. Central to community acceptance of perinatal services are low maternal and perinatal mortality and morbidity rates (van Coeverden de Groot, 1993).

It was against this background that the research was undertaken to review patient records for all maternal deaths in Lesotho lowland district health facilities.

CHAPTER 3: AIM AND OBJECTIVES

The initial aim was to establish an audit of causes of maternal mortality in Maseru district health facilities. This was formulated on the assumption that all maternal mortality records would be retrieved for review. It turned out that very few hospitals had any system of record keeping and so retrieval of records was a major problem.

The aim was subsequently changed to “An Analysis of the Causes of, and Substandard Care associated with, Maternal deaths in the Lowland districts of Lesotho”. The change in aim allowed for more health facilities to be covered with a shift in focus from the number of maternal deaths/maternal mortality rate to quality/standard of care provided.

The specific objectives were:

1. To review antenatal, intrapartum and postpartum case records of women who died in the target health facilities between 1994 and 1998;
2. To identify aspects of substandard care at each of the above obstetric phases;
3. To identify other factors contributing to maternal deaths; and
4. To make recommendations aimed at improving the quality of maternal care.

CHAPTER 4: METHODOLOGY

The research was based on a retrospective review of case records. The study design was descriptive. No sampling was involved since all retrieved patient records were reviewed. In each case, the stage at which the patient had made initial contact with health services was noted. The care provided from that time until the time of death was reviewed and the various factors that contributed to death identified. The factors were then classified under four categories namely: medical (service related), patient, administrative and infrastructural. Within each category, the factors were further classified as avoidable, probably avoidable or unavoidable. Based on these classifications, the overall quality of care was assessed. Fifty patient records were reviewed covering a five-year period between 1994 and 1998.

Assessment of the quality of service was based on standard obstetric care protocols. During the antenatal period for instance, the consistency with which screening tests were done, identification of obstetric risks and appropriate referral of at risk patients were the variables used for assessment of care. For intrapartum period, partogram use and application of its findings were some of the variables considered in addition to the general medical care provided. Select case studies were used for illustration of various factors that contributed to maternal deaths. The reason for citing case studies was to highlight the actual situation on the ground rather than attempting to describe it.

Prior to record review, the research proposal was submitted to the Ministry of Health and Social Welfare for clearance following which a separate clearance had to be obtained for hospitals, which administratively fall under the Christian Health Association of Lesotho (CHAL). The proposal was then submitted to Cape Town University Ethics Committee for approval.

Once the Ethics committee approved the proposal, contact was made with the target health facilities for retrieval of records. Of the five hospitals from which records were reviewed, two were from Maseru district and one each from the other three districts. The review of records was limited to weekends when at least one medical staff member at the target health institution would be available for the exercise.

Although the original intention had been to have a nurse and a doctor from every hospital as co-investigators, it was not possible to have a convenient time for all the three in most cases. Only one hospital provided both a nurse and a doctor for record review. The rest of the records were reviewed in collaboration with one other doctor.

CHAPTER 5: FINDINGS

5.1 ANTENATAL CARE (ANC)

5.1.1 ANC Service Utilisation

Antenatal care (ANC) services are grossly under-utilised. Of the fifty cases reviewed, eighteen (36%) never attended ANC. Fifteen (30%) attended ANC only one to three times. Those who effectively utilised ANC services (four or more visits) were seventeen (34%).

5.1.2 Quality of ANC Services

There was minimal monitoring of the various pregnancy-related risks during the ANC visits. Of the 32 women who attended ANC at least once, twenty-six (81.0%) never had their haemoglobin checked, twenty-one (66.0%) and twenty-three (72.0%) never had their urine checked for proteinuria and glycosuria respectively (see tables 2,3 & 4 below):

Table 2: Omission of Haemoglobin (Hb) Check during ANC

	No. of ANC Visits			Total	%
	1-3	4-6	7-9		
Hb Checked	3	3	0	6	19
Hb not Checked	12	8	6	26	81
Total	15	11	6	32	100

Table 3: Omission of Proteinuria Check during ANC

	No. of ANC Visits			Total	%
	1-3	4-6	7-9		
Proteinuria Checked	5	2	4	11	34
Proteinuria not Checked	10	9	2	21	66
Total	15	11	6	32	100

Table 4: Omission of Glycosuria Check during ANC

	No. of ANC Visits			Total	%
	1-3	4-6	7-9		
Glycosuria Checked	3	2	4	9	28
Glycosuria not Checked	12	9	2	23	72
Total	15	11	6	32	100

Note that 18 of the patients never attended ANC and hence the total of 32 instead of the reviewed 50 cases in all the three tables above.

5.1.3 Failure to Identify patients at Risk

Primary level facilities either did not identify patients at risk during ANC or when they did, appropriate steps were not taken. There was for instance an attempted trial of previous caesarean section scar at one health centre. Even when the patient ruptured the uterus, the complication was not identified. The patient was only later referred on account of cessation of labour pains without mention of the possibility of uterine rupture.

5.1.4 Inadequate monitoring of patients in Obstetric Villages

Due to the difficult terrain in some cases and poor infrastructure in others, patients identified with an obstetric risk are sometimes admitted to Obstetric Villages within hospital premises. The main purpose of these shelters as they are commonly known is to allow close monitoring of such patients. There was little evidence that this was being done as illustrated by the following two cases:

Case 1

M. A. was a 32-year-old Para 4 Gravida 5 patient. She had attended ANC from the gestational age of 16 weeks at a health centre. Proteinuria was noted on her 7th and last visit. The patient was then 39 weeks by dates. She was referred to hospital for further evaluation.

At the hospital, the patient was admitted to the shelters without any investigations. There was no record of any review until two weeks later when she developed convulsions. The only blood pressure reading documented was after convulsions ensued. It was extremely high at 220/180 mmHg. The patient was given intravenous magnesium sulphate 4 g bolus, in an attempt to control the convulsions. She collapsed and died.

