



Saving Babies 2001 2nd Perinatal Care Survey of South Africa



Compiled by:
The MRC Unit for Maternal and
Infant Health Care Strategies,
PPIP Users, and the
National Department of Health



**Delegates at Saving Babies 2001: 2nd Perinatal Care Survey of South Africa Workshop
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Foreword

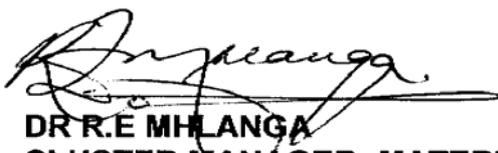
Publication of Saving Babies: A perinatal care survey of South Africa, marked the beginning of highlighting the magnitude of both perinatal and neonatal deaths. Saving Babies 2 confirms the findings of the first publication; we now have a good estimate of the magnitude of both perinatal and neonatal mortalities. We have also gained good insight on the causes of the mortalities.

The increase in the number of sentinel sites and the fact that it has been possible to produce Saving Babies 2, shows commitment on the part of health workers to improve perinatal care in South Africa and this is commendable. It is now important to generate effective responses to the identified challenge. Priority should be given to activities that individuals can implement in their facilities. It is also incumbent on the program managers to respond to needs that have been identified.

More than 50% of the perinatal and neonatal deaths can be prevented with simple interventions and strengthening of existing services. The Department of Health aims to reduce perinatal deaths by 25% from 40 to 30/1000 births over the next five years. With the kind of commitment shown by those involved in perinatal care surveillance, I have no doubt that the target is within our reach.

Improving communication channels between different stakeholders is also a big challenge facing us. I urge all of us to strengthen relationships and consolidate our efforts on data collection and utilisation. Hopefully with the next workshop all provinces will be able to report on the magnitude of their perinatal mortality and other perinatal events.

I take this opportunity, on behalf of the Director-General: Health to congratulate all those committed to improving perinatal care. Without your commitment we would not have made such big strides.



DR R.E MHLANGA
CLUSTER MANAGER: MATERNAL, CHILD, WOMEN'S HEALTH & NUTRITION

Contents

	Page
Frontpiece	i
Chapter Authors and Acknowledgements	ii
Foreword	iii
Contents	iv
Preface	v
Aims of the Perinatal Care Survey of South Africa	vii
Executive Summary	viii
CHAPTERS	TITLE
1	Introduction, methods and definitions of the survey 1
PROBLEMS	
2	Why babies die 8
3	Intrapartum hypoxia – searching for solution 28
4	Is preterm labour unavoidable, but are deaths due to prematurity avoidable? 33
5	PROVINCIAL REPORTS
	Overview 41
a	Eastern Cape 43
b	Free State 47
c	Gauteng 49
d	KwaZulu Natal 52
e	Limpopo 54
f	Mpumalanga 58
g	Northern Cape 61
h	North West 63
i	Western Cape 65
SOLUTIONS	
6	Quality assurance
a	- Antenatal 68
b	- Intrapartum 77
7	Recommendations and motivations 87
APPENDICES	
1	Workshop programme 92
2	Delegates 93
3	PPIP Users abstracts 99

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The report will be available on the PPIP website at: www.ppip.co.za.

Preface

A second Perinatal Care Survey workshop was held at the Hammanskraal Campus of the University of Pretoria, from the 26-28th November 2001. Like the previous one, this workshop brought together the users of the Perinatal Problem Identification Programme (PIIP), the national and provincial Maternal, Child and Women's Health (MCWH) units, the national and provincial Health Information and Epidemiology units, and the Medical Research Council (MRC) Research Unit for Maternal and Infant Health Care Strategies.

It is not possible at this stage for South Africa to have confidential enquiries into all of its' perinatal deaths. A solution that has worked for South Africa has been to have a combination of national basic perinatal data, from every site where babies are born and to have sentinel sites around the country that go further and have confidential enquiries into all the perinatal deaths in their areas. The basic perinatal data is a minimal data set that includes all births and deaths in their weight categories. The data from the sentinel sites adds descriptive data of causes and avoidable factors to the basic perinatal care indices. This gave a good reflection of the magnitude of the problem of perinatal care in the country, and also provided information on why the infants are dying by including details on pathology and health system failure. A combination of both sets of data gave a reliable picture of perinatal care in the country and directed health workers to areas where the greatest improvements can be made. This report was published as "**Saving Babies: A perinatal care survey of South Africa 2000**". This report included 27 PIIP sites. For the report to be truly representative, the situation of the sentinel sites is crucial and must reflect all segments of the health system which was a bit lacking in the first report. The new report has 44 sentinel sites and every province and every geographical area is represented.

The basic data was presented from the provincial MCWH units, and the PIIP Users and the MRC Unit presented the collated data. At the previous workshop, intrapartum birth asphyxia was identified as the condition potentially the most readily available for quick intervention. However, it was not clear what the specific reasons for intrapartum birth asphyxia being such a common potentially avoidable condition were. A specific survey was conducted on perinatal deaths due to intrapartum asphyxia, which comprised of a two-page questionnaire. The PIIP users were asked to fill in the form if such a death occurred in their institution. The results of this specific survey are detailed in the current report.

There are a few essential ingredients necessary to effect change¹. The first phase is to identify the magnitude of the problem, and to realise that it is feasible to improve significantly upon the current state of affairs. The second phase is to have the knowledge available to improve the situation, to persuade the health workers to use that knowledge and to make the knowledge and facilities available to the vast majority of the population. For this, a political will must exist to push through the necessary changes.

After publication of the first report, South Africa was at the point where it could realistically give a reliable estimate of its perinatal mortality rate, it knew the common causes of perinatal death and it knew that there were a great number of avoidable factors, missed opportunities and substandard care that exist surrounding these perinatal deaths. These findings have been confirmed in this second report. Most importantly, South Africa now knows what these common causes and factors are and that they are remediable.

The medical knowledge is available to prevent these deaths and the health system is in place to make that knowledge available to the vast majority of pregnant women. There is a strong political will to improve the care of pregnant women and their infants. Thus all the ingredients are available except that of persuading the health workers to use the knowledge available and direct their energies in the most appropriate way. Should that occur, South Africa should see a sudden and major improvement in perinatal care.

Considerable discussion took place at the workshop on prioritising interventions and on deciding which strategies to implement. The recommendations of the group are published in this report. Subsequent reports will concentrate on identifying what strategies are most effective and provide case histories of how it was achieved. In this way this group hopes it will play a significant role in improving the care of pregnant women and their babies.

All this would not be possible without the hard and often unrewarding work of the PPIP users, the administrators and the researchers. Thank you, but most of all remember that it's the women and their children that will benefit most from your work.

Reference

1. De Brouwere V, Tonglet R, Van Lerberghe W. Strategies for reducing maternal mortality in developing countries: what can we learn from the history of the industrialised West? *Tropical Medicine and International Health* 1998;3:771-782.

Aims of the Perinatal Care Survey of South Africa

Prior to the first workshop in 2000, a set of aims was drawn up. They were negotiated with all the stakeholders and agreed to by all delegates at the outset of the workshop. Two of the aims have been achieved, namely reaching consensus on indicators the group will use to describe perinatal care and reach consensus on the minimal data required for perinatal care surveillance and standardisation of the data-collecting tool.

The six remaining aims are as follows:

1. Collate available data in order to describe perinatal care in terms of relevant indicators (e.g. perinatal mortality rate, neonatal death rate), the common causes of perinatal death, and the common missed opportunities, avoidable factors and substandard care.
2. Identify problems with the current data set and decide on methods of improving the data set for the future.
3. Prioritise, with respect to resources and current knowledge, the major problem areas in perinatal care.
4. Plan strategies to deal with these problem areas.
5. Produce a report for the Department of Health and all health workers involved in the care of women and children.
6. To bring together program managers and health workers involved in perinatal care surveillance in order to promote communication and support.

Point 4 is very ambitious and although the problem areas have become very clear to all delegates, the planning of strategies to deal with the problems was only started at the workshop. Those suggested in the report should serve as initial suggestions to start a national debate on the possible solutions for the problems identified.

Having clearly identified the problems, it would be criminal not to tackle them. Morally we cannot stand back and at least in our own institutions we will have to find solutions to the problems we have identified. Future workshops will also have as one of its aims to identify strategies that have been successful in reducing perinatal mortality and morbidity and improving care of pregnant women and their babies in the PPIP sentinel sites. These will be clearly described in subsequent reports so that they can be of use to others in similar situations.

In no way must the report be interpreted as a government policy document.

Saving Babies: A Perinatal Care Survey of South Africa 2001

Executive Summary

Aim

1. To estimate a national perinatal mortality rate (PNMR) and to identify the major causes of perinatal mortality and related avoidable factors, missed opportunities and substandard care in South Africa.
2. Recommend strategies to reduce the PNMR based on this information.

Setting

All Provinces in South Africa gave input, where possible, into the PNMR in their particular Provinces. Furthermore, 44 state hospitals throughout South Africa representing metropolitan areas, cities and towns, and rural areas were the sentinel sites for the documentation of the causes of perinatal death and the avoidable factors associated with the deaths.

Method

The Provincial Health Information Sections and the Maternal, Child and Women's Health units of the provinces presented their available data. Users of the Perinatal Problem Identification Programme (PIIP) amalgamated their data to provide descriptive data on the causes of perinatal death and the avoidable factors, missed opportunities and substandard care in South Africa and comprised the sentinel sites. The sentinel sites were grouped into metropolitan, city and town, and rural areas. The metropolitan grouping reflects urban areas and a fully functioning tiered health care system with ready access to tertiary care. The city and town grouping reflects functioning primary and secondary levels of care, with limited access to tertiary care, and the rural grouping reflects primary care, with less accessibility to secondary and tertiary care.

Results

Some provinces have developed effective data collection systems at the time of the workshop and were able to provide accurate data for their whole province regarding births and perinatal deaths within state institutions. Accurate data was available for Gauteng and the Western Cape. The PNMR for Gauteng was reported as being 32.1/1000 births and for Western Cape reported as 18.4/1000 births.

A total of 3045 perinatal deaths of 1000g or more were reported from 78 343 births at the sentinel sites. The perinatal mortality rates for the metropolitan, city and town and rural groupings were 38.4, 43.4 and 25.5/1000 births, respectively. The neonatal death rate was highest in the City and Town groups (16.5/1000 live births) followed by the Rural and Metropolitan groups (11.1 and 10.7/1000 live births respectively). The low birth weight rate was highest in the Metropolitan group (21.4%), followed by the City and Town group (18.6%) and the Rural group (13.7%).

Unexplained intrauterine deaths were a common grouping of primary cause of death in all groups. The most common primary cause of perinatal death in the Rural group was intrapartum asphyxia and birth trauma (rate 6.28/1000 births) followed by spontaneous preterm delivery (6.07/1000 births). The most common primary cause of death in the City and Town group was spontaneous preterm delivery (7.48/1000 births) followed by antepartum haemorrhage (7.0/1000 births) and intrapartum asphyxia and birth trauma (6.8/1000 births). The Metropolitan group's most common primary causes were antepartum haemorrhage (6.82/1000 births), spontaneous preterm labour (5.33/1000 births) and complications of hypertension in pregnancy (5.19/1000 births). Neonatal deaths due to complications of prematurity and hypoxia were the most common final neonatal causes of death in all groups.

Patient related avoidable factors were reported to be present in 39.3% of perinatal deaths, followed by health worker related (24.6%) and administrative (14.0%). Lack of sufficient information to evaluate the case was present in 5.1% of cases. No, late initiation or infrequent attendance for antenatal care (present in 688 cases) was the most common avoidable factor. This was followed by an inappropriate responses by health workers to problems identified during antenatal care (305 occasions);

inappropriate response by patients to poor fetal movements (227 occasions); delays in seeking medical attention during labour (177 occasions); delays in referring patients or calling for assistance (173 occasions); transport delays (162 occasions) and problems of monitoring the fetus during labour (106 occasions).

Conclusions

The current data is sufficient to state that the PNMR in South Africa is probably in the order of 40/1000 births, and some readily remedial problems have been identified. These are in the structure of antenatal care, management of labour, resuscitation of the asphyxiated neonate and care of the premature neonate. Focusing attention on these readily remedial priority problems, by ensuring that equipment, protocols and trained health workers are always available and by specifically introducing kangaroo mother care for the care of the premature infants, makes the reduction of perinatal mortality in South Africa feasible and inexpensive.

Recommendations

Solutions for improving pregnant women and their baby's care and reducing the PNMR rate at institutions

1. Ensure each site conducting births has the necessary equipment and protocols and that the staff is appropriately trained to manage labour and are especially trained in the use of the partogram. Introduce a quality assurance tool to assess the success of the training.
2. Ensure each site conducting births has the necessary equipment and protocols and appropriately trained staff to manage asphyxiated neonates. See that training programmes in neonatal resuscitation are accessible to all staff involved in conducting childbirth.
3. Ensure each site caring for premature infants has the necessary equipment and protocols and that the staff is appropriately trained in kangaroo mother care. See that implementation programmes are available to the staff.
4. Ensure each site performing antenatal care has protocols in place for where to and when to refer patients and the staff is appropriately trained therein. Introduce a quality assurance tool to assess the success of the training.
5. Move to a system where the time and point at which the woman confirms she is pregnant also becomes the woman's first antenatal visit where she can be classified according to risk and where her further antenatal care is specifically planned. If this is not practice, establish what barriers there are and attempt to overcome them.

Improve the process

1. Continue to establish more PPIP sentinel sites
2. Hold regular Provincial MCWH – PPIP sentinels site meetings

Research priorities

1. What are the barriers to implementing on-site screening for syphilis?
2. What is the primary pathology related to unexplained IUDs?
3. What is the feasibility of introducing nasal CPAP for managing premature infants in cities and towns and rural areas?

Advocacy

Valuable information obtained from the Perinatal Care Survey must be conveyed to the appropriate bodies.

Chapter 1

Introduction, Methods and Definitions of the Survey

Introduction

Historically, where there has been a dramatic reduction in maternal mortality, it has been associated with two technical phases¹. The first phase is a description of the magnitude of the problem (both in local and in comparative terms) and the realisation that it is feasible to do something about it. The second phase is the acquisition of new (scientific) knowledge, the teaching of this new knowledge to health workers, and finally making the knowledge and facilities available to the vast majority of the population. This is coupled with a political will, and pressure from the population to do something about it. In South Africa, the first phase is not yet in place, whereas the ingredients for the second phase are. The scientific knowledge is available, the teaching systems are in place and a health system exists that can provide health care to the vast majority of the population.

Maternal and child health is a priority of the national Department of Health. A confidential enquiry into maternal deaths has already been established. The need for having national data on perinatal care similar to data available on maternal care has been identified as a priority. The MRC Research Unit for Maternal and Infant Health Care Strategies conceived this project together with the Maternal, Child and Women's Health (MCWH) unit of the national Department of Health.

Currently, every province collects basic perinatal data, which usually includes the number of deliveries and perinatal deaths. Some provinces break up the data into weight categories, adding a further dimension to their statistics. However, this data can only describe the magnitude of the problem at various levels, but does not provide information on the medical diseases that led to the perinatal deaths, or areas where the health system has failed. In other words, this data does not give an indication of the manageability of the problems. The Perinatal Problem Identification Programme (PPIP) provides this information.

PPIP was developed in the 1990s by the MRC Unit and been extensively field tested since 1996. PPIP is a simple, user friendly computer-based programme that, once simple perinatal data is entered, calculates various perinatal care indices, describes the medical conditions that led to the perinatal death and describes the avoidable factors, missed opportunities and substandard care that led to the deaths. The data from various sites can be collated, thus perinatal care indices, patterns of disease and avoidable factors can be analysed for various groupings of sites, e.g. provincial, or primary, secondary and tertiary levels of care, or metropolitan, city and town, and rural areas. Once this information is available, the priority problems are clearly identified and solutions can be sought. PPIP follows the 'ICA solution' audit system, first described in 1995². This system, although not time consuming or labour-intensive, relies on the presence of regular perinatal mortality meetings to discuss the various deaths and the possible shortcomings in care. Thus it takes enthusiasts to run it, and at present, cannot be introduced at all sites where births occur.

By collating the two databases (provincial data sets and data from PPIP users), a reliable picture of perinatal care can be obtained as well as clearly identifying where problem areas lie.

Methods

All provincial Maternal, Child and Women's Health units were requested to submit to the national Maternal, Child and Women's Health Units, data relating to perinatal care in their provinces. This minimum perinatal data set was agreed to at the first Perinatal Care Survey Workshop in 2000. Data included the number of deliveries and deaths per weight category, as well as information relating to the number of caesarean sections, the number of babies born before arrival, and the number of maternal deaths. The basic form is shown in figure 1.1. Collecting the data was effected either by the provincial MCWH units collecting the minimum data from the institutions directly or by requesting the information from the provincial Health Information Systems units. The provincial data is shown under the respective provinces reports.

The MRC unit contacted all people currently using PPIP and requested them to electronically send their PPIP data to the unit. Each PPIP sentinel site was also asked to complete a structured abstract form. These abstracts are given in appendix 4. The MRC Unit electronically collated the data using PPIPWIN. The PPIP sentinel sites were grouped into three categories, those from metropolitan areas (as defined by the new 'mega-cities'), city and town areas, and rural areas. This categorisation was chosen as it grouped the hospitals into naturally comparable units and covered most of the institutional deliveries occurring in those areas and was thought to be more representative of population-based data than any other combination. Furthermore, the metropolitan grouping represents a fully functioning tiered health care system, with all patients in the area having relatively easy access to tertiary care if needed. The city and town grouping represents areas where patients usually have easy access to primary and secondary level institutions, but there is some difficulty in accessing tertiary institutions. Finally, the rural grouping represents primary care, with the patients having to be referred for secondary and tertiary care. This categorisation was not always easy. It was decided not to combine the data by levels of care across the country because of the very different referral patterns, or by Provinces because of the lack of representation of PPIP users in some Provinces.

Figure 1.1. Example of the proposed minimal data collection tool.

MONTHLY SUMMARY STATISTICS						
Name of institution:			Level of care:			
Health district:			Rural/peri-urban/urban			
Health region:						
Month:			Year:			
Weight Category (g)	Stillborn		Neonatal death		Alive on discharge	Total
	Fresh	Macerated	Early	Late		
500 –999						
1000 – 1499						
1500 – 1999						
2000 – 2499						
2500 +						
TOTAL						
Total Number of births: _____						
Women less than 20 years: _____						
Women more than 34 years: _____						
Syphilis status: Negative _____						
Positive _____						
Unknown _____						
Route of delivery:						
Normal vaginal birth: _____						
Assisted birth – Vacuum: _____						
Forceps: _____						
Caesarean section _____						
Born before arrival: _____						
Number attended antenatal care: _____						
Maternal deaths: _____						
Compiled by: _____			Signature: _____			
Date: _____			Tel/fax: _____			

Definitions

The definition of the perinatal care indicators and their significance is described below:

1. **Neonatal death rate (NNDR)**
$$\frac{\text{Total number of neonatal deaths} \times 1000}{\text{Total number of live births}}$$

A viable live born baby from birth to 28 days is called a neonate. Neonatal deaths are subdivided into early (first 7 days of life) and late (8 – 28 days) where early neonatal death (ENND) is an indicator of intrapartum care and partly the quality of neonatal facilities.

2. **Stillbirth rate (SBR)**
$$\frac{\text{Total number of stillbirths} \times 1000}{\text{Total number of births}}$$

A viable baby born dead is called a stillbirth. The stillbirth rate is an indicator of the quality of obstetric care in general. Stillbirths can be further subdivided into fresh stillbirths and macerated stillbirths where fresh stillbirths would usually reflect the quality of intrapartum care and macerated stillbirths the quality of antenatal care.

3. **Perinatal mortality rate (PNMR)**
$$\frac{\text{Total number of perinatal deaths} \times 1000}{\text{Total number of births}}$$

The perinatal period starts at the beginning of fetal viability (28 weeks gestation or 1000 g in South Africa) and ends at the end of the 7th day after delivery. A perinatal death is one that occurs during this time period and is the sum of stillbirths plus early neonatal deaths. South Africa still uses the older World Health Organisation (WHO) definition of PNMR. The most recent WHO definition of PNMR is the number of stillbirths and neonatal deaths occurring from 24 weeks gestation or 500 grams to 28 days neonatal life.

The PNMR is the most sensitive indicator of obstetric care. For developed countries the PNMR for babies of 1000 g or more is usually less than 6/1000 births whereas for developing countries PNMR ranges from 30 – 200/1000 births. It is important to note that developed countries calculate their PNMR from 24 weeks gestation or 500 g. For South Africa, the PNMR is estimated to be 40/1000 births with a wide range, and this is for babies of 28 weeks gestation or more or 1000 g or more. The maternal mortality ratio for South Africa was estimated at 150/100 000 in 1998 (DHS, 1998). For every maternal death there are at least 27 perinatal deaths.

4. **Low birth weight rate (LBWR)**
$$\frac{\text{Total number of births} < 2500 \text{ g} \times 100}{\text{Total number of births}}$$

Low birth weight rate is an indicator of the socio-economic status and health of the community in general. If deliveries are categorized by weight, this will give an indication of low birth weight as a cause of perinatal mortality as well as an indication at what weight babies survive. The LBWR for births in developed countries is around 7%, whereas in developing countries it is much higher, around 15%.

For all the indicators mentioned above, 1000 g is used as a cut off and babies weighing 999 g or less are regarded as late abortions. Birth weight is used instead of gestational period as in a significant number of women gestational age is not known. Birth weight of 1000 g equates

to about 28 weeks gestation. There is considerable debate as to whether the PNMR (and other calculations) should be calculated from 500 g, with the Western Cape asking for the inclusion of all babies from 500 g whereas the rest of the country uses 1000 g or more³. In a great many hospitals in the country, small stillbirths are not weighed and are regarded as abortions. Furthermore, in a large number of hospitals, patients considered to be having an abortion do not deliver in the labour ward, but in a female ward or gynaecology ward. A number of babies weighing between 500 g and 1000 g are born in these sites and are not recorded as births. Hence the debate goes around the accuracy of the data and the need for completeness. Another aspect to the debate relates to the common policy in neonatal units of not providing ventilation for neonates born under 1000 g at state institutions.

Clearly the move should be towards recording all births of 500 g or more, however, until the data is shown to be accurately collected, the PNMR should be reported per 500 g and above (where available) and from 1000 g and above. Comparisons in PNMR should be made using 1000 g and above.

5. Stillborn:neonatal death (SB:NND) ratio.

If the data on perinatal deaths is collected by separating stillbirths and neonatal deaths, the SB:NND ratio can be calculated and is another indicator of the perinatal environment. A developed country usually has a SB:NND ratio of around one. In developing countries where there is almost no care the ratio is also around one with as many stillbirths as neonatal deaths. As care improves, i.e. more births take place in institutions and labour, delivery and immediate care of the neonate is supervised, the NNDR declines and the SB:NND ratio increases. Finally as antenatal care improves, the number of stillbirths decline and the ratio decreases again to one.

6. Perinatal Care Index (PCI) $\frac{\text{Overall PNMR}}{\text{Percentage low birth weight babies}}$

This was first described by Theron *et al.*⁴ in 1985. It can be used to compare the standard of care of various areas. It takes into account the environmental factors so that the comparison can be more valid. The LBWR of an area is an indication of the socio-economic status of that area. It is not dependent on the care received in the clinic or hospital, but more dependent on environmental factors. Most deaths occur in babies weighing less than 2500 g. If the LBWR is high, it is to be expected that the PNMR will be high. If the PNMR is low in this set of circumstances, then good care is present. However, in areas with a low LBWR that have a high PNMR, then the care must be poor. A low PCI indicates good care whereas a high PCI indicates poor care. A low PCI indicates good care because the PNMR is relatively low in relation to the LBWR. A high PCI indicates poor care because the PNMR is relatively high in relation to the LBWR. It is only appropriate to use this index to compare hospitals with similar circumstances or the same hospital over a period of time.

7. Caesarean section (C/S) rate $\frac{\text{Number of C/Ss} \times 100}{\text{Total number of births}}$

8. Assisted delivery rate $\frac{\text{Number of assisted births} \times 100}{\text{total number of births}}$

9. **Booked status rate:** $\frac{\text{Number of booked women (who have given birth)} \times 100}{\text{Total number of births}}$

This is a proportion of women booked for antenatal care and reflects the utilisation of health facilities. A pregnant woman is regarded as booked if she has had a single visit to a general practitioner or the clinic prior to labour or developing a complication. In modern obstetrics, with the availability of on-site testing, a patient can be fully risk classified at the first visit and the antenatal care planned. The term 'booked' is unfortunate. It is derived from a pregnant woman booking a bed for the birth of her baby. That has come to mean someone who attended antenatal care. The term still gives rise to confusion, especially among pregnant women. It would be better to use the term 'attended antenatal care'. This would emphasise the right action.

10. **Maternal mortality ratio (MMR)** $\frac{\text{Total number of maternal deaths} \times 100\,000}{\text{Total number of live births}}$

The MMR is not discussed in this report, but it is useful to record the number of maternal deaths on the same form as perinatal deaths.

The classification system used in PPIP to describe the causes of perinatal death was first used in Aberdeen by Sir Dugald Baird and his colleagues from the 1940s and is clearly defined in *Perinatal Problems: The second report of the 1958 British Perinatal Mortality Survey*⁵. The chief purpose of the classification system was to assist in the prevention of perinatal deaths, and therefore the aim of the Aberdeen classification system is to identify 'the factor which probably initiated the train of events leading to death'. This system clearly points to where prevention can be targeted. The classification system was modified by Whitfield *et al*⁶ in 1986 to bring it into line with modern obstetrics and this forms one of the systems used in CESDI. The Aberdeen classification was adapted again by Pattinson *et al*⁷ in 1989 for use in developing countries and again in 1995² to include the concept of avoidable factors, missed opportunities and substandard care. Appendix ... gives the definitions of the primary obstetric causes of death and the final causes of neonatal death.

References

1. De Brouwere V, Tonglet R, Van Lerberghe W. Strategies for reducing maternal mortality in developing countries: what can we learn from the history of the industrialised West? *Tropical Medicine and International Health* 1998;3:771-782.
2. Pattinson RC, Makin JD, Shaw A, Delpport SD. The value of incorporating avoidable factors into perinatal deaths. *S Afr Med J* 1995;85:145-147.
3. Woods D, Khan M, Louw H. A comparison of the perinatal mortality rates for infants weighing 500g or more at birth and those weighing 1000 g or more. *S Afr Med J* 2001;91:323-324.
4. Theron GB, Pattinson RC, Engelbrecht BHJ. Kaaplandse plattelandse perinatale sterftes Januarie-Desember 1985. *S Afr Med J* 1988;73:211-213.
5. Baird D, Thompson AM. The survey perinatal deaths re-classified by special clinico-pathological assessment. In *Perinatal Problems: the Second Report of the 1958 British Perinatal Mortality Survey* (Butler NR, Alberman ED eds), Churchill Livingstone, Edinburgh, 1969, 200-210.

6. Whitfield CR, Smith NC, Cockburn F, Gibson AAM. Perinatally related wastage – a proposed classification of primary obstetric factors. *Br J Obstet Gynaecol* 1986;93:694-703.
7. Pattinson RC, De Jonge G, Theron GB. Primary causes of total perinatally related wastage at Tygerberg Hospital. *S Afr Med J* 1989;75:50-53.

Chapter 2

Why babies die: A perinatal care survey of South Africa 2001

Abstract

Aim: To identify the major causes of perinatal mortality and the avoidable factors, missed opportunities and substandard care regarding perinatal care, in South Africa.

Setting: Forty-four state hospitals throughout South Africa representing metropolitan areas, cities and towns and rural areas.

Method: Users of the Perinatal Problem Identification Programme (PPIP) amalgamated their data to provide descriptive information on the causes of perinatal death and the avoidable factors, missed opportunities and substandard care in South Africa.

Results: A total of 3045 perinatal deaths of 1000g or more were reported from 78 343 births at the PPIP Users sites. The perinatal mortality rates for the metropolitan, city and town and rural groupings were 38.4, 43.4 and 25.5/1000 births, respectively. The neonatal death rate was highest in the city and town groups (16.5/1000 live births) followed by the rural and metropolitan groups (11.1 and 10.7/1000 live births respectively). The low birth weight rate was highest in the metropolitan group (21.4%), followed by the city and town group (18.6%) and the rural group (13.7%).

Unexplained intrauterine deaths were a common grouping of primary cause of death in all groups. The most common primary cause of perinatal death in the Rural group was intrapartum asphyxia and birth trauma (rate 6.28/1000 births) followed by spontaneous preterm delivery (6.07/1000 births). The most common primary cause of death in the City and Town group was spontaneous preterm delivery (7.48/1000 births) followed by antepartum haemorrhage (7.0/1000 births) and intrapartum asphyxia and birth trauma (6.8/1000 births). The Metropolitan group's most common primary causes were antepartum haemorrhage (6.82/1000 births), spontaneous preterm labour (5.33/1000 births) and complications of hypertension in pregnancy (5.19/1000 births). Neonatal deaths due to complications of prematurity and hypoxia were the most common final neonatal causes of death in all groups.

Patient related avoidable factors were reported to be present in 39.3% of perinatal deaths, followed by health worker related (24.6%) and administrative (14.0%). Lack of sufficient information to evaluate the case was present in 5.1% of cases. No, late initiation or infrequent attendance for antenatal care (present in 688 cases) was the most common avoidable factor. This was followed by inappropriate responses by health workers to problems identified during antenatal care (305 occasions); inappropriate response by patients to poor fetal movements (227 occasions); delays in seeking medical attention during labour (177 occasions); delays in referring patients or calling for assistance (173 occasions); transport delays (162 occasions) and problems of monitoring the fetus during labour (106 occasions).

Conclusion: Concentration on the remedial priority problems identified (namely managing labour, resuscitation of the asphyxiated neonate and care of the premature neonate using Kangaroo Mother Care and the structure of antenatal care) makes the reduction of perinatal mortality in South Africa feasible and inexpensive.

Introduction

A workshop was held at the Hammanskraal Campus of the University of Pretoria, from the 26th – 28th November 2001. This workshop brought together the users of the Perinatal Problem Identification Programme (PPIP), the National and Provincial Maternal, Child and Women's Health Units and the National and Provincial Health Information and Epidemiology Units and the MRC Research Unit for Maternal and Infant Health Care Strategies.

One aim of the workshop was to collate data relating to perinatal care from throughout South Africa and to identify major areas of concern regarding the care of women during pregnancy, labour and the newborn period. The delegates came from throughout South Africa. This workshop was unique in that it combined grassroots health workers, administrators from the National and Provincial Health Departments and researchers from the Medical Research Council.

PPIP was developed in the 1990s by the MRC Research Unit for Maternal and Infant Health Care Strategies and has been extensively field tested since 1996. PPIP is a simple, user friendly computer-based programme that, once simple perinatal data is entered, calculates various perinatal care indices, describes the medical conditions that led to the perinatal death and lists the avoidable factors, missed opportunities and substandard care that were associated with the deaths. The data from various sites can be collated, thus perinatal care indices, patterns of disease and avoidable factors can be analysed for various groupings of sites, e.g. provinces, or levels of care, or metropolitan, cities and towns and rural areas. Once this information is available, the priority problems are clearly identified and solutions can be sought. PPIP follows the ICA Solution Audit system, described by Pattinson et al. in 1995¹. This system, although not time consuming or labour intensive, relies on the presence of regular perinatal mortality meetings to discuss the various deaths and the possible shortcomings in care. Thus it takes enthusiasts to run, and at present cannot be introduced at all sites where births occur.

This chapter gives an overview of the amalgamated data from the PPIP sentinel sites.

Methods

The PPIP users were grouped into three categories, those from metropolitan areas, (as defined by the new mega-cities), cities and towns, and rural areas. This was chosen as it grouped the hospitals into natural comparable units and covered most of the institutional deliveries occurring in those areas. It was thought to be more representative of population-based data than any other combination. It was decided not to combine the data by levels of care because of the very different referral patterns, or by Provinces because of the lack of representation in some Provinces. The grouping falls naturally into those areas with easy access to tertiary services (metropolitan group), those with easy access to secondary level care, regional and district hospitals (city and town group) and those where mainly primary level care is available, district and sub-district hospitals (rural group).

There were 44 sites that provided data and they are given below:

Metropolitan: Addington, Chris Hani Baragwanath, Kalafong, King Edward VIIIth
Peninsular Maternity and Neonatal Services (Groote Schuur, Peninsular

Maternity and Somerset Hospitals and their Midwife Obstetric Units) and Pretoria Academic Hospitals (8 sites).

City & Town: Eben Donges, Empangeni, Frontier, Goldfields Regional, Kimberley, Klerksdorp, Ladysmith, Leratong, Louis Trichardt, Mafikeng, Madadeni, Mankweng, Middelburg, Potchefstroom, Settlers, Uitenhage and Witbank Hospitals (17 sites).

Rural: All Saints, Ceres, Elim, Gelukspan, Jane Furse, Letaba, Lydenburg, Mary Terese, Mapulaneng, Mokopane, Port Alfred, Robertson, Seshego, Shongwe, St Elizabeths, St Patricks, St Ritas, Tintswalo, Tshilidzini and WF Knobel Hospitals (19 sites).

Each site submitted their data electronically to the PPIP coordinating centre where it was collated. Data was collected for the dates 1st October 2000 to 30th September 2001. Not all hospitals had been a PPIP site for the whole year, however the data that was submitted was used. Descriptive data is presented as proportions of the total (percentages) and rates per thousand births. The proportional data identifies the priority concerns for that grouping. The rate per thousand allows for comparison between the various groups. This enables one to judge the real magnitude of the problem at the various sites. The data is descriptive and only standard statistical methods were used.

Results

Table 1 includes all data from all the hospitals.

Table 1. Basic data and Perinatal Care Indices

	Metropolitan	City & Town	Rural
Total deliveries ≥1000g	22719	41957	13667
Live deliveries ≥1000g	22082	40808	13468
SB ≥1000g	637	1149	199
NND ≥1000g	236	674	150
Total deaths ≥1000g	873	1823	349
PNMR (≥1000g) / 1000 del.	38.4	43.4	25.5
NNDR (≥1000g) / 1000 del.	10.7	16.5	11.1
NNDR 1000-1499	150	227	234
NNDR 1500-1999	32	79	85
NNDR 2000-2499	10	17	16
NNDR 2500+	3	6	4
LBWR	21.4	18.6	13.7
PCI (≥1000g)	1.8	2.3	1.9
C-section rate (%)	28.9	18.4	11.3
SB:NND Ratio	2.7:1	1.7:1	1.3:1

The outstanding features of Table 1 are:

1. The high PNMR in the city and town group (43.4/1000 deliveries)
2. The high neonatal death rates in the city and town (16.5/1000 live births)
3. The very high neonatal death rates in the various birth weight categories in the city and town and rural groups that is consistently higher than the metropolitan areas (see Figure 1).
4. The high low birth weight rate in all groups, but especially in the metropolitan and city and town groups with the rates being 21.4% and 18.6% respectively
5. The Perinatal Care Index (PCI) is lowest in the metropolitan group

6. The high stillbirth neonatal death ratio in the metropolitan area (2.6:1)

Table 2 describes the pattern of disease in the various areas and is expressed as percentages and rates per thousand births. Figures 1-5 illustrate the differences between the various groups with respect to cause of death and area of death.

Table 2. Pattern of disease in Metropolitan areas, Cities and Towns and Rural areas

	Metropolitan			City & Town			Rural		
	No	%	rate/ 1000	No	%	rate/ 1000	No	%	rate/ 1000
Primary causes $\geq 1000g$	873		22719	1823		41957	349		13667
Unexplained IUD	295	33.8	13.0	439	24.1	10.46	82	23.5	6.0
Spontaneous preterm lab.	121	13.9	5.33	314	17.2	7.48	83	23.8	5.33
Hypertensive Disorders	118	13.5	5.19	236	12.9	5.60	24	6.9	1.76
Antepartum haemorrhage	155	17.8	6.82	295	16.2	7.03	33	9.5	2.41
IUGR	11	1.3	0.5	22	1.2	0.52	3	0.9	0.22
Intrapartum asphyxia	57	6.5	2.51	251	13.8	5.98	68	19.5	4.98
Trauma	4	0.5	0.18	36	2.0	0.86	18	5.2	1.32
Infections	15	1.7	0.66	105	5.8	2.50	10	2.9	0.66
Fetal abnormalities	61	7.0	2.68	68	3.7	1.62	13	3.7	0.95
Maternal disease	27	3.1	1.19	39	2.1	0.93	4	1.1	0.29
Other	9	1.0	0.40	18	1.0	0.43	11	2.0	0.80
Final causes $\geq 1000g$	236		22082	674		40808	150		13468
Immaturity related	78	33.1	3.53	279	41.4	6.84	53	35.3	3.94
Hypoxia	64	27.1	2.90	206	30.6	5.05	50	33.3	3.71
Trauma	2	0.8	0.01	2	0.3	0.05	3	2.0	0.22
Infection	45	19.1	2.03	103	15.3	2.52	10	6.7	0.74
Congenital abnormalities	40	16.9	1.80	53	7.9	1.30	15	10.0	1.11
Other	5	2.1	0.02	19	2.8	0.47	11	7.3	0.80
Unknown	2	0.8	0.01	12	1.8	0.29	5	3.3	0.37

Figure 1. Neonatal Mortality Rates – 2001

(rate/1000 births)

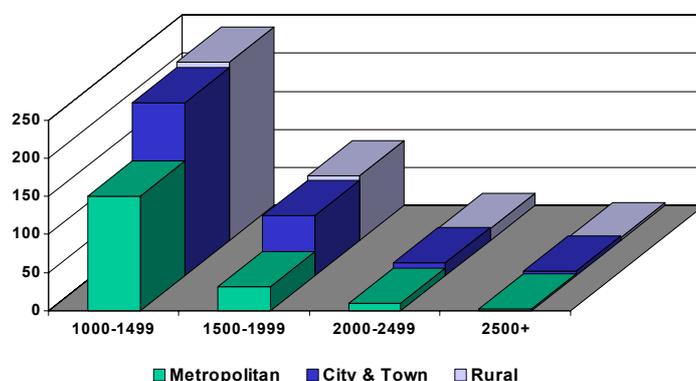


Figure 2. Pattern of Primary Obstetric Causes of Perinatal Death - 2001

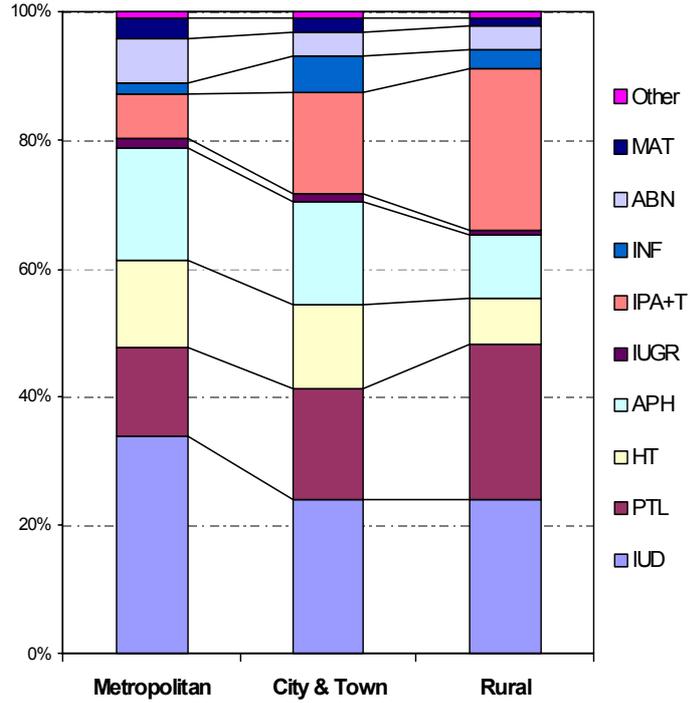


Figure 3. Comparison of the rates of primary obstetric causes of perinatal deaths - 2001 (rate/1000 births)

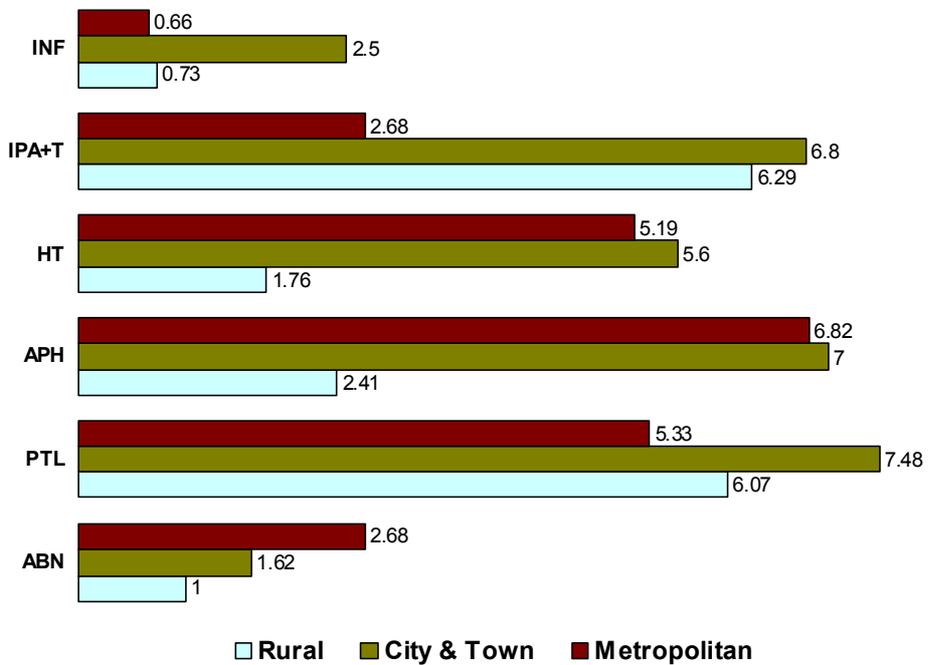


Figure 4. Pattern of Final Neonatal Causes of Death - 2001

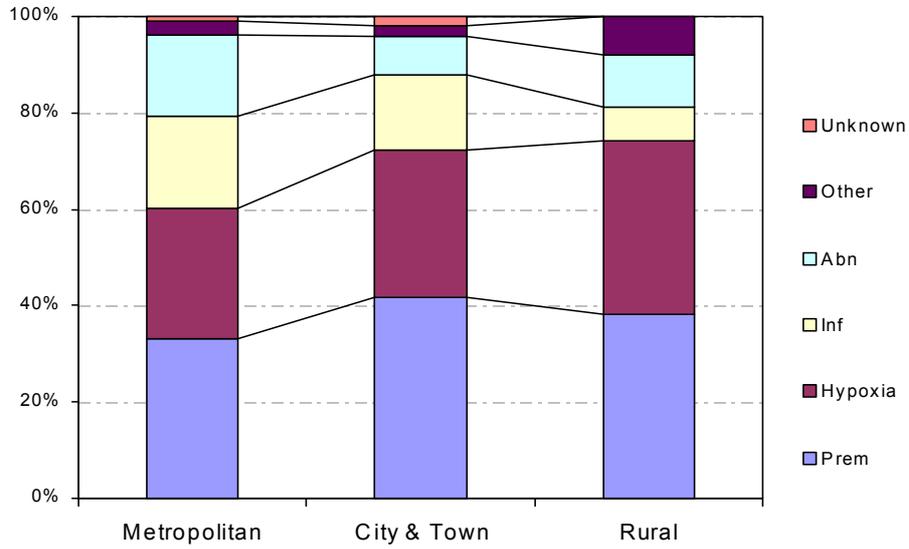
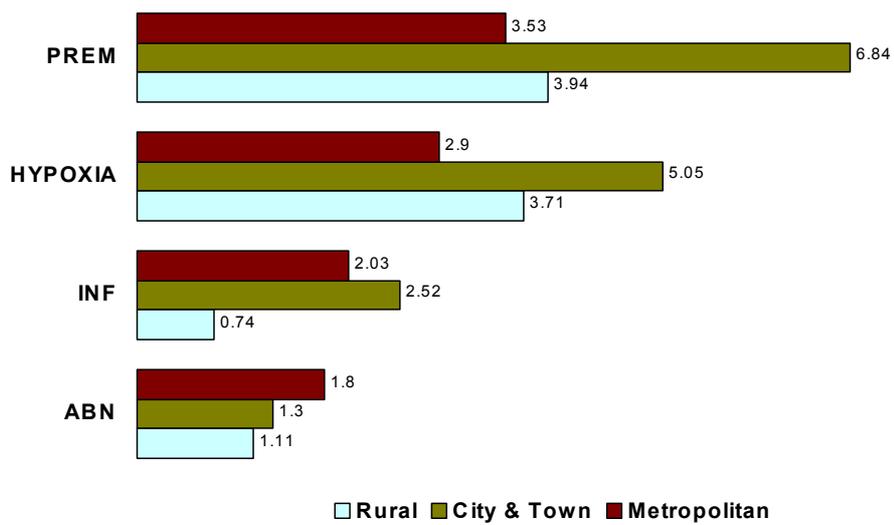


Figure 5. Comparison of the rates of final neonatal causes of deaths - 2001 (rates/1000 live births)



The significant features of Table 2 and these figures are as follows:

Primary Obstetric Cause of Death

1. Unexplained intrauterine deaths were a significant proportion of deaths in each group (metropolitan 33.8%, city and town 24.1%, and rural 23.5%). The majority of these deaths were macerated and there was insufficient information available to allocate specific causes.
2. Deaths due to intrapartum asphyxia and trauma (IPA+T) are the major causes of death in the rural group (24.7%) and third most common cause in city and towns. Deaths due to these causes were significantly higher in the rural and city and town groups compared to the metropolitan group $p < 10^{-6}$.
3. The PNMR due to antepartum haemorrhage was 6.82 and 7.03/1000 births in the metropolitan and city and town groups respectively and occurred significantly more frequently than in the rural group $p < 10^{-6}$.
4. Spontaneous preterm labour was the most common primary obstetric cause of death in the city and town group and occurred significantly more frequently than in metropolitan and rural groups $p < 10^{-6}$.
5. Hypertension in pregnancy was the fourth most common primary obstetric cause of death in the metropolitan group and fifth most common in the city and town group. If cases in the sub-category abruptio placentae with hypertension were included in the hypertension in pregnancy group, then death due to hypertension would be the second most common primary obstetric cause of death in the metropolitan group. Deaths due to hypertension occurred significantly less frequently in the rural group compared to the metropolitan and city and town group $p < 10^{-6}$.
6. Death due to infection was the sixth most common cause of death in the city and town group and occurred significantly more frequently than in the metropolitan and rural groups, $p < 10^{-6}$. However, testing for syphilis in perinatal deaths varied considerably at the various sites and there is clearly under-reporting on syphilis as a cause of death (see Table 3).

Table 3. Syphilis testing in perinatal deaths

Syphilis serology	Metropolitan (%)	City and Town (%)	Rural (%)
Positive	3.7	4.5	4.1
Negative	52.2	57.3	43.6
Unknown	44.1	38.3	52.3

Final Neonatal Causes of Death

1. Deaths due to immaturity were the most common neonatal cause of death in the city and town group and had the highest rate of any condition. Deaths due to this cause occurred significantly more frequently than in the metropolitan and rural groups $p < 10^{-6}$.
2. Death due to asphyxia was the second most common cause of death in the all the groups with the city and town group having the highest rate. They occurred significantly more frequently than in the metropolitan group $p < 10^{-6}$, and the rural group $p < 10^{-3}$.
3. Deaths due to infections were rarely reported in the rural group and syphilis testing was worst in this grouping.
4. There were no differences between the groups with respect to congenital abnormalities.

Tables 4 and 5 show the breakdown of the primary obstetric and final neonatal causes of death into the sub-categories for all groups combined. Table 6 and 7 describe the avoidable

factors, missed opportunities and substandard care. The number of avoidable factors in their respective categories is given for these hospitals combined.

Table 4. Breakdown of the categories of Primary obstetric causes

Primary Cause	Number
Unexplained IUD	816
Macerated	445
Fresh	92
Lack of information	279
Spontaneous Preterm Labour	518
Idiopathic	299
Preterm Premature Rupture of Membranes (PPROM)	83
PPROM and Chorioamnionitis	20
Preterm Labour and Chorioamnionitis	2
Cervical incompetence	7
Iatrogenic preterm delivery for no real reason	7
Unspecified	100
Infections	130
Syphilis	51
Amniotic Fluid	22
Unspecified	57
Antepartum Haemorrhage	483
Abruptio Placentae	262
Abruptio Placentae and Hypertension	169
Placenta Praevia	22
Antepartum Haemorrhage of Unknown Origin	20
Unspecified	10
Intrauterine Growth Restriction	36
Idiopathic	28
Postmaturity	8
Hypertension	378
Chronic Hypertension	11
Proteinuric Hypertension	249
Eclampsia	92
Unspecified	26
Fetal Abnormality	142
Chromosomal Abnormalities	11
Neural tube defects	47
Hydrocephalus	5
Cardiovascular abnormalities	8
Renal System Abnormalities	5
FLK	12
Multiple Systems	20
Non-immune Hydrops Fetalis	8
Unspecified	26
Trauma	58
Traumatic breech delivery	25
Mechanical – instrumental deliveries	3
Ruptured uterus	16
Precipitous labour	5
Unspecified	9
Intrapartum asphyxia	376
Labour related	190
Meconium Aspiration	61
Cord Prolapse	40
Cord around the neck	43
Unspecified	42
Maternal Disease	70
Diabetes Mellitus	37
Other	32
Other	39

Table 5. Final Neonatal Causes of Death

Final Cause	Number
Prematurity Related	410
Extreme Immaturity	128
Hyaline Membrane Disease	147
Necrotizing Enterocolitis	26
Pulmonary Haemorrhage	22
Intraventricular Haemorrhage	14
Unspecified	73
Hypoxia	320
Hypoxic ischaemic encephalopathy	218
Meconium Aspiration	57
Persistent Fetal Circulation	7
Unspecified	38
Infection	158
Septicaemia	78
Pneumonia	30
Congenital Syphilis	7
HIV Infection	16
Congenital Infection	7
Meningitis	2
Nosocomial	10
Unspecified	8
Congenital Abnormalities	108
Central Nervous System	16
Cardiovascular System	14
Renal System	4
Gastrointestinal System	7
Respiratory System	12
Chromosomal Abnormalities	17
Biochemical Abnormalities	1
Other	37
Trauma	7
Subaponeurotic Haemorrhage	2
Other	5
Other	32
Unknown	25

Table 6. Avoidable Factors, Missed Opportunities and Substandard Care

Avoidable factors	Number	%
Patient Related	1198	39.3
Administrative Factors	427	14.0
Health Worker Related	748	24.6
Lack of Information	155	5.1

Denominator 3045 perinatal deaths

Table 7. Specific avoidable factors, missed opportunities and substandard care

Factor	Number
Patient related	1198
Never initiated antenatal care	399
Late initiation of antenatal care	195
Infrequent attendance at antenatal care	94
Delays in seeking medical attention during labour	177
Inappropriate response to decreased fetal movements	227
Inappropriate response to rupture of membranes	34
Inappropriate response to antepartum haemorrhage	30
Administrative	427
Transport delays – Patient to health institution	121
Transport delays – Between health Institutions	41
Syphilis serology	64
Insufficient staff	19
Inappropriately trained staff	46
Insufficient Neonatal Intensive Care facilities	72
Inadequate theatre facilities	30
Health Worker Related	748
Antenatal care	
Overestimated fetal size	12
Underestimated fetal size	33
No response to poor past obstetric history	31
No response to glycosuria	8
No response to poor uterine fundal growth	31
No response to hypertension	59
Antenatal fetal monitoring not performed or interpreted incorrectly	34
No response to apparent post-term pregnancy	8
No response to positive syphilis serology	11
No response to report of poor fetal movements	14
Multiple pregnancy not diagnosed	10
Intrapartum care	
Partogram not used	9
No response to poor progress in labour	18
Fetus not monitored	58
Signs of fetal distress interpreted incorrectly	48
Second stage prolonged without intervention	30
Inappropriate use of forceps/vacuum	4
Neonatal care	
Neonatal resuscitation inadequate	5
Neonatal monitoring inadequate	12
Neonatal management plan inadequate	14
Delays	
Delay referring patient to secondary/tertiary unit	114
Delay in calling for assistance	42
Delay in doctor responding to call	17
Unprofessional conduct	
Doctor did not respond to call	3

The most common category of avoidable factor was related to the pregnant woman's behaviour. This was thought to have contributed to the death of the baby in 39.3% of cases. Inappropriate, lack of or no action on the part of the health workers were thought to have contributed to 24.6% of the babies' deaths. The significant finding in the avoidable factors, missed opportunities and substandard care tables are as follows:

1. No, infrequent or late attendance at antenatal care occurred on 688 occasions. This occurred in 22.6% of perinatal deaths and is the single most important avoidable factor noted.
2. Inappropriate responses by health workers during antenatal care occurred on 305 occasions of which the most common was no response to hypertension in pregnancy that occurred on 59 occasions.
3. An inappropriate response to poor fetal movement by the patient was thought to have contributed to the perinatal death in 227 occasions.
4. Delays in seeking medical attention during labour were noted on 177 occasions. Transport delays occurred on 162 occasions.
5. Delays in referring patients or calling for assistance occurred on 173 occasions.
6. Problems of monitoring the fetus during labour and was noted on 106 occasions. This was divided into not monitoring the fetus in labour (58 occasions) and signs of fetal distress being interpreted incorrectly (48 occasions).
7. Inadequate facilities was noted on 102 occasions, with the most common being lack of neonatal intensive care facilities.

Birthweight category sub-analysis of primary obstetric causes of death

The pattern of perinatal deaths and the rates per 1000 births of babies of birthweights of $\geq 2500\text{g}$ are illustrated separately in Figures 6 and 7. Intrapartum asphyxia and birth trauma were the most common causes of perinatal death overall and responsible for perinatal deaths in metropolitan, cities and towns and rural areas of 20.4%, 35.8% and 45.3% respectively. If the unexplained intrauterine deaths are excluded then intrapartum asphyxia is by far the biggest problem in this birthweight category.

Figure 6. Pattern of Primary Obstetric Causes of Perinatal Deaths (>2499g) - 2001

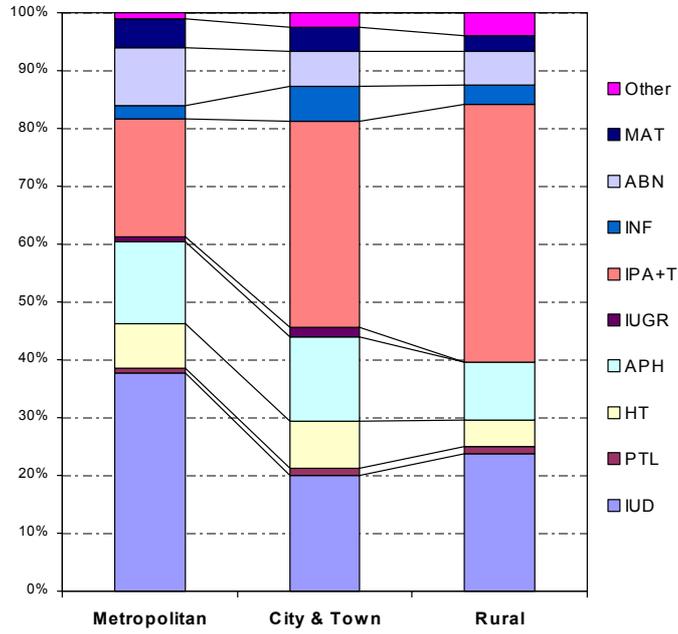
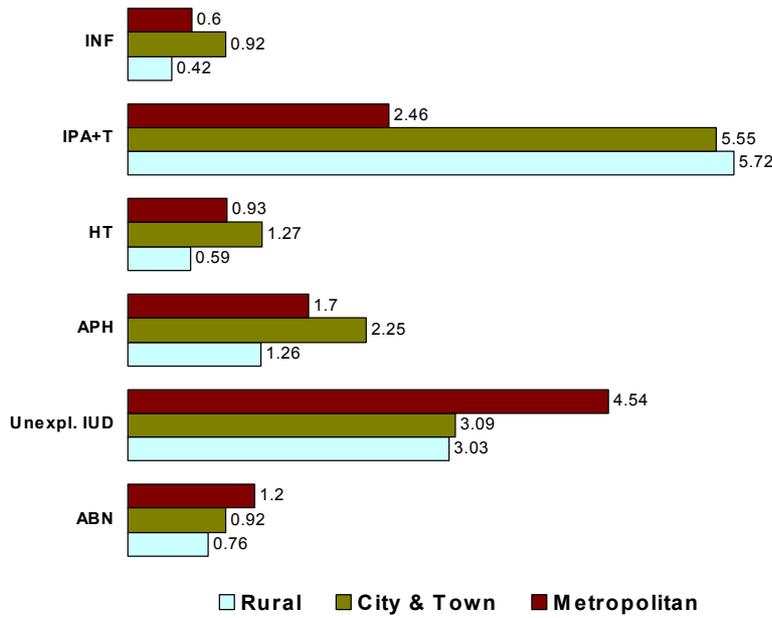


Figure 7. Comparison of the rates of primary obstetric causes of perinatal deaths (>2499g)- 2001 (rate/1000 births)



Spontaneous preterm labour is second to unexplained intrauterine death as the most common cause of perinatal death overall (Table 2). There is a marked difference between neonatal death rate (NNDR) in the metropolitan areas and the NNDR in the city and towns and in the rural areas (Figure 1). This difference is most apparent between the birthweights 1000g and 2000g. Figures 8 and 9 demonstrate that spontaneous preterm birth is by far the most common primary cause of perinatal death for births in this birthweight category. It was responsible for 49.7% of perinatal deaths in rural areas, 29.4% in cities and towns and 22.2% in metropolitan areas.

Figure 8. Pattern of Primary Obstetric Causes of Perinatal Deaths (>999<2000g) - 2001

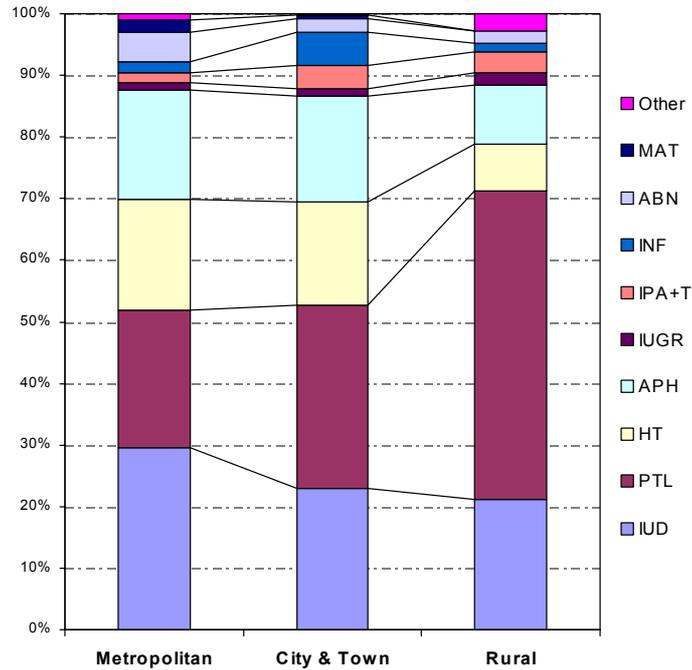
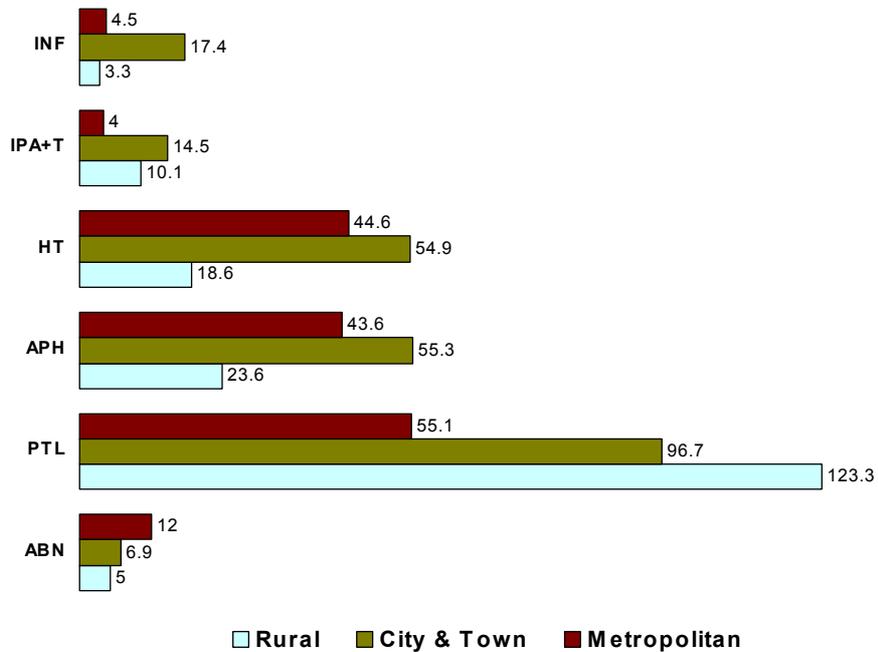


Figure 9. Comparison of the rates of primary obstetric causes of perinatal deaths (>999 <2000g)- 2001 (rate/1000 births)



Discussion

Reliability of the data

This data is unique because the majority input is from non-academic hospitals. This fact gives a truer reflection of real circumstances concerning perinatal care in South Africa. However there are many gaps, and clearly more sentinel sites are needed. It must be remembered that those hospitals supplying PPIP data are more likely to be better than those not supplying data. Hence the information is biased and probably reflects a more favourable situation than reality. To achieve a true picture of perinatal mortality rates, the minimal data set concerning births in all sites in South Africa is required.

Another weakness of the data is that it is not population based. When the data is compared to population based PPIP data that is available from 5 sites, the patterns are the same, but the mortality rates are slightly lower². Hopefully as more sites come on line, the data will become more population based.

Finally, the data systematically excludes births occurring in private institutions. Inclusion of this data would probably decrease the PNMR and NNDR. These limitations must be kept in mind when interpreting the data.

Referral systems

The groupings chosen represent the current health care system in the country. The metropolitan areas all have tertiary hospitals and are associated with academic hospitals. The population from this area has relatively easy access to tertiary care. The tertiary hospitals in the metropolitan areas are supposed to receive referrals from secondary hospitals from their own areas, but also areas outside of their own areas. The city and town group do not have fully fledged tertiary facilities but often out of necessity provide tertiary care. They have regional and district hospitals and receive patients from the rural areas and refer to the tertiary hospitals in the metropolitan areas. The rural group has a number of primary level hospitals and they are supposed to refer to the secondary level hospitals. The groups of this survey, in general represent the situation in primary (rural group), secondary (city and town) and tertiary (metropolitan group) levels of care.

The numbers of cases that should have been referred but were not (173 occasions) demonstrate this problem. Is it because the health workers did not know they should have referred the patient? Is it because the hospital to which the patient was being referred refused to accept the patient? Are the tertiary level hospitals too overcrowded that they just do not have space for any referrals? These questions on the actual functioning of the health system need to be answered and the problems addressed.

Perinatal Care Indices

A national PNMR is still elusive, but possibly lies at around 40/1000 births. A national NNDR is similarly difficult to estimate, but again will possibly lie around 15/1000 live births.

A high LBWR has been found in all sites. This indicates a developing country where the majority of the population is poor. The LBWR is two to three times higher than in a developed country. A surprising finding that requires further investigation is the reported approximately one third lower LBWR in rural areas when compared to the other two areas. There are various possible explanations. For example: the mothers with small fetuses are referred to the cities and towns; women who go into labour in rural areas prematurely deliver

their babies at home and they are never recorded; and the lifestyle in the rural areas is very different from the urban and peri-urban areas. Any or all of these might explain the difference. It is a priority to establish whether the finding is correct and if so, why.

The SB:NND ratio is unexpectedly high in the metropolitan areas. This is probably a reflection of good neonatal care. In the rural areas and cities and towns the ratio is much lower and the NNDR much higher. Stillbirths reflect antenatal care and neonatal deaths reflect the care during labour and in the nursery. In a developed country, the SB:NND ratio is close to one. Where no care exists, the stillbirth rate and NNDR are both high, the ratio will also be close to one. As communities start using institutions for birth, the care during and after labour improves. Complications during labour and of the neonate are managed more effectively, hence the NNDR declines and so the SB:NND ratio rises. Finally as the provision of antenatal care improves and pregnant women attend the clinics, the SB:NND ratio will decline. In developing countries there are usually many more stillbirths to neonatal deaths and the ratio is high. Irrespective of this, it is clear that the high number of stillbirths in the metropolitan areas suggest that much effort will need to go into improving the provision of antenatal care in the metropolitan areas. This is not to say the same problems do not exist in the rural areas and cities and towns, but improving care during labour and in the nursery might be a bigger priority in those areas.

The Perinatal Care Index (PCI) is, as expected, lowest in the metropolitan group, then rural and then city and town. The assumption made is that the lower the PCI the better the care. The PCI is the PNMR divided by the LBWR. The LBWR is a factor of the socio-economic circumstances of the community and there is very little that health institutions can do about it on their own. Factors that will decrease the LBWR are improvement in the local economy, increasing education standards, improved living conditions and so on. The majority of perinatal deaths occur in the LBW group of babies and hence, in areas with a high LBWR, one would expect a high PNMR. Should the PNMR be low in that area, one assumes that this is due to the good care provided by the health institutions and the PCI will be lower. This is the circumstance in the metropolitan areas. However, in areas where the LBWR is low, one would expect that the PNMR would also be low. Should the PNMR be high one assumes this is due to poor care in the health institution and the PCI would be high. The validity of the PCI still needs to be verified. However, a comparison of the PCIs of institutions with similar circumstances will indicate to health administrators on which institutions to concentrate their efforts initially.

Intrapartum care

Intrapartum asphyxia accounts for almost half of the perinatal deaths of babies born $\geq 2500\text{g}$ in rural areas and just more than one in three in cities and towns. It would be expected that without the traumatic labour these babies would have been perfectly normal. The high rates of death due to intrapartum asphyxia and trauma at all sites, but especially in cities and towns and rural areas, are a cause for great concern. The one area where the health institutions should be able to provide good basic care is during labour. It is the area where standard protocols are available and where the use of the partogram to detect prolonged labour is of value. Both midwives and doctors are trained in managing labour so lack of knowledge should not be a reason for the high death rate. The avoidable factors associated with deaths in labour were misinterpreting the signs of fetal distress, not monitoring the fetus during labour, not using the partogram or using it incorrectly and poor management of the second stage of labour. All these factors should be relatively simple to correct, provided that there

are adequate staffing levels. This is dealt with in greater detail in the chapter specifically devoted to intrapartum hypoxia.

Perhaps the initial step would be to review the teaching of intrapartum care at nursing and medical schools. It is an assumption that managing labour is taught using current knowledge and concentrating on the use of the partogram. Are midwives (who conduct the majority of births) properly qualified to manage labour? Has the integrated 4-year nursing course removed a level of training that is necessary for midwives to manage labour safely? In the past, nurses had to do an extra year's training to become midwives. Now a nurse is regarded as a midwife on completion of the 4-year course and can be exposed to managing labour unsupervised in primary care settings. Similar comments can be made about doctors who with minimal or no training might be placed in charge of labour wards during their community service, again unsupervised.

An audit of intrapartum care can be performed as an immediate step by institutions to identify and start addressing their local problems. Specific quality assurance tools have been developed by Philpott et al. for this specific goal and are included in the Chapter 6.

Not quantified in the avoidable factors is the number of cases where poor or no neonatal resuscitation compounded the problem of an asphyxiated infant and was a major factor in the ultimate death of the infant. Can all midwives resuscitate an asphyxiated infant? Can all midwives provide effective mask ventilation? Is there equipment available in all sites where births occur?

Answering all these questions might contribute significantly to salvaging asphyxiated infants. (See Chapter 3).

Spontaneous preterm labour

Spontaneous preterm labour is the most common cause of perinatal deaths overall. The neonatal death rates of babies born between 1000g and 2000g are almost twice those of the metropolitan areas in the rural areas and cities and towns. Spontaneous preterm labour is by far the most common cause of perinatal deaths in babies born between 1 and 2 kg. The obstetric management of these cases has been studied and the proportion of cases not receiving corticosteroids, where it is possible to administer, is very low. This supports the previous experience at Kalafong Hospital⁴ where the proportion of cases where corticosteroids could be given was low because in most cases the women arrives at the institution in advanced labour and the fetus is delivered shortly thereafter. It would seem the area where the major impact on this could be made is in preventing neonatal deaths by improving the neonatal care of these infants. City and towns and rural areas have very high rates of perinatal death due to spontaneous preterm labour and it is the highest of all primary causes. Cities and towns also have the highest NNDR due to prematurity. The question would be why is the neonatal death rate so much higher than in the metropolitan areas? Is it because of lack of facilities, or lack of ability to refer patients or lack of knowledge on how to manage these small babies?