Case 2

R. K. was a 31-year-old Para 4 Gravida 5. She never attended ANC but was admitted to hospital with a history of labour pains. A diagnosis of false labour was made and since the patient had had two previous caesarean sections, she was admitted to the shelters for close monitoring.

There was no documentation of the patient having been reviewed until 11 days later when she went into spontaneous labour. A decision was made to take the patient for emergency caesarean section on account of two previous scars.

The patient, who had evidently not been prepared for surgery vomited on induction of anaesthesia. For fear of further vomiting, a decision was made to do the operation under spinal anaesthesia. The patient collapsed and died on administration of the anaesthesia.

5.2 INTRAPARTUM MANAGEMENT

5.2.1 Primary Obstetric Problems that contributed to Maternal Mortality

- It is evident that eclampsia was the commonest obstetric problem, accounting for 20% of the deaths (see Table 5 below).

Table 5: Identified Primary Obstetric Problems

Condition	No. of Cases	%
Eclampsia	10	20 %
Obstructed labour	5	10 %
Previous caesarean section	4	8 %
Poor progress of labour	4	8 %
Ruptured uterus	4	8 %
Antepartum haemorrhage	3	6 %
Postpartum haemorrhage	3	6 %
Multiple pregnancy	3	6 %
No identifiable obstetric problem	3	6 %
Pregnancy Induced Hypertension	2	4 %
Prelabour rupture of membranes	2	4 %
Malpresentation	1	2 %
Chorioamnionitis	1	2 %
Others	5	10 %
Total	50	100 %

The three deaths for which no obstetric problem could be identified were full-blown AIDS cases whose conditions deteriorated following delivery, culminating in deaths.

5.2.2 Intrapartum Monitoring

Intrapartum monitoring of patients was generally poor. The partogram, which is a graphic representation of labour events, is designed to give essential information with minimal writing of notes. This can be quite handy especially in situations where the quality of clinical notes is poor. There was gross underutilisation of this monitoring tool. Of the fifty cases reviewed, only five (10%) had a partogram chart.

Even in the few situations when the partogram was used, decisions were rarely made in conformity with the charted findings. With reference to case 5 for instance, the readings were plotted to the right of the action line for over twelve hours before active intervention was considered.

5.2.3 Case Management Protocols

Even among pregnancies categorised as low risk, there are always possible complications, which should be anticipated. The emergency management of most obstetric problems can be achieved by protocols, which have been in use for decades (Maine et al, 1997). In the series of cases reviewed in this study for instance, all identified primary obstetric problems had recognised standard emergency protocols that could have been used successfully (see table 5 above). None of the hospitals from which records were reviewed had case management protocols.

5.2.4 Anaesthetic Complications

Apart from Queen Elizabeth II Hospital, anaesthesia is administered by trained nurses in all district hospitals. There is no supervision beyond the initial training and this was associated with a lot of problems.

One hospital for instance had three consecutive table deaths with the chain of events pointing to anaesthetic complications in each case. Subsequent records in that particular hospital revealed reluctance in taking patients to theatre. Patients with clear indications for caesarean section were as a result allowed to continue with labour. They often died of other complications related to prolonged labour.

In another hospital, the two patients who died of anaesthetic complications were undergoing spinal anaesthesia. In each case, the anaesthetic notes were deficient on the resuscitative measures taken. It appears that the procedure was being attempted without adequate skills.

5.3 POSTPARTUM CARE

5.3.1 Monitoring

Eighteen deaths (36%) occurred among grandmultiparous women (parity>3) as indicated in table 6 below. All the three deaths attributed to postpartum haemorrhage were in this group. It appears that postpartum haemorrhage was never anticipated as will be illustrated by case 3.

Table 6: Mortality Distribution by Parity

Parity	Deaths	%
Primigravida	15	30
Para 1	5	10
Para 2	8	16
Para 3	4	8
Grandmultiparous	18	36
Total	50	100

Case 3

M. R. was a 35-year-old para 7 Gravida 8. She had attended antenatal clinic seven times starting from the gestational age of 20 weeks. Her haemoglobin, proteinuria and glycosuria checks were never done but she had apparently had an uneventful antenatal period.

She was admitted with a history of labour pains. No initial examination was done to document the stage of labour on admission. It was only 34 hours later that the first entry of examination findings was made. By then the cervix was 9 cm dilated. There was no comment on either the patient's or the fetal condition.

The patient delivered a male fresh stillbirth 15 minutes after the initial examination. She developed massive vaginal bleeding 3 hours after delivery following which an intravenous line was established and a doctor called. The doctor came 6 hours later to find the patient gasping. Resuscitative measures were unsuccessful and the patient died.

5.4 Substandard Care

The series of cases reviewed in this study revealed a predominance of substandard care. Of the 50 cases, only 5 did not have avoidable medical factors contributing to death. Indeed categorisation of avoidable contributing factors showed this kind of distribution (see annexure 1 for definitions of the various contributing factors and examples of avoidable factors):

- i) Avoidable medical factors contributed to forty five (90%) of the deaths;
- ii) Avoidable patient factors contributed to twenty four (48%) of the deaths;
- iii) Avoidable administrative factors contributed to five (10%) of the deaths; and
- iv) There was no documented infrastructural factor contributing to death.

The following cases both portrayed serious substandard medical care and will be used to illustrate the magnitude of this problem:

Case 4

Antenatal Period Management

R. M. was a 36-year-old Para 5 Gravida 6 patient. She had attended ANC five times starting from the gestational age of 24 weeks. Her haemoglobin had been checked during ANC and recorded as 11.5 g/dl. Proteinuria and glycosuria were however not checked.

Multiple pregnancy was suspected in the course of her antenatal visits. The patient was referred to Queen Elizabeth II hospital where ultrasonography confirmed triplets. The gestational age at which ultrasonography was done was not indicated but the patient was advised to deliver in hospital.