Nasal CPAP and Kangaroo Mother Care (KMC) are interventions that have been shown to be effective, inexpensive and user-friendly methods to decrease the neonatal death rate in this birthweight category in various settings^{5,6}. They, in combination, would appear to be ideal solutions for hospitals outside of the metropolitan areas caring for these neonates.

These issues are dealt with in greater detail in Chapter 4.

Antepartum haemorrhage (APH) and hypertension

Perinatal deaths due to APH and hypertension occur significantly less frequently in rural areas than in the other areas. This is a real difference and not just a proportional difference. Again the reason for this is unknown and one could speculate on the influence of lifestyle, especially smoking and stress, in women from the urban areas of the cities and towns. This aspect will need to be investigated further.

Infections

There is a surprising variation in availability of syphilis serology status of women who have had a perinatal death. One would expect that the group where syphilis testing would be especially thorough would be in those women who have lost a baby. Hence it would be the best reflection of syphilis screening in the population served by the institution. That, in some areas the syphilis serology status of women who have had a perinatal death is not known in more than 80% of cases, demonstrates a serious lack of provision of the basic antenatal care in these areas. Simple, inexpensive on-site methods for screening for syphilis are available² and there is no excuse for the administrators not to ensure that screening is performed throughout. Deaths due to syphilis contributed significantly to the perinatal mortality and the number is clearly under-reported. Syphilis is a condition that can be effectively detected and treated. There can be no excuse for babies still to die from syphilis and certainly no babies that are alive when the mother enters the health service should die from syphilis.

Unexplained stillbirths

There is a disturbing number of unexplained intrauterine deaths recorded in this survey. A number are recorded as such because of lack of information such as the syphilis status of the patients. However, there is still a large group where there is adequate clinical information, but still no cause can be found. Also, the prevalence of these truly unexplained macerated intrauterine deaths appears to be rising (Kalafong Hospital PPIP data: all weight categories 1994 – 11/1000 births, 2000 – 17/1000 births, and for the Atteridgeville Community 1994 – 9/1000 births and 2000 14/1000 births). Previously, amniotic fluid infection syndrome (AFIS) has been found to be a common cause. The clinical diagnosis is difficult and is usually only made after the birth of the baby. AFIS is usually a sub-clinical chorioamnionitis, which occurs in malnourished or immune suppressed patients. Determining the actual cause of the unexplained macerated intrauterine deaths is important and might change the relative importance of the various categories of primary obstetric causes of death. Concurrent with the rise in the unexplained macerated intrauterine deaths has been the rise of the HIV/AIDS epidemic. It is well described that a pregnant woman who is HIV infected has an almost four times greater chance of having a stillbirth and two times greater risk of preterm labour⁷. Perhaps there is a cause and effect relationship. If the cause is due to AFIS, a randomised trial on the role of prophylactic erythromycin in HIV infected pregnant women would be very useful. This is a priority for investigation.

Antenatal Care

The most common avoidable factor recorded is no, infrequent or late attendance for antenatal care. Ndiweni and Buchmann⁸ have demonstrated that in most cases the unbooked mother that develops a complication has a lower risk than other women who develop complications in pregnancy, and that the vast majority intended to attend antenatal care but the complication occurred before they could attend. At Kalafong Hospital 97% of women make contact with the health services during pregnancy and before the onset of labour. The Health and

Demographic Survey of 1998 indicated that 95% of women attend antenatal care when they are pregnant. It appears the issue is not encouraging women to attend antenatal care, but encouraging pregnant women to attend early. Here it appears that the agents of the health service put barriers in place to discourage this. Most women will confirm that they are pregnant either at a general practitioner or a clinic within 3 months of missing a period, but then initiate antenatal care some months later on the instruction of the general practitioner or clinic sister⁹. Hence we have the situation where the average age of confirming pregnancy is 12 weeks and that of starting antenatal care is 22 weeks⁹. Clearly a golden opportunity is being lost to intervene early in the pregnancy. If the paradigm could change such that women receive their first antenatal examination at the point when the pregnancy is confirmed many of the above problems would cease to exist, as demonstrated by Jeffery et al.¹⁰. The pregnancy plan would be discussed and initiated at that visit. The question is how to initiate this change. Most women confirm their pregnancies at general practitioners; hence part of the solution will be to bring the general practitioners into the circle of health care workers providing antenatal care for indigent women. At very least the general practitioners should be supplied with antenatal cards, by the health authorities, so that they can issue them to women who make their way initially to them to confirm that they are pregnant. Furthermore, the attitude of the general clinics will need to change such that they welcome women who come early for antenatal care and not tell them to come back when they are 5-6 months pregnant. Innovative ways will need to be sought to change the health service to this paradigm¹⁰.

There are many occasions reported on problems detected in antenatal care not being acted upon by the health care workers. It would appear that clear protocols for referrals, and auditing systems to ensure that the policies are followed are necessary to improve this situation. In circumstances where no referral centre is available, this will need to be established. Philpott et al have also identified poor decision-making and they have developed quality assurance tools for antenatal care similar to those developed for intrapartum care. These tools are included in Chapter 6.

Fetal movement charting

Poor reporting of reduced fetal movements is frequently reported as a patient related avoidable factor. Whether this is realistic or a form of victim blaming is uncertain. Neldam¹¹ showed that formal scoring of fetal movements in a low risk population resulted in a significant reduction in perinatal mortality in Sweden in 1979. The large RCOG trial performed in England later in the 1980's could find no difference between formal recording of fetal movements and no formal recording¹². However, in the latter trial a similar number of women reported poor fetal movements in each group. Hence the importance of monitoring fetal movements is unclear. Furthermore, no randomised trial on fetal movements has been conducted in a developing country. There is clearly a need for a well-structured randomised trial to investigate the role of fetal movement recording or awareness and their effect on perinatal outcome.

Other issues

Other issues highlighted by the data are transport problems. These were noted on 162 occasions, (5.3% of all perinatal deaths) but this is almost certainly an underestimation. There were 177 occasions (5.8% of all perinatal deaths) where delay in seeking help in labour was recorded. What was not recorded was the reason why there was this delay. In a number of cases it must have been lack of transport from the patients home to the health institution. Potentially 11% of all perinatal deaths were associated with transport problems. An effort

will need to be made to more accurately quantify the magnitude of this problem and if is large to bring it to the attention of the relevant authorities.

An area almost not recorded as avoidable factors is the lack of staff. Is there enough staff or are the health workers so used to chronic shortages that they regard it as normal? Clearly staffing norms are urgently required and once available the institutions can measure themselves against the norms and be able to judge just how big their problem is.

Conclusion

In South Africa we now know the magnitude of the problem of perinatal death, we know the causes and we know that some of the major problems are manageable. By focussing on the remedial priority problems, (namely, intrapartum management, resuscitation of the asphyxiated neonate, care of the premature neonate with kangaroo mother care and restructuring antenatal care), the PNMR could be substantially reduced. This coupled with the current medical infrastructure, both regarding the profession and health systems and with clear political support should see dramatic drops in PNMR in South Africa, in near future.

References

1. Pattinson RC, Makin JD, Shaw A, Delpont SD. The value of incorporating avoidable factors into perinatal audits. *S Afr Med J* 1995;85:145-147.
2. Saving Babies: A perinatal care survey of South Africa 2000. Chapter 5.
3. Pattinson RC. On-site screening for syphilis – the time has come. *S Afr Med J* 1998;88:780.
4. Dobbelaere S, Pattinson RC, Makin JD, Quintelier. The potential for preventing the delivery and perinatal mortality of low birth weight babies in a black urban population. *S Afr Med J* 1995;85:536-539.
5. Charpak N, Ruiz-Pelaez JG, Figueroa de CZ, Charpak Y. Kangaroo-mother versus traditional care for infants <2000 grams: a randomised controlled trial. *Pediatrics* 1997;100:682-688.
6. Ho JJ, Subramaiam P, Henderson-Smart DJ, Davis PG. Continuous distending pressure for respiratory distress syndrome in preterm infants (Cochrane Review). In: *The Cochrane Library, Issue 2, 2002*. Oxford: Update Software.
7. Brocklehurst P, French R. The association between maternal HIV infection and perinatal outcome: a systematic review of the literature and meta-analysis. *Br J Obstet Gynaecol* 1998;105:836-848.
8. Ndiweni Q, Buchmann EJ. Unbooked mothers and their babies – what causes the poor outcome. *S Afr Med J* 1998;88:192-199.
9. Tsuari M, Mabale T, Kgobane R, Pattinson RC. Health seeking behaviour of pregnant women. Seventeenth Priorities in Perinatal Care Conference, Aventura Aldam, Free State, 3-6 March 1998.
10. Jeffery BS, Tsuari M, Pistorius LR, Makin J, Pattinson RC. The impact of a pregnancy confirmation clinic on the commencement of antenatal care. *S Afr Med J* 2000;90:153-156.
11. Neldam S. Fetal movements as an indicator of fetal well-being. *Lancet* 1980;I:1222-1224.
12. Grant A. Routine formal fetal movement counting and risk of antepartum late death in normally formed singletons. *Lancet* 1989;ii:345-349.

Chapter 3

Intrapartum hypoxia – searching for solutions

Abstract

Aim: *Intrapartum hypoxia ('birth asphyxia') is a leading cause of perinatal death in South Africa and is potentially preventable. The objectives of this study were to identify clinical and structural or administrative deficiencies that predispose to this condition.*

Methods: *Hospitals using the Perinatal Problem Identification Programme completed detailed data sheets for all perinatal deaths from intrapartum hypoxia, meconium aspiration, cord prolapse, birth trauma and ruptured uterus.*

Results: *There were 102 perinatal deaths related to intrapartum hypoxia, from a variety of metropolitan, town and rural hospitals. There were 22 stillbirths and 80 neonatal deaths. The mean birthweight of the infants was 3021g. Seven per cent had an active phase of labour >12 hours and 10% crossed the 4-hour partogram action line. The second stage exceeded 2 hours in 18% of vaginal deliveries. There were 35 caesarean sections and 14 assisted deliveries, with 14 (40%) and 2 (14%) respectively done for fetal distress. Fetal monitoring was recorded for 80 babies, with 41 (51%) having cardiotocography during labour. Late fetal heart decelerations were found in 27 (34%). The median midwifery-staffing ratio per shift was 1 to every 2 births. Cardiotocography and neonatal resuscitation equipment was in good working order in almost all institutions.*

Conclusion: *Deaths from intrapartum hypoxia occur most frequently in low-risk term labours. Problem areas include fetal monitoring in labour, prolonged second stage and neonatal care. The most serious deficiency was failure to detect fetal distress. The majority of these babies were born asphyxiated or dead without any apparent warning. Careful and close fetal monitoring in labour in the first and second stages, with particular attention to detail, may allow early identification of hypoxic fetuses.*

Introduction

The Saving Babies report of 2000 identified intrapartum hypoxia, also known as 'birth asphyxia', as an important and avoidable cause of perinatal death in South Africa, making up 17% of all deaths of birth weight ≥ 1000 g. Rural hospitals had the highest rates of death from this cause (7.7/1000 births), although the rates found in town and city (5.8/1000) and metropolitan areas (3.2/1000) compared poorly with developed countries such as the United Kingdom where death rates from intrapartum hypoxia are below 1 in 1000 births. Using PPIP avoidable factors, the first Saving Babies report found delayed presentation in labour, failure of fetal monitoring and inappropriate response to poor labour progress as the most serious problems leading to deaths from intrapartum asphyxia. Improvements in labour management and neonatal resuscitation were suggested for the prevention of death from intrapartum hypoxia.

In response to these findings, a more detailed study of deaths from intrapartum hypoxia was undertaken, to identify the precise clinical and health service problems that are associated with these deaths, so as to make specific recommendations for prevention.

Methods

Contributors from PPIP sites were asked to participate in this study. Those who expressed an interest were sent data sheets on which to enter detailed information from each death caused by intrapartum hypoxia according to the PPIP definition. This also includes cord prolapse, meconium aspiration, birth trauma and uterine rupture. The data sheets required the entry of information on facilities, transport, staffing, timing from decisions to interventions, and obstetric factors such as maternal risk factors, progress of labour, mode of delivery and fetal monitoring. Data were entered and analysed using Microsoft Excel and Epi-Info 6 statistical software. Where necessary, comparison of frequencies was done using the Chi-square test with statistical significance taken at $P < 0.05$.

Results

Intrapartum hypoxia data sheets were returned by the following hospitals: metropolitan: Addington, Chris Hani Baragwanath, Kalafong; city and town: Eben Donges, Empangeni, Kimberley, Klerksdorp, Leratong, Mankweng, Lydenburg, Middelburg, Settlers, Uitenhage, Witbank; rural: All Saint's, Mapulaneng, Port Alfred, St Elizabeth's, Tshilidzini. One hundred and thirty-one forms were received, but 29 were rejected from further analysis, because the primary obstetric causes of death were not intrapartum hypoxia. This left 102 cases of intrapartum hypoxia and related causes of perinatal death, with 23 from metropolitan, 35 from city and town, and 34 from rural hospitals. The largest contributors of cases were Chris Hani Baragwanath Hospital, Gauteng, and St Elizabeth's Hospital, Eastern Cape, each with 18 deaths.

There were 22 stillbirths and 80 neonatal deaths. The mean birth weight was 3021g (range 1600 g to 4700 g), with a median gestational age of 38 weeks. Two infants had a gestational age of 41 weeks, and one of 42 weeks. There were seven breech presentations and one transverse lie. Five mothers had mild to moderate hypertension in pregnancy. Four deaths followed induction of labour. The primary obstetric causes of death were intrapartum hypoxia (82), meconium aspiration (8), cord prolapse (7), trauma from breech delivery or shoulder dystocia (3) and uterine rupture (2).

Progress of labour

The median time those women were in hospital before delivery was 6.5 hours, with 24% in hospital for less than two hours before giving birth. The length of the latent phase was greater than 8 hours in 14 of 82 women where this was recorded (17%). The length of the active phase was greater than 12 hours in six of 86 women in whom this was recorded (7%). Partogram progress could be assessed in 90 cases. The alert line was crossed in 31 (34%), the two-hour action line in 16 (18%), and the four-hour action line in 9 (10%). Oxytocin augmentation was used for 10 women (10%). Second stage length was recorded in 66 women who did not have first-stage caesarean sections. The second stage exceeded two hours in 12 (18%). Shoulder dystocia occurred in four cases, and in all of these the birth weight was less than 4000g. The findings on labour length and progress are summarised in Table 1.

Table 1. Labour duration and progress preceding perinatal death caused by intrapartum hypoxia

	N	%
Latent phase >8 hours (n=82)	14	17
Active phase >12 hours (n=86)	6	7
Progress crossed partogram alert line (n=90)	31	34
Progress crossed 2-hour partogram action line (n=90)	16	18
Progress crossed 4-hour partogram action line (n=90)	9	10
Oxytocin augmentation (n=102)	10	10
Second stage >2 hours (n=66)	12	18

Fetal monitoring

Fetal monitoring was noted for 80 cases, and the method described in 75. Cardiotocography was used, at least intermittently, in 41 (55%), fetal stethoscope in 24 (32%), hand-held Doppler in 10 (13%). Fetal heart decelerations were detected in 39 cases, and late decelerations in 27. Thick meconium staining of the liquor was recorded in 37 cases, and in 17 of these it was associated with fetal heart decelerations. This is summarised, with modes of delivery, in Table 2.

Table 2. Detection of intrapartum fetal distress and mode of delivery preceding perinatal death caused by intrapartum hypoxia (n=80, cardiotocograph used in 41)

	N	%
Fetal heart decelerations during contractions	22	28
Fetal heart decelerations after contractions	27	37
All fetal heart decelerations detected	39	49
Meconium staining of the liquor	50	63
Thick meconium staining of the liquor	37	46
Thick meconium staining with decelerations	17	21
Caesarean section for fetal distress or cord prolapse	14	18
Vacuum extraction for fetal distress	2	3

Mode of delivery

Thirty-five infants were born by caesarean section, with the indication for operation being 11 for fetal distress and three for cord prolapse. All the other indications were maternal or obstetric, including cephalopelvic disproportion, breech presentation, previous caesarean section and transverse lie. Caesarean sections were done in 18 of the 27 women where late decelerations were detected. The time taken from decision to operate to the delivery was recorded in 28 cases. In 18 (64%) there was a delay of greater than 30 minutes, and in 14 (50%), it took more than 60 minutes for the babies to be delivered. There were 14 assisted vaginal deliveries (21% of vaginal births), including one forceps and 13 vacuum deliveries. Two of these assisted deliveries were performed for fetal distress, with the remaining 12 done for prolonged second stage or maternal exhaustion.

Neonatal resuscitation

Eighty babies were born alive. Seventy had Apgar scores recorded, and 62 (89%) had scores less than seven at five minutes. Fifty-two newborns were intubated and 19 resuscitated with oxygen by mask. Details on the timing and circumstances of resuscitation were insufficient for meaningful analysis. Fifteen babies went on to receive intensive care ventilation. In the opinions of the persons completing the forms, 19 babies would have survived if ventilation facilities had been available at their institutions.

Transport, human resources and equipment

The time of delivery was recorded for 101 babies. Sixty were born in the night shift (19:00 to 07:00), which is 46 % more than the 41 born during the day ($P=0.18$).

Delay in presentation in labour was noted in 27 cases, with eight related to transport difficulties from home to the labour unit, and four caused by delays in transport from clinic to hospital. The median number of babies born during a 12-hour shift was six, with the median numbers of staff available being three midwives and one assistant nurse. Doctors were noted to be immediately available in 91% of the cases.

Cardiotocographs (CTGs) were available in 98 out of the 102 cases, with the hospitals having a mean of 4.5 and a median of 2 CTGs. A mean of 3.9 CTGs were actually in working order at the time of the deaths. Basic resuscitation equipment, including tubes and laryngoscopes, were available in all instances, but in only 51 (50%) was it possible to provide ventilation for newborns after initial resuscitation.

Discussion

In searching for a common thread that links these deaths from intrapartum hypoxia, it was possible to reject a number of factors as possible major contributors. Post-term pregnancy, oxytocin use, breech presentation, and prolonged first stage of labour were not prominent in this sample of perinatal deaths. Labour prolongation, whether measured as time in labour, or as crossing action lines on the partogram, was surprisingly uncommon. While this should not dilute the recommendation that partogram-based labour protocols must be practised in all labour units, it emphasises that the majority of babies who die from intrapartum hypoxia are born after apparently normal labours.

Skilled staff and appropriate equipment were available in all of these hospitals. The midwife:births ratio was not helpful in identifying staff shortage as problem, as the ideal midwifery staff norms have not been established for South Africa. There was a significant delay in performance of caesarean sections, with the decision-to-delivery interval being more than one hour in one half of the operations. Cardiotocography and neonatal resuscitation equipment is available and mostly in good working order, although it is possible that CTGs are in short supply in some of the institutions.

Transport and delay in arrival

As expected, delay in presentation proved to be a common problem, with transport difficulties predominating. Almost one-quarter of the women delivered within two hours of arrival, making it difficult for any hospital interventions to be effective. Transport problems in obstetric care go far beyond the health service. Poverty, distance, telephone and road infrastructure, and local administrative capacity, all play an important role. In rural areas, mothers' waiting areas in hospitals and clinics will continue to be the most effective way for women to ensure safe and supervised delivery.

Early detection of intrapartum hypoxia (fetal distress)

The most striking finding in this study was the failure, in most of these deaths, to detect fetal distress during labour. It is likely that these babies would have shown some evidence of intrapartum hypoxia during labour. Late decelerations, the hallmark of fetal distress, were detected in just over one-quarter of these cases.

Caesarean section or assisted vaginal delivery was done for 49 of these women, but fetal distress was the indication for operative delivery in only 16 (33%). In the majority of deliveries, the poor condition of the babies at birth must have been surprising to the attending midwives or doctors. In the hospitals studied, and probably in most other state hospitals in South Africa, there is a serious problem with intrapartum fetal monitoring. For low-risk labour, intermittent auscultation using a hand-held Doppler or fetal stethoscope is the method of choice for monitoring the fetus in labour. Cardiotocography, which is available in almost all labour units, can be used for fetuses found to have abnormalities on auscultation. It appears that insufficient time and care is taken with auscultation, and that the early signs of fetal hypoxia – tachycardia and decelerations – are frequently being missed.

The second stage of labour

The rates of prolonged second stage and assisted delivery (18% and 21% respectively of vaginal births) were high, especially as these units do not practice epidural analgesia in labour. It is not possible to say whether the assisted deliveries contributed to the deaths of these babies. The second stage of labour, with the strong uterine contractions and expulsive forces, exerts a significant hypoxic stress on the fetus. Women who are pushing in the second stage of labour should not be left alone, and fetal heart auscultation must be done after each contraction to determine if the heart rate returns to the baseline. This will allow early detection of fetal bradycardia, and appropriate action can then be taken.

Neonatal care

The data in this study suggest that neonatal resuscitation is done for asphyxiated babies, with most being intubated. It was not possible, however, to decide if the resuscitation was performed adequately and in time. The absence of neonatal ventilation facilities is problematic as the necessary equipment and expertise is not available in most South African hospitals. There is little doubt that immediate effective neonatal resuscitation gives an asphyxiated newborn the best chance for recovery. The skills and equipment for neonatal resuscitation must be available in all units performing deliveries. Training of midwives and doctors in neonatal resuscitation remains an ongoing priority.

Conclusion

Intrapartum hypoxia is a common and avoidable cause of perinatal death in South African hospitals. This study has demonstrated that the majority of these deaths due to intrapartum hypoxia occur in low-risk women with low-risk labour, with failure to detect signs of fetal distress. The single most important shift in our labour care should be close and careful monitoring of women in labour, with particular attention to detail in fetal monitoring (See Chapter 6).

Chapter 4

Is preterm labour unavoidable, but are deaths due to prematurity avoidable?

Abstract

Aim: *Assessment of perinatal deaths (>1000g) due to spontaneous preterm labour to determine the potential for reducing the PNMR related to spontaneous preterm delivery.*

Method: *Data from the Perinatal Care Survey of 2001 was used. The data comes from 44 PPIP sentinel sites around South Africa. In each death the primary and final neonatal cause of death was recorded as well as the avoidable factors, missed opportunities and substandard care were discussed and allocated.*

Results: *The Perinatal Care Survey of 2001 analysed the causes and avoidable factors associated with 3045 perinatal deaths in 78 343 births of 1000g or more. There were 518 perinatal deaths whose primary obstetric cause of death was due to spontaneous preterm labour. This comprised 17% of all perinatal deaths and had a PNMR of 7.48/1000 births. The most common avoidable factors allocated at the PPIP sites were lack of antenatal care (32,6%), delay in seeking help during labour (14.7%), lack of neonatal facilities (10.0%), lack of transport (7.3%) and inappropriate response to the presence of premature rupture of membranes (4.6%).*

Very few perinatal deaths could be ascribed to poor antenatal or intrapartum management of spontaneous preterm labour within the health institutions.

Conclusion: *The vast majority of spontaneous preterm births could not be prevented within the health institutions. Institutions were presented with women in advanced preterm labour who subsequently gave birth shortly thereafter. To make a major impact on the second most common cause of perinatal death in South Africa, attention must be focused on providing adequate neonatal care facilities and adequate training of health workers to manage these premature infants.*

Introduction

To make an impact on the unacceptably high perinatal mortality rate (PNMR) in South Africa, strategies have to be developed that will tackle the major causes of the high PNMR in the country. Since the beginning of the new millennium a perinatal care survey has been conducted in South Africa. The survey is conducted in sentinel sites where a detailed audit has been performed on each perinatal death. At each site the causes and avoidable factors related to perinatal death are recorded on PPIPWIN, a Windows based computer programme. The data from each site is amalgamated and a representative picture of perinatal care is obtained.

Spontaneous preterm labour is second to unexplained intrauterine death as the most common cause of perinatal death¹. There is a marked difference between the neonatal death rate (NNDR) in the metropolitan areas and the NNDR in the city and towns and in the rural areas (Figure 1¹). This difference is most apparent between the birthweights 1000g and 2000g. Spontaneous preterm birth is by far the most common primary cause of perinatal death for births in this birthweight category (Table 1 and Figure 2).

Table 1. Proportion of the primary obstetric causes of perinatal deaths between 999g and 2000g per area for 2001

Primary obstetric cause	Metropolitan %	City and Town %	Rural %
Spontaneous preterm labour	22.2	29.4	49.7
Unexplained intrauterine death	29.5	22.6	21.1
Hypertension	18.0	16.7	7.5
Antepartum haemorrhage	17.6	16.8	9.5
Ideopathic intrauterine growth restriction	1.2	1.3	2.0
Intrapartum asphyxia and birth trauma	1.6	3.8	3.4
Infections	1.8	5.3	1.4
Congenital abnormalities	4.8	2.1	2.0
Pre-existing maternal disease	2.0	0.6	-
Other	1.0	0.2	2.7

Figure 1. Neonatal Mortality Rates – 2001

(rate/1000 births)

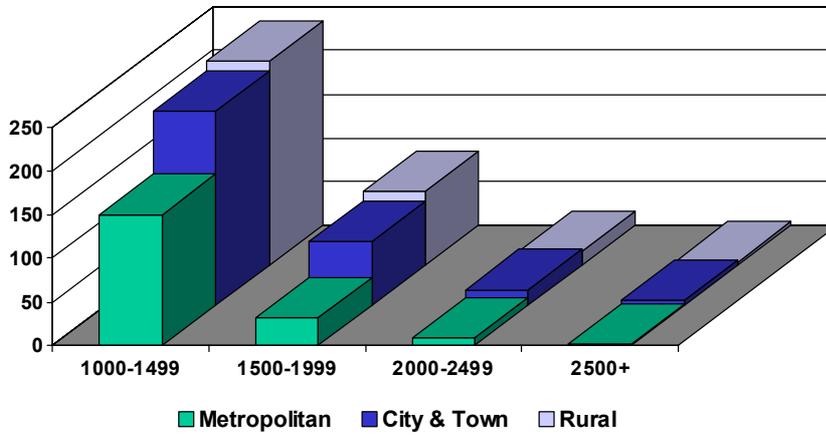
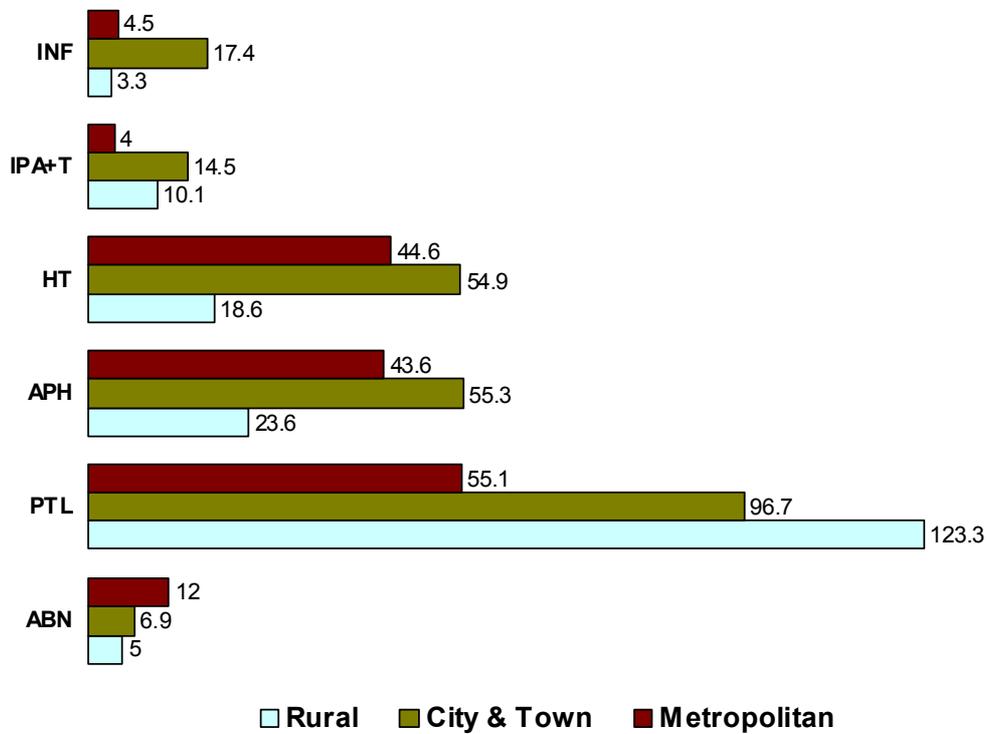


Figure 2. Comparison of the rates of primary obstetric causes of perinatal deaths (>999 <2000g)- 2001

(rate/1000 births)



This study was undertaken to determine what the avoidable factors, missed opportunities and substandard care are related to spontaneous preterm labour. With this information it was felt that rational health care strategies could be developed such that a decrease in the perinatal mortality rate (PNMR) due to spontaneous preterm labour could be achieved, thus effectively reducing the overall PNMR.

Methods

Data was collated from the 44 PPIP sentinel sites spread throughout South Africa¹. Every perinatal death in these sites was analysed and the primary obstetric cause of death and where applicable the final neonatal cause of death allocated. Also avoidable factors, missed opportunities and substandard care were sought for each death. This data was entered on PPIPWIN, a Windows based perinatal audit system². All the deaths whose primary obstetric cause of death was categorised as being due to spontaneous preterm labour were separated and the avoidable factors, missed opportunities and substandard care analysed. This is a function of the PPIPWIN programme.

Results

The Perinatal Care Survey of 2001 analysed the causes and avoidable factors associated with 3045 perinatal deaths in 78 343 births of 1000g or more. There were 518 perinatal deaths whose primary obstetric cause of death was due to spontaneous preterm labour. This comprised 17% of all perinatal deaths. The PNMR was of 7.48/1000 births.

Spontaneous preterm labour as a primary obstetric cause of death is divided into a number of sub-categories and this is shown in Table 2. Idiopathic preterm labour was the most common sub-category being responsible for 77% of deaths in the whole group.

Table 2. Sub-category causes of spontaneous preterm labour

Sub-category cause	Number (518)	%
Idiopathic preterm labour	399	77.0
Preterm premature rupture of membranes (PPROM)	83	16.0
PPROM with chorioamnionitis	20	3.9
Cervical incompetence	7	1.4
Preterm labour with chorioamnionitis with intact membranes	2	0.4
Other	7	1.4

The specific avoidable factors, missed opportunities and substandard care related to spontaneous preterm labour are shown in Table 3. The most common factors allocated were lack of antenatal care (32,6%), delay in seeking help during labour (14.7%), lack of neonatal facilities (10.0%), lack of transport (7.3%) and inappropriate response to premature rupture of membranes (4.6%). There were only 16 cases reported where the management in the antenatal period or intrapartum care in hospital could have been better.

Table 3. Specific avoidable factors, missed opportunities and substandard care for perinatal deaths due to spontaneous preterm labour - 2001

Factor	No.	%
	518	SPL deaths
Lack of antenatal care	169	32.6
Delay in seeking attention during labour	76	14.7
Lack of transport	38	7.3
Inappropriate response to rupture of membranes	24	4.6
Inadequate neonatal facilities	52	10.0
Multiple pregnancy not diagnosed	18	3.5
Incorrect management of preterm labour	12	2.3
Antenatal steroids not given	4	0.8
Delay in referral	18	3.5

SPL – Spontaneous preterm labour. Note a case may have more than one factor.

Table 4 gives the factors associated with spontaneous preterm labour per designated area. Inadequate neonatal facilities were most marked in the rural areas being associated with 20.5% of perinatal deaths. Undiagnosed twins were also a frequent problem in the rural areas.

Table 4. Specific factors involved in perinatal deaths due to spontaneous preterm labour per area.

Factor	Metropolitan	City & Town	Rural
	(N=121)	(N=314)	(N=83)
	%	%	%
Lack of antenatal care	34 (28.1)	115 (36.6)	20 (24.1)
Delay in seeking attention during labour	12 (9.9)	52 (16.6)	12 (14.5)
Lack of transport	7 (5.8)	27 (8.6)	4 (4.8)
Inappropriate response to rupture of membranes	3 (2.5)	17 (5.4)	4 (4.8)
Inadequate neonatal facilities	3 (2.5)	32 (10.2)	17 (20.5)
Multiple pregnancy not diagnosed	1 (0.8)	9 (2.9)	8 (9.6)
Incorrect management of preterm labour	-	12 (3.8)	-
Antenatal steroids not given	-	2 (0.6)	2 (2.4)
Delay in referral	3 (2.5)	10 (3.2)	5 (6.0)

Discussion

The major problem of deaths due spontaneous preterm labour is outside of metropolitan areas, more especially in rural areas and this is clearly reflected in the higher neonatal death rates in the cities and towns and rural areas.

In allocating the avoidable factors the clinicians are restricted by the information available to them. If a history was not taken at the time of admission on why the patient, for example, presented late in labour, problems relating to transport or the rapidity of preterm labour will not be detected. All that will be documented is the patient arrived late in labour. It is suspected that this will mostly be due to transport problems from the patients' home to the institution and rapidly progressing preterm labour. Hence the factor 'delay in seeking attention during labour' probably includes a large number of transport problems and that factor coupled with directly recorded transport problems probably reflects the real magnitude of transport problems.

Transport problems are probably present in between one in four and one in six cases of perinatal death.

Analysis of the avoidable factors, missed opportunities and substandard care has nevertheless clearly indicated where the major problems lie. They are mostly related to transport problems, lack of neonatal facilities and the rapidity of preterm labour. In most cases the health institutions did not have time to stop the labour and administer corticosteroids. This is not an uncommon finding. Doubelaere et al.³, recorded in only 2.4% of women delivering low birthweight infants was prevention of labour attempted of the 550 low birth weight infants delivering in a tertiary hospital over a six-month period. They concluded that hospital staff could do little to prevent delivery of low birthweight babies. The net result is health institutions are faced with having to manage live premature infants. The infants' survival is dependant on the neonatal care they receive. The neonatal death rate (NNDR) was significantly lower in the metropolitan areas. Had the cities and towns and rural areas the facilities and expertise available in the metropolitan areas the NNDR could be significantly reduced.

The low rate of delay in referral recorded probably reflects the advanced stage of labour many of the women arrive in, making *in-utero* transfer inappropriate. It also reflects delay in transfer of the premature infants. It is surprising that this was not recorded much more frequently. There are two possible explanations, firstly the infants died rapidly in the institutions, making referral impossible. The second more likely explanation is that the doctors know from experience that the neonatal intensive care units in the tertiary hospitals are "always full" and have got tired of trying to refer the infants who would normally qualify for referral. The shortage of neonatal intensive care facilities is well documented. In one metropolitan area, lack of neonatal intensive care facilities was documented as being closely associated with 20% of infants born within that institution⁴. Refusal of requests from outside institutions was not documented and one can safely assume the rate was high.