Home Delivery

When labour finally came, the patient laboured at home and delivered the first two twins. She was admitted to hospital with a history of retained triplet. It was not clear from the notes what the interval was between delivery of the second baby and the time of admission.

Hospital Intrapartum Management

On examination the patient was noted to be in good general condition. She was not pale and her blood pressure was 120/80 mmHg. No contractions were palpated but the fetal heart was heard and noted to be regular. The cervix was 4 cm dilated. There was no mention of whether the membranes were still intact or ruptured.

The patient was put on 10 units of Pitocin in 1 litre of 5 % dextrose. She was reviewed 7 hours later after the Pitocin drip had run dry. The fetal heart rate was still heard and noted to be regular. There were no contractions. A diagnosis of uterine inertia was made. The patient was prepared for caesarean section.

Intra-operative Management

A live baby was delivered but haemostasis could not be achieved due to oozing of blood from both the wound edges and the needle puncture sites. A diagnosis of disseminated intravascular coagulation was made. There being no fresh frozen plasma at the district hospital, the possibility of transferring the patient to Queen Elizabeth II hospital was considered but there was no ambulance for transport.

A decision was made to carry out an emergency hysterectomy. The actual operation went well but oozing from the cervical stump persisted for a long time. It eventually stopped after blood transfusion and the patient was taken to the ward in a relatively stable condition.

Post-operative Management

No vital signs were monitored in the ward postoperatively. The only nursing notes entered documented a stable condition, the patient having been fully awake and talking to her relatives some six hours after the operation. She suddenly collapsed and died half an hour after the apparent stability. No post-mortem was done to determine the cause of death.

Case 5

Antenatal Period Management

M. M. was a 20-year-old primigravida. She attended ANC eight times starting from the gestational age of 14 weeks. She had an apparently uneventful antenatal period but her haemoglobin, proteinuria and glycosuria were never checked throughout her visits.

Intrapartum Period Management

The patient was admitted with a history of labour pains. She was diagnosed as being in the latent stage of labour although the initial clinical findings were not documented. It was only 12 hours after admission that the first clinical findings were recorded. The patient was then in active labour with cervical dilatation of 5 cm. There was no comment on the quality of contractions, the patient's general condition or the fetal condition.

The patient was reviewed again 3 hours later. Cervical dilatation was still 5 cm with intact membranes. Still no comment was made on the quality of contractions but the patient was put on pitocin apparently for augmentation of the contractions. The action line on the partogram had been crossed at this stage.

The next review was 8 hours later. There was no documentation of any clinical findings. Artificial rupture of membranes was however done and the liquor noted to be meconium-stained. No action was taken in the face of apparent fetal distress.

The patient was again reviewed 3 hours later. The cervix was then 9 cm dilated. Still no comment was made on the quality of contractions, maternal and fetal conditions but another dose of pitocin was ordered.

Vacuum extraction was attempted two- and- a- half- hours later but failed. There were no clinical notes to justify the procedure. A decision to perform a caesarean section was made on account of prolonged second stage of labour with failed vacuum extraction.

Intra-operative Management

A baby boy was born alive but with a very low Apgar score. The patient died intra-operatively. Clinical notes on how the patient died were scanty and could not allow for definite determination of the cause of death.

5.5 SUMMARY OF IDENTIFIED ELEMENTS OF SUBSTANDARD CARE**Table 7: Identified Elements of Substandard Care**

Obstetric Period	Elements
Antenatal	Omission of ANC profile
	Failure to identify at risk patients for referral
	Absence of set criteria for referral
	Failure to review patients in Obstetric Village (Shelters)
Intrapartum	Failure to identify at risk patients for close monitoring
	Failure to use the partogram
	Failure to act on the partogram in the few cases when it was used
	Lack of supervision for nurse-anaesthetists
Postpartum	Inadequate postpartum monitoring
	Failure to anticipate postpartum complications
	Inadequate knowledge of resuscitation
Cross-cutting	Lack of case management protocols
	Poor record keeping

These identified elements of substandard care were common to all hospitals from which records were reviewed. There was no noticeable difference in quality of care between the only referral hospital, Queen Elizabeth II, and district hospitals.

CHAPTER 6: DISCUSSION

6.1 ANTENATAL CARE (ANC)

6.1.1 ANC Service Utilisation

For purposes of this research, effective utilisation of ANC services was defined as four or more visits. Four visits are far from ideal but were considered the bare minimum contact with health services, which can allow for screening of patients for various obstetric risks and some degree of health education. Only seventeen (34%) of the reviewed cases met this criterion. This figure is significantly lower than that obtained from the 1993 Rapid Evaluation Method (REM) study, which put ANC service utilisation at 54.1% (Family Health Division, 1993). The disparity might be attributed to the small sample of cases reviewed in this case. However, even at 54.1%, it would still be under-utilisation of ANC services.

No subsequent research has been done in Lesotho to establish possible reasons for this. The REM study partly attributed it to lack of service provision on a daily basis, in most of the health facilities. Of the nineteen facilities covered by the study, 35.4% offered ANC once a week, 36.2% at most twice a week, while approximately 20% offered the service daily. This situation is likely to have changed over time. There is therefore an urgent need to carry out a comprehensive research not only to update these figures but also to establish other reasons for ANC under-utilisation.

6.1.2 Quality of ANC Services

This was generally poor. Only three tests namely haemoglobin, glycosuria and proteinuria check were used for screening and monitoring of ANC patients. The tests were however carried out in a very erratic manner as outlined in the findings. It is therefore not surprising that hypovolaemic shock secondary to haemorrhage and various complications of eclampsia were the leading causes of death.

A mother whose antenatal haemoglobin status is unknown might be anaemic on admission in labour. Depending on the circumstances under which the patient is admitted (a patient arriving in second stage of labour for instance), pallor might be missed. With this risk factor unidentified, what is ordinarily considered minimal bleeding might significantly affect her haemodynamic status. ANC is therefore the best place to evaluate the patient and document all identified risk factors for purposes of alerting whoever may end up conducting the delivery.