What is surprising is that no attendance for antenatal care is regarded as a major avoidable factor in these patients, given our inability to predict or prevent preterm labour in general. Also Ndiweni and Buchmann⁵ have previously demonstrated that the high perinatal mortality related to lack of antenatal care is normally associated with preterm labour and that the labour intervened before the woman had intended to start antenatal care. These women are usually women of lower risk than those who initiate antenatal care early. There is probably a large element of victim blaming in this circumstance. The major issue related to antenatal care is promoting early attendance at antenatal care and not waiting until the third trimester, which unfortunately is still a common practice. Efforts must continue to bring down the gestational age at which antenatal care is started. The initiation of antenatal care at pregnancy confirmation would clearly facilitate this process⁶. It is in no way certain that early initiation of antenatal care will reduce the rate of spontaneous preterm labour.

In looking for health care strategies to improve the PNMR in South Africa, transport and neonatal care facilities and management skills are the major problems in the health system that need to be overcome. It would be unreasonable to suggest a large increase in neonatal intensive care facilities in the metropolitan areas, given the

expense and the already existing transport problems. It seems the sensible approach would be to look for easily implementable neonatal care strategies that could be applied to institutions outside of metropolitan areas. Fortunately there are two strategies that seem tailor made for this. The first could be the introduction of nasal continuous positive airway pressure (CPAP) to stabilise premature infants with respiratory difficulties⁷. Nasal CPAP is a non-invasive, inexpensive method of supporting the neonates' respiration. It does not require intubation or mechanical ventilation. The second strategy would be the use of kangaroo mother care⁸. Both interventions have been extensively studied and are ideal to fill the current need in South Africa.

Lack of transport is a problem that is experienced throughout the health service. It is being addressed at a national level and more ambulances have been ordered. Negotiations with the emergency services in each area should in the meantime be initiated so that the principle is established that the highest priority rating is given to pregnant woman in labour.

Conclusion

Improving neonatal care for premature infants outside of the metropolitan areas is the area where there is the greatest potential to rapidly decrease perinatal mortality rate in South Africa. Two interventions stand out in their potential to immediately address this need, namely the introduction of nasal CPAP and secondly kangaroo mother care. The introduction of these strategies is both inexpensive and the intervention of proven benefit. It is a matter of urgency that these strategies be implemented. More intractable problems such as late initiation of antenatal care and poor transport still need to be addressed.

References

1. Why babies die. Chapter 2, Saving Babies 2001. Second. perinatal care survey of South Africa.
2. Introduction methods and definitions. Chapter 1, Saving Babies 2001. Second. perinatal care survey of South Africa.
3. Dobbelaere S, Pattinson RC, Makin JD, Quintelier. The potential for preventing the delivery and perinatal mortality of low birth weight babies in a black urban population. *S Afr Med J* 1995;85:536-539.
4. Perinatal Care Survey, Pretoria 1996-7. Regional report to Gauteng Province.
5. Ndiweni Q, Buchmann EJ. Unbooked mothers and their babies – what causes the poor outcome. *S Afr Med J* 1998;88:192-199.
6. Jeffery BS, Tsuari M, Pistorius LR, Makin J, Pattinson RC. The impact of a pregnancy confirmation clinic on the commencement of antenatal care. *S Afr Med J* 2000;90:153-156.

7. Ho JJ, Subramaiam P, Henderson-Smart DJ, Davis PG. Continuous distending pressure for respiratory distress syndrome in preterm infants (Cochrane Review). In: The Cochrane Library, Issue 2, 2002. Oxford: Update Software.
8. Charpak N, Ruiz-Pelaez JG, Figueroa de CZ, Charpak Y. Kangaroo-mother versus traditional care for infants <2000 grams: a randomised controlled trial. *Pediatrics* 1997;100:682-688.

Chapter 5

Overview Provincial Reports

Introduction

The minimum perinatal data tool was discussed at the first Perinatal Care Survey workshop in November 2000. At that time only Gauteng Province and the Western Cape could produce reliable provincial perinatal statistics. There has been a dramatic improvement during 2001. Five provinces (Free State, Gauteng, Mpumalanga, North West and Western Cape) have provided full provincial data. KwaZulu-Natal has a good sample from the province. There are only three provinces (namely Eastern Cape, Limpopo and Northern Cape) where the only provincial data available for this report was from the PPIP sentinel sites.

Table 1 gives the total provincial data and the perinatal care indices.

Table 1. Perinatal care indices per province and estimated for South Africa

Province	Births >1000g	SB >1000g	NND >1000g	PNMR >1000g	NNDR >1000g	LBWR %	PCI	C/s rate %	MMR
Eastern Cape*	17358	400	235	37	14	16.4	2.86	17.3	-
Free State	33151	1121	394	46	12	21.8	2.14	15.2	-
Gauteng	111503	2769	1423	38	13	21.8	2.40	18.9	133
KwaZulu- Natal#+	63606	1450	858	36	14	14.0	2.60	19.5	-
Limpopo*	8242	165	94	31	12	11.1	2.80	-	-
Mpumalanga ⁺	41755	938	678	39	17	21.8	2.40	14.2	261
North West	36276	982	616	44	18	16.5	2.67	9.2	183
Northern Cape*	4542	118	52	38	12	26.2	1.46	15.7	129
Western Cape	71524	1019	301 [§]	19	4	17.5	1.06	-	59
South Africa	387957	8962	4651	35	12	17.8	1.97	-	-

SB – Stillbirth, NND – Neonatal death, PNMR – Perinatal mortality rate, NNDR – Neonatal death rate, LBWR – Low birthweight rate, Perinatal Care Index, MMR – Maternal mortality ratio.

* - PPIP site data only. # - Incomplete provincial data. + - Estimated number of SB and NND in infants less than 1000g. § - Early neonatal deaths only

One of the main objectives of the survey is to give an accurate estimate of the PNMR in South Africa. The survey is much closer to this than in 2000.

The perinatal priorities of care of the various provinces will vary according to their particular circumstances. The growth of the number of PPIP sentinel sites and the great improvement of the collection of the minimum perinatal data set throughout the country is beginning to allow provincial MCWH units and PPIP sentinel sites to get together to discuss the data. This is essential in starting to develop solutions to the problems identified in their provinces. The second workshop facilitated these meetings between the provincial MCWH administrators and the health workers from the sentinel sites. They were able to discuss some of the issues in their provinces on the basis of the data that each group provided. The following sections give the provincial and PPIP data amalgamated and some of the future plans which each the group discussed. It is hoped that the groups will meet before the 2002 workshop with

their data and discuss its implications. Their presentation at the 2002 workshop will be a joint one.

Chapter 5a

Eastern Cape

Introduction

(From Primary Health Care in the Eastern Cape Province, 1997-2000, Equity Project & Eastern Cape DoH, 2001)

The Eastern Cape Province has a population of approximately 6.8 million and is the poorest province in South Africa based on monthly household expenditure.

Unemployment is 48.5% and the two poorest district councils and two poorest magisterial districts in South Africa are in the Eastern Cape. Only 46.9% of people live in formal housing, 31.3% have access to electricity, and 24.4% have tap water inside the dwelling. 63.4% of the population is rural.

53.8% of the population is women and the total fertility rate is 3.5 children, compared to the South African national rate of 2.9 children. The infant mortality rate is 61.2/1000 and the Under 5 Mortality rate is 80.5/1000.

Under the new district municipality boundaries, the Eastern Cape now has six district municipalities, plus one Metropolitan District (Nelson Mandela) in the Port Elizabeth metropole. Within these districts there are 702 clinics and health centres supported by 64 District Hospitals, 12 Regional Hospitals and 18 Specialised Hospitals. Only 30% of these clinics can conduct a pregnancy test and only 65% take blood for syphilis testing during antenatal care. 68% of women have at least 3 antenatal visits prior to delivery and trained assistance at delivery ranged from 60% in the poorest rural areas to 96% in the region including the metropolitan district. In 2000, the antenatal HIV prevalence was 24.5%.

PPIP in the Eastern Cape Province

The Maternal Health Division in the Provincial Maternal, Child and Women's Health Programme coordinates PPIP in the Eastern Cape Province. At the start of 2001, there were three PPIP sites in the Eastern Cape, one rural (Port Alfred) and two peri-urban (Frontier and Settlers Hospitals). In May 2001, maternity staff from eight new hospitals were trained by Professor Pattinson in East London, four rural (Mary Terese, All Saints, St. Patricks, Glen Gray and St. Elizabeths Hospitals), one peri-urban (Provincial Hospital Uitenhage), and two urban (Frere, Cecelia Makiwane). In addition, on-site support for PPIP was provided to the three most remote rural hospitals (Mary Terese, St. Patricks, and St. Elizabeths) by the Initiative for Sub-District Support from Health Systems Trust. Representatives from eight of eleven sites attended the annual PPIP conference in November 2001 and presented their data. This data is summarised below.

PPIP Sites

City and town: Settlers Hospital and Uitenhage Provincial Hospital.

Rural: Port Alfred, Frontier, Mary Terese, All Saints, St. Patricks and St. Elizabeths Hospitals

PPIP Sites:	Dates of Report:	# of Deliveries:
Port Alfred	01/07/00 – 30/06/01	365
Settlers	01/07/00 – 30/06/01	1128
Frontier	01/01/95 – 31/12/00	14 562
Mary Terese,	01/06/01 – 31/08/01	250
All Saints	01/01/01 – 30/09/01	1665
St. Patricks	01/01/01 – 31/08/01	1662
St. Elizabeths	01/01/01 – 15/09/01	1769
Provincial Hospital Uitenhage	01/01/98 – 31/08/01	10 719

Table 1. Total data from PPIP sites*

Weight Category (g)	Stillborn	Neonatal death	Alive on discharge	Total
500 – 999	119	69	12	200
1000 – 1499	96	70	201	367
1500 – 1999	84	35	542	661
2000 – 2499	71	23	1557	1651
2500 +	149	107	14 423	14 679
TOTAL	519	304	16 735	17 558

*from 7 of 8 PPIP sites, Frontier not included & <1000 grams not included at All Saints

Table 2. Perinatal Care Indices of PPIP sentinel sites

Hospital	PNMR (>1000g)	NNDR (>1000g)	LBWR	PCI
City and Town				
Settlers	31	12	15.6	2
Uitenhage	28	7	19.2	1.47
Rural				
All Saints	18	15	8	2.25
Mary Terese	61	25	11.6	6.2
Port Alfred	16	6	23.3	0.7
St Elizabeths	36	26	9	7.3
St Patricks	78	41	11	8

Amalgamated Provincial Perinatal Care Indices (Only PPIP sites data available)

Mortality rates:

>1000g: SB Rate: 23/1000 NNDR: 14/1000 PNMR: 37/1000

All weight categories: SB Rate: 30/1000 NNDR: 18/1000 PNMR: 47/1000

Other perinatal care indices

LBWR: 16.4% PCI: 2.86 SB:NNDR: 1.7:1

C/s rate: 17.3%

Proportion of women who attended antenatal care: 89.8%

Provincial Primary Obstetric Causes of Death >1000g (Top 5)

1. Unexplained IUD – 22%
2. Spontaneous Preterm Labour - 19%
3. Labour-Related Ashypxia – 14%
4. Hypertensive Disorders – 11%
5. Infections & Antepartum Haemorrhage (tied) – 10%

(Does not include Frontier or All Saints Hospitals)

Provincial Final Neonatal Causes of Death >1000g (Top 3)

1. Extreme Prematurity – 36%
2. Hypoxia – 21%
3. Infection – 13%

(Does not include Frontier or All Saints Hospitals)

Provincial Avoidable Factors

- Patient related – 66%
- Administrative – 8%
- Health worker related – 8%
- Missing files – 4%

(Does not include Frontier, All Saints or St. Patricks Hospitals)

Provincial Top 5 Individual Items in the Avoidable Factors

1. Delay in Seeking Medical Attention during labour.
2. Inadequate or Lack of Skilled Staff.
3. No Antenatal Care.
4. Poor responses to Obstetric History e.g. hypertension, poor fetal movements, syphilis testing.
5. Incorrect use and/or interpretation of partogram.
6. Inadequate Facilities.

(Does not include Frontier Hospital)

Problems related to data collection (both Provincial and PPIP)

Most of the new sites were still in the process of learning the system and the PPIP computer software. Limited computer access and lack of computer skills were cited as problems. Comments specific to the system included: no code for ectopic pregnancy, limited access to audit of private patients, undelivered maternal deaths when no delivery date, and no way to account for newborns who are not weighed in the statistics.

Discussion

This report only combines data from seven of the eight PPIP hospitals as the data from Frontier hospital was available in summary form only. The combined PNMR over 999g was 37/1000 births and the NNDR was 14/1000 births. These are similar to the SA averages for PNMR (39/1000) and NNDR (15/1000). However, there was wide variation across the EC sites. The PNMR ranged from 16 to 78/1000 and the NNDR ranged from 6 to 41/1000. The mean PCI was 2.86, slightly higher than the target rate of 2.0, but once again there was a wide range across sites (0.7 to 8.0). The mean low birth weight rate was 16% with a smaller range of 8 to 23%. It is important to note that for all the combined data, the means are driven by the large number of births included in the Uitenhage site (10 719) compared to the other six sites (ranged from 250 to 1769).

Despite variations in death rates across sites, the top primary obstetric and final neonatal causes of death were similar across sites, although the relative position (1st, 2nd, 3rd, etc.) of the top causes varied across hospitals. Of the top causes, prematurity and hypoxia related deaths appeared most consistently in the top causes of death.

Avoidable factors were somewhat more consistent with their relative positions. Patient related factors number one in 4 of 6 hospitals reporting percentages. However the percentages with this factor varied widely (31% in Port Alfred to 94% for Uitenhage). The other two factors (Administration and Health Worker Related) were essentially split between the 2nd and 3rd spots and ranged from 0 to 68% for Health Worker Related, and 0 to 44% for Administration Related factors. Classification of avoidable factors showed some inconsistency across sites. For example, the Uitenhage rate of 94% for Patient Related factors was much higher than other sites (next highest site was only 56%). This skewed the aggregate percentage for this factor. When excluding Uitenhage the Patient Related percentage decreases to 29%.

Future Plans

The provincial maternal and neonatal health programme intends to focus on two areas in 2002. These include:

1. Strengthening current PPIP sites within the province -
 - Expanding on-site mentor visits to all PPIP sites
 - Explore increasing access to computers at PPIP sites for which this is a problem
 - Provincial PPIP users meeting
 - Re-training activities, such as review of classification of avoidable factors
2. Addressing causes of death and avoidable factors –
 - Asphyxia/Hypoxia – improve use of partogram, expand neonatal resuscitation training, PEP programme (Maternal Care Module), and continuing perinatal education (COPE) beyond currently involved regions
 - Low Birth Weight/Prematurity – examine factors related to LBW/PTD
 - Administrative factors – collaborate to improve transport and staffing, especially in rural areas
 - Health Worker factors - expand community obstetrics and paediatrics specialty consultation capacity across the province to support maternal and neonatal services in the hospitals and clinics

Chapter 5b

Free State Provincial Report

Introduction

The perinatal data presented in this report is data collected from the Free State Provincial Hospital via the intra-net database and covers all of the provincial Hospitals (passively collected data with occasional spot checks performed). The data of those PHC facilities that are not classified as hospitals (i.e. Community Health Centres/Midwife Obstetrical Units) are excluded from this report, but it is hoped that they can be included in future. Data from the private health facilities in the Free State has also not been included into this report. The data presented here is that collected for the period January 2001 to September 2001.

The data presented is derived from 30 Hospitals in the Free State, 25 District Hospitals, 4 Regional Hospitals and one tertiary Hospital, and is stratified per region.

Table 1. Perinatal Data Free State Province - January to September 2001

	Deliveries	C/S %	Ass Del %	PNMR /1000	NNMR /1000	LBW %	Teen/preg %	PCI
<i>Free State Total</i>	<i>33151</i>	<i>15.2</i>	<i>2.6</i>	<i>45.7</i>	<i>11.9</i>	<i>21.8</i>	<i>20.4</i>	<i>2.14</i>
DC 16 Xhariep	917	4.5	2.7	47.3	24	19.6	24.8	2.22
DC 17 Motheo	7182	23.9	3.9	53.4	9.6	25.5	18.6	2.12
DC 18 Lejweleputswa	7436	11.5	1.9	46.3	10	27.6	19.2	1.7
DC 19 Thabo Mofutsanyane	9671	13.3	1.5	42.3	13.2	16.7	22	2.62
DC 20 Northern Free State	5945	14.3	3.5	41.8	13.2	18.9	20.8	2.28

The high caesarean section rate and slightly higher PNMR in the Motheo district can be explained by the fact that two hospitals in this district act as referral hospitals. The high neonatal mortality rate in Xhariep district is disturbing, but in part can be explained by the smaller numbers (volumes). The teenage pregnancy rate for the Free State has been measured as 20%.

A PPIP pilot site has been started in one of the Free State regions, DC 18 Lejweleputswa. Currently it covers mainly the regional hospital, Goldfields Regional Hospital, but the aim is to cover the entire region with this site. Comparison of the above data and the PPIP site is made. Currently this Goldfields Hospital site is the only PPIP site in the Free State. The possibility of starting another site in a different region, possibly just covering the district hospital is being investigated.

Finding of the Goldfields PPIP site (currently based mainly on the regional Hospital) compared to the district as a whole:

	Deliveries	C/S %	Ass Del %	PNMR/1000	NNMR/1000	LBW %	Teen /preg %
PIPP site	2243	23.1	2.4	95	23	20.9	17
DC 18	7436	11.5	1.9	46.3	10	27.6	19.3

The higher caesarean section rate, PNMR and NNMR at the PPIP site is explained by the fact that it is a regional hospital. The assisted delivery rate is marginally higher at the PPIP site Regional hospital, but overall very low. Of the BBA's, only 19% delivered at home whereas 81% of patients delivered in transit to the facility. This indicated difficulties in patients getting to the facilities in time.

Syphilis results were not available in 21.5% of cases, whereas it was not done in 20%. Only 6.8% of patients had a positive test result with 51 % negative.

Causes of perinatal deaths were identified as: asphyxia, proteinuric hypertension and "unknown".

Chapter 5c

Gauteng Provincial Report

Introduction

Gauteng has proportionately more people (69%) in the economically active age groups (15-64 years) compared to the national average (60%). Only 25% of the population constitute the under 15 years age group, as compared to the national figure of 34%. The total fertility rate in Gauteng has decreased from 3 in 1991 to 2.3 in 1998, compared to the South African rate that has decreased from 3.3 in 1991 to 2.9 in 1998 (SADHS). The crude death rate of Gauteng in 1994 was 6.1 for every 1000 people. In 1997, the life expectancy at birth for Gauteng was 65.8 years (South Africa: 64.4 years).

Gauteng province is now divided into three health regions: A, B and C.

- Region A consists of the City of Johannesburg Metropolitan Area and the West Rand District Council Area.
- Region B consists of the Ekurhuleni Metropolitan Area and the Sedibeng District Council Area.
- Region C consists of the City of Tshwane Metropolitan Area and the Metsweding District Council Area.

Each Regional Office now incorporates hospital, district and emergency medical services.

The perinatal care surveillance is done through routine monthly collection of data at the hospitals and the MOUs. Standardised data collection forms are used. The following hospitals are implementing the Perinatal Problem Identification Programme (PPIP): Baragwanath, Johannesburg, Pretoria Academic, Leratong, Sebokeng and Tembisa hospitals.

The data that has been provided is from the public hospitals only (26 hospitals). It covers the period August 2000 to July 2001. The issue of timeliness and completeness of reporting is a great challenge for the province.

Table 1. Total Provincial Data (*Hospital data only*)

Weight Category (g)	Stillborn	Neonatal death		Alive on discharge	Total
		Early	Late		
500 – 999	1222	199	356	545	2322
1000 – 1499	732	92	347	2064	3235
1500 – 1999	620	88	202	4815	5725
2000 – 2499	556	49	156	12794	13555
2500 +	861	104	385	87636	88986
TOTAL	3991	532	1446	107854	113825

Data does not include births at Community Health Centres (MOUs) or at Private Institutions

Table 2. Perinatal Care Indices of PPIP sentinel sites

Hospital	PNMR (>1000g)	NNDR (>1000g)	LBWR %	PCI
Metropolitan				
Chris Hani Baragwanath Johannesburg*	39.9	11.8	21.5	1.86
Kalafong	36	13	21.2	1.7
Pretoria Academic	29	6	19.8	1.46
	25	7	19.3	1.31
City and Town				
Leratong*	63	26	16.6	3.78
Sebokeng*	43	16	19.2	2.22
Tembisa*#	17	8	18.7	0.93

* Represents two months data only. # Incomplete data

Provincial Perinatal Care Indices (>1000g) (August 2000 – July 2001)

Mortality rates:

>1000g: SB Rate: 24.8/1000 NNDR: 13.3/1000 PNMR: 37.6/1000

Other perinatal care indices

LBWR: 21.8% PCI: 2.4 SB:NND: 1.9:1

C/s rate: 18.9% Assisted delivery rate: 1.1%

Teenage pregnancies: 6% Syphilis prevalence: 4%

Maternal Mortality Ratio: 133/100 000 live births

Proportion of women who attended antenatal care: 93.5%

Amalgamated Provincial PPIP data (>1000g)

Primary Obstetric causes of death (Top 5):

Unexplained Intrauterine Deaths: 35%
Spontaneous Preterm Labour: 15%
Hypertension: 14%
Intrapartum Asphyxia: 11%
Antepartum Haemorrhage: 8%

Final causes of neonatal death (Top 3)

Prematurity: 32%
Asphyxia: 29%
Infection: 22%

Provincial Avoidable factors

Patient related 49%
Health worker related 23%
Administrative 8%

Provincial Top 5 Individual Items in the Avoidable Factors

Inappropriate response to poor fetal movements
Inadequate fetal monitoring
Never initiated antenatal care
Inadequate equipment in neonatal unit/nursery
Delayed arrival in Labour

Future Plans

In view of the above findings the provincial MCWH Unit in conjunction with the delegates from the PPIP sentinel sites felt that the following actions were needed in the next year.

1. An audit to be done on the availability of neonatal resuscitation equipment in especially the secondary level hospitals
2. Implementation of Kangaroo Mother Care Units in Gauteng Province
3. Increase the PPIP sites to 9 in 2002.
4. Midwifery update courses and CPD training for medical staff to focus on monitoring patients in labour as well as neonatal resuscitation skills.

Chapter 5d

KwaZulu-Natal Provincial Report

Introduction

There are 11 health districts and 64 public hospitals providing maternity services in KwaZulu Natal. Perinatal statistics presented at the Saving Babies Workshop on 26-28 November 2001 were obtained from only 34 hospitals. The statistics excluded births from clinics. Of the 34 hospitals that provided statistics, 5 presented PPIP statistics at the workshop. There was inconsistency in the presentation of the statistics with some hospitals presenting statistics covering only 3 months and some not providing statistics according to weight categories. Problems experienced in the collection of data indicated serious deficiencies in the data collection system. There was also inconsistency pertaining to data collected by PPIP users and hospital based data in the same institution. This also indicates the need for communication and discussion of the data collected at hospital level in order to ensure that data presented from the same sources in an institution is relevant and accurate.

Provincial Data

Hospital data was collected from 13 rural, 18 city/town and 3 metropolitan institutions.

Total births: 64119

Total live births: 61290

Estimated PNMR: 44/1000

Estimated NNDR: 19/1000

PNMR > 1000g: 36/1000

NNDR > 1000g: 14/1000

Low birth weight rate: 14%

Perinatal Care Index: 2.6

Caesarean section rate: 19.49%

BBA: 2889 (4.5%)

PPIP sentinel sites

Five PPIP users presented their data from the following sentinel sites in KZN:

Metropolitan: King Edward Hospital, Addington Hospital

City and Town: Ladysmith Provincial Hospital, Lower Umfolozi Hospital (Empangeni), Madadeni Hospital

Table 1. Perinatal Care Indices of PPIP sentinel sites

Hospital	PNMR (>1000g)	NNDR (>1000g)	LBWR	PCI
City and Town				
Ladysmith Provincial	49	22	13.9	3.54
Lower Umfolozi Hospital	37	11	15.6	2.35
Madadeni Hopistal	45	22	17.3	3.30
Metropolitan				
Addington Hospital	30	9	16.3	1.81
King Edward VIII th	57	16	24	3.54

Provincial Primary Obstetric Causes of Death >1000

1. Premature labour
2. Hypertension in pregnancy
3. Unexplained IUDs

Provincial Final Neonatal Causes of Death >1000g

1. Asphyxia
2. Prematurity
3. Infection

Provincial Avoidable Factors

1. Patient related: Range 47.4-68.3%
2. Administration related: Range 3.6-13.4%
3. Health worker related: Range 12-38.8%

In all 5 sites some information could not be assessed.

Provincial Top 3 Individual Avoidable Factors

1. Unbooked case
2. Failure to respond/detect fetal distress
3. Poor management of hypertension during antenatal care and during labour.

Problems experienced with hospital data collection

Incomplete, fragmented data was submitted by hospitals.

Low birth weight babies not categorised according to birth weight.

Inconsistent data received in terms of time frames and sources e.g. only 34 hospitals responded and the period of data collection varied between two to nine months.

Data from clinics and community health centres (CHCs) was not available.

Perceived major problems

1. Intrapartum asphyxia – unrecognised/untreated.
2. Prematurity
3. Infection
4. Failure to recognise the problem
5. Poor fetal monitoring
6. Inappropriate/non utilisation of the partograph
7. Poor resuscitation

Recommended possible solutions to these problems

MCWH will provide support and assist in training where necessary to improve quality of perinatal care. The following must be implemented in all institutions providing maternity care:

- Perinatal review meetings
- Use of partograph
- Use of management guidelines and protocols
- Resuscitation of the newborns
- Health education to mothers
- Community education

Chapter 5e

Limpopo (Northern) Provincial Report

Introduction

Limpopo Province consists of six districts, each further divided into sub districts. 90% of the Province is rural, with poor roads, poor transport, and inadequate water and sanitation. The total population is 5,514 million of which 54% are female. Of the total female population 45% are in the child-bearing age group.

The health service structure consists of 1 tertiary institution, 6 district hospitals (Level II) and 36 community hospitals (Level I).

The health professionals in the province in 2001 are as follows:

Medical: Total number of doctors 455 full time and 250 part time doctors. The full time doctors consist of 154 foreign doctors (34%), 167 Community service doctors (37%), 74 interns (16%)

Nursing: there are a total of 5043 professional nurses, of these 682 are primary health care practitioners.

Background

Limpopo Province has always practiced a tradition of collecting a wealth of information, but due to there previously being four diverse administrations, there was little co-ordination in collation and standardisation of data.

The year 2001 saw the beginning of this process with the introduction of PPIP. A tremendous amount of energy was put into establishing PPIP. By the end of November 2001, 12 of the 43 hospitals were collecting PPIP data, this was then computerised and initial data for the province was extrapolated.

Although not all the hospitals in the province have a computer on site in the maternity unit, every effort is made to computerise data and to share the reports with these hospitals. Standardised data collection sheets have been developed and these were circulated to all hospitals interested in PPIP. Manual data collection was initiated. This data was then captured on computer once a month and reports are produced. It is anticipated that in this manner the entire province will be using PPIP by the 2002 PPIP congress

The data documented at the 2001 congress does not necessarily reflect the true picture in the province because the collection period is short and the numbers are therefore small, but this is at least the beginning of organisation.

The hospitals that participated in the PPIP Congress 2001 are as follows – the period over which data was collected is indicated in brackets:

Tertiary Institute: Mankweng: July to September 2001 (3 months)

District Hospitals: Letaba: July to September 2001 (3 months)
 Mapulaneng: July to September 2001 (3 months)
 Mokopane: July to September 2001 (3 months)
 St Ritas: July to September 2001 (3 months)
 Tshilidzini: July to September 2001 (3 months)

Community hospitals: Elim: May to October 2001 (6months)
 Jane Furse: July to September 2001 (3 months)
 Louis Trichardt August to October 2001 (3 months)
 Seshego: July to September 2001 (3 months)
 Tintswalo: July to September 2001 (3 months)
 WF Knobel: January to September 2001 (9 months)

Total Provincial data

Provincial data was obtained from 17 of the 43 hospitals. The period of collection is May to September 2001. The information does not give the entire picture in the Province, but the exercise has identified the shortfalls in the province, all of which will be addressed in 2002.

Table 1. Total Provincial data

Weight category	Stillborn	Neonatal death		Alive on Discharge	TOTAL
		Early	Late		
500-999g	32	9	19	12	72
1000-1499g	33	13	15	58	119
1500-1999g	40	8	8	151	207
2000-2499g	33	7	6	475	521
>2500g	61	20	14	7299	7395
TOTAL	197	56	66	7995	8314

The details of the data for each site is tabulated in Table 2 below.

Amalgamated Provincial Perinatal Care Indices

Mortality rates:

>1000g: SB Rate: 20/1000 NNDR: 12 /1000 PNMR: 31/1000
 All weight categories: SB Rate: 24/1000 NNDR: 15/1000 PNMR: 38/1000

Other perinatal care indices

LBWR: 11.1% PCI: 2.80 SB:NND: 1.6:1

Provincial Primary Obstetric Cause of Death >1000g (Top 5)

1. Intrauterine deaths – 21,7%
2. Preterm labour – 20,9%
3. Asphyxia – 16,5%
4. Hypertension – 6,7%
5. Antepartum haemorrhage – 5,5%

Provincial Final Neonatal Cause of Death >1000g (Top 3)

1. Immaturity – 34,4%
2. Hypoxia – 33,3%
3. Congenital abnormalities – 10,8%

Provincial Avoidable Factors

1. Patient related – 37,8%
2. Administrative – 21,6%
3. Health worker related – 16,8%
4. Insufficient records – 9,2%

Provincial Top 5 Individual Items in the Avoidable Factors

1. Patient never initiated antenatal care – 12,7%
2. Patient's response to foetal movements is inappropriate – 8,2%
3. VDRL results not returned – 6,0%
4. VDRL not available – 4.8%
5. Lack of transport: Institution to institution – 2,9%

Problems with data collection

- Data collection in the province is still a serious problem – lack of standardised forms. Many hospitals still using old data collection sheets, making collation impossible.
- Lack of general understanding of information required on the forms and explicit terms or brief explanations are required.

Other Problems Identified

- Partogram usage may not be optimal. Evaluation of this parameter on all perinatal deaths may be of value.
- VDRL testing a serious problem in some areas.
- Lack of trained personnel.
- Poor transport services.
- Patient education is a serious problem.

Future Plans

- Standardisation of record keeping and data collection system. This may be achieved by introducing a standardised maternity register and standardised data sheets with brief instructions on how to complete forms.
- Introduce PPIP at all hospitals in the province.
- Monitoring of partogram usage, evaluating use initially on all perinatal deaths.
- Training of personnel in the province, and setting standards for implementation.
- VDRL testing and transport are slightly more difficult issues, for which simple solutions will not suffice.

Table 2. Analysis of data from PPIP sentinel sites

Hospital	PCI	LBWR	PNMR	SB:NND	NNR	C/S R	VDRL+	VDRL-	no VDRL	no results	no anc	ANC unknown	bba	Teenage
MANGKWENG	3.1	14	41	2.93	11	22.5	11.5	44	21.3	23	1.6	62.1	1.5	20.4
MOKOPANE	1.63	15.5	25	1.5	9	5.9	5	60	25	10	0.9	0	2.8	24.1
MAPULANENG	1.3	13.7	18	1.4	7	12.3	0	25	75	0	1.4	2.2	1.3	27.5
TSHILDZINI	1.97	11.3	22	0.7	15	24.5	0	16	64	20	1.2	2.7	1.8	21.9
LETABA	1.99	10.9	22	2.7	4	15.6	11.5	53.8	34.6	0	0.6	84	1.3	19.4
ST RITAS	2.24	14	34	1.2	18	12.3	2.5	17.5	55	25	8.5	0	2.2	19.2
KNOBEL	3.7	6.8	25	1.3	11	9.2	0	100	0	0	2	0	3.8	24.4
JANE FURSE	3.07	9.2	28	2.2	9	8.4	0	20.7	55.2	24.1	0.9	97.1	4.1	21.7
LOUIS TRICHARDT	3.25	15.5	50	3	10	40.5	8.3	25	16.7	50	5.5	1.8	4.1	21.7
ELIM	3.24	10.3	33	0.6	21	16.2	1.9	34	37.7	26.4	1.2	59.1	1.8	19.4
SESHEGO	2.29	13.2	30	1.8	12	8.3	3	60.4	15.5	21.2	5.8	0	4	17.8
TINSWALO	1.95	12.6	25	1.5	10	11.6	0	16.7	60	23.3	12.6	1.6	2.8	29.6

Chapter 5f

Mpumalanga Provincial Report

Introduction

Mpumalanga province is mostly rural. There are three health districts, each of which is divided into sub districts. The provincial health information unit is responsible for data collection in the province. The PPIP data is however collected by the PPIP users at the institutions. There are plans to get the health information unit to be involved with PPIP in future. The PPIP presentation below is for the three PPIP sites which presented at the last PPIP workshop i.e. Lydenburg, Middelburg and Witbank hospitals.

The total deliveries for the province (i.e for all the hospitals including the non PPIP sites) is for the year 2000.

Table 1. Total Provincial Hospital data

Weight category (g)	Stillborn	Neonatal death		Alive on discharge	Total
		Early	Late		
500-999					751
1000-1499					902
1500- 1999					2192
2000-2499					5421
2500+					33240
Total	1 417	770	125	40 194	42 506

Deliveries under 18 yrs: 5 828 (13.7%)

Deliveries above 35yrs: 1 872 (4.4%)

Born Before Arrival: 2 486 (5.8%)

C/sections: 6 016 (14.2%)

Assisted deliveries: 1 461 (3.4%)

Maternal deaths: 111

Provincial Perinatal Care Indices

The rates below are for all deliveries above including < 1000g

SB rate: 33.3/1000 NNDR: 21.1/1000 PMNR: 54.4/1000

LBWR: 21.8% PCI: 2.40 SB:NND: 1.9:1

C/S rate: 14.2% Assisted delivery rate: 1.5%

Proportion of teenage pregnancies (<18yrs only): 13.7%

Maternal Mortality Ratio: 261/100 000 live births

Table 2. Perinatal Care Indices of PPIP sentinel sites

Hospital	PNMR (>1000g)	NNDR (>1000g)	LBWR %	PCI
City and Town				
Middelburg	29	8	11	2.66
Witbank	37	9	19.7	1.91
Rural				
Lydenburg	32	10	8.3	3.82
Amalgamated data	32	9	13	2.79

Caesarian section rate: 15.6%

Assisted delivery rate: 1,4%

Amalgamated Provincial PPIP data

Table 3. Top 5 Primary Obstetrical Causes of deaths:

	Number	%
Unexplained IUD	87	28.4%
Intrapartum asphyxia	27	8.8%
Hypertensive disorders	30	9.8%
APH	30	9.8%
Spontaneous preterm labour	22	7.2%

Table 4. Top 3 Final Causes of deaths:

	Number	%
Prematurity related	22	25.3%
Asphyxia and birth trauma	18	20.7%
Infection	7	8.1%

Table 5. Provincial Avoidable factors

Factor	Number	%
Patient related	72	23.5%
Administrative	24	7.8%
Health worker related	61	19.9%
Missing files/ insufficient notes	12	3.9%

Table 6. Top 5 Individual Avoidable factors in the Province

Avoidable factor	Number	%
Unbooked patient	20	6.5 %
Delay referring patient for secondary/tertiary treatment	14	4.6%
Infrequent visits to ANC	14	4.6%
Delay seeking medical attention during labour	13	4.3%
Inadequate facilities in neonatal unit	12	3.9%

Problems related to data collection (provincial and PPIP)

PPIP sites

- Lack of Information Technology skills by some PPIP users. PPIP users are dependent on some assistance from far away.
- Computer not accessible at times.
- PPIP still run by individuals at some institutions resulting in no team work.
- A number of sites using PPIP did not supply data in 2001. Sustainability is a problem.

Provincial data

- Provincial data presented here is for the year 2000, 2001 data still coming in and being analysed. The flow of data from districts and institutions to the provincial office is slow. However, things have improved considerably and we get the relevant data even though we get the information a bit late.
- No weight categories for the deliveries in our provincial data.

Future Plans

- Supply the PPIP reports to the province and districts to inform them about the programme and information obtained.
- Expansion of PPIP sites in the province.
- Organise PPIP training for the new sites (to request MRC's assistance).
- Encourage staff to undergo training on PEP, and neonatal resuscitation.
- Introduce KMC to more sites in the province.
- Organise refresher/update programmes for staff on management of labour and the proper use and interpretation of the partogram.
- Encourage the development and use of standard management protocols and guidelines in the institutions.
- The referral system needs to be addressed by senior management.

Chapter 5g

Northern Cape Provincial Report

Introduction

The Northern Cape covers 28% of the surface area of South Africa with a population of 800 000. This equals 2 people/km². It is mainly a rural province with 40% of the inhabitants staying in or around Kimberley. The province is divided into 5 health districts. The major towns in these districts are: Kimberley, Upington, Kuruman, De Aar and Springbok.

During 2001, we had only one PPIP site in the province: Kimberley/Galashewe Day Hospital managing nearly 20% of the total births in the province.

Table 1. Total Data (only available from Kimberley/Galashewe Day Hospital)

Weight Category (g)	Stillborn	Neonatal death		Alive on discharge	Total
		Early	Late		
500 – 999					90
1000 – 1499					167
1500 – 1999					309
2000 – 2499					648
2500 +					3418
TOTAL	168	68	9	4387	4632

Perinatal care Indices (all infants)

SB Rate: 32.3/1000 **NNDR:** 13.71/1000 **PNMR:** 52.9/1000
NNDR (>1000g): 12/1000
PNMR (> 1000g): 38/1000
LBWR: 26.2% **PCI:** 2.02 **SB:NND:** 2.18:1
C/s rate: 15.7/1000 **Assisted delivery rate:** 2.74/1000
Proportion teenage pregnancies: 11.2%
Syphilis prevalence: 6.10%
Maternal mortality ratio: 129/100 000 live births
Proportion of women who attended antenatal care: 84.5%

PPIP Site: Kimberley/Galashewe Day Hospital

Primary Obstetric causes of death (Top 5)

Intrauterine death 28.7%
Antepartum haemorrhage 24.1%
Intrapartum asphyxia 20.7%
Hypertensive disorders 8%
Spontaneous preterm labour 6.9%

Final causes of neonatal death (Top 3)

Asphyxia and birth trauma 45.5%
Prematurity related 23.6%
Infection 20%

Avoidable factors	All %	Probable %
Patient related	54.5%	14.7%
Administrative	14.7%	5.1%
Health worker related	30.1%	9%
Missing files	0.6%	0

Top 5 Individual Items in the Avoidable Factors (Number and %)

Unbooked patients (33)	21.2%
Inappropriate response to poor fetal movements (28)	17.9%
Delay in seeking medical attention during labour (18)	11.5%
Delay in referring patient for secondary/tertiary treatment (11)	7.1%
Lack of transport (9)	5.8%

Comments on problems related to data collection (PPIP)

Important information on possible avoidable factors was not available in the files making full assessment of the case impossible on occasions.

Future Plans

1. Improve infection control in NICU.
2. Training for sisters in NICU.
3. Less rotation of sisters in NICU.
4. More regular perinatal mortality meetings to discuss avoidable factors.
5. Involve provincial directorate for information in PPIP program.
6. Expand PPIP to Upington, Kuruman, Jan Kempdorp, De Aar, Springbok and Calvinia Hospitals.

Chapter 5h

North West Provincial Report

Introduction

The NW Province has a population of over 3 355 295 (according to 1996 census data). Health facilities include: 4 provincial hospitals, 2 psychiatric hospitals, 14 district hospitals, 13 community hospitals, 330 clinics and CHCs and 100 mobile clinics.

PPIP Data was presented from 3 sites: Mafikeng Provincial Hospital, Klerksdorp Provincial Hospital and Potchefstroom Hospital. There are a further four sites who are running PPIP, namely Zeerust, Thusong, Rustenburg and Gelukspan.

Table 1. Total Provincial Data

Weight Category (g)	Stillborn	Neonatal death		Alive on discharge	Total
		Early	Late		
500 – 999	281	157		186	624
1000 – 1499	200	234		297	731
1500 – 1999	194	113		1057	1364
2000 – 2499	149	74		3152	3375
2500 +	439	105		30172	30806
TOTAL	1263	773		34864	36900

Provincial Perinatal Care Indices (>1000g)

SB Rate: 27.1/1000 births **NNDR:** 17.5/1000 live births **PNMR:** 44.1/1000 births
LBWR: 16.5% **PCI:** 2.67 **SB:NND:** 1.63:1
C/s rate: 9.2% **Assisted delivery rate:** 1.5%
 Proportion teenage pregnancies: 10.6%
 Syphilis prevalence: 4%
 Maternal mortality ratio: 182.8/100 000 live births

Table 2. Perinatal Care Indices of PPIP sentinel sites

Hospital	PNMR (>1000g)	NNDR (>1000g)	LBWR %	PCI
City and Town				
Klerksdorp	39	23	19.4	2.03
Mafikeng	40	18	16.7%	2.40
Potchestroom	41	14	17.5	2.32

Amalgamated Provincial PPIP data (>1000g)

Primary Obstetric causes of death (Top 5)

Intrauterine deaths: 38%
 Hypertensive disorders: 16.2%
 Preterm labour: 14.8%
 Asphyxia: 9.9%
 Infections: 7.7%

Comments on problems related to data collection (both Provincial and PPIP):

Communication between PPIP sentinel sites and the Provincial MCWH unit is not efficient. Unfortunately, the Provincial MCWH Office did not receive all the sites data. Furthermore, in areas where there are potential sites, there is a lack of knowledge on how to start the programme.

Future Plans

1. Training of midwives to implement program.
2. Communication with sites for data collection.

Chapter 5i

Western Cape Provincial Report

Introduction

The Western Cape occupies 10.6% of South Africa's land area with a total population of 4 187 035 (1996 census).

The province is divided into 4 health regions, Cape Metropole (pop. 2 708 858), West Coast/Winelands (pop. 549 328), Boland/Overberg (pop. 466 432) and South Cape/Karoo (pop. 462 417). The regions are further subdivided into 25 health districts.

Households tend to be concentrated in urban areas – as many as 85% are found here with only 15% in non-urban areas. A large proportion of the population is housed in formal houses and shacks and these tend to be concentrated in urban areas.

The rapid urbanisation has placed great pressures on existing basic infrastructure and added to backlogs in supplying such basic services. The Western Cape is considered to be one of the wealthier provinces in South Africa with a good health infrastructure yet transport to and between health facilities is still problematic.

Table 1. Total Provincial Data: Jan – Dec 2000

Weight Category (g)	Stillborn	Neonatal death		Alive on discharge	Total
		Early	Late		
500 – 999	657	269		551	1477
1000 – 1499	} 729	236		11738	12703
1500 – 1999					
2000 – 2499					
2500 +	290	65		58466	58821
TOTAL	1676	570		70755	73001

Provincial Data (>1000g)

SB Rate: 14.3

NNDR: 4.3

PNMR: 18.5

LBWR: 17.5

PCI: 1.06

SB:NND: 3.39

Maternal mortality ratio: 58.7/100 000 live births

Table 2. Perinatal Care Indices of PPIP sentinel sites

Hospital	PNMR (>1000g)	NNDR (>1000g)	LBWR %	PCI
Metropolitan				
Peninsula Maternal and Neonatal services (PMNS)	19	5	16	1.16
City and Town				
Eben Donges	24	6	27	0.89
Rural				
Robertson Provincial	20	12	21.6	0.93

Table 3. Perinatal causes of death at PPIP sites (only major causes per site listed)

Cause	PMNS %	Eben Donges %	Robertson %
Primary Obstetric Cause			
Spontaneous preterm labour	27.3	13.9	30
Unexplained IUD	16.4	22.8	15
Antepartum Haemorrhage	15.1	31.7	
Hypertensive disorders	12.8		
Intrauterine growth restriction	7.9		
Intrapartum asphyxia		9.2	30
Final Neonatal cause (Top 3)			
Immaturity related	57.2	38.5	27.3
Hypoxia		19.2	36.4
Infection		26.9	
Congenital abnormalities			18.2

Table 4. Avoidable factors

Avoidable factors	PMNS	Eben Donges	Robertson
Patient orientated	59.3	12.9	39.9
Administrative problems	7.2	4.8	37.9
Health worker related	31.9	19.4	24.1
Missing data	1.6	-	-

Top Individual Items in the Avoidable Factors**Peninsula Maternal & Neonatal Services (PMNS)**

- Never initiated antenatal care
- Delay in seeking medical care during labour
- Booked late in pregnancy

Eben Dönges Hospital

- Unbooked
- No response to maternal hypertension
- Lack of transport
- No response to history of stillbirth or abruptio placentae
- Fetal distress not detected

Robertson Provincial Hospital

- Delay in seeking medical attention
- Insufficient nurses on duty
- Smoking

Comments on problems related to data collection (Provincial)

- A new hospital form was introduced in April 2000 therefore items not completed above are not available.
- Some regions capture data only in three weight categories.
- Late neonatal deaths are not captured.
- Data flow sometimes problematic.
- More information training needed at health facility level.

Future plans

- Closer relationship between PPIP sentinel sites and MCWH.
- Involving the Provincial Health Information Directorate more in PPIP.
- Other facilities have expressed an interest in using PPIP, Boland/Overberg region will be implementing PPIP in all district hospitals soon (aiming to start from the second quarter 2002).
- PPIP feedback planned in province: to senior management of all regions and staff at health facilities.

Chapter 6a

Quality Assurance

INFORMATION FOR DECISION MAKING IN ANTENATAL CARE **Notes to help you do a quality check of antenatal records and decisions**

Introduction

Good practitioners make good decisions based on good information.

We encourage pregnant women to come to our clinics and hospitals for antenatal care. We offer this care because we believe we can give them the best opportunity of having a live, healthy baby. This is a very serious undertaking.

Many midwives and doctors are providing the best antenatal care possible. But there is evidence from the perinatal deaths reported in our Perinatal Review Meetings that some health workers are providing antenatal care that is of a very poor standard. As a result we are not fulfilling our responsibilities to our people.

Top of the list of standards for "best practice" in antenatal care is the ability to make good decisions. In order to make good decisions, we need good and accurate information. Most of the mothers in the antenatal clinic are healthy and have no problems. As a result it is easy to see large numbers of mothers quickly and to miss the few with problems. Most of us have taken histories and examined mothers so often that we sometimes find antenatal care boring. When that happens we easily miss vital pieces of information in the history or examination. We then fail to spot something that can lead to the death of the mother or baby. Last week in a Perinatal Review Meeting we heard of a 28 year old mother who died in labour as a result of cardiac failure due to mitral stenosis. This had been missed in the history and the heart had not been examined properly in the antenatal clinic. We have identified 25 items in the history and examination of an antenatal patient that are absolutely essential in the antenatal care of every mother. If we miss one of these items, we can end up with an avoidable maternal or perinatal death.

There are two main purposes for this set of notes.

- **The first is to list the important steps to take to obtain and use good information for good decision making in antenatal care.**
- **The second purpose is to help you check the quality of the information obtained and the quality of the decisions made in your antenatal care records.**

These notes are not meant to give the details of the diagnosis and management of problems in the antenatal period. These details can be found in the textbooks recommended at the end of this chapter.

To make sure that high standards of record keeping and decision-making are maintained we must check the quality of our work frequently. If we do not, the standards will drop and the perinatal mortality rate will go up. At the end of this set of notes we describe how to check the quality of antenatal records and decisions. Those who have used the Quality Check have been able to spot the weaknesses in their antenatal care. They have then corrected their weaknesses and improved the quality of their antenatal service.

To make sure that we get the best information for making decisions in antenatal care, we ask ourselves the following questions:

- What is the overall aim of antenatal care?
- Who is responsible for antenatal care?
- What decisions need to be made?
- What information is required in order to make these decisions?
- How do we collect and record the information?
- How do we analyse and present the findings?
- How do we interpret and use the findings for decision-making and appropriate action?
- How do we do a quality check of our findings and decisions?
- How do we improve our record keeping and decision making?

1. WHAT IS THE OVERALL AIM IN PATIENT MANAGEMENT IN ANTENATAL CARE?

A healthy mother and a well nourished baby, who are both well prepared for childbirth. To ensure this, we need to be able to recognise the mothers with high-risk problems and treat them appropriately.

2. WHO IS RESPONSIBLE FOR PATIENT MANAGEMENT IN ANTENATAL CARE?

In each sub-district there should be a Woman's Health Management Team. This Team is responsible to make sure that the following *minimum* staff requirements are met in each clinic and hospital antenatal service in the sub-district. In rural areas it is not always easy to provide supervisors for the antenatal clinic. Fortunately the availability of Advanced Midwives helps to make this possible. The table below lists the antenatal visits when a supervisor (doctor with obstetric experience OR Advanced Midwife OR senior, experienced midwife) *must* review the progress of the patient, and counter-sign the record.

Routine Antenatal Visits (approximate timing)	Trained Midwife	Supervisor (ADM OR doctor with obstetric experience OR senior, experienced midwife)
▪ First Visit (12 Weeks)	X	X
▪ Second Visit (24 Weeks)	X	
▪ Third Visit (32 Weeks)	X	
▪ Fourth Visit (36 Weeks)	X	X
High risk antenatal clinic		
▪ All 1 st visits (or second visits if blood results are not yet available)		X
▪ All at 36/52		X
▪ All high risk patients at every visit, as determined by the doctor or ADM		X

The role of the supervisor in the antenatal clinic.

It is important to pause for a moment to consider the role of the supervisor in the antenatal clinic. To ensure that nothing is missed in the antenatal examination the Supervisor must check every patient's findings at least at the first visit and at the 36-week visit. If there is any uncertainty about the accuracy of the midwife's findings, then the Supervisor must check the findings at *every* visit until she is satisfied with the accuracy and completeness of the findings.

One other point needs emphasis. Every patient who is found to have a High Risk factor must have access to a High Risk Antenatal Clinic. This can be in the local clinic with a visit from a doctor OR ADM OR experienced midwife. If this is not possible, the High Risk patient must be referred to the High Risk Antenatal Clinic in the nearest Community or District Hospital.

It is recognised that these standards are not always easy to meet in some remote rural areas. That does not lessen the need to state this basic minimum standard for antenatal care. If the standard has not yet been attained, we must record this deficiency and strive to meet it as soon as possible. This is what the principle of equity means when describing Primary Health Care For All.

3. WHAT DECISIONS NEED TO BE MADE WHEN PROVIDING HIGH QUALITY ANTENATAL CARE?

- Is this pregnancy Low Risk (LR) or High Risk (HR)?
- Where should the pregnancy and labour be managed and by whom?

If the pregnancy is High Risk, the mother should be seen by a doctor or ADM in the High Risk antenatal clinic. This can be either in the hospital or at a time when the doctor or ADM visits the clinic. Delivery of patients with High Risk factors must be planned to take place in the hospital under the supervision of a doctor or ADM.

- What interventions are needed?
-

4. WHAT INFORMATION IS REQUIRED IN ORDER TO MAKE THESE DECISIONS?

Antenatal clinic record cards are not standardised throughout the country. However, they are very similar and provide for the following information to be recorded. Please accept that every item is of great importance and must be completed.

History.

1. Age, parity and gravidity
2. Details of previous pregnancies, including causes of death 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 date of the first day of the last menstrual Period (LMP) and the estimated date of delivery (EDD)
6. The estimated period of gestation by dates (POGD) correctly recorded or plotted on the antenatal graph at each visit

Examination

1. Maternal height and weight
2. Blood pressure recorded at each visit
3. Heart examination for cardiac disease
4. Estimation of period of gestation by palpation (POGP) (using SFH in cms, fetal size, hardness of the head, amount of liquor) recorded or plotted on the graph.
5. Estimation whether POGP=POGD or whether there is evidence of IUGR, recorded at each visit.
6. Fetal presentation, recorded from 36 weeks onwards
7. Fetal heart heard or fetal movements felt
8. Urinalysis for proteinuria and glycosuria

9. Haemoglobin and Rh group
10. Syphilis test result recorded
11. Has the client been counselled for HIV testing?
12. Has tetanus toxoid been given?

Note on detection of Intra-Uterine Growth Retardation (IUGR).

Most of the above items are clear, understandable and routine. However, there is one group of findings, items 5, 6, 10 and 11, that require considerable skill and understanding. IUGR is most commonly due to placental insufficiency or sometimes lack of nutrition of the fetus. The placental insufficiency can be due to a number of conditions, but most commonly maternal hypertensive disease. If IUGR is not detected, the fetus will die in the uterus before term and a macerated stillbirth will be delivered. If it is detected during antenatal care, the fetus can be delivered before it dies.

IUGR can be detected if:

- The POGD (Period of Gestation by Dates) is recorded accurately
- The POGP (Period of Gestation by Palpation) is assessed accurately
- The POGP is found to be less than the POGD

If the POGP is found to be less than the POGD, the patient must be referred for expert assessment and careful decision on when to deliver the baby. We can reduce the number of macerated stillbirths in our practice if we improve the accuracy of our antenatal care.

5. HOW DO WE COLLECT AND RECORD THE INFORMATION?

These findings are recorded on the patient retained antenatal card. Care should be taken to record the findings clearly. This will ensure that you and others caring for the woman will have the best picture of what is happening.

As the patient will be taking her card with her, some information has to be kept in the clinic in order to calculate quality of care indicators. In particular, a record must be kept of the number of first visits before 20 weeks, the number of first visits after 20 weeks, the total number of first visits, and the number of follow up visits. Antenatal clinics should also keep a record of mothers whose blood has been taken for a syphilis test, the number of results received, the percentage of positives and the percentage of patients with syphilis who have completed the appropriate treatment.

6. HOW DO WE ANALYSE AND PRESENT THE FINDINGS?

This is similar to detective work. Abnormal findings are identified and then, where relevant and appropriate, they are grouped together to form recognised patterns. For example, in a primigravid patient who has excessive weight gain, oedema, a raised blood pressure and proteinuria in the later weeks of pregnancy, the diagnosis is pre-eclamptic toxæmia. This then has to be graded according to the severity and known prognosis.

7. HOW DO WE INTERPRET AND USE THE FINDINGS FOR DECISION-MAKING AND APPROPRIATE ACTION?

This is one of the most vital steps in the care of the pregnant woman, yet it is a step that is too often neglected. In reviewing antenatal cards in the Emakhosini district, the majority recorded the correct information, but in many there was no interpretation of the information and consequently decisions were not made and actions were neglected, with serious outcomes.

Let us pause for a moment and make sure that we know what it means to *interpret* findings. *To interpret is to decide what is the meaning or the significance of a set of findings.* In the example given in #6 above, the patient has worsening pre-eclamptic toxæmia and the significance is that, if nothing is done, the mother might develop eclampsia, a cerebral haemorrhage, renal failure or abruptio placentae and the baby might suffer from intra-uterine growth retardation and even die. That then is the consequence of not interpreting the information provided.

If that set of information is interpreted correctly, then the correct action will be implemented. The mother will be admitted to hospital for bed rest, evaluation and the possible administration of anti-hypertensive drugs. The pregnancy will be terminated by inducing labour and delivering the baby, or by caesarean section, at the appropriate time. We deliver the baby in time to avoid maternal and fetal complications, while at the same time we try to avoid delivering a baby that is too premature.

In the antenatal clinic, the following steps are taken in interpreting findings and using them for decision-making and appropriate action. These 7 items are added to the 18 items of history and examination to complete the 25 items that are essential in antenatal care.

- 1. Identify and record the risk factors and rate their severity and significance.**
This is dependent on our knowledge of the risk factors described in current manuals on antenatal care and our skill in detecting them. If you are uncertain of your measurements and findings, and of their significance, call for help from a doctor or ADM before going any further.
- 2. Decide on appropriate action and record your action plan. This will include interventions and referral if indicated.**
The appropriate intervention will be determined by the information gained thus far.

Current manuals of antenatal care will indicate which risk factors require that the mother be referred for further specialised management.

- Again, if you are not absolutely sure that you are able to make the correct decision from the information available, you must consult someone more experienced.
- 1. Discuss with the patient the most appropriate place for her delivery (clinic or hospital) and record this on her card.**
- 2. Discuss with the patient suitable transport arrangements for when she goes into labour, and record this on her card.**
- 3. Decision taken by the mother re future family planning**
- 4. The findings at the first visit and the 36-week visit must be double-checked and counter-signed by an ADM or doctor or a senior, experienced midwife.**

These are the times when every item in the history and examination must be double-checked to ensure that nothing has been missed. The diagnosis has to be correct and the decisions about possible referral or treatment must be accurate. There are no second chances if something is missed. One midwife cannot take this responsibility alone. The midwife must be supported by a supervisor who reviews all findings and decisions with her.

- 1. Decide when the patient needs to be seen again, and record the date on her card.**

8. QUALITY CHECK

This is conducted to determine whether:

- Your information is accurate and complete
- You are making the right decisions

If the quality of the information and the decision-making in the antenatal clinic is not checked frequently, the standards tend to drop and preventable mistakes occur with serious consequences for the life of the mother and her baby.

A simple quality check exercise has been tested in the clinics and hospitals in each of the sub-districts in the Emakhosini Health District in KwaZulu Natal. It has been shown to help to improve the quality of information obtained and the decisions made. A percentage score is given for each antenatal card checked. An average score can then be given for each health facility and then a combined score for each sub-district. It is recommended that the exercise should be carried out by a supervisor on a monthly basis until the standards are high, and then three-monthly.

A copy of the Quality Check form is given in Appendix A. This can be photocopied and used in your clinic or hospital.

The steps taken in conducting the Quality Check are as follows:-

1. Each month, examine 100 (or fewer if this is not possible) consecutive, antenatal records of all clients who are 36 or more weeks pregnant, as the clients leave the antenatal clinic. For each ANC record, give 1 point for each of the items listed in the Quality Check form that have been recorded on the ANC record.. This will give a maximum score of 25 points, which, if multiplied by 4, will give a percentage score.
2. Record the commonest items missing in the records
3. Record the major reasons for:
 - Incomplete record keeping
 - Incomplete decision-making
4. What will you do to improve the quality of record keeping and decision-making?

Major reasons for incomplete record keeping

In the study done in the Emakhosini Health District, the following were the major reasons identified by maternity staff for incomplete record keeping. It is likely that some of these are applicable in your own District, but it is important to check for local reasons also.

Problems related to the health system

1. The pressure of work, with the temptation to deal with the long queue rather than with individuals. This is sometimes due to poor allocation of staff rather than the numbers of patients attending, as many clinics have lengthy periods of time when there are very few patients but the same number of staff on duty as when the queues are long.
2. Some clinics and hospitals are using staff nurses with no midwifery training to see antenatal patients. This is unethical and a breach of contract with the patients.
3. Lack of awareness of the importance of some issues e.g. decisions on place of delivery and transport arrangements that need to be made.
4. Poor communication between the midwife and the client. The midwives themselves volunteered the information that often the judgemental and impatient attitude and behaviour of some of their colleagues restricted clients from giving the details of their history.

5. A slipshod approach to the consequences of incomplete assessment and record keeping. Instead of recording vital information some midwives use a (-) or leave a space empty on the record card.
6. Lack of privacy. Histories are often taken in a crowded waiting area instead of in a private consulting room or cubicle and, understandably, clients withhold vital information.
7. Lack of essential equipment - tape measures, blood pressure machines, dip-sticks are often not available. It is difficult to believe, but one maternity unit in a hospital in another district had been without a blood pressure machine for six months.

Patient related problems

Initially there were a number of items under this heading, but when the problems were probed more deeply it became evident that they were really health system related problems. For example, it is easy to blame the patient for booking late when in truth the reason is that there is no service in their neighbourhood or the importance and purpose of early booking has never been explained to community members.

Major reasons given for incomplete decision making

1. Incomplete records inevitably lead to incomplete decision making
2. Limited experience among the midwives and doctors
3. Not consulting seniors when necessary
4. Resistance to change - new records not used due to poor briefing
5. Inadequate supervision
6. Lack of acknowledgement of one's own limitations
7. Not looking deep enough for unexpected problems. Too involved in the routine of seeing large numbers of patients and do not look for the unexpected. Always be pessimistic and expect the worst until the final outcome is favourable.

Recommendations for improving record keeping and decision making

As individuals

1. Carefully follow the steps in decision-making outlined in this set of notes in every antenatal patient seen.
2. Consult more with colleagues for advice and for help in the improvement of findings and decision-making. It is difficult to consult if a colleague is not friendly. Am I a 'friendly' colleague who others want to consult?
3. Have findings double-checked until confident of accuracy.
4. Seek opportunities to advance your knowledge and skills. Document this in your personal learning file.

As a Woman's Health Management Team

1. Establish a programme to ensure that all midwives and doctors complete the Perinatal Education Programme, or its equivalent.
2. Ensure that an Advanced Midwife supervises the antenatal clinic and double checks findings, decisions and planned actions.
3. Proper placement of Advanced Midwives. At present many are in office jobs or inappropriate departments e.g. Men's Surgical.
4. Ensure that doctors and midwives in Antenatal Clinic and Maternity attend the Perinatal Review Meetings every month.
5. Ensure privacy for history taking and examination of patients
6. Keep a thorough check on essential equipment

7. The WHMT should meet monthly to review standards and to function as a Learning Organisation.
8. Encourage community involvement through exit interviews and Focus Group Discussions on their perceptions of the service

LITERATURE

1. Obstetrics in Peripheral Hospitals by Jon Larsen. Published by DEPAM, 1998.
2. Perinatal Education Programme. Manual 1, Maternal Care.

Appendix A
INFORMATION FOR DECISION-MAKING IN ANTENATAL CARE
Quality Check for Antenatal Records

Each month, examine 100 (or fewer, if this is not possible) consecutive, antenatal records of all clients who are 36 or more weeks pregnant. Examine their records as they leave the ANC.

For each record, give 1 point for each of the items listed below that have been recorded. Half points can be given where a recording is incomplete.

History.

1. Age, parity and gravidity
2. Details of previous pregnancies, including causes of death 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 date of the first day of the last menstrual Period (LMP) and the estimated date of delivery (EDD)
6. The estimated period of gestation by dates (POGD) correctly recorded or plotted on the antenatal graph at each visit

Examination

7. Maternal height and weight
8. Blood pressure recorded at each visit
9. Heart examination for cardiac disease
10. Estimation of period of gestation by palpation (POGP) (using SFH in cms, fetal size, hardness of the head, amount of liquor) recorded or plotted on the graph.
11. Estimation whether POGP=POGD or whether there is evidence of IUGR, recorded at each visit.
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?

Interpretation and decisions

19. Identification and recording of risk factors, their severity and significance
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
23. Decision taken by mother re future family planning
24. Have the findings at 1st visit and 36 weeks visit been double-checked and counter-signed by an ADM or doctor or senior, experienced midwife.
25. Date of next visit.

This will give a maximum score of 25 points.

For each ANC record assessed, record:

Total: _____

25

Multiply by 4 = _____ %

Chapter 6b

Quality Assurance

INFORMATION FOR DECISION MAKING IN THE MANAGEMENT OF LABOUR

Notes to help you do a Quality Check of Labour Records

1. Introduction

The successful outcome of a mother's labour depends on the midwife and the doctor making correct decisions. Each decision depends on having accurate and complete information. We take the following steps in making each decision during the mother's labour:

- We make regular **observations** e.g. of the fetal heart rate etc.
- We **record** the observations. After completing the admission assessment, all new observations are recorded on the labour graph, and nowhere else.
- We **interpret**, the observations recorded on the labour graph. For example, we look at all the observations of the fetal condition and record whether this means fetal distress or a healthy fetus.
- We **make our decisions**. These are based on our interpretation of the observations.
- We **implement** our decisions.

To help us get good information for making good decisions we use a labour record for each patient. Each labour record consists of five main parts or components. These are:

- The admission assessment form
- The labour graph
- The labour management form
- The assessment of the newborn
- The final summary of labour.

Most midwives and doctors know how to complete a labour record. However, it is not always done properly or completely. This can lead to wrong decisions and possibly death of the mother or the fetus.

It is therefore important to do a quality check of labour records in a clinic or hospital at least every month. This set of notes will describe how labour records should be completed and also how to check the quality of labour records. In the **Quality Check-List** in Appendix A you will notice that we only check on the most important items of the labour record. These are items that apply to all patients.

You may find that some items in the Quality Check-List have not been done in your labour ward in the past. For example, there is an expectation that you should record an *interpretation* of the observations made on the labour graph at least every four hours. This interpretation should be written on a page following the labour graph. This is an essential step in the management of labour. By marking on the check list that this has not been done, you are not recording a failure. Instead, you are noting an improvement that you will be able to make in the future. The same applies to the requirement that the assessment of the patient on admission should be double checked by an experienced midwife or doctor. Not many maternity units have been doing this in the past. Some have not had enough staff to do it. However, it has been shown to save the lives of mothers and babies and so we should all try

to meet this essential standard. If we have to record that it is not being done, we have something to aim at in the future.

To make sure that we get the best information for making decisions in the management of labour, we ask ourselves the following questions. These are the same kind of questions that we ask when we have to choose information for any decision-making – even if you want to plan a wedding!

- What is the overall aim (in the management of labour)?
 - Who is responsible?
 - What questions need to be answered and what decisions need to be made?
 - What information is needed?
 - How do we collect and record the information?
 - How do we interpret and use the information?
 - How do we check the quality of the information?
 - How do we improve the quality of the information?
2. What is the overall aim in the management of labour?
 - A live and healthy mother and baby
 - A labour which the mother and father will remember with satisfaction
 - A quality of labour ward practice that demonstrates the values of the Woman’s Health Management Team.
 3. Who is responsible for patient management in the Labour Ward?

In the Labour Ward each health worker must know their own responsibilities and also know the responsibilities of each of the other health workers.

There are two categories of health worker in the Labour Ward, the midwife and the supervisor. In rural practice, the Advanced Midwife (ADM) is usually the supervisor. When there is no ADM, the supervisor will be an experienced midwife. Hopefully the supervisor will have back up from a doctor who has experience in obstetrics.

The Table below lists the responsibilities in the management of labour.

	Midwife	Supervisor (ADM <i>or</i> Doctor <i>or</i> a senior, experienced midwife)
▪ On admission to the Labour Ward	X	X
▪ Half hourly check of FH, contractions.	X	
▪ Hourly check of maternal pulse, BP.	X	
▪ 2-4 hourly PV and head level	X	
▪ 4-hourly temp and urinary output	X	
▪ Four hourly evaluation of labour. This is to be done more frequently when there are problems, particularly near the end of the first stage of labour.	X	X
	This midwife must be well trained, experienced and well supervised	At the above times it is imperative that all findings and decisions are <u>double-checked</u> by the most experienced person available

Some have questioned the requirement for a supervisor to double-check the findings on admission of the patient, and then at least every 4 hours thereafter. It has been said that this is not possible in all labour wards because of staff shortages. But, this has to be done throughout the 24 hours of every day. This is absolutely essential if we are serious about

reducing the maternal and perinatal mortality rates in labour. Even though this may not yet be possible for every mother in labour, it must be noted in the Quality Check-List. If it is not being done, then it will be dealt with as a Key Issue in a future Strategic Plan and corrected as soon as possible. If it is not noted, we will never improve our service.

4. What questions need to be answered when managing labour, and what decisions need to be taken?

Throughout the first and second stages of labour, those managing the patient need to keep asking and answering the following questions:

- Are there maternal or fetal risk factors present and how serious are they? These need to be looked for in the antenatal record, the admission findings and during the course of labour
 - What is the fetal condition? Is there any evidence of hypoxia (fetal heart rate changes) or excessive head compression (moulding)?
 - Is labour progressing well? Is there any evidence of delay in progress and, if there is, what is the cause?
 - What is the maternal condition?
 - Is there an indication for any form of intervention?
5. What information is required when managing labour?

Labour records

Before listing the information required, it is best to clarify that there are five essential parts of the labour record:

- (i) **The admission assessment form.** This is for recording the findings on admission in labour, for interpretation of these findings and for decisions arising from them
- (ii) **The labour graph.** Recordings are commenced on the labour graph on admission if the patient is in true labour, and are continued until labour is complete.
Observations made during labour are only recorded on the labour graph, and nowhere else.
- (iii) **The labour management form.** This is a four-hourly (or more frequently if necessary) record of the *interpretation of the findings*, and *decisions* that then need to be taken. This record is made on pages immediately following the labour graph.
- (iv) **The assessment of the newborn.**
- (v) **The final summary of labour.** This is a form for recording a summary of each of the three stages of labour.

5.1. Admission assessment form

The admission examination and assessment is very, very important. It has to be done very thoroughly and completely and must be checked and counter-signed by a supervisor. Many perinatal deaths, and some maternal deaths, occur as a result of an inadequate examination on admission.

The admission assessment form should be designed to record each of the following essential items, and must be completed in every detail.

- **Review of antenatal record**, including recording the **period of gestation by dates** as accurately as possible. All risk factors must be itemised and highlighted. The patient's antenatal record should be stapled to the admission record, if it is not already part of the labour record.