It is worth noting that antenatal screening for anaemia does not replace the basic requirement that all health care facilities offering obstetric services should be prepared for management of haemorrhage; it only supplements it.

The same can be said of eclampsia with its attendant complications. Apart from a rise in blood pressure, which can be quite sudden, proteinuria is a common and in most cases an early sign of pre-eclampsia. It is unacceptable for ANC facilities purporting to monitor patients for the risk of pregnancy induced hypertension to ignore checking for proteinuria. Indeed some of the patients who died as a result of complications of eclampsia had attended ANC either on the same day or a few days earlier. Although detection of proteinuria may not by itself avert development of eclampsia, it alerts health care providers to that possibility, leading to an increased degree of preparedness.

6.1.3 Failure to Identify patients at Risk

This was mainly noted among patients who attended ANC in clinics. Without guidelines for staff at that level, patients who should have been referred ended up being managed in the clinics. The previous caesarean scar patient who ruptured her uterus at a clinic for instance should have been referred to hospital for high-risk ANC clinic.

This opportunity was not only missed during ANC but the clinic staff decided on trial of the scar in a health facility that was ill prepared for any intervention if the trial failed. It appears that the risk of rupturing the uterus was not anticipated. This explains why the patient was referred for cessation of labour pain rather than for ruptured uterus. The complication was missed altogether when it occurred. This case underscores the need for clear referral guidelines, particularly for clinics offering obstetric services.

6.1.4 Inadequate Monitoring of Patients in the Obstetric Villages

The success of obstetric villages depends on clear admission criteria in terms of high-risk status and a management plan for the admitted patients. In Lesotho, the villages are generally used as lodgings for expectant mothers. Some of the lodgers may have no obstetric risk but just opt to be closer to the hospital. This results in mixing of high-risk patients with those who are simply lodging. The resultant overcrowding hinders proper monitoring leading to a situation where high-risk patients become just part of the “crowd”.

With reference to case 1, the pregnancy was already term (39 weeks) by the time the patient was admitted to the shelters. Proteinuria detected at the referring clinic should have alerted the hospital staff to the need for further investigations including uric acid level and liver function tests. Any aberration in these parameters would have been an indication for early intervention by way of induction of labour. As it turned out, she was lost to follow up including basic blood pressure check until she developed eclampsia two weeks after admission.

The gestational age at the time of admission for case 2 was not documented. The fact that she was admitted to the shelters for closer monitoring indicates that she was either at term or near term. With two previous scars, the appropriate form of management was elective caesarean section. Vomiting, which necessitated the use of spinal anaesthesia would have been avoided in the first place.

6.2 INTRAPARTUM MANAGEMENT

6.2.1 Monitoring

The partogram is the best tool for intrapartum monitoring. Due to its graphic nature, it is easy to tell how labour is progressing at a glance as opposed to reading long narratives in the form of clinical notes, some of which might be illegible. The utilisation rate of this tool in the series of cases reviewed was a mere 10%. There is an urgent need for its enforcement.

The envisaged enforcement should start with re-educating health care providers on the effectiveness of the partogram, how it is charted and the interpretation of the graph. In the absence of this basic knowledge, partogram charting becomes a mechanical exercise that benefits nobody, as was documented in case 5 where the patient's graph was on the right of the action line for over twelve hours without the health care provider attaching any significance to it.

6.2.2 Case Management Protocols

Availability of case management protocols greatly improves the confidence of health care providers. Once the burden of attempting to recall various management regimens is relieved, the main responsibility becomes accurate identification of obstetric problems. Ideally, these protocols should be complemented with clear referral guidelines such that patients at risk are managed at the most appropriate level.

Both case management protocols and referral guidelines were non-existent in the hospitals from which cases were reviewed. The result was evident groping around by individual practitioners as they were confronted by various obstetric complications. Eclampsia was the one condition that best exemplified the need for such protocols. It was the commonest primary obstetric problem, was managed in as many ways as the number of practitioners involved and either directly or indirectly contributed to 20% of the deaths.

It would appear therefore that adequate management of hypertension in pregnancy with its complications could minimise maternal mortality significantly. Although it is not within the scope of this thesis to come up with various case management protocols, the management of eclampsia will be discussed in view of its relative significance:

Management of Eclampsia

Eclampsia is the most important complication of pre-eclampsia. It is defined as the occurrence of convulsions or coma unrelated to other cerebral conditions with signs and symptoms of pre-eclampsia (Gabbe et al, 1998). Pre-eclampsia is in turn defined as the presence of an elevated blood pressure with proteinuria in pregnancy. This may occur with or without oedema.

The management of eclampsia is best approached with the principles of resuscitation in mind: The first task is to ensure that the airways are clear of secretions and that the patient is breathing. The circulation is then assessed to confirm presence of a good volume pulse. It is only after these initial resuscitative measures that the attention is shifted to control of convulsions.

Several drugs have been used for control of eclamptic fits. The commonly used drugs include diazepam, phenytoin and magnesium sulphate. Although it is standard practice to use these anticonvulsants, the choice of agent has been controversial in the absence of properly controlled evidence to support any of the above options.

This was the situation until 1995 when 1,687 women with eclampsia were recruited into an international multicentre randomised trial comparing standard anticonvulsant regimens. Primary measures of outcome were recurrence of convulsions and maternal death. Data for 1,680 women was available for analysis:

453 patients were allocated Magnesium Sulphate versus 452 allocated diazepam and 388 allocated magnesium Sulphate versus 387 allocated Phenytoin. Women allocated magnesium Sulphate had a 52% and 67% lower risk of recurrent convulsions than those allocated diazepam and Phenytoin respectively. Maternal mortality was non-significantly lower among women allocated magnesium Sulphate. There was also no significant difference in other measures of serious maternal morbidity or perinatal morbidity and/or mortality (Lancet, 1995). This study provided compelling evidence in favour of magnesium Sulphate, rather than diazepam or Phenytoin, for the treatment of eclampsia.