- **History of this labour.** It is important to obtain an accurate assessment of the duration of true labour, carefully differentiating this from false labour. True labour is progressive, with a lengthening duration of regular contractions and a shortening of the time between contractions.
- **General examination.** A lot can be gained from this assessment, including - evidence of the amount of pain, shock, prolonged labour, dehydration etc., in addition to signs of cardiac disease, diabetes and HIV/AIDS
- **Abdominal examination**
- **Vaginal examination**

5.2. Recordings on the Labour Graph

- **Fetal condition**
 - Record the **Fetal Heart Rate (FHR) and its relation to the uterine contractions.** Use the fetal stethoscope to count the fetal heart rate, and place a hand on the abdomen to feel the contractions. Count the rate before, and immediately after a contraction. This will tell you whether the fetus is well, or there is fetal distress due to hypoxia or head or umbilical cord compression. First, record the baseline rate (the rate before the onset of a contraction). Then decide whether there has been a slowing of the fetal heart rate (deceleration) and, if so, draw an arrow downwards from the baseline rate to the slowest rate noted. Next, determine whether the deceleration is early, late or combined, and record an 'E', 'L' or 'C' accordingly, next to the arrow. Early decelerations begin and end during the time of the contraction and are usually due to fetal head compression. Late decelerations begin after the start of the contraction and persist after the end of the contraction. They are usually due to fetal hypoxia. Combined decelerations begin before the start of the contraction and end after the contraction is over. They are usually due to a combination of head compression and fetal hypoxia. Decelerations that vary in their relation to the duration of the contraction are often due to cord compression, and usually improve when the patient's position is changed.
 - Record the presence and amount of **fetal head moulding.** This is an indication of head compression. This must be scored accurately out of a score of 6. It will tell you the severity of any head compression and help you to decide whether this is increasing over time in relation to the level of the fetal head. The total score is a combination of the amount of moulding at the junction of the two parietal bones (where they meet) and at the junction of the parietal bones and the occipital bone. At each of the two junctions score '0' if the bones are separated, '1' if they are touching, '2' if they are overlapping but can be reduced by digital pressure, and '3' if they are overlapping but cannot be reduced by digital pressure. By adding the scores at the two junctions, a score out of 6 is obtained. This assessment is done every time that a vaginal examination is performed..
 - **Liquor** - is liquor draining and, if so, is it meconium stained? Record an 'I' if the membranes are intact, 'C' if the liquor is clear and an 'M' if there is meconium staining of the liquor.

- **Labour progress**
 - **Head level.** This assessment is made by abdominal palpation, assessing the number of fifths of the head above the brim of the pelvis. If you find this difficult to measure, get someone to coach you. In the manuals referred to at the end of

this chapter there are excellent diagrams illustrating this method of assessment. It is an important sign in the management of labour. It completely replaces the older, inaccurate method of assessing head level using the relationship of the head to the ischial spines. The relationship of the head to the ischial spines may only be an indication of the descent of the caput while the widest diameter of the head is still at a higher level.

- **Cervical effacement and dilatation.** A diagram on the wall in the labour ward showing a series of circles of diameters 1-10cms helps to ensure consistency in measuring the dilatation of the cervix. The effacement of the cervix is determined by assessing the length of the cervix in centimetres. This is recorded by shading in the vertical line where the dilatation is recorded, according to the number of centimetres of effacement.
 - **Recordings in the Latent Phase of Labour.** Once the mother is in **true labour**, recordings are started on the labour graph. She is in true labour when the contractions are lasting for more than 20 seconds and are increasing in duration. The time between contractions will be getting less. The cervix will be opening (dilating) and shortening (effacing). There may be a show of a little blood mixed with mucous. If she is having contractions, but you are not sure whether she is in true labour, record her findings on a separate labour graph. Once she has started true labour, do a vaginal examination every four hours. Record the findings on the graph in the Latent Phase part of the labour graph. In this part of the graph there is a line drawn straight and horizontally from the 3cm mark at the start of the labour graph to the 8-hour mark. If a patient is in the Latent Phase of labour for more than 8 hours, this will alert you to a possible problem. See a standard textbook to guide you in the management of a Prolonged Latent Phase.
 - **Recordings in the Active Phase of Labour.** The patient is in the Active Phase of labour when she is having regular contractions and the cervix is completely effaced and at least 3cms dilated. From then onwards all recordings are recorded in the Active Phase part of the labour graph. When the patient is in the Active Phase, a vaginal examination should be done every 2 hours to assess the dilatation of the cervix.
 - **The use of the Alert and Action Lines on the labour graph.** The Alert Line is drawn at the 8-hour mark from 3cms dilatation upwards at the rate of 1cm per hour. The Action Line is drawn 2 hours to the right and parallel to the Alert Line. The names of these lines tell us what they are for. In normal progress in labour, the plotting of the cervical dilatation will always remain to the left of the Alert Line. If cervical dilatation crosses to the right of the Alert Line, this alerts you to a possible problem. If the patient is in a clinic or health centre, transfer her to a hospital. If she is in a hospital, call a doctor or ADM to help you manage the patient. If the progress of cervical dilatation crosses the Action Line, action is essential. An experienced doctor or ADM should then come and examine the patient and decide on further action. The action should be closely monitored by the doctor or ADM.
 - **Contractions.** These are recorded every half hour.
- **Maternal condition**
 - General condition, including response to pain.
 - Pulse and blood pressure is recorded every hour
 - Temperature and urinary output is recorded 4-hourly.

1. How do we collect and record the information?

The following recordings are made on the labour graph

- Half-hourly recording by the midwife of the FHR and contractions.
- Hourly recordings of the maternal pulse and blood pressure
- At least 4-hourly recordings of the head level, the cervical dilatation, the amount of moulding (every two hours in the Active Phase). Also the mother's temperature and urinary output.

7. How do we interpret and use the information for the management of labour?

The management of labour form

This form should follow the labour graph in the set of labour records. Some labour records do not have a special form for this purpose. However, it is so important that, if necessary, it needs to be hand-written in the record. The pages headed 'Clinical Notes' could be used for this purpose.

The *labour graph* is used for the recording of all observations (measurements/findings). The *management of labour form* is used for recording the interpretation (or meaning) of the observations, plus the decisions that follow.

This form has to be filled in after every vaginal examination in labour. This must be at least every four hours. Because of the importance of the decisions that have to be taken, an advanced midwife or doctor must complete this form. If there is no ADM or doctor, the form should be filled in by the most experienced midwife available. At each assessment, the following items must be recorded:

- The date and the time
- The phase (Latent or Active Phase) and the duration of labour
- The fetal condition - do not repeat the findings recorded on the labour graph, but interpret the meaning of those findings. Record whether you assess the fetus to be in good condition, or showing signs of hypoxia or head compression
- The progress in labour. Decide and record whether this is normal or delayed and, if possible, record the cause of any delay.
- The maternal condition. Is this good or is there evidence of maternal distress of any kind?
- The overall diagnosis/assessment. This will be a combined interpretation of the fetal condition, labour progress and maternal condition together. For example, if there are fetal heart rate changes suggestive of hypoxia, and delay in dilatation of the cervix as shown by progress crossing the Alert Line, a cause for the delay must be found. The most serious cause of delay would be cephalo-pelvic disproportion (CPD). That is diagnosed by no descent of the head and an increasing degree of moulding.
- Any intervention that is indicated. In the example given, the baby needs to be delivered immediately. If the cervix is not fully dilated, this would be by caesarean section. If the cervix is fully dilated, there is no more than 2/6 degree of moulding, and the head is 1/5 or less above the brim of the pelvis, a vacuum extraction may be possible, otherwise a caesarean section is necessary.
- Record the time for the next assessment.
- Record the name and signature of the senior person making the management decisions.

Form for the assessment of the newborn. This should include details of any resuscitation required and the first full physical examination of the newborn.

Final summary of labour form

After the three stages of labour are completed, the midwife completes the summary form in the labour record.

2. How do we check the quality of the labour records?

Labour records are essential for getting information and making good decisions in the management of every labour. However, unless quality checks are done frequently, it is easy for standards to drop and then for disasters to occur. It is recommended that every month the labour ward supervisor does the following quality check of records and decisions made in labour.

(A sample quality check form is provided in Appendix A, and can be photocopied and used in your Labour Ward.)

1. 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. You can give half points where the information recorded 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 and decisions 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?

TOTAL out of 25: _____

Multiply by 4: = _____ %

2. Once the forms have been completed, calculate the average percentage score for 100 consecutive labour records for the month and compare it with previous months. The target has to be 100% as anything less compromises the lives of mothers and babies.

3 Then answer the following questions:

3.1. Which are the most frequent omissions or deficiencies in the labour records in your labour ward in the:

- recordings
- decisions

3.2. What are the major reasons for the omissions?

3.3. What will you do to improve both?

8. How do we improve the quality of recordings and decision-making in labour?

After reviewing labour records in the Emakhosini Health District, members of the Maternal Health Teams made the following recommendations.

1. Improve basic midwifery education. Many tutors in colleges of nursing spend all their time in the classroom and need to be encouraged to move freely between classroom and labour ward with their students. This should also help tutors to keep up to date with progress in clinical practice.
2. Provide a formal in-service orientation in the management of labour, with accreditation, for all midwives and doctors. Experience suggests that this takes a minimum of 3 days. The professional education of doctors and midwives working in South Africa varies so greatly that all need to be helped to reach basic standards of knowledge and skills. It is ideal if doctors and midwives can learn together in these 3-day orientation workshops.
3. Constant supportive supervision and mentoring by Advanced Midwives who are actively working in the Labour Ward with the midwives.
4. Monthly quality checks of the labour records as outlined in #7 above.
5. Participation by doctors and midwives of the Labour Ward staff in the monthly Perinatal Review Meetings.
6. Detailed review of records, and the scores obtained in the Quality Check, in the Perinatal Review Meeting, and in the preparatory meeting.
7. Encourage midwives and doctors to read new books and journals, and also to make use of the Internet. This culture of learning needs as much ongoing support as possible

LITERATURE

1. Obstetrics In Peripheral Hospitals, by Jon Larsen. Published by DEPAM, 1998.
2. The Partograph, A managerial tool for the prevention of prolonged labour. Sections 1-4. WHO, 1988.

Appendix A
QUALITY CHECK OF LABOUR RECORDS

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. 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?
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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?
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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?

TOTAL out of 25: _____

Multiply by 4: = _____ %

Chapter 7

Recommendations and motivations

The recommendations of the first report were divided into two sections. The first section described suggested methods to improve data collection and hence the accuracy and applicability of the report. The second suggested solutions that if implemented would result in a decrease in the perinatal mortality rate and in improved care to pregnant women. These recommendations were aimed at health workers, health administrators, medical schools and nursing colleges. Specific recommendations for the public were not addressed in that report. These suggestions came from the workshop and were not government policy. They served to initiate the process of discussing ways of decreasing perinatal mortality in South Africa.

Discussion on recommendations at this workshop centred on deciding what implementable interventions are immediately available and what needs to be done on other levels to achieve the aim of improving care of pregnant women and their babies. The five recommendations that were regarded as implementable solutions in the first report are still regarded as the key strategies on an institutional level to improve care. The current recommendations are based on the five solutions but give more detail and also importantly provide ways of measuring their implementation. Again the recommendations were aimed at health workers and specific recommendations on messages to the public were not addressed. This is not to underestimate the importance of these messages and communicating the findings of the reports to the community is regarded as a vital in reducing perinatal mortality. This is further addressed under the section on advocacy. Recommendations on improving the process were also discussed.

New to the process was the recognition that the group has extremely valuable information and all groups of society need to hear it. For this reason there are some recommendations regarding advocacy that were included.

Finally, it was recognised there were some questions about some of the findings and research needs to be conducted in those priority areas.

Progress on implementation of the first report's recommendations

To improve the process

1. *Adopt the proposed minimum data set and tool.*
2. *Establish the process for collection of the minimum data set in each province.*
3. *Establish more PPIP sentinel sites.*

All provinces have adopted the use of the minimum perinatal data set and the National Health Information Systems of South Africa (NHISSA) also agreed to the contents of the minimum perinatal data set. NHISSA left it up to each province to decide on the mechanism by which it would be achieved. The process of collection of the data has still not been clarified in a number of provinces.

The number of PPIP sentinel sites rose from 27 in 2000 to 44 in 2001. Unfortunately some of the original sites did not send any data. This illustrates the need to ensure sustainability of the process. On the positive side every province is now represented and a meeting between the provincial MCWH coordinators, Health Information representatives and PPIP users in that province was held at the workshop to discuss provincial plans. Still more sites need to be established, their sustainability ensured and their integration in the provincial structures needs to be reinforced. PPIP users provide primarily useful information for their institutions, then the provinces and finally for the country. Ideally at least annual workshops should be held with the PPIP sentinel sites, provincial MCWH units and other institutions in the province to discuss the data provided by PPIP. This can also serve as a planning forum and a place to discuss progress on implementation of recommendations within the province.

Solutions

- 1. Ensure each site conducting births has the necessary equipment and protocols and that the staff is appropriately trained to manage labour and are especially trained in the use of the partogram.*
- 2. Ensure each site conducting births has the necessary equipment and protocols and appropriately trained staff to manage asphyxiated neonates.*
- 3. Ensure each site caring for premature infants has the necessary equipment and protocols and that the staff are appropriately trained in kangaroo mother care.*
- 4. Ensure each site providing antenatal care has protocols in place for where to and when to refer patients and the staff are appropriately trained therein.*
- 5. Move to a system where the time and point at which the woman confirms she is pregnant also becomes the woman's first antenatal visit where she can be classified according to risk and where her further antenatal care is specifically planned.*

It is too soon to assess the efficacy of these recommendations. All the recommendations related to maternal care comply with the recommendations of the National Committee for the Confidential Enquiries into Maternal Deaths (NCCEMD) and will be evaluated in its triennial report. The Department of Health has produced **Guidelines for Maternity Care** in clinics and sub-district hospitals and has in essence supplied the guidelines needed for each institution to develop its own protocols.

There are as yet no national guidelines for neonatal care. Getting information for example on implementing kangaroo mother care is not readily available. Training courses on neonatal resuscitation are commercially available but access to the majority of those caring for neonates is extremely limited. A new Perinatal Education Programme on basic neonatal care has been produced, but as yet has not been widely publicized.

Implementable interventions

These were divided into two, those that can be initiated now and those that will take a little longer. It is important to note these recommendations expand on the five initial recommendations relating to directly reducing perinatal mortality.

Immediate (to be done by institutions now)

- **Introduction of kangaroo mother care (KMC). (Solution 3)**
Training programmes are becoming available on KMC and many provinces are starting either pilot programmes of KMC or have introduced using KMC for premature infants as policy for the province. All PPIP sentinel sites not using KMC were encouraged to start the process of implementing it immediately.
- **Neonatal resuscitation. (Solution 2)**
Training in neonatal resuscitation was seen as essential for all staff involved in conducting childbirth. The Perinatal Education Programme Trust was asked as a matter of urgency to develop a training programme that could reach all sites delivering babies.
- **Quality assurance. (Solution 1 and 4)**
All sites have antenatal care policies and use the partogram. Methods of assessing the quality of care of women in the antenatal period and intrapartum were discussed. Workable examples for auditing antenatal and intrapartum care were introduced. They are included in the appendices. It is suggested that PPIP sentinel sites try these tools out.

The Better Births Initiative is available on the Internet and is a programme aimed at directly improving the standard and quality of care during labour. PPIP sentinel sites were made aware of the programme and encouraged to examine it. Potentially it could be very powerful in improving care.

Short term

- **Ensure availability of basic protocols in clinics and hospitals (Solution 4)**
The Department of Health has distributed the Guidelines for Maternity Care to all the provinces, and they have been further distributed from there. Each institution should now make their own protocols from these guidelines.
- **Initiate antenatal care earlier (Solution 5)**
If antenatal care was initiated at the point of confirmation of pregnancy the gestational age of starting antenatal care would be dramatically reduced. This allows for a greater time to intervene during pregnancy. For this to be achieved the general practitioners will need to be encouraged to perform the first antenatal visit. This implies that the Department of Health will need to supply all the general practitioners with the national antenatal card.

Improve the process

- Continue to establish more PPIP sentinel sites.
- Hold regular Provincial MCWH – PPIP sentinels site meetings.
The aim is to monitor the implementation of the 5 interventions and to try an ensure sustainability of the current sites.
- Select a PPIP steering committee.
This committee would have advocacy as one of its main functions.
- Select “technical advisors”.
Their function would be to vet new codes, help on the PPIP web-page and to initiate and coordinate studies like birth asphyxia study.

Research priorities

- What are the barriers to implementing on-site screening for syphilis?
- What is the primary pathology related to unexplained IUDs?
- What are the barriers to implementation of initiation of antenatal care at the confirmation of pregnancy?
- What is the feasibility of introducing nasal CPAP for the care of premature infants in cities and towns and rural areas?

Advocacy group

It was felt that such a group should be established so that valuable information obtained from the Perinatal Care Survey could be conveyed to the appropriate bodies.

- Spreading PPIP information (for example by producing pamphlets for the public, trying to present the report to MINMEC, presentation at conferences like the Midwifery Conference and the Priorities in Perinatal Care Conference)
- Workshop Saving Babies report by MCWH coordinators throughout South Africa
- Transport
Lack of transport came up repeatedly as an avoidable factor. Discussions with the ambulance services about the priority given to pregnant women should take place. Information should be given to the authorities about the number of perinatal deaths related to poor transport facilities. This might help these authorities in getting more facilities.
- Nation-wide campaign on antenatal care
Lack of antenatal care and late initiation of antenatal care is one of the major features of the report. The group would support any campaign on antenatal care, like the current pregnancy week, and provide such campaigns with relevant information.
- Public-Private partnerships
Bringing in the Private sector especially in caring for antenatal patients might be an effective way of improving antenatal care throughout the country. Distribution of the national antenatal card to private practitioners will facilitate this. For this to occur the information must be spread to the private practitioners.
- Problems with staff rotations and lack of staffing norms
A continual source of frustration experienced at most institutions were that of staff rotations whereby a large proportion of trained staff would be rotated to other sections of the institution and replaced by inexperienced staff. In most cases there was no orientation or training of the new staff and this led to avoidable deaths. The system of rotation needs to be reviewed such that patient's lives are not put at danger and the newly rotated staff at a severe disadvantage. The lack of staffing norms for labour wards and neonatal nurseries was highlighted as a major problem.
- HPCSA to be approached regarding foreign doctors
Many hospitals outside of the academic institutions are short of doctors. South African trained doctors do not choose to work there and employment of foreign doctors is very difficult. There are a large number of foreign doctors who would like to work in rural hospitals of South Africa for a few years, before continuing their careers in their own countries. With current regulations it is very difficult to employ such doctors. The group could join up with the Rural Doctors Association of South Africa and provide information with which to approach the Health Professions Council of South Africa in order to facilitate a solution.

Conclusion

Solutions for improving pregnant women and their baby's care and reducing the PNMR rate at institutions are:

1. Ensure each site conducting births has the necessary equipment and protocols and that the staff is appropriately trained to manage labour and are especially trained in the use of the partogram. Introduce a quality assurance tool to assess the success of the training.
2. Ensure each site conducting births has the necessary equipment and protocols and appropriately trained staff to manage asphyxiated neonates. See that training programmes in neonatal resuscitation are accessible to all staff involved in conducting child birth.
3. Ensure each site caring for premature infants has the necessary equipment and protocols and that the staff is appropriately trained in kangaroo mother care. See that implementation programmes are available to the staff.
4. Ensure each site performing antenatal care has protocols in place for where to and when to refer patients and the staff is appropriately trained therein. Introduce a quality assurance tool to assess the success of the training.
5. Move to a system where the time and point at which the woman confirms she is pregnant also becomes the woman's first antenatal visit where she can be classified according to risk and where her further antenatal care is specifically planned. If this is not practice establish what the barriers are and overcome them.

APPENDIX 1

Programme

<u>Time</u>	<u>Title</u>	<u>Chairperson</u>
Monday, 26 November 2001		
13h00	Local provincial team meetings (Provincial representatives and PPIP users)	
14h00	Welcome	
14h05	Eastern Cape Province presentation	Gail Andrews & EC Chairperson
15h05	Tea	
15h15	Free State Province presentation	Gail Andrews & FS Chairperson
16h15	Gauteng Province presentation	Gail Andrews & Gauteng Chairperson
17h15	Dinner	
18h00	KZN Province presentation	Pulane Tlebere & KZN Chairperson
19h00	Mpumalanga Province presentation	Pulane Tlebere & Mpu Chairperson
20h00	North West Province presentation	Pulane Tlebere & NW Chairperson
Tuesday, 27 November 2001		
08h15	Northern Cape Province presentation	Nancy Nyathikazi & NC Chairperson
09h15	Northern Province presentation	Nancy Nyathikazi & NP Chairperson
10h15	Tea break	
10h30	Western Cape Province presentation	Nancy Nyathikazi & WC Chairperson
11h30	PPIP: New developments, Questions & answers Dr Johan Coetzee	Nancy Nyathikazi
12h30	Lunch	
13h30	Amalgamated data	Lisbeth Mangate
14h30	Birth asphyxia: Presentation of Data	Lisbeth Mangate
15h30	Tea break	
15h45	Discussion of birth asphyxia problem	Lisbeth Mangate
17h30	Session ends	
18h00	Braai	
Wednesday, 28 November 2001		
08h15	Human Genetics	Allan Kambaran
09h00	WHO	Allan Kambaran
09h15	Department of Health	Allan Kambaran
10h00	Tea break	
10h30	Summary and Saving Babies Steering Committee	Bob Pattinson
12h00	Lunch	

APPENDIX 2

SAVING BABIES WORKSHOP DELEGATES/INSTITUTION

Surname, Initials, Title Institution

World Health Organisation

Tlebere, Pulani (Dr) WHO

Save the Children Foundation

Abwao, Stella Save the Children Foundation

Moore, Judith Save the Children Foundation

Institutions presenting data with PPIP users

Ahad, MA (Dr)	Klersdorp Hospital, NW
Alapatt, Jose (Dr)	Mafikeng Provincial Hospital
Amin, H (Dr)	Kimberley Hospital, NC
Buchmann, Eckhart (Dr)	CH Baragwanath Hospital, Gau
De Witt, W (Dr)	Pretoria Academic Hospital, Gau
Doubada, C (Ms)	Mankweng Hospital, NP
Engelbrecht, MP (Mrs)	Goldfields Hospital, FS
Greenfield, Dave (Dr)	Peninsula Maternal & Neonatal Service, WC
Goosen, A (Mrs)	Uitenhage Provincial Hospital, EC
Gwexe, PN	St Patrick's Hospital, EC
Herrera, RS (Dr)	Frontier Hospital, EC
Kambaran, Allan (Dr)	Pietersburg-Mankweng Complex
Kilian, C (Dr)	Zeerust Hospital
Lakhana, S (Dr)	Elim Hospital, NP
Langenhorst, V (Dr)	Kimberley Hospital and Galeslane Day Hospital, NC
Lehata, E (Mrs)	Tembisa Hospital, Gau
Lethale, MS (Ms)	Sebokeng Hospital, Gau
Liebenberg, N (Dr)	Potchefstroom Hospital, NW
Maboho, RM (Mrs)	Tshilidzini Hospital, NP
Maboya, I (Ms)	Mokopane Hospital, NP
Macdonald, AP (Dr)	Pretoria Academic Hospital, Gau
Malek, AJE (Dr)	Witbank Hospital, Mpu
Maleka, DM (Mrs)	Seshego Hospital, NP
Mashua, D (Mrs)	Mapulaneng Hospital, NP
Matambo, JA (Dr)	Ladysmith Provincial Hospital, KZN
Matos, IM (Dr)	WF Knobel Hospital, NP
Mbhele, JH (Mrs)	Ladysmith Provincial Hospital, KZN
Minors, Jill (Mrs)	Addington Hospital, KZN
Mlanlandle, PN (Ms)	Mary Terese Hospital, EC
Mntambo, F (Mrs)	Ceza Hospital, KZN
Molefe, E (Ms)	Mafikeng Provincial Hospital, NW
Moran, Neil (Dr)	Dept of Obstetrics & Gynaecology, University of Natal
Morewane, L (Mrs)	Mapulaneng Hospital, NP
Mothupi, GM (Dr)	Mankweng Hospital, NP
Mqakanya, J (Ms)	All Saints Hospital, EC
Muller, Marie (Mrs)	Middelburg Hospital, Mpu
Mvuyekure, BA (Dr)	Letaba Hospital, NP

Nambasii, EW (Dr)	Ladysmith Hospital, KZN
Ngobese, PN (Ms)	Madadeni Hospital, KZN
Ngongoma, EDN (Miss)	Prince Mshiyeni Memorial Hospital, KZN
Nikodem, C (Dr)	Tembisa Hospital, Gau
Nojaja, VN(Mrs)	St Elizabeth's Hospital, EC
Oettlé, C (Dr)	Eben Donges Hospital, WC
Patrick, Mark E (Dr)	Frontier Hospital, EC
Phakathi, NR (Ms)	Madadeni Hospital, KZN
Philpott, H (Prof)	Centre for Health & Social Sciences, KZN
Pienaar, H (Dr)	Kimberley Hospital, NC
Pretorius, Shirley (Dr)	Potchefstroom Hospital, NW
Qolohle D (Dr)	Tembisa Hospital
Quarshie, RA (Dr)	Mafikeng Provincial Hospital, NW
Radipere, AK (Ms)	Seshego Hospital, NP
Raymond, Steve (Dr)	Empangeni Hospital, KZN
Roussot, D (Dr)	Johannesburg Hospital, Gau
Sabela, EZ (Ms)	Letaba Hospital, NP
Sefoloko, C (Ms)	Klerksdorp Hospital, NW
Shabalala, C (Ms)	Tembisa Hospital, Gau
Silwana, N (Ms)	All Saints Hospital, EC
Sing, R (Ms)	Stanger Hospital, KZN
Sithole, M (Ms)	Elim Hospital, NP
Snyman, Kobie (Mrs)	Albany Health District, EC
Soodi, NM (Ms)	Lydenburg Hospital, Mpu
Stott, Carmel (Sr)	Addington Hospital, KZN
Thoko, ME (Mrs)	WF Knobel Hospital, NP
Tsibane, MR (Ms)	Mafikeng Provincial Hospital, NW

MRC Unit

Pattinson, RC (Prof)	MRC Unit for Maternal and Infant Health Care Strategies
Coetzee, Johan (Dr)	Private practice – PPIP developer
Mokhondo, KR (Mrs)	MRC Unit for Maternal and Infant Health Care Strategies
Prinsloo, RV (Mrs)	MRC Unit for Maternal and Infant Health Care Strategies
Thompson, S (Ms)	MRC Unit for Maternal and Infant Health Care Strategies

National Department of Health

Andrews, Gail (Ms)	National DOH
Mangate, HL (Ms)	National DOH
Nyathikazi, Nancy (Mrs)	National DOH

Provincial Department of Health

Arends, Edna L (Mrs)	PAWC, MCWH sub-directorate, WC DOH
Bartlett, G (Dr)	MCWH, KZN DOH
Godi, N Patrick (Dr)	DOH, Mpumalanga
Lekhoathi, MM (Ms)	NC DOH
Mabitsela, E	DOH, NP
Mabusela, M (Ms)	Human Genetics, DOH
Madolo, B (Dr)	Gauteng DOH
Malgas, KM (Ms)	MCWH, NW Province
Masilela, S (Mr)	Eastern Cape DOH

Mlambo, K (Ms)	NW DOH
Mokoena, MG (Ms)	IM & R, Mpumalanga Province
Motlolometsi, MWA	MCH & Nutrition Subdirector, FS
Mthethwa, O (Ms)	Sedibeng DHS
Naicker, M (Mr)	NW DOH
Nchukana, Gloria (Mrs)	MCWH, DOH Bisho
Nyasulu, Dolly (Mrs)	MCWH, KZN
Rabie, Ryan S (Mr)	DOH, NC
Rabosiwana, Maureen (Ms)	Gauteng DOH
Rapapali, G Isaac	Information & Research, FS

PIIP Users at workshop or whose data was presented

Alapatt, J (Dr)	Mafikeng Provincial Hospital
Buchmann, E (Dr)	CH Baragwanath Hosp, Gau
De Villiers, J (Dr) (absent)	Robertson Provincial Hospital, WC
Doubada, C (Ms)	Mankweng Hospital, NP
Engelbrecht, M (Ms)	Goldfields Regional Hospital, FS
Goosen, A (Mrs)	Uitenhage Hospital, EC
Greenfield, D (Dr)	Peninsula Maternal & Neonatal Service
Gwexe, PN (Ms)	Frontier Hospital, EC
Kambaran, A (Dr)	Pietersburg-Mankweng Complex, NP
Kilian, C (Dr)	Zeerust Hospital, NW
Lakhana, SP (Dr)	Elim Hospital, NP
Langenhorst, V (Dr)	Kimberley Hospital & Galeslane Day Hospital, NC
Liebenberg, N (Dr)	Potchefstroom Hospital, NW
Maboho, RM (Ms)	Tshilidzini Hospital, NP
Macdonald AP (Dr)	Pretoria Academic Hospital, Gau
Maleka, DM (Ms)	Seshego Hospital, NP
Mashua, D (Mrs)	Mapulaneng Hospital, NP
Matos, I (Dr)	WF Knobel Hospital, NP
Mlalandle, PN (Ms)	Mary Terese Hospital, EC
Moran, N (Dr)	Dept of Obstetrics & Gynaecology, University of Natal
Morewane, ML (Mrs)	Mapulaneng Hospital, NP
Mothupi, GM (Dr)	Mankweng Hospital, NP
Mqakanya, J (Ms)	All Saints Hospital, EC
Muller, M (Mrs)	Middelburg Hospital, Mpu
Nambassi, EW (Dr)	Ladysmith Hospital, KZN
Ngobese, PN (Ms)	Madadeni Hospital, KZN
Nojaja, VN (Ms)	St Elizabeths Hospital, EC
Oettlé, C (Dr)	Eben Donges Hospital, WC
Patrick, ME (Dr)	Frontier Hospital, EC
Pattinson, RC (Prof)	MRC Unit for Maternal and Infant Health Care Strategies, UP & Kalafong Hospital
Pretorius, S (Dr)	Potchefstroom Hospital, NW
Prinsloo, RV (Mrs)	MRC Unit for Maternal and Infant Health Care Strategies, UP& Kalafong Hospital
Minors, J (Mrs)	Addington Hospital, KZN
Raymond, Steve (Dr)	Empangeni Hospital, KZN
Soodi, NM (Ms)	Lydenburg Hospital, Mpu
Stott, C (Ms)	Addington Hospital, KZN

Health Systems Trust

Bamford, Lesley (Dr)

Health Systems Trust

Other Institutions represented

Cameron, D (Dr)

Jubilee Hospital, NW

Kgosana, NE (Ms)

Warmbaths Hospital, NW

Martinez, Z (Dr)

Jubilee Hospital, NW

Musonda, J (Dr)

Thusong Hospital, NW

Putuka, S (Ms)

Jubilee Hospital, NW

Ricardo-Escobar (Dr)

Warmbaths Hospital, NW

Steinberg, H (Dr)

Dept of Family Medicine, UOFS

Suliman, R (Dr)

Klerksdorp Hospital, NW

Woods, D (Prof)

Department of Paediatrics, UCT

Other attendees

Heyns, A (Dr)

Private practice

Bourne, D (Dr)

Department of Public Health, UCT

Greef, D (Dr)

Editor: Geneeskunde/The Medical Journal

Alphabetical list of delegates at the Saving Babies: A Perinatal Care Survey of South Africa Workshop

Stella Abwao, Save Children Foundation	Dr N Moran, King Edward Hospital, KZN
Dr MA Ahad, Klerksdorp Hospital, NW	Mrs L Morewane, Mapulaneng Hospital
	Ms MWA Motlolometsi, MCH & Nutrition Subdirectorates, FS
Dr J Alapatt, Mafikeng Provincial Hospital	Dr GM Mothupi, Mankweng Hospital
Dr H Amin, Kimberley Hospital	Ms J Mqakanya, All Saints Hospital
Ms G Andrews, NDOH	Mrs M Muller, Middelburg Hospital
Mrs EL Arends, PAWC, MCWH sub-directorate	Dr J Musonda, Thusong Hospital
Dr L Bamford, Health Systems Trust	Ms O Mthethwa, Sedibeng DHS
Dr G Bartlett, MCWH, KZN DOH	Dr BA Mvuyekure, Letaba Hospital
Dr D Bourne, Dept of Public Health, UCT	Mr M Naicker, NW DOH
Dr E Buchmann, CH Baragwanath Hosp, Gau	Dr EW Nambassi, Ladysmith Provincial Hospital
Dr D Cameron, Jubilee Hospital	Mrs PN Ngobese, Madadeni Hospital
Dr J Coetzee, Private practice - PPIP developer	Miss EDN Ngongoma, Prince Mshiyeni Memorial Hospital
	Dr C Nikodem, Tembisa Hospital
Dr W de Witt, Pta Academic Hospital	Ms VN Nojaja, St Elizabeths Hospital
Ms C Doubada, Mankweng Hospital	Mrs D Nyasulu, MCWH, KZN
Mrs MP Engelbrecht, Goldfields Hospital, FS	Mrs N Nyathikazi, National DOH
Dr NP Godi, DOH, Mpumalanga	
Mrs A Goosen, Uitenhage Hospital	Dr C Oetllé, Eben Donges Hospital
Dr D Greeff, Editor: Geneeskunde/The Medical Journal	Dr ME Patrick, Frontier Hospital, EC
Dr D Greenfield, Groote Schuur Hosp. Peninsula Maternal & Neonatal Service	Prof RCPattinson, MRC Unit for Maternal and Infant Health Care Strategies
	Mrs NR Phakathi, Madadeni Hospital
Ms PN Gwexe, St Patricks Hospital	Prof H Philpott, Centre for Health & Social Studies
Dr RS Herrera, Frontier Hospital, EC	
	Dr HF Pienaar, Kimberley Hospital
Dr A Heyns, Private Practice, NW	Dr S Pretorius, Potchefstroom Hospital, NW
Dr A Kambaran, Pietersburg- Mankweng Complex	Mrs RV Prinsloo, MRC Unit for Maternal and Infant Health Care Strategies
NE Kgosana, Warmbaths Hospital	Ms S Putuka, Jubilee Hospital
	Dr D Qolohle, Tembisa Hospital
Dr C Kilian, Zeerust Hospital	Dr RA Quarshie, Mafikeng Provincial Hospital
Dr SP Lakhana, Elim Hospital	Mr RS Rabie, DOH, NC
Dr V Langenhorst, Kimberley Hospital	Ms AK Radipere, Seshego Hospital
Mrs E Lehata, ECRU, Tembisa	Mr GI Rapapali, FS Govt, Information and Research
Ms MM Lekhoathi, DOH, NC	Dr S Raymond, Empangeni Hospital, KZN
Mrs MS Lethale, Sebokeng Hospital	Dr Ricardo-Escobar, Warmbaths Hospital
	Dr D Roussot, Johannesburg Hospital
Dr N Liebenberg, Potchefstroom Hospital	Ms EZ Sabela, Letaba Hospital
Ms E Mabitsela, DOH, NP	Matron C Sefoloko, Klerksdorp Hospital, NW
Mrs RM Maboho, Tshilidzini Hospital	Ms E Shabalala, Tembisa Hospital
I Maboya, Mokopane Hospital	
Ms M Mabusela, Human Genetics, DOH	Miss N Silwana, All Saints Hospital
Dr AP Macdonald, O & G, Pretoria Academic	
Dr B Madolo, DOH	
Dr AJE Malek, Dept of Paediatrics, Witbank Hospital	

Mrs DM Maleka, Seshego Hospital
Ms KM Malgas, MCWH, NW Province
Ms HL Mangate, NDOH
Dr Z Martinez, Jubilee Hospital
Mrs D Mashua, Mapulaneng Hospital, NP
Mr S Masilela, Eastern Cape DOH
Dr JA Matambo, Ladysmith Provincial Hospital
Dr IM Matos, WF Knobel Hospital

Mrs JH Mbhele, Ladysmith Provincial Hospital
Mrs J Minors, Addington Hospital, KZN
Miss P Mlalandle, Mary Terese Hospital
Mrs F Mntambo, Ceza Hospital
Ms MG Mokoena, IM & R, Mpumalanga Province
Mrs KR Mokhondo, MRC Unit for Maternal and
Infant Health Care Strategies
Ms E Molefe, Mafikeng Provincial Hospital
Dr J Moore, Save Children Foundation

Miss R Sing, Stanger Hospital
Sr M Sithole, Elim Hospital
Mrs K Snyman, Albany Health District, EC
Ms NM Soodi, Lydenburg Hospital
Dr H Steinberg, Dept of Family Medicine, UOFS
Ms C Stott, Addington Hospital, KZN
Dr R Suliman, Klerksdorp Hospital, NW
Mrs ME Thoko, WF Knobel Hospital
Ms S Thompson, MRC Unit for Maternal and
Infant Health Care Strategies
Dr P Tlebere, WHO
Ms MR Tsibane, Mafikeng Provincial Hospital
Ms R v/d Walt, Gauteng DOH
Prof D Woods, UCT

APPENDIX 3 PPIP USERS ABSTRACTS

EASTERN CAPE ABSTRACTS

PRESENTER: Mrs A Goosen
INSTITUTION: Provincial Hospital Uitenhage
HOSPITAL-BASED DATA *** PROVINCE: Eastern Cape: Region A POPULATION: CITY/TOWN***

BASIC DATA

TIME PERIOD: 1 January 1998 to 31 August 2001
TOTAL NUMBER OF DELIVERIES: 10 719
PNMR: 40/1000 NNDR: 12/1000 PCI: 1.47 LBWR: 19.2 PNMR >1000g 28/1000
NNDR >1000g 7/1000

PATTERN OF DISEASE: (please give percentages)

TOP 5 PRIMARY OBSTETRIC CAUSES:

1. Intrauterine Death 32%;
2. Spontaneous Preterm Labour 24%;
3. Antepartum Haemorrhage 12%;
4. Infections 10%;
5. Fetal Abnormalities 6%.