In Lesotho, it was evident from the records reviewed that Magnesium Sulphate is the drug of choice for management of eclampsia. All patients diagnosed eclamptic received it in one form or other. The diverse dosages prescribed and modes of administration however indicated lack of the working knowledge required for effective use of this drug. It is for this reason that two regimens commonly in use are outlined below:

Regimen A

6 g of Magnesium Sulphate in 100 ml of fluid is given over a period of 15-20 minutes as a loading dose. Additional 2 g in 100 ml of fluid is given every hour for maintenance. Serum Magnesium levels should be obtained after 4-6 hours and the infusion accordingly adjusted to keep the level between 4.8 and 9.6 mg/dl. Treatment is continued for 24 hours post-delivery (Gabbe et al, 1998).

It should be mentioned that this particular regimen is inappropriate for developing countries since facilities for determination of serum magnesium levels are not readily available. It would however be ideal if resources were not a limiting factor.

Regimen B

The loading dose comprises of 4 g magnesium sulphate diluted in 200 ml of normal saline given intravenously as a slow infusion over 10-15 minutes and 5 g given intramuscularly into each buttock. The maintenance dose is 5 g given intramuscularly into alternate buttocks every 4 hours (Steyn, 1999).

Comments:

In both regimens, monitoring involves checking for the knee reflex, which must be present before giving additional maintenance doses, respiratory rate which should be more than 16 respirations/minute and urine output, which must be more than 100 ml over a period of 4 hours.

Although magnesium sulphate is generally a safe drug, its injudicious use can result in respiratory arrest due to toxicity. In the event of this, immediate cardiopulmonary resuscitation should be instituted and 10 ml of 10% (1 g) of Calcium gluconate solution administered intravenously over a period of 3 minutes. This emergency drug must be on emergency trays in all obstetric units.

Once convulsions have been controlled, blood pressure should be attended to. The aim is to gradually bring down blood pressure and maintain it between 140/90 and 150/100 mmHg. Dihydrallazine is the drug of choice. In the Peninsula Maternal and Neonatal Service of Cape Town, two regimens of this drug are used:

- i. The intravenous regimen comprises of 25 mg in 200 ml of saline. This is initially run at the rate of 2.5 mg/hr (5 drops/minute). The rate is gradually increased in accordance with the blood pressure response to a maximum of 20mg/hr (40 drops/minute).
- ii. The intramuscular regimen comprises of an initial dose of 6.25 mg. This is repeated every 30-60 minutes as necessary.

6.2.3 Anaesthetic Complications

Five deaths were attributed to anaesthetic complications. In each case, there was no documentation of any resuscitative measures taken. Since all these deaths occurred in district hospitals where anaesthesia is administered by nurse anaesthetists, it would appear that resuscitative skills are not adequately taught during their training. The long-term solution will entail a review of the training curriculum. In the meantime, there is an urgent need for in-service courses for those already in the field.

6.3 POSTPARTUM CARE

6.3.1 Monitoring

Identification of postpartum risk factors is a prerequisite for adequate monitoring of this early stage of the puerperium. Monitoring is by itself not enough unless the health care provider knows what to do when the anticipated complications ensue. Once again, this underscores the need for case management protocols.

With reference to case 3, it was evident that the high-risk status of this patient was never identified. She had a very prolonged labour, which in itself could have contributed to uterine atony as a result of exhaustion. There was no mention of simple resuscitative measures like uterine massage or administration of ergometrine when postpartum haemorrhage ensued.

In the absence of any explanation why it took the doctor 6 hours to respond to an emergency, the only inference one can make is that of gross negligence.

6.4 Substandard Care

6.4.1 Case 4

The patient was one of the very few who had benefited from attending ANC. Her haemoglobin had been checked and she had been referred for ultrasonography, which confirmed triplets. She had been advised to deliver in hospital.

The patient was admitted with a retained third triplet. Contractions usually resume in cases of retained twin or triplet but this did not happen. Whether the uterine inertia developed spontaneously or was a result of some medication administered at home will never be known. Despite taking the risk of administering 10 units of pitocin to a grandmultiparous patient, the inertia could not be overcome necessitating caesarean section.

What was expected to be a simple caesarean section ended up in hysterectomy. It was not clear whether the staff at the district hospital were technically qualified to do the procedure or not but in the absence of an ambulance service, it appeared like a logical decision. The patient somehow survived the ordeal but later collapsed and died at a time when everybody was convinced that the worst was over.

If death was as sudden as it was reported in the nursing notes, pulmonary embolism was the most likely cause. A post-mortem should however have been done for confirmation.

Categorisation of Contributing Factors

A) Medical Factors

Looking at the factors that played a role, the most glaring medical factor was poor postoperative management. There is a danger of taking for granted aspects of surgical notes, which are written routinely. Observation of vital signs is one such aspect and yet it is so critical in assessing the patient's post-operative progress. The technical capability in conducting hysterectomy at the district level might be questioned but as already mentioned, the circumstances militated against any other option.

B) Administrative Factors

Administrative factors did not feature much in the series of cases reviewed. In this instance however, there was lack of ambulance service and fresh frozen plasma. The presence of either one or both would most likely have made a difference.

C) Patient Factors

The patient's role in the whole process was quite significant. It would be understandable if this was a case of undiagnosed triplets. Having taken the trouble of travelling to Queen Elizabeth II hospital for ultrasonography, it was not clear why the patient defied the given instructions and decided to labour at home.

The common feeling among grandmultiparous women is that they have seen it before. Perhaps more time has to be invested in health education to convey the message that pregnancy-related complications tend to increase with both age and parity.

6.4.2 Case 5

This patient had done all that was within her power to benefit from medical care. She had consistently attended ANC from gestational age of 14 weeks. Even at this stage of her pregnancy, she did not benefit much from the medical care offered. She attended ANC 8 times but even her antenatal profile was never established.

Following admission, the patient was subjected to extreme substandard care. It is not clear how long she was in active labour. The documented initial assessment was done 12 hours after admission. She had not made any progress 3 hours later after which the patient was started on pitocin without any clinical notes to justify the decision.

If the main problem was ineffective contractions as deduced from the management, then artificial rupture of membranes should have been done first. The procedure enhances contractions due to locally released prostaglandins. Administration of pitocin should only have been considered after a period of assessment of this prostaglandin effect.

As it turned out, it was only 8 hours later that the membranes were eventually ruptured and liquor noted to be meconium stained. Clarity of liquor or lack of it is an important tool for monitoring the fetal condition during labour. In this case, the finding did not elicit any action. It took another 3 hours for the patient to be reviewed but apart from cervical dilatation, no evaluation of the fetal or maternal general condition was made.

Without comments on the fetal descent and any other features, which would rule out cephalopelvic disproportion, it is not clear whether vacuum extraction was indicated or not. The procedure was however attempted without success before the patient was eventually taken to theatre.

As fate would have it, the fetus somehow survived the sustained trauma. The mother however never lived to tell the story, which entails all that should never happen in obstetrics.

6.5 LIMITATIONS OF THE RESEARCH

6.5.1 Coverage

Health facilities in designated mountainous districts were omitted on logistic grounds. Whereas the quality of medical care may not differ significantly between lowland and mountainous districts, the latter have more acute infrastructural problems, which may have served as confounding factors.

However, infrastructural problems are by nature not amenable to short term remedies. The research findings should therefore be equally relevant to the mountainous districts in as far as the quality of health care is concerned.

6.5.2 Record Recovery

Fifty records out of an expected two hundred is only the tip of the iceberg. Fortunately the repertoire of findings especially in terms of quality of care tends to be limited. Even with the fifty records, a repetitive pattern was already beginning to emerge giving the impression that more records would only have underscored the magnitude of the problems already identified. The data though quantitatively limited gives a qualitative overview of the factors contributing to maternal mortality in Lesotho health facilities.

6.5.3 Quality of Clinical Notes

Gleaning information from the available records was difficult. Clinical notes were often too sketchy to help conjure a flowing picture of what might have been done for any given patient. More often than not, an inference as to what clinical condition was being managed could only be made by checking the treatment sheet. Objective assessment was therefore not possible in some cases where clinical notes were particularly deficient.

CHAPTER 7: RECOMMENDATIONS

1. Data Storage

Record keeping was one of the major problems encountered in this research. Ordinary files are cumbersome to maintain especially for vital information like maternal mortality, which may be required many years later for research purposes.

Recommendation 1: That the Perinatal Problem Identification Programme (PPIP) be introduced in all Lesotho hospitals.

PPIP is designed for collection and storage of information on maternal near misses, maternal and perinatal mortality. The programme can work out cumulative perinatal mortality statistics and calculate the avoidable perinatal mortality rates. It also identifies common avoidable factors contributing to deaths and formulates easy to understand graphs of various factors, which can be printed out.

An additional advantage with PPIP is that once the information is entered, it can only be updated but not deleted. It safeguards against tampering with data for whatever reason while at the same time allowing additional inputs in order to build a more complete picture in cases where clinical notes were deficient.

Given that most of the hospitals in Lesotho have access to computers, the cost of instituting this programme will be minimal. It is user friendly and may not require any special training for use. Medical officers working in obstetric units have successfully used it in KwaZulu Natal.

The programme was developed by Professor R. C. Pattinson at the University of Pretoria. The diskettes for installation can be obtained from the University, making the technology readily available if Lesotho chooses to make use of it.

2. Establishing Regular Perinatal Audits

Even with the introduction of PPIP, improvement of perinatal services can only be realised through regular audits during which the identified problems can be discussed. Whereas maternal mortalities are discussed once in a while at Queen Elizabeth II hospital, circumstances under which mothers die in the other hospitals are only known to the staff directly involved in their management.

Recommendation 2: That regular perinatal audits be established in all hospitals.

Even where there are no specialists, such forums will provide an opportunity for pooling available clinical experiences for the betterment of services rendered.

3. Formulation of Patient Management Protocols

Patient Management Protocols are required for the various obstetric phases. At the antenatal stage, protocols have to be developed to guide health care providers on the baseline investigations, monitoring tools and criteria for referral.

During the intrapartum stage, the protocols should emphasise diligent use of the partogram. Clinical management outlines of common obstetric conditions should be made available for quick reference.

Recommendation 3: That management protocols be drawn up for all the major complications of pregnancy, labour and the puerperium, for use in all the hospitals in Lesotho.

It should however be mentioned that protocols have to be explained to both the nursing and medical staff in order to let them understand why the management option given is the correct approach. Mechanical enforcement may work for a while but is not sustainable.

4. Upgrading Training in Anaesthesia

Apart from Queen Elizabeth II hospital, which has anaesthetists, all other hospitals in Lesotho have nurses trained in anaesthesia who work without supervision. Five deaths out of the fifty reviewed were attributed to anaesthetic complications. Two of these were a direct result of attempted spinal anaesthesia in the absence of adequate resuscitative knowledge.

Recommendation 4: That nurse-anaesthetists based outside QE II hospital be involved in periodic refresher courses.

It should be clear to them what anaesthetic options they are capable of undertaking. They should be encouraged to refer patients whom they cannot handle with confidence. Updating resuscitative skills should be part of this refresher course package.

5. Introduction of Perinatal Education Programme (PEP)

Although nurse-anaesthetists have been identified as a priority category, other health workers equally require continuing medical education.

Recommendation 5: That all midwives, other categories of nursing staff and doctors be involved in a Perinatal Education Programme.

South Africa has PEP Manuals that can be used for reference. Once such reference material is available, health care workers in various facilities should be encouraged to hold regular sessions for review of case management protocols. Visiting consultants can come in once in a while for reinforcement of the programme and addressing possible impediments to protocol implementation. Organising for a feedback workshop at which the findings of this research can be presented would be an ideal way of setting the PEP ball rolling.