TOP 3 FINAL NEONATAL CAUSES:

1. Immaturity Related 62%;
2. Infection 14%;
3. Congenital Abnormalities 13%.

PROPORTION OF DEATHS WITH AVOIDABLE FACTORS PRESENT: (not adequately accessed)

Patient-related: 94%

Administration-related: 5,6%

Health worker-related: nil

No information/Could not be assessed

TOP 3 AVOIDABLE FACTORS (specify):

1. Never initiated ANC;
2. Delay in seeking medical attention during labour;
3. Inappropriate response to poor fetal movements.

WHAT DO YOU PERCEIVE THE MAJOR PROBLEMS TO BE (PARAGRAPH):

ANC not accessible in Uitenhage, TLC reluctant to extend ANC to all Primary Health Care Clinics.
HIV-Voluntary Counselling and Testing (VTC) not available due to budget restrains especially at TLC clinics. Health Education during ANC should be accompanied by pamphlets in order to enforce the information given.

SOLUTIONS TO THESE PROBLEMS (PARAGRAPH):

ANC to be extended to all PHC clinics

PEP to be used for In-service Training by all ANC providers

National Maternity guidelines to be available and used in all ANC clinics

VTC Should routinely be available to all ANC clients

PROBLEMS EXPERIENCED WITH PERINATAL PROBLEM IDENTIFICATION PROGRAMME (PIPI):

Maternal Deaths: Undelivered patient, date of delivery cannot be provided

Perinatal Deaths: No Code for Ectopic Pregnancy (Two cases <1000g during past two years)

Born Before arrival is not an institutional delivery and counted separately, on PPIP therefore an "unknown" amount of deliveries. Private Patients SB/NNDR cannot be audited.

No free access to a computer at work, therefore inexperience in software uses.

PRESENTER: Mrs VN Nojaja, Dr R Alvarez-Diaz

INSTITUTION: St Elizabeth's Hospital

HOSPITAL-BASED DATA

or

POPULATION-BASED DATA

PROVINCE: Eastern Cape

POPULATION: **RURAL** CITY/TOWN METROPOLITAN

BASIC DATA

TIME PERIOD: 01/01/2001-15/09/2001

TOTAL NUMBER OF DELIVERIES: 1769

PNMR: 66.1 NNDR: 29.3 PCI: 7.3 LBWR: 89.8 PNMR >1000g: 36.1 NNDR >1000g: 26

PATTERN OF DISEASE: (please give percentages)

TOP 5 PRIMARY OBSTETRIC CAUSES: Intrapartum asphyxia: 23%, Hypertensive disorders: 16.2%, Antepartum haemorrhage: 14.5%, Other: herbs: 10.25%, Unexplained IUD 9.4%

TOP 3 FINAL NEONATAL CAUSES: Asphyxia 47%, Meconium aspiration 41.02%, Infection 8.54%

PROPORTION OF DEATHS WITH AVOIDABLE FACTORS PRESENT:

Patient-related: 37.6%

Administration-related: 12.8%

Health worker-related: 27.3%

No information/Could not be assessed: 22,2%

TOP 3 AVOIDABLE FACTORS (specify):

Delay in seeking medical help by the patient.

Incorrect use and interpretation of partogram by medical personnel.

Inadequate staff and facilities.

WHAT DO YOU PERCEIVE THE MAJOR PROBLEMS TO BE (PARAGRAPH):

No transport for clients to reach hospital in time. Very few midwives, no paediatrician, only obstetrician for maternity. No proper monitoring of foetal heart during labour mainly because of staff shortage. Only one neonatal laryngoscope for the whole labour ward. No ventilators for continuity of care in low-APGAR neonates. Traditional herbs taken by mothers during pregnancy as oxytocin which is started from 3 months of pregnancy.

SOLUTIONS TO THESE PROBLEMS (PARAGRAPH):

Employment of enough midwives, 2 obstetricians and at least one paediatrician. Training of more advanced midwives for the hospital and clinics served by St Elizabeth's Hospital. Well-equipped neonatal ICU and high care area for high-risk obstetric patients. Only staff interested in maternity should be allocated to maternity, if possible. Good relationship between nurses and doctors – should not undermine each other. Development of outside clinics for good ANC and emergencies in midwifery. Doctors who have specialized in fields other than obstetrics should not be forced to work in obstetric units.

PROBLEMS EXPERIENCED WITH PERINATAL PROBLEM IDENTIFICATION PROGRAMME (PPIP):

There is very little time for touching the patient due to excessive clerical work, otherwise the information required is very relevant and eye-opening. The midwife responsible for PPIP seems to have guilty feelings when the ward is busy and she cannot attend to the patients when there are only one or two midwives per shift which is usually the case. St Elizabeth's Hospital does not have many comments yet because the programme is still new and exposure time too little.

PRESENTER: PN Gwexe
 INSTITUTION: St Patrick's Hospital
HOSPITAL-BASED DATA or **POPULATION-BASED DATA**
 PROVINCE: Eastern Cape
 POPULATION: **RURAL** CITY/TOWN METROPOLITAN

BASIC DATA
 TIME PERIOD: 01/06/01 – 31/08/01
 TOTAL NUMBER OF DELIVERIES: 1662
 PNMR: 88.4/1000 NNDR: 44.7/1000 PCI: 8 LBWR: 11% PNMR >1000g: 78 NNDR >1000g: 41

PATTERN OF DISEASE: (please give percentages)
 TOP 5 PRIMARY OBSTETRIC CAUSES: Intrapartum asphyxia 38%, Hypertensive disorders 20%, Spontaneous preterm labour: 20%, Unexplained IUD: 15%, APH – 5%

TOP 3 FINAL NEONATAL CAUSES: Asphyxia Neonatorum: 38%, Infections: 27%, Immaturity related: 20.2%

PROPORTION OF DEATHS WITH AVOIDABLE FACTORS PRESENT:
 Patient-related: Infrequent ANC visits. Delay in seeking medical attention when in labour. Inappropriate response to danger signs.
 Administration-related: Insufficient doctors to manage patients. Insufficient nurses on duty to manage patients & neonates.
 Health worker-related: Poor monitoring of patients, Delay in medical personnel calling for expert assistance. Partogram not always used – at times due to workload.
 No information/Could not be assessed:

TOP 3 AVOIDABLE FACTORS (specify): Delay in seeking medical attention during labour, no response to bad obstetric history e.g. SB. Frequent staff rotation.

WHAT DO YOU PERCEIVE THE MAJOR PROBLEMS TO BE (PARAGRAPH):

1. Shortage of personnel leads to poor monitoring of patients during pregnancy and labour.
2. Information not reaching the pregnant mothers and community regarding mostly the danger signs during pregnancy.
3. Patients presenting late in labour, sometimes as their last resort or due to lack of transport facilities.
4. No obstetrician and paediatrician for expert assessment of pregnant women and newborns.

SOLUTIONS TO THESE PROBLEMS (PARAGRAPH):

1. Involvement of managers and administrators through workshops providing them with well-defined reports.
2. Maternal and neonatal care refresher courses for maternity staff including new doctors.
3. Adequate staffing in maternity and infrequent staff rotation.
4. Health education to the public.

PROBLEMS EXPERIENCED WITH PERINATAL PROBLEM IDENTIFICATION PROGRAMME (PIIP):
 Problems due to lack of experience with the computer.
 Difficulty in getting September statistics as requested for 1 October.

PRESENTER: Sr Jabulile Mqakanya

INSTITUTION: All Saints Hospital

HOSPITAL-BASED DATA

or

POPULATION-BASED DATA

PROVINCE: Eastern Cape

POPULATION: **RURAL** CITY/TOWN METROPOLITAN

BASIC DATA

TIME PERIOD: January – September 2001

TOTAL NUMBER OF DELIVERIES: 1648

PNMR: 18/1000 NNDR: 15/1000 PCI: 18/1000 / 8/100 LBWR: 50 8/100

PNMR >1000g: 18/1000 NNDR >1000g: 15/1000

Babies less than 1kg were not entered in statistics till September, will appear from 1 October onwards.

PATTERN OF DISEASE: (please give percentages)

TOP 5 PRIMARY OBSTETRIC CAUSES: Pre-existing medical conditions, Hypertension in pregnancy, AIDS, Postpartum haemorrhage, Abortion

TOP 3 FINAL NEONATAL CAUSES: Prematurity (HMD), Meconium aspiration, Chromosomal abnormalities

PROPORTION OF DEATHS WITH AVOIDABLE FACTORS PRESENT:

Patient-related: delay in seeking medical aid

Administration-related: lack of skilled staff, no intensive care facilities

Health worker-related: 2nd stage delayed – no intervention

No information/Could not be assessed

TOP 3 AVOIDABLE FACTORS (specify):

1. Delay in seeking medical attention.
2. Lack of skilled staff.
3. Transport problems.

WHAT DO YOU PERCEIVE THE MAJOR PROBLEMS TO BE (PARAGRAPH):

- No obstetrician and paediatrician in an institution.
- Rotation of newly employed doctors.
- Gross shortage of staff and facilities to care for neonates and mothers.
- Women delay seeking medical attention.

SOLUTIONS TO THESE PROBLEMS (PARAGRAPH):

Experienced doctor – avoidance of rotation.

Teamwork and regular in-service training in perinatal care.

Providing intensive care facilities.

Education of women and teenagers re: prompt medical attention.

PROBLEMS EXPERIENCED WITH PERINATAL PROBLEM IDENTIFICATION PROGRAMME (PIIP):

Difficulty in collecting required data. Delay in faxing data due to problems with fax machines being out of order for long periods. There are no computers.

PRESENTER: Pamella Nyameka Mlalandle

INSTITUTION: Mary Terese Hospital

HOSPITAL-BASED DATA

or

POPULATION-BASED DATA

PROVINCE: Eastern Cape

POPULATION: **RURAL** CITY/TOWN METROPOLITAN

BASIC DATA

TIME PERIOD: 01/06/2001 – 31/08/2001

TOTAL NUMBER OF DELIVERIES: 250

PNMR: 72/1000 NNDR: 29/1000 PCI: 6.2 LBWR: 11.6% PNMR >1kg: 61/1000

NNDR >1kg: 25/1000

PATTERN OF DISEASE: (please give percentages)

TOP 5 PRIMARY OBSTETRIC CAUSES: Idiopathic preterm labour: 21%, Labour related asphyxia: 21%, Amniotic Fluid Infection: 21%, Macerated Unexplained Stillbirth: 14%, PET- 14%

TOP 3 FINAL NEONATAL CAUSES: Asphyxia: 42%, Septicaemia: 21%, Extreme prematurity (multi system failure): 14%, Unknown: 14%

PROPORTION OF DEATHS WITH AVOIDABLE FACTORS PRESENT:

Patient-related: 56%

Administration-related: 0%

Health worker-related: 28%

No information: 21% (these did not appear avoidable – one congenital anomaly and 2 macerated s/b)

TOP 3 AVOIDABLE FACTORS (specify):

Delay in seeking medical attention: 42%

Unable to assess: 21%

Unbooked: 14%

Poor labour progress with correct interpretation of partogram: 14%

WHAT DO YOU PERCEIVE THE MAJOR PROBLEMS TO BE (PARAGRAPH):

Note that this hospital does not have a doctor on staff to do c-sections or surgery, patients for emergency c-section must be transferred. A visiting doctor does scheduled c-sections once a week. Nevertheless, patient factors appear to be the driving factor at this site. However, patients do know the situation, so I wonder if more would come earlier if they knew c-section would be available.

(Personal reflections: Debra Jackson)

1. No doctor to do c-sections.
2. Transport problems.
3. Inadequate nursing staff.
4. Poor ANC health education.

SOLUTIONS TO THESE PROBLEMS (PARAGRAPH):

1. Improve nurse & doctor staffing.
2. Improve transport.
3. Improve ANC health education

PROBLEMS EXPERIENCED WITH PERINATAL PROBLEM IDENTIFICATION PROGRAMME (PIIP):

Have just started using the PIIP computer programme.

FREE STATE ABSTRACTS

PRESENTER: Ms MP Engelbrecht INSTITUTION: Goldfields Regional Hospital HOSPITAL-BASED DATA or POPULATION-BASED DATA PROVINCE: Free State POPULATION: RURAL CITY/TOWN METROPOLITAN
BASIC DATA TIME PERIOD: 1/1/2001 – 31/8/2001 TOTAL NUMBER OF DELIVERIES: 2012 PNMR: 371/1000 NNDR: PCI: 4.53 LBWR: 21.4% of all deliveries PNMR >1000g: 97/1000 NNDR >1000g:
PATTERN OF DISEASE: (please give percentages) TOP 5 PRIMARY OBSTETRIC CAUSES: IUD – 22.9%, Spontaneous preterm labour – 22.4%, Hypertensive disorders – 21.0%, APH 17.1%, Intrapartum asphyxia 6.7% TOP 3 FINAL NEONATAL CAUSES: Immaturity related – 70.2%, Hypoxia – 21.1%, Congenital abnormalities – 5.3% PROPORTION OF DEATHS WITH AVOIDABLE FACTORS PRESENT: Patient-related: 50.2% Administration-related: 20.3% Health worker-related: 29.2% No information/Could not be assessed: 0.2% TOP 3 AVOIDABLE FACTORS (specify): Delay in referring to Level 2 or 3 facilities especially PET. Booked late in pregnancy – mostly 26 weeks +, Never attended ANC Clinic. WHAT DO YOU PERCEIVE THE MAJOR PROBLEMS TO BE (PARAGRAPH): Lack of antenatal care is a major problem. Medical personnel not acting on fetal distress. Partograms are not always utilised especially at referral institutions. Shortage of facilities in neonatal. SOLUTIONS TO THESE PROBLEMS (PARAGRAPH): Education in school and community about the need for ANC. Education of staff in the hospital. The use of the partogram and it's implications with asphyxia been brought to attention of referral institutions. Discuss the problem of neonatal facilities with management. PROBLEMS EXPERIENCED WITH PERINATAL PROBLEM IDENTIFICATION PROGRAMME (PIIP): Patients with more than one obstetric cause - a problem to indicate it. Getting health workers to complete PIIP data forms completely and timeously.

GAUTENG ABSTRACTS

PRESENTER: Dr E Buchmann INSTITUTION: Baragwanath Hospital HOSPITAL-BASED DATA or POPULATION-BASED DATA PROVINCE: Gauteng Province POPULATION: RURAL CITY/TOWN METROPOLITAN
BASIC DATA TIME PERIOD: 1/1/2001 – 9/9/2001 TOTAL NUMBER OF DELIVERIES: 12656 PCI: 1.86 LBWR: 21.5% PNMR >1000g: 39.9/1000 NNDR >1000g: 11.8/1000
PATTERN OF DISEASE: (please give percentages) TOP 5 PRIMARY OBSTETRIC CAUSES: 1. Unexplained 31.7%, 2. Hypertension (including abruptio) 20.0%, 3. Intrapartum asphyxia 17.6%, 4. Spontaneous preterm labour 8.9%, 5. Antepartum haemorrhage (excl hypertension) 7.9% TOP 3 FINAL NEONATAL CAUSES: 1. Asphyxia 48.3%, 2. Prematurity 32.4%, 3. Congenital abnormalities 13.1% PROPORTION OF DEATHS WITH AVOIDABLE FACTORS PRESENT: Patient-related: 20.6% Administration-related: 5.1% Health worker-related: 25.3% Missing files: ? TOP 3 AVOIDABLE FACTORS (specify): 1. Inadequate fetal monitoring 57 (11.3%) 2. Unbooked mother 34 (4.7%) 3. No response to poor fetal movements 20 (4.0%) 4. Late booking 19 (3.8%) 5. Delayed arrival in labour 19 (3.8%) COMMENTS ON PROBLEMS RELATED TO DATA COLLECTION (BOTH PROVINCIAL AND PPIP): Windows PPIP impossible and unfriendly for this user (sorry!). All this data collected on Epi-Info 6. FUTURE PLANS: Learn and use PPIP.

PRESENTER: RC Pattinson
INSTITUTION: Kalafong Hospital

HOSPITAL-BASED DATA or **POPULATION-BASED DATA**

PROVINCE: Gauteng

POPULATION: RURAL CITY/TOWN **METROPOLITAN**

BASIC DATA

TIME PERIOD: 1/10/2000 – 30/09/2001

TOTAL NUMBER OF DELIVERIES: 5336

PNMR: 49/1000 NNDR: 11/1000 PCI: 1.39 LBWR: 20% PNMR >1kg: 28/1000

NNDR >1000g: 5/1000

PATTERN OF DISEASE: (please give percentages)

TOP 5 PRIMARY OBSTETRIC CAUSES >1000g: 1. Unexplained IUD 52%;

2. Fetal abnormalities 12.5%; 3. Spontaneous preterm labour 12.5%;

4. Antepartum haemorrhage 9.7%; 5. Hypertension 7.6%

TOP 3 FINAL NEONATAL CAUSES >1000g: 1. Congenital abnormalities 33.3%;

2. Prematurity 25.9%; 3. Infection 22.2%

PROPORTION OF DEATHS WITH AVOIDABLE FACTORS PRESENT:

Patient-related: 64.7%

Administration-related: 4.9%

Health worker-related: 14.7%

No information/Could not be assessed: 15.7%

TOP 3 AVOIDABLE FACTORS (specify):

Inappropriate response to poor fetal movements.

File missing.

No antenatal care.

WHAT DO YOU PERCEIVE THE MAJOR PROBLEMS TO BE (PARAGRAPH):

Unexplained IUDs – more than 50% of perinatal deaths more than 1kg. Possibly the effect of HIV/AIDS and amniotic fluid infection syndrome.

SOLUTIONS TO THESE PROBLEMS (PARAGRAPH):

Specific study to elucidate problems surrounding unexplained IUDs.

PROBLEMS EXPERIENCED WITH PERINATAL PROBLEM IDENTIFICATION PROGRAMME (PIPI):

None

PRESENTER Dr. Duma Qolohle; Dr. Cheryl Nikodem

INSTITUTION: Tembisa Hospital

HOSPITAL-BASED DATA

or

POPULATION-BASED DATA

PROVINCE: Gauteng

POPULATION: RURAL **CITY/TOWN** METROPOLITAN

BASIC DATA

TIME PERIOD: October 2001

TOTAL NUMBER OF DELIVERIES: 875

PNMR: 26/1000 NNDR: 8/1000 PCI: 0.93 LBWR: 18.7%% PNMR >1kg: 17/1000

NNDR >1000g: 5/1000

PATTERN OF DISEASE: (please give percentages)

TOP 5 PRIMARY OBSTETRIC CAUSES >1000g: 1. Hypertensive disorder (30.4%)

2. Intrauterine deaths (26.1%)

3. Spontaneous premature labour (17.4%)

4. Antepartum haemorrhage (8.7%)

5. Intrapartum asphyxia (8.7%)

TOP 3 FINAL NEONATAL CAUSES >1000g: 1. Immaturity related 57.1%;

2. Hypoxia 28.6%; 3. Congenital abnormalities 14.3%

PROPORTION OF DEATHS WITH AVOIDABLE FACTORS PRESENT:

Patient-related: 2/23

Administration-related: 9/23

Health worker-related: 16/23

No information/Could not be assessed: 7/23

TOP 3 AVOIDABLE FACTORS (specify):

1. Health Worker

2. Administration

3. Not provided

WHAT DO YOU PERCEIVE THE MAJOR PROBLEMS TO BE (PARAGRAPH):

Healthworkers – no or incorrect response to treatment of women with hypertensive disorders or with a history of previous stillbirths. Delay in getting/arriving of expert assistance.

Administrative – inadequate resuscitation equipment. High rate of BBA? Lack of transport. Lack of in service training and teaching

SOLUTIONS TO THESE PROBLEMS (PARAGRAPH):

Weekly well-organised morbidity and mortality meetings using PPIP format for deaths. With this meeting, an organised talk on evidence-based care or new guidelines. Daily rounds with consultant / senior midwife to discuss treatment of high risk women in labour. Inform women to come to hospital earlier to avoid BBA's.

PROBLEMS EXPERIENCED WITH PERINATAL PROBLEM IDENTIFICATION PROGRAMME (PIP):

Giving error message and exits. User cannot specify further when selecting "other" under list of avoidable factors. Working needs to be revised / changed: medical personnel associated – health worker, medical / nursing personnel associated. Everywhere the term medical refers to personnel, we should include the term nursing as well.

KWAZULU NATAL ABSTRACTS

PRESENTER: Dr Llorente INSTITUTION: Madadeni Hospital HOSPITAL-BASED DATA or POPULATION-BASED DATA PROVINCE: KZN POPULATION: RURAL CITY/TOWN METROPOLITAN
BASIC DATA TIME PERIOD: June 2001 – August 2001 TOTAL NUMBER OF DELIVERIES: 1247 PNMR: 52.9 NNDR: 24.7 PCI: 3.3 LBWR: 16% PNMR >1000g: 45.4 NNDR >1000g: 22.4
PATTERN OF DISEASE: (please give percentages) TOP 5 PRIMARY OBSTETRIC CAUSES: 1. PIH, 2. Preterm labour, 3. Prelabour rupture of membranes, 4. Sepsis, 5. HIV related conditions TOP 3 FINAL NEONATAL CAUSES: 1. Low Apgar, 2. Prematurity, 3. Sepsis PROPORTION OF DEATHS WITH AVOIDABLE FACTORS PRESENT: Patient-related: Administration-related: Health worker-related: No information/ Could not be assessed TOP 3 AVOIDABLE FACTORS (specify): 1. Low apgar score 2. 2. PIH relatd outcomes 3. Sepsis WHAT DO YOU PERCEIVE THE MAJOR PROBLEMS TO BE (PARAGRAPH): The major problem in our hospital is a shortage of staff (both nurses and doctors), lack of necessary equipment, the structure of ANC services is not adequate. SOLUTIONS TO THESE PROBLEMS (PARAGRAPH): A proper strategy should be implemented to retain experienced staff, and ANC services should be restructured so problem can be identified and treated properly. PROBLEMS EXPERIENCED WITH PERINATAL PROBLEM IDENTIFICATION PROGRAMME (PIPI): We had a short time to get all information asked, and we were not used to the programme. Data very difficult to obtain due to actual system of filing (getting records). No electronic data available.

PRESENTER: Sr C. Stott

INSTITUTION: Addington Hospital, Durban, KZN

POPULATION METROPOLITAN

BASIC DATA

TIME PERIOD: 1/January 2001 – 30/September 2001

TOTAL NUMBER OF DELIVERIES: 5408

PNMR: 40/1000

NNDR: 14/1000

PCI: 1.77

LBWR:

16.7%

PNMR >1000g

NNDR >1000g

PATTERN OF DISEASE: (please give percentages)

TOP 5 PRIMARY OBSTETRIC CAUSES: 1. Preterm labour. 2. Interuterine Death. 3. Intrapartum Asphyxia. 4. Antepartum haemorrhage. 5. Hypertensive disorders.

TOP 3 FINAL NEONATAL CAUSES: 1. Prematurity. 2. Asphyxia. 3. Infection

PROPORTION OF DEATHS WITH AVOIDABLE FACTORS PRESENT:

Patient-related: 63.8%

Administration-related: 10.8%

Health worker-related: 25.4%

No information/Could not be assessed

TOP 3 AVOIDABLE FACTORS (specify): 1. Unbooked patients. 2. Delay in seeking attention in labour. 3. No response to poor fetal movement

WHAT DO YOU PERCEIVE THE MAJOR PROBLEMS TO BE (PARAGRAPH):

Patients still tend to book late in pregnancy, also appear to underestimate the time it will take to reach the institution, or wait for support to arrive before seeking assistance.

Clinics and 1st level Hospitals seeking assistance late

SOLUTIONS TO THESE PROBLEMS (PARAGRAPH):

1. Continuing education of pregnant women
2. Continue training and update for midwives and doctors

PROBLEMS EXPERIENCED WITH PERINATAL PROBLEM IDENTIFICATION PROGRAMME (PIPP):

Initially getting health workers to complete the PIPP forms completely, timeously and accurately.

<p> PRESENTER: Dr. E. W Nambassi INSTITUTION: Ladysmith Hospital HOSPITAL-BASED DATA or POPULATION-BASED DATA PROVINCE: KZN POPULATION: RURAL CITY/TOWN METROPOLITAN </p>
<p> BASIC DATA TIME PERIOD: July 2000 – August 2001 TOTAL NUMBER OF DELIVERIES: 6,929 PNMR: 61/1000 NNDR: 25/1000 PCI: 3.54 LBWR: 13.9% PNMR >1000g 49/1000 NNDR >1000g 22/1000 </p>
<p> PATTERN OF DISEASE: (please give percentages) TOP 5 PRIMARY OBSTETRIC CAUSES: 1. Pre-term Labour 18.2% 2. M.S.B 15.4% 3. Proteinuric HPT 10.4% 4. Asphyxia 8.5% 5. Abruptio 5.7% TOP 3 FINAL NEONATAL CAUSES: 1. Multi organ immaturity 50.6% 2. H.I.E 25.3% 3. HMD 4.8% PROPORTION OF DEATHS WITH AVOIDABLE FACTORS PRESENT: Patient-related: 68.3% Administration-related: 4.9% Health worker-related: 19.1% No information/Could not be assessed: 7.7% TOP 3 AVOIDABLE FACTORS (specify): 1. No ANC 44.3% 2. Late booking 10.2% 3. Delay seeking help in labour 5.3% WHAT DO YOU PERCEIVE THE MAJOR PROBLEMS TO BE (PARAGRAPH): 1. No clinics doing deliveries 2. Overworked staff in hospital – shortages 3. Under-supervised junior Doctors/midwives 4. Under committed GP's doing bulk of calls 5. Decreased booking rate for ANC 6. Monitoring in early stages of labour decreased. SOLUTIONS TO THESE PROBLEMS (PARAGRAPH): 1) Encourage more clinics to have 24hr service 2) increase staffing at hospital 3) better design labour ward 4) design protocols and encourage regular drills 5) more perinatal review meetings. PROBLEMS EXPERIENCED WITH PERINATAL PROBLEM IDENTIFICATION PROGRAMME (PIIP): 1) Data collection in a busy unit a challenge!!! 2) Can programme be improved re: more analysis e.g. weight categories </p>

<p>PRESENTER: Neil Moran INSTITUTION: King Edward VIII Hospital HOSPITAL-BASED DATA or POPULATION-BASED DATA PROVINCE: KWAZULU NATAL POPULATION: RURAL CITY/TOWN METROPOLITAN</p>
<p>BASIC DATA TIME PERIOD: July 2000 – September 2001 TOTAL NUMBER OF DELIVERIES: 9958 PNMR: 57 NNDR: 16 PCI: 2.35 LBWR: 24.3% PNMR >1000g: NNDR >1000g:</p>
<p>PATTERN OF DISEASE: (please give percentages) TOP 5 PRIMARY OBSTETRIC CAUSES: 1. IUD – no cause; 2. Hypertension; 3. APH; 4. Preterm labour; 5. Fetal abnormality.</p> <p>TOP 3 FINAL NEONATAL CAUSES: 1. Prematurity related; 2. Asphyxia & birth trauma; 3. Infection</p> <p>PROPORTION OF DEATHS WITH AVOIDABLE FACTORS PRESENT: Patient-related: 47.4% Administration-related: 13.4% Health worker-related: 38.8% No information/Could not be assessed</p> <p>TOP 3 AVOIDABLE FACTORS (specify):</p> <ol style="list-style-type: none"> 1. Unbooked. 2. No response to maternal hypertension. 3. Fetal distress not detected because fetus not monitored. <p>WHAT DO YOU PERCEIVE THE MAJOR PROBLEMS TO BE (PARAGRAPH): Poor assessment of causes of IUD, poor antenatal management of hypertension and poor intrapartum monitoring.</p> <p>SOLUTIONS TO THESE PROBLEMS (PARAGRAPH): Protocol for investigation of causes of MSBs. More streamlined referral system for hypertensive patients and better staffed and managed labour wards.</p> <p>PROBLEMS EXPERIENCED WITH PERINATAL PROBLEM IDENTIFICATION PROGRAMME (PIPI): List of avoidable factors insufficient.</p>

PRESENTER: Steve Raymond

INSTITUTION: Lower Umfolozi District War Memorial Hospital (Empangeni)

HOSPITAL-BASED DATA or **POPULATION-BASED DATA**

PROVINCE: KwaZulu Natal

POPULATION: RURAL **CITY/TOWN** METROPOLITAN

BASIC DATA

TIME PERIOD: September 1, 2000 to August 31, 2001

TOTAL NUMBER OF DELIVERIES: 8725

PNMR: 47/1000

NNDR: 15/1000

PCI: 2.38

LBWR: 15.9%

PNMR >1000g 38/1000

NNDR >1000g: 12/1000

PATTERN OF DISEASE: (please give percentages)

TOP 5 PRIMARY OBSTETRIC CAUSES: Abruptio Placentae-19%; Macerated IUDs (unexplained)-18%; Proteinuric Hypertension-11%; Labour related intrapartum Asphyxia-8.8%; Preterm Labour-6.3%

TOP 3 FINAL NEONATAL CAUSES: Hypoxic Ischaemic Encephalopathy-31%; Extreme Immaturity-28%; Septicaemia-13%

PROPORTION OF DEATHS WITH AVOIDABLE FACTORS PRESENT:

Patient-related: 25%

Administration-related: 3.6%

Health worker-related: 12%

No information/Could not be assessed

TOP 3 AVOIDABLE FACTORS (specify): Never initiated A/N care-12%; Infrequent visits to clinic-4%; Delay in seeking medical attention in labour-3.6%.

WHAT DO YOU PERCEIVE THE MAJOR PROBLEMS TO BE (PARAGRAPH): Have been trying to get the culture of booking early accepted in the clinics. And running workshops for clinic midwives on appropriate referral of high risk patients. But patient perception of need is the major issue, not failure of staff.

SOLUTIONS TO THESE PROBLEMS (PARAGRAPH): Publicity which is ongoing and persistent, and starts in schools. National ad campaign such as was used in the cholera epidemic is also something which Health Department would do well to embark on.

PROBLEMS EXPERIENCED WITH PERINATAL PROBLEM IDENTIFICATION PROGRAMME (PIIP): Johan knows about my problem with the Monthly PNM graph – it now appears that the Graphics Server program is not functioning at all. Setting up a new unit is not very user friendly.