6. Institution of Confidential Enquiries into Causes of Maternal Mortality

Confidential Enquiries into causes of maternal deaths result in an improvement in the quality of maternal health care. This works in a number of ways:

- i) Being confidential, individuals interviewed are more at ease to give details pertaining to the death;
- ii) Since the enquiries are conducted soon after death, the circumstances are captured while still fresh in the minds of the interviewees; and
- iii) The fact that somebody is watching is a form of exerted pressure, especially in situations where substandard medical care is concerned.

As mentioned earlier, three consecutive deaths in one hospital occurred under very similar circumstances. If confidential enquiries had been conducted, the underlying problem would have been identified perhaps with the first death. This would have saved the subsequent two lives.

Recommendation 6: That Lesotho institute a system of Confidential Enquiries into Maternal Deaths based on the South African and British models, to replace the current practice where the medical officer involved simply files a report.

In implementing this recommendation, Lesotho can share experiences with its neighbour, the Republic of South Africa, which declared maternal mortality a notifiable medical condition in 1997. It might be too soon to predict, which direction the South African maternal mortality trend will take. Learning from the United Kingdom's experience however, it seems a logical starting point in addressing the spectre of avoidable maternal deaths in Lesotho particularly in health institutions.

7. Establishment of a Task Force

In order to tackle the problem of Maternal Mortality in Lesotho in a co-ordinated fashion, the following further recommendation is made.

Recommendation 7: That a Task Force be convened as a matter of urgency, to address the above mentioned recommendations. It is further recommended that the Task Force obtain input from experts in the field of Maternal Mortality, both in South Africa and elsewhere.

Table 8: Summary of Recommendations

- 1. That the Perinatal Problem Identification Programme (PPIP) be introduced in all Lesotho hospitals.***
- 2. That regular Perinatal audits be established in all hospitals.***
- 3. That Management Protocols be drawn for all the major complications of pregnancy, labour and the puerperium, for use in all the hospitals in Lesotho.***
- 4. That nurse-anaesthetists based outside Queen Elizabeth II hospital be involved in periodic refresher courses.***
- 5. That all midwives, other categories of nursing staff and doctors be involved in a Perinatal Education Programme.***
- 6. That Lesotho institute a system of Confidential Enquiries into Maternal Deaths based on the South African and British models to replace the current practice where the medical officer involved simply files a report.***
- 7. That a Task Force be convened as a matter of urgency, to address the above mentioned recommendations.***

CHAPTER 8: CONCLUSION

The research, the original aim of which was establishing an audit of causes of maternal mortality in Maseru district health institutions ended up identifying factors contributing to some of the deaths instead. The reason for changing the main objective was failure to retrieve enough records from the four institutions originally targeted.

Even after extending the exercise to other lowland districts, the records collectively retrieved still fell far below the expected number going by the prevailing high maternal mortality statistics in Lesotho. Only 50 cases were reviewed but the information obtained provides an insight into the magnitude of substandard care meted out in Lesotho health institutions as evidenced from an overwhelming number of medical factors, which contributed to these deaths.

It is evident that the area, which needs maximum attention, is that of medical care provided by midwives and doctors. The recommendations given above have largely attempted to address this and if implemented will go a long way in improving the plight of expectant mothers in Lesotho.

Findings of this research constitute a snapshot of the quality of maternal care currently offered in the various Health Service Areas in Lesotho. Although deaths do not represent all of the problems experienced in a maternal service, an audit of deaths should lead to improvements in the overall care of mothers and new-borns. It follows therefore that there should be minimum guidelines or protocols to guide health workers on how to conduct a perinatal and maternal mortality audit:

- i. Each Health Service Area must have a reliable system for reporting all known maternal and perinatal deaths, using standardised reporting forms.
- ii. There should be one person in each Health Service Area who is in charge of the audit.
- iii. Every time there is a perinatal or maternal death, the relevant reporting form should be filled in and sent with the patient's case notes to the person in charge of the audit.
- iv. The person in charge of the audit must have the clinical experience and skills to be able to examine the patient notes and the reporting forms to make a diagnosis of the cause of death and to identify any avoidable factors if present.
- v. Meetings and reports to feedback the audit findings to relevant health staff must be organised on a regular basis.
- vi. The findings of the audit should be kept anonymous, so that there is no mention of the patient's name or names of health workers who were involved.
- vii. Perinatal mortality meetings should be held once a month to review all perinatal and maternal deaths that may have occurred in the previous month.
- viii. All health workers involved in the delivery of maternal health care should be aware of the audit findings and should, if possible, attend mortality audit meetings.
- ix. If clinic midwives are unable to attend these meetings, the findings should be conveyed to the clinics by the clinic supervisor, or when there is in-service training for clinic staff.
- x. It is important that all participants understand that an audit is not a disciplinary procedure to penalise staff for their errors, but a positive opportunity for them to learn from mistakes in order to avoid repeating them. Thus the facilitator of the audit must create a non-threatening environment that is conducive to constructive learning¹.

It is only through such regular audits that improvement in perinatal and maternal care can be monitored as the above recommendations are implemented.

¹ Adapted from infant care audit system by RC Pattinson and JC Coetzee

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Annexure 1

DEFINITIONS OF THE VARIOUS FACTORS THAT CONTRIBUTED TO MATERNAL DEATHS

1. Medical Factors: Acts or omissions on the part of the health care provider(s), which were contributory to the outcome.
2. Patient Factors: Co-existing medical conditions, acts and/or omissions on the part of the patient, which were contributory to the outcome.
3. Administrative Factors: Factors within the health facility, which had an impairing effect on the provision of adequate care.
4. Infrastructural Factors: The degree to which physical inaccessibility to the health facility contributed to the outcome.