MPUMALANGA ABSTRACTS

PRESENTER: Marié Muller

INSTITUTION: Middelburg health ward

HOSPITAL-BASED DATA

or

POPULATION-BASED DATA

PROVINCE: Mpumalanga

POPULATION: RURAL

CITY/TOWN

METROPOLITAN

BASIC DATA

TIME PERIOD: 1/1/2001 – 30/9/2001

TOTAL NUMBER OF DELIVERIES: 1886

PNMR: 36/1000 NNDR: 12/1000 PCI: 2.85 LBWR: 10.9% PNMR >1000g: 31/1000

NNDR >1kg: 8/1000

PATTERN OF DISEASE: (please give percentages)

TOP 5 PRIMARY OBSTETRIC CAUSES: 1. Intrapartum asphyxia 27.6%, 2. Intrauterine death unexplained 22.4%, 3. Hypertensive disorders 17.2%, 4. Spontaneous preterm labour 12.1%, 4. Fetal abnormality 8.7%

TOP 3 FINAL NEONATAL CAUSES: 1. Asphyxia and birth trauma 53.3%, 2. Prematurity related 20.2%, 3. Congenital abnormalities 13.3%

PROPORTION OF DEATHS WITH AVOIDABLE FACTORS PRESENT:

Patient-related: 49.3%

Administration-related: 13.7%

Health worker-related: 31.5%

No information/Could not be assessed: 5.5%

TOP 3 AVOIDABLE FACTORS (specify):

Patient-related:

1. Unbooked patient: 15.4%
2. Delay seeking medical attention during labour: 12.3%
3. Infrequent visits to antenatal clinic: 9.2%

Health worker-related:

1. Delay in medical personnel calling for expert assistance: 6.2%
2. Delay in doctor responding to call: 6.2%
3. No response to maternal hypertension/fetal distress not detected: 3.1%

Administrative-related:

1. Lack of transport – patient: 4.6%
2. Inadequate facilities in neonatal unit: 6.2%
3. Inadequate resuscitation equipment: 1.5%

WHAT DO YOU PERCEIVE THE MAJOR PROBLEMS TO BE (PARAGRAPH):

Patients not attending antenatal clinics or book very late in pregnancy. When referred from the clinic to the hospital, they delay coming. Patients stay and attend clinics in other health wards but deliver in our institution. Another major problem is patients presenting late in labour. Medical personnel delay calling for expert assistance because they think they can manage the case. Staff shortages lead to lack of motivation. No ventilators available for babies. Babies cannot be transferred to the referral hospital due to lack of beds.

SOLUTIONS TO THESE PROBLEMS (PARAGRAPH):

- Education of patients and the community to stress the importance of antenatal care and the awareness of complications during pregnancy.
- Motivation for more staff
- Motivation for neonatal equipment and better infrastructure at referring hospital.

PROBLEMS EXPERIENCED WITH PERINATAL PROBLEM IDENTIFICATION PROGRAMME (PIIP):

Not enough codes.

<p>PRESENTER: NM Soodi INSTITUTION: Lydenburg Hospital HOSPITAL-BASED DATA or POPULATION-BASED DATA PROVINCE: Mpumalanga POPULATION: RURAL CITY/TOWN METROPOLITAN</p>
<p>BASIC DATA TIME PERIOD: 1/1/2001 – 30/9/2001 TOTAL NUMBER OF DELIVERIES: 758 PNMR: 32/1000 NNDR: 15/1000 PCI: 3.87 LBWR: 7.5% PNMR >1kg: 29/1000 NNDR >1kg: 12/1000</p>
<p>PATTERN OF DISEASE: (please give percentages) TOP 5 PRIMARY OBSTETRIC CAUSES: 1. Spontaneous preterm labour 27.3%, 2. Hypertensive disorders 22.7%, 3. Intrapartum asphyxia 22.7%, 4. Intrauterine death 9.1%, 5. Antepartum haemorrhage 4.5%</p> <p>TOP 3 FINAL NEONATAL CAUSES: 1. Prematurity related 55.6%, 2. Asphyxia and birth trauma 33.3%, 3. Trauma 11.1%.</p> <p>PROPORTION OF DEATHS WITH AVOIDABLE FACTORS PRESENT: Patient-related: 30.4% Administration-related: 21.7% Health worker-related: 47.8% No information/Could not be assessed</p> <p>TOP 3 AVOIDABLE FACTORS (specify): <u>Patient related:</u> 1. Unbooked patients 13.0%; 2. Delay in seeking medical attention during labour 13.0%</p> <p><u>Administration related:</u> 1. Inadequate facilities in neonatal unit 13.0%; 2. Insufficient nurses on duty to manage the patient adequately 4.3%</p> <p><u>Health worker related:</u> 1. Delay in referring patient for secondary/tertiary treatment 21.7%; 2. Medical personnel underestimated fetal size 4.3%; 3. No response to medical hypertension 4.3%.</p> <p>WHAT DO YOU PERCEIVE THE MAJOR PROBLEMS TO BE (PARAGRAPH): Medical personnel delay in calling for expert assistance because there was no monitoring of patients due to staff shortages. Patient who come in advanced labour due to transport problems. No ventilators for babies. Lack of beds in the referring hospital. Patients not attending antenatal clinics or book late in pregnancy.</p> <p>SOLUTIONS TO THESE PROBLEMS (PARAGRAPH):</p> <ul style="list-style-type: none"> • Peer educators and community-based health workers to be involved in antenatal care. • Staff shortages to be attended to. • CTG machines could also help with the early referral of patients to secondary/tertiary. • Environmental research can also help to exclude teratogenic factors, which can be the cause of premature labour and births. • Health promoters to be involved in the programme. <p>PROBLEMS EXPERIENCED WITH PERINATAL PROBLEM IDENTIFICATION PROGRAMME (PIPI): The computer is not retrieving information. The computer was then allocated to the CHC center.</p> <p>Involvement of PPIP users in workshops will reduce problems.</p>

<p>PRESENTER: Dr E Malek INSTITUTION: Witbank Hospital HOSPITAL-BASED DATA or POPULATION-BASED DATA PROVINCE: Mpumalanga POPULATION: RURAL CITY/TOWN METROPOLITAN</p>
<p>BASIC DATA TIME PERIOD: 01/01/01 – 30/09/01 TOTAL NUMBER OF DELIVERIES: 2280 PNMR: 53/1000 NNDR: 17/1000 PCI: 2.17 LBWR: 24.3% PNMR >1kg: 53/1000 NNDR >1kg: 15/1000</p>
<p>PATTERN OF DISEASE: (please give percentages) TOP 5 PRIMARY OBSTETRIC CAUSES: 1. Intrauterine death 44.4%; 2. Antepartum haemorrhage 20.5%; 3, Spontaneous preterm labour 14.5%; 4. Hypertensive disorder 8.5%; 5. Infection 5.1%</p> <p>TOP 3 FINAL NEONATAL CAUSES: 1. Immaturity-related 61.3%, 2. Infection 19.4%, 3. Hypoxia 12.9%</p> <p>PROPORTION OF DEATHS WITH AVOIDABLE FACTORS PRESENT: Patient-related: 35.7% Administration-related: 28.6% Health worker-related: 28.6% Insufficient notes to comment on avoidable factors: 7.1% No information/Could not be assessed</p> <p>TOP 3 AVOIDABLE FACTORS (specify): Patient related Infrequent visits to ANC: 10.7% Never initiated ANC: 7.1% Inappropriate response to poor fetal movements: 7.1% Inappropriate response to APH: 7.1%</p> <p>Health-worker related Overestimated fetal size: 10.7% Delay in referring patient: 7.1% Fetal distress not detected intrapartum: 3.6%</p> <p>Administrative Inadequate facilities/equipment: 21.4% Personnel not sufficiently trained: 3.6%</p> <p>WHAT DO YOU PERCEIVE THE MAJOR PROBLEMS TO BE (PARAGRAPH):</p> <ul style="list-style-type: none"> • Some patients not taking advantage of Antenatal Clinics. • High rate of low birth weight infant delivered at Witbank. • A significant number of preterm/VLBW infants born to mothers with severe PET. • Episodic overcrowding of neonatal units at Witbank Hospital especially prior to the opening of the new facilities resulting in outbreaks of nosocomial infections. • Insufficient notes making identification of avoidable factors difficult/impossible. • IUDs constitute more than three quarters of all perinatal deaths at Witbank Hospital.

SOLUTIONS TO THESE PROBLEMS (PARAGRAPH):

- Increased efforts to convince patients of the importance of ANC.
- Teaching patients "danger signs of pregnancy".
- Promoting family planning.
- The NNDR has decreased after the opening of the new facilities at Witbank Hospital.
- More nursing staff/trained ICU nurses for HCU and NICU at Witbank in order to fully utilise the available equipment.
- Agreeing on maximum patient numbers in HCU and ICU.

PROBLEMS EXPERIENCED WITH PERINATAL PROBLEM IDENTIFICATION PROGRAMME (PPIP):

- Referral data not entered by PPIP team – will be attended to.
- Missing code for: Crowding in NICU/Neonatal Unit as avoidable factor.
- The term "avoidable factor" gives rise to misunderstandings. Even if some avoidable factors could have been avoided, the outcome of the patient may not have been affected at all.
- No code for unwanted pregnancy in list of Avoidable Factors.
- Graph of 3-month moving average of PNMR not working.

NORTH WEST PROVINCE ABSTRACTS

PRESENTER: Sr EM Mpolokeng INSTITUTION: Potchefstroom Hospital HOSPITAL-BASED DATA or POPULATION-BASED DATA PROVINCE: North West POPULATION: RURAL CITY/TOWN METROPOLITAN
BASIC DATA TIME PERIOD: 01/01/2000-31/12/2000 TOTAL NUMBER OF DELIVERIES: 2921 PNMR: 60/1000 NNDR: 17/1000 PCI: 2.32 LBWR: 17.5% PNMR >1kg: 41/1000 NNDR >1kg: 14/1000
PATTERN OF DISEASE: (please give percentages) TOP 5 PRIMARY OBSTETRIC CAUSES: Intrauterine death: 47.4%, Spontaneous preterm labour: 17.2%, Antepartum haemorrhage: 11.2%, Intrapartum asphyxia: 8.6%, Fetal abnormalities: 6% TOP 3 FINAL NEONATAL CAUSES: Infection: 44.7%, Prematurity related: 15.8%, Asphyxia & birth trauma/Congenital abnormalities: 15.8% PROPORTION OF DEATHS WITH AVOIDABLE FACTORS PRESENT: Patient-related: 66.7% Administration-related: 19.6% Health worker-related: 13.7% No information/Could not be assessed: 0 TOP 3 AVOIDABLE FACTORS (specify): Unbooked patients: 27.5% Inappropriate response to poor fetal movement: 25.5% No syphilis screening performed at hospital/clinic: 9.8% WHAT DO YOU PERCEIVE THE MAJOR PROBLEMS TO BE (PARAGRAPH): A very high percentage of intra-uterine deaths received from referral hospitals/units. High incidence of nosocomial infections. SOLUTIONS TO THESE PROBLEMS (PARAGRAPH): To give better information to patients at the antenatal clinics: especially about fetal movements. To get referring units/hospitals to give better antenatal care. Try to prevent nosocomial infections by getting a separate neonatal high care unit. PROBLEMS EXPERIENCED WITH PERINATAL PROBLEM IDENTIFICATION PROGRAMME (PIIP): Information on BBAs.

NORTHERN CAPE ABSTRACTS

PRESENTER: Dr V Langenhorst

INSTITUTION: Kimberley Hospital & Galeslene Day Hospital

HOSPITAL-BASED DATA or **POPULATION-BASED DATA**

PROVINCE: Northern Cape

POPULATION: RURAL **CITY/TOWN** METROPOLITAN

BASIC DATA

TIME PERIOD: 01/01/01 – 31/08/01

TOTAL NUMBER OF DELIVERIES: 3155

PNMR: 56 NNDR: 18 PCI: 1.61 LBWR: 25% PNMR >1000g: 40 NNDR >1000g: 13

PATTERN OF DISEASE: (please give percentages)

TOP 5 PRIMARY OBSTETRIC CAUSES: APH 27.4%, IUD unexplained 26.6%, Intrapartum asphyxia 21%, Infections 6.5%, Hypertensive disorders 6.5%

TOP 3 FINAL NEONATAL CAUSES:

Asphyxia & birth trauma 47.4%, Infection 23.7%, Prematurity related 21.1%

PROPORTION OF DEATHS WITH AVOIDABLE FACTORS PRESENT:

Patient-related: 54.4%

Administration-related: 12.6%

Health worker-related: 32%

No information/Could not be assessed: 1%

TOP 3 AVOIDABLE FACTORS (specify):

Unbooked 27.2%

Inappropriate response to poor fetal movements: 17.5%

Delay in referring patient for secondary/tertiary treatment: 7.8%

WHAT DO YOU PERCEIVE THE MAJOR PROBLEMS TO BE (PARAGRAPH):

1. Stillbirths
2. Unbooked patients
3. Abruptio and hypertension: related to being unbooked
4. Infection: pre/intra/postpartum

SOLUTIONS TO THESE PROBLEMS (PARAGRAPH):

For Point 4. Neonatal care can be improved: sisters need training in university NICU and have to be sustainable: no rotation.

For Points 1,2,3: need to be attended to be provincial co-ordinator.

PROBLEMS EXPERIENCED WITH PERINATAL PROBLEM IDENTIFICATION PROGRAMME (PIPI):

1. Not possible to delete unless a new case is inserted.
2. Absolute number of PNM cases per weight category don't appear in PPIP, only percentages.
3. Not possible to look at final cause of neonatal death in neonatal death cases (excluding SB). This overestimates our amount of asphyxia cases as cases where we still could have intervened from an obstetric or neonatal point of view.
4. Not possible to see how many SB cases were unbooked.
5. Not possible to see the obstetric cause of death in the SB cases only.
6. PFC is categorised under asphyxia: this is not always linked.
7. Not possible to insert second cause of death.

NORTHERN PROVINCE ABSTRACTS

PRESENTER: Dr Sajira Lakhana INSTITUTION: Elim Hospital

HOSPITAL-BASED DATA

PROVINCE: Northern province POPULATION: **RURAL**

BASIC DATA

TIME PERIOD: May 01 to Aug 01, but will be presenting up to end of Oct01

TOTAL NUMBER OF DELIVERIES:1134

PNMR: 40/1000 NNDR: 26/1000 >1kg PCI: 3,39 LBWR:10,8% **PNMR: 36/1000>1000g**
NNDR >1000g: 23/1000

PATTERN OF DISEASE: (please give percentages)

TOP 5 PRIMARY OBSTETRIC CAUSES:

1. Spontaneous preterm labour 42,2%
2. Intrapartum asphyxia 22,2%
3. Intrauterine Death 11,1%
4. APH 4,4%
5. IUGR 4,4%

TOP 3 FINAL NEONATAL CAUSES:

1. Immaturity 31%
2. Hypoxia 24,1
3. Infections 10,3

PROPORTION OF DEATHS WITH AVOIDABLE FACTORS PRESENT:

Patient-related: 20,8%

Administration-related: 9,4%

Health worker-related: 64,4%

No information/Could not be assessed: 5,7%

TOP 3 AVOIDABLE FACTORS (specify):

1. No response to poor uterine fundal growth 9,4%
2. Delay in seeking medical attention in labour 9,4%
3. Never initiated antenatal care 7,5
4. Intrapartum asphyxia not detected, fetus not monitored 7,5
5. Delay in calling for expert assistance 7,5

WHAT DO YOU PERCEIVE THE MAJOR PROBLEMS TO BE (PARAGRAPH):

There is definitely a **deficiency of knowledge**. Most patients receive antenatal care at the clinic level, very few of the clinic nurses have advanced midwifery training or PEP training. In the 30 clinics attached to Elim, there are only 4 advanced midwives. There should be some form of **patient education program**. The new holistic approach to primary health care has had a negative effect on specialised care and patient education. With regards to patients presenting late in labour, one would have to have an in depth look into underlying factors. **Transport** could well be a factor, since the most distant clinic attached to Elim is about 70km from the hospital. Although clinics are close, and abundant very few render 24 hour service. With regards to poor intrapartum fetal monitoring, staffing may be an issue.

SOLUTIONS TO THESE PROBLEMS (PARAGRAPH):

In **service training**, is of paramount importance. The new system, looking at training and implementation of guidelines, that is currently being developed shows some promise. A strategy to include **patient education programs** must be developed. Individual patient education as advocated by the new system is failing because of the abnormally disproportionate ratio of staff to clients visiting clinics. **Introduction of 24 hour services** would be of some help for those remote areas. **Staffing** of labour ward with adequate number of professional nurses is important.

PROBLEMS EXPERIENCED WITH PERINATAL PROBLEM IDENTIFICATION PROGRAMME (PIIP):

Although a very good program, it is not very user friendly. Importing and exporting of data is not one of the simplest tasks as is with most other current programs. Some thought should be given including a **save** and **save as**, instead of import and export. Data sheets and some other information cannot be viewed, but have to be printed. This is a handicap especially if there is no printer attached and one would just like to look up something.

PRESENTER: Dr GM Mothupi, C Doubada

INSTITUTION: Mankweng Hospital

HOSPITAL-BASED DATA

or

POPULATION-BASED DATA

PROVINCE: Northern Province

POPULATION: **RURAL** CITY/TOWN METROPOLITAN

BASIC DATA

TIME PERIOD: 01/07/01 – 30/09/2001

TOTAL NUMBER OF DELIVERIES: 1258

PNMR: 48/1000 NNDR: 12/1000 PCI: 2.93 LBWR: 14.0% PNMR >1kg: 41/1000

NNDR >1kg: 11/1000

PATTERN OF DISEASE: (please give percentages)

TOP 5 PRIMARY OBSTETRIC CAUSES: 1. Intra uterine death 34.4%, 2. Spontaneous preterm labour 18%, 3. Syphilis 9.8%, 4. Intrapartum asphyxia 6.6%, 5 Hypertensive disorders 6.6%

TOP 3 FINAL NEONATAL CAUSES: 1. Prematurity 60%, 2. Congenital abnormalities 26.7%, 3. Asphyxia 13.3%

PROPORTION OF DEATHS WITH AVOIDABLE FACTORS PRESENT: None

Patient-related: 45.5%

Administration-related: 39.4%

Health worker-related: 15.2%

No information/Could not be assessed

TOP 3 AVOIDABLE FACTORS (specify):

1. Unbooked/late booking
2. Syphilis screening not done and no results returned
3. Delay in referring from clinics and referring hospitals/centres.

WHAT DO YOU PERCEIVE THE MAJOR PROBLEMS TO BE (PARAGRAPH):

1. Patients present late in pregnancy or no booking.
2. Clinics do not test for syphilis and, if tested, results are not returned.
3. Preterm labour of <1000g deaths with patients arriving late.
4. ENND of babies 1000-1499g due to lack of neonatal facilities.
5. Patients with complications referred late in pregnancy or in labour.

SOLUTIONS TO THESE PROBLEMS (PARAGRAPH):

1. On-site syphilis testing.
2. Identifying pregnancy problems and early referrals.
3. Continued in-service education about pregnancy and it's complications.
4. Provision of neonatal staff and facilities.

PROBLEMS EXPERIENCED WITH PERINATAL PROBLEM IDENTIFICATION PROGRAMME (PIIP):

Entering the descriptive information for the code "Other" in the computer.

<p>PRESENTER: MD Maleka INSTITUTION: Seshego Hospital HOSPITAL-BASED DATA or POPULATION-BASED DATA PROVINCE: Northern Province POPULATION: RURAL CITY/TOWN METROPOLITAN</p>
<p>BASIC DATA TIME PERIOD: 01/07/00 – 31/08/01 TOTAL NUMBER OF DELIVERIES: 684 PNMR: 41/1000 NNDR: 133/1000 PCI: 89 LBWR: 14% PNMR >1kg: 32/1000 NNDR >1kg: 32/1000</p>
<p>PATTERN OF DISEASE: (please give percentages) TOP 5 PRIMARY OBSTETRIC CAUSES: 1. Intrauterine death, 2. Spontaneous preterm labour, 3. Trauma, 4. Intra-partum asphyxia</p> <p>TOP 3 FINAL NEONATAL CAUSES: 1. Prematurity related, 2. Asphyxia and birth trauma, 3. Trauma</p> <p>PROPORTION OF DEATHS WITH AVOIDABLE FACTORS PRESENT: Patient-related: 53.8% Administration-related: 23.1% Health worker-related: 15.4% No information/Could not be assessed: 7.7%</p> <p>TOP 3 AVOIDABLE FACTORS (specify): Combined with</p> <p>WHAT DO YOU PERCEIVE THE MAJOR PROBLEMS TO BE (PARAGRAPH): Patients seem not to be well informed on maternity issues e.g. bookings, the importance of antenatal care, so they book late for ANC and some default for subsequent visits. Serology results not always available – in most cases due to lack of facilities. Inadequate facilities both human and maternal pose sub-standard care in the nursery.</p> <p>SOLUTIONS TO THESE PROBLEMS (PARAGRAPH): Health education e.g. at antenatal clinics, radio talks etc. Motivation for facilities e.g. transport for collection of specimens from clinics to laboratory. Sessional obstetrician & paediatrician in a district hospital. Professional and skilled nurse in neonatal unit at all times.</p> <p>PROBLEMS EXPERIENCED WITH PERINATAL PROBLEM IDENTIFICATION PROGRAMME (PIIP): Lack of computer skills in most personnel. No computers in the wards. Struggle to capture the data on the computer.</p>

PRESENTER: Sr M Maboho/Dr R Fuentes
INSTITUTION: Tshilidzini Hospital
HOSPITAL-BASED DATA or POPULATION-BASED DATA
PROVINCE: N Province
POPULATION: **RURAL** CITY/TOWN METROPOLITAN

BASIC DATA

TIME PERIOD: 1st July – 31st August 2001
TOTAL NUMBER OF DELIVERIES: 905
PNMR: 28/1000 NNDR: 17/1000 PCI: 1.97 LBWR: 11.3% PNMR >1kg: 22/1000
NNDR >1kg: 15/1000

PATTERN OF DISEASE: (please give percentages)

TOP 5 PRIMARY OBSTETRIC CAUSES: (1) Preterm premature rupture of membranes (16%), (2) Abruptio placentae, unexplained intrauterine death, (3) fresh and (4) macerated (all 8%) and (5) Syphilis (4%)

TOP 3 FINAL NEONATAL CAUSES: (1) Hyaline membrane disease (13.3%), (2) Hypoxic ischaemic encephalopathy and (3) Persistent fetal circulation (all 6.7%)

PROPORTION OF DEATHS WITH AVOIDABLE FACTORS PRESENT:

Patient-related: 9.1%
Administration-related: 9.1%
Health worker-related: 30.3%
No information/Could not be assessed: 51.5%

TOP 3 AVOIDABLE FACTORS (specify): Insufficient notes to comment: 51.5%
Probable causes: (1) Inappropriate response to APH, (2) No Syphilis screening performed and (3) Fetal distress not detected intrapartum, fetus monitored (all 3.0%)

WHAT DO YOU PERCEIVE THE MAJOR PROBLEMS TO BE (PARAGRAPH): PNMR in LBW 176/1000

Sexually Transmitted Diseases in general appears to be highly associated with premature labour and intrauterine deaths. Patients arrive to health services in advanced premature labour or presenting with PPRM. No serology results in more than 80% of deaths. No ventilators available in Neonatal Units.

SOLUTIONS TO THESE PROBLEMS (PARAGRAPH):

Increase counselling and screening for STD's in pregnancy and health education concerning identifying signs and symptoms of premature labour.

PROBLEMS EXPERIENCED WITH PERINATAL PROBLEM IDENTIFICATION PROGRAMME (PIIP):

Time consuming procedure, especially in personnel with inadequate computer training. In those areas where there was a statistic information proces before PIIP, it becomes a parallel system that duplicates the work.

PRESENTER: Dr Matos	INSTITUTION: WF Knobel hospital
HOSPITAL-BASED DATA	
PROVINCE: Northern province	POPULATION: Rural
BASIC DATA	
TIME PERIOD: Jan 01 to Aug 01	
TOTAL NUMBER OF DELIVERIES: 1312	
PNMR: 28/1000 NNDR: 12/1000 <1kg PCI: 3,72 LBWR: 6,8% PNMR 25/1000>1000g NNDR >1000g: 11/1000	
PATTERN OF DISEASE: (please give percentages)	
TOP 5 PRIMARY OBSTETRIC CAUSES:	
1. Intrauterine death – 29,7% - 24,3% is macerated SB	
2. Spontaneous preterm labour 24,3%	
3. APH – 13,5%	
4. Intrapartum asphyxia 22,2%	
5. Trauma 10,8%	
TOP 3 FINAL NEONATAL CAUSES:	
4. Immaturity 37,5%	
5. Hypoxia 31,3%	
6. Infections 12,5%	
PROPORTION OF DEATHS WITH AVOIDABLE FACTORS PRESENT:	
Patient-related: 48,8%	
Administration-related: 29,8%	
Health worker-related: 20,2%	
No information/Could not be assessed: 1,2%	
TOP 3 AVOIDABLE FACTORS (specify):	
1. Inappropriate response to FM 15,5%	
2. Delay in seeking medical attention in labour 11,9%	
3. No access to icu bed 9,5%	
4. lack of transport home to institute 6,0%	
5. Personel not sufficiently trained to handle patients 6,0%	
WHAT DO YOU PERCEIVE THE MAJOR PROBLEMS TO BE (PARAGRAPH):	
Lack of knowledge. Both patient and staff related. An intensive patient education program is necessary. In service training program for staff is also important. Sufficiently trained staff should run labour wards. There is a high incidence of prematurity and no neonatal icu facility in the entire province. The province has poor communities with poor transport access. The Ems does not serve the poor communities well. Improvement of roads as well as easy access to transport is important.	
SOLUTIONS TO THESE PROBLEMS (PARAGRAPH):	
In service training , is of very important. An intensive patient and community education program is necessary. Intensifying the outreach programs and community education is important. Establishing intensive care facilities especially for babies with a good prognosis is important. Intensive training in obstetric health for staff is necessary. Maintaining staff for longer periods in the same ward would be of benefit. Frequent rotations result in poor general knowledge. A strategy to include patient education programs must be developed. Individual patient	
PROBLEMS EXPERIENCED WITH PERINATAL PROBLEM IDENTIFICATION PROGRAMME (PPIP):	
Difficult to load and transfer to a disk.	
Unable to view data sheets, program insists on printing	
Strangely enough the program only prints data sheets for a short period rather than the period requested hence unable to analyse the different birthweight categories	
Unable to view data analysed, only graphic representation given.	

<p>PRESENTER: Mrs ML Morewane INSTITUTION: Mapulaneng Hospital HOSPITAL-BASED DATA or POPULATION-BASED DATA PROVINCE: Northern Province POPULATION: RURAL CITY/TOWN METROPOLITAN</p>
<p>BASIC DATA TIME PERIOD: 01/07/01 – 31/08/01 TOTAL NUMBER OF DELIVERIES: 1009 PNMR: 23/1000 NNDR: 9/1000 PCI: 1.24 LBWR: 13.7% PNMR > 1kg: 17/1000 NND > 1kg: 6/1000</p>
<p>PATTERN OF DISEASE: (please give percentages) TOP 5 PRIMARY OBSTETRIC CAUSES: 1. Antepartum haemorrhage: 25.7%; 2. Spontaneous preterm labour: 20.0%; 3. Intrapartum asphyxia: 14.3%; 4. Intrauterine death: 11.4%; 5. Hypertensive disorders 8.6%. TOP 3 FINAL NEONATAL CAUSES: 1. Immaturity-related: 56.3%; 2. Hypoxia: 12,5%; 3. Other 12.5% PROPORTION OF DEATHS WITH AVOIDABLE FACTORS PRESENT: Patient-related: 63.9% Administration-related: 13.9% Health worker-related: 22.2% No information/Could not be assessed: Nil TOP 3 AVOIDABLE FACTORS (specify): Never initiated antenatal care. Multiple pregnancy not diagnosed antenatally. Inadequate facilities/equipment in neonatal unit/nursery. WHAT DO YOU PERCEIVE THE MAJOR PROBLEMS TO BE (PARAGRAPH): Failure to convince our clients about the importance of prenatal care. Lack of adequate health education. SOLUTIONS TO THESE PROBLEMS (PARAGRAPH): Clinics should be sufficiently staffed and supermarket style policy should be reviewed. PROBLEMS EXPERIENCED WITH PERINATAL PROBLEM IDENTIFICATION PROGRAMME (PIPI): Nil</p>

PRESENTER: ? Dr Miranda
 INSTITUTION: St Rita's Hospital
HOSPITAL-BASED DATA or **POPULATION-BASED DATA**
 PROVINCE: Northern Province
 POPULATION: **RURAL** CITY/TOWN METROPOLITAN

BASIC DATA
 TIME PERIOD: July to September
 PNMR :40/1000 NNDR :18/1000 PCI:2.24 LBWR: 14.0 % PNMR> 1000: 34/1000
NNDR >1000 18/1000

PATTERN OF DISEASE: (please give percentages)
 TOP 5 PRIMARY OBSTETRIC CAUSES:
 Spontaneous Preterm Labour 27.5 %
 Intrapartum Asphyxia 27.5 %
 Hypertensive Disorders 12.5 %
 Intrauterine Death 12.5 %
 Trauma 7.5 %

TOP 3 FINAL NEONATAL CAUSES:
 Hypoxia 55.6 %
 Immaturity related 27.5 %
 Aspiration Pneumonia 5.6 %

PROPORTION OF DEATHS WITH AVOIDABLE FACTORS PRESENT:
 Patient-related: 66.6 %
 Administration-related: 11.1 %
 Health worker-related:
 No information/Could not be assessed: 22.2 %

TOP 3 AVOIDABLE FACTORS (specify):
 Never initiated antenatal care 55.6 %
 Insufficient notes to comment 22.2 %
 Personnel too junior to manage the patient 11.1 %

WHAT DO YOU PERCEIVE THE MAJOR PROBLEMS TO BE (PARAGRAPH):
 Patients booking late. Shortage of trained staff. Drs too junior to manage complicated patients. Lack of ventilators for newborn. Patients with advanced age and high parity.

SOLUTIONS TO THESE PROBLEMS (PARAGRAPH):
 Bringing more specialists on board (obstetricians and paediatricians). Continue training nurses staff working in labour wards and keeping them on the same post. To improve regional Hospitals at least with ventilators for newborns and if possible creating a small IUC. To educate more the communities and involve them in the problems

PROBLEMS EXPERIENCED WITH PERINATAL PROBLEM IDENTIFICATION PROGRAMME (PIP):
 Impossible to delete wrong information.
 Impossible to overwrite on the same file information from a floppy.
 When inserting information in the perinatal death file it goes from the final cause of death to a new patient record. It doesn't go to avoidable factors.

WESTERN CAPE ABSTRACTS

PRESENTER: DH Greenfield

INSTITUTION: Peninsula Maternal and Neonatal Service

HOSPITAL-BASED DATA or **POPULATION-BASED DATA**

PROVINCE: Western Cape

POPULATION: RURAL CITY/TOWN **METROPOLITAN**

BASIC DATA

TIME PERIOD: 1 January 2000 to 31 December 2000

TOTAL NUMBER OF DELIVERIES: 28284

PNMR: 33 / 1000 NNDR: 10 / 1000 PCI: 1.16 LBWR: 16.0%

PNMR >1000g 19 / 1000 NNDR >1000g 5 / 1000

PATTERN OF DISEASE: (please give percentages)

TOP 5 PRIMARY OBSTETRIC CAUSES: 1. Spontaneous preterm labour (27,3%) 2. Unexplained IUD – macerated (16,4%) 3. Antepartum haemorrhage (Abruptio placentae) (15,1%) 4. Hypertensive disorders (12,8%) 5. Intrauterine growth retardation (7,9%)

TOP 3 FINAL NEONATAL CAUSES: **1.** Immaturity related (57,2%) **2.** Congenital abnormalities **3.** Intrapartum hypoxia

PROPORTION OF DEATHS WITH AVOIDABLE FACTORS PRESENT:

Patient-related: 59,3%

Administration-related: 7,2%

Health worker-related: 31,9%

No information/Could not be assessed 1,6%

TOP 3 AVOIDABLE FACTORS (specify): **1.** Never initiated antenatal care **2.** Delay in seeking medical care during labour **3.** Booked late in pregnancy

WHAT DO YOU PERCEIVE THE MAJOR PROBLEMS TO BE (PARAGRAPH):

Patients: Poor antenatal clinic attendance: Delays in coming for medical care

Health workers: Monitoring in labour, and interpreting the findings: Delay in referring patients to the next level of care

Administrative: Few, but transport delays need to be addressed

SOLUTIONS TO THESE PROBLEMS (PARAGRAPH):

Patients: Many of these are "socio-economic". Patients attend for care "better" when their standard of living improves. Transport to a health centre at night is a problem.

Health workers: Ongoing education – theory and skills; and the following of protocols.

PROBLEMS EXPERIENCED WITH PERINATAL PROBLEM IDENTIFICATION PROGRAMME (PIPI):

Very few – it works well, and is easy to use.

There need to be a few changes in the codes, particularly the congenital abnormalities in the final neonatal causes.

Some of the graphics are not working in the one which I am using.

I would find it useful to be able to delete a record rather than just overtyping, as I am working with several different units and have entered data on the incorrect unit's data base!

PRESENTER: Dr RN de Villiers
 INSTITUTION: Robertson Provincial Hospital
HOSPITAL-BASED DATA or **POPULATION-BASED DATA**
 PROVINCE: Western Cape
 POPULATION: RURAL **CITY/TOWN** METROPOLITAN

BASIC DATA
 TIME PERIOD: 07/2000 – 06/2001
 TOTAL NUMBER OF DELIVERIES: 851
 PNMR: 24/1000 NNDR: 13/1000 PCI: 0.93 LBWR: 21.6% PNMR >1kg: 20/1000
 NNDR >1kg: 12/1000

PATTERN OF DISEASE: (please give percentages)
 TOP 5 PRIMARY OBSTETRIC CAUSES: Idiopathic preterm labour: 30%, Labour related intrapartum asphyxia: 30%, IUD: 15%, No obstetric cause: 10%, Infections: 5%

 TOP 3 FINAL NEONATAL CAUSES:
 Hypoxia 36.4%, Immaturity 27.3%, Congenital abnormalities 18.2%

 PROPORTION OF DEATHS WITH AVOIDABLE FACTORS PRESENT:
 Patient-related: 37.9%
 Administration-related: 37.9%
 Health worker-related: 24.1%
 No information/Could not be assessed

 TOP 3 AVOIDABLE FACTORS (specify):
 1. Delay in seeking medical attention during labour 13.8%
 2. Insufficient nurses of duty 13.8%
 3. Smoking 10.3%

 WHAT DO YOU PERCEIVE THE MAJOR PROBLEMS TO BE (PARAGRAPH):
 District hospital – no incentive to attract experienced staff.
 Training and supervision – poor.
 Education of patients – poor.
 Inflexible employment policy of Department of Health. Not prepared to adapt to needs in district setting.

 SOLUTIONS TO THESE PROBLEMS (PARAGRAPH):
 Outreach education programmes.
 Sufficient staff complement despite increase in costs.
 Incentives to get experienced personnel in district hospitals.

 PROBLEMS EXPERIENCED WITH PERINATAL PROBLEM IDENTIFICATION PROGRAMME (PPIP):
 Inability to change graphic outlay, colours, headings. Extension of data on normal deliveries to compare more detail to perinatal deaths e.g. time of delivery and Apgar score of all babies born, duration of 1st stage of labour, duration of 2nd stage of labour, bed occupancy.