EXAMPLES OF AVOIDABLE FACTORS

Medical

1. Failure to screen ANC patients for obstetric risks
2. Failure to refer identified at risk patients to an appropriate level of care
3. Inadequate monitoring of labour
4. Injudicious use of drugs including anaesthetics
5. Failure to monitor patients during early puerperium
6. Failure to respond to emergencies promptly
7. Inadequate resuscitative measures

Patient

1. Failure to attend antenatal care clinic
2. Delay in seeking health care during labour
3. Grandmultiparity
4. Pre-existing medical conditions

Administrative

1. Lack of essential drugs/supplies
2. Lack of staff
3. Lack of equipment

Infrastructural

No avoidable factors were identified

Annexure 2

MEDICAL DATA COLLECTION SHEET FOR MATERNAL DEATHS IN LESOTHO HEALTH INSTITUTIONS

PATIENT IDENTIFICATION:

Hospital:

Age (years):

Parity:

ANTENATAL CARE:

Circle type of care: CLINIC/HOSPITAL/PRIVATE/TBA/OTHER/NONE.

Number of visits:

ANTENATAL RISK FACTORS	IDENTIFIED (yes/no/specify factor)	ACTED UPON (yes/no/specify action)
Previous Obstetric history:		
Current Obstetric history:		
Medical history:		
Haemoglobin:		
Blood pressure:		
Proteinuria:		
Glycosuria:		

PERINATAL DATA:

Under 'Pregnancy outcome' state whether abortion, ectopic, or give perinatal outcome:

Pregnancy outcome: Route of delivery:

Gestational age (Specify/not known): Birth weight (specify/not known):

COURSE OF EVENTS AFTER ADMISSION:

TIME AND DATE	COMPLICATIONS AFTER ADMIN.	IDEN. (yes/no/ not clear)	ACTED UPON (yes/no/specify action)	INDIC. (yes/no)	DID ACTION OCCUR? (yes/no/ why not)

‘TIME’ in format of 24-hour clock.

Complications include any medical, obstetric or operative event including anaesthesia (local, regional or general) or an ICU or high care area admission.

‘IDEN.’ means, did the medical or nursing staff identify the problem or complication?

‘INDIC’ means, was the action taken indicated in the view of the investigators?

MEDICAL ASSESSMENT BY INVESTIGATORS:

PRIMARY OBSTETRIC PROBLEM:

--

FINAL SYSTEM DYSFUNCTION/FAILURE DIAGNOSIS:

--

Other complicating or associated system dysfunction/failure:

--

CONTRIBUTING FACTORS

PATIENT FACTORS:

WHAT?	WHY?	A/PA/U

MEDICAL FACTORS:

WHAT?	WHY?	A/PA/U

ADMINISTRATIVE FACTORS:

WHAT?	WHY?	A/PA/U

INFRASTRUCTURAL FACTORS:

WHAT?	WHY?	A/PA/U

OTHER FACTORS/SPECIFY:

WHAT?	WHY?	A/PA/U

Key:

A-Avoidable

PA-Possibly Avoidable

U-Unavoidable

INSUFFICIENT NOTES TO MAKE A JUDGEMENT?

(Yes/no/state area of deficiency):

--

Annexure 3



Ministry of Health
and Social Welfare,
P.O. Box 514,
Maseru - 100.
26th August 1999.

To whom it may concern.

Re: Request for Permission for Data Collection

Dr. Givans Ateka, has been granted permission to collect data from health institutions in fulfillment of his Masters Degree Research.

May I request that you and colleagues accord him the needed cooperation. At the end of his research, and the Ministry's receipt of a copy of the report, we will share it with you. We hope the information so obtained will contribute towards strengthening the Reproductive Health Programme.

Thank you.

Yours Sincerely,

A black rectangular box redacting the signature of Dr. M. M. Moteetee.

Dr. M. M. Moteetee
Director PHC

cc: Dr. T Ramatlapeng, DGHS a.i
Mr. B. Majara, Head FHD a.i

Annexure 4

Christian Health Association of Lesotho
P. O. Box 1632
Maseru 100, Lesotho

Memorandum For: Management Teams (Scott & St. Joseph)

From: Executive Secretary

Signature: 

Date: 27th July, 1999

Re: **AUTHORISATION TO INCLUDE ST. JOSEPHS HOSPITAL IN
RESEARCH ON CAUSES OF MATERNAL MORTALITY**

Please allow me to introduce Dr. G.K. Ateka, who is intending to conduct an audit of causes of Maternal mortality within health Institutions, including your own Institutions.

The research has been allowed by the MOH&SW as per enclosed copy of their letter.

The topic chosen by Dr. Ateka is our concern al, and we hope that the results of this research will not only be used for academic purposes but should enable us to devise intervention measures.

We therefore call for your usual cooperation in assisting Dr. Ateka with whatever he may need.

The enclosed letter from Dr. Ateka details the plan of action for the research.

Enclosures

cc: Dr. G. K. Ateka

Annexure 5

UNIVERSITY OF CAPE TOWN



Research Ethics Committee
Faculty of Medicine
Anzio Road, Observatory, 7925
Queries : Martha Jacobs
Tel : (021) 406-6492 Fax: (021) 406-6390
E-mail : Martha@medicine.uct.ac.za

05 August 1999

REC REF : # 214/99

Dr G Ateka
Maternal & Child Health
Information & Resource Centre
46 Sawkins Road
RONDEBOSCH
7700

Dear Dr Ateka

A RETROSPECTIVE ANALYSIS OF CAUSES OF MATERNAL MORTALITY IN THE HEALTH FACILITIES OF MASERU DISTRICT OF LESOTHO

I have pleasure in informing you that the above study has been formally approved by the Research Ethics Committee on 24 July 1999.

Included is a list of Research Ethics Committee Members who have formally approved your protocol.

Please quote the above Reference number in all correspondence.

Yours sincerely,



PROFESSOR FOLBE
CHAIR: RESEARCH ETHICS COMMITTEE

Queries: Martha Jacobs
Research Ethics Committee
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UCT Medical School
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