National Perinatal Morbidity and Mortality Committee Report 2008-2010

Executive summary

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I. INTRODUCTION

The National Perinatal and Neonatal Morbidity and Mortality Committee (NaPeMMCo) was established in March 2008 as one of the three Ministerial committees tasked to look at maternal, perinatal and child deaths in South Africa. NaPeMMCo was tasked to audit all perinatal and neonatal deaths occurring in the country and to produce annual reports and a final triennial report in 2011. The committee was also tasked to make recommendations on what needed to be done to reduce perinatal and neonatal deaths.

Due to large numbers of perinatal and neonatal deaths it was not possible for the committee to independently and *ab initio* review each and every death in the country. The committee therefore used all available databases in the country containing information on perinatal and neonatal deaths.

The national databases reviewed were the District Health Information System (DHIS) which collects information on births and deaths from government healthcare facilities and Statistics South Africa (Stats SA) which analyses information from the Department of Home Affairs (DHA) on all registered births and deaths.

The DHIS and DHA databases collect mainly the number of deaths rather than the pathological and health system causes of perinatal and neonatal deaths. Information on the pathological and health system causes of perinatal and neonatal deaths was acquired from two databases, the Perinatal Problem Identification Program (PPIP) and Child healthcare Problem Identification Program. Both programs are used in a significant number of public sector hospitals and use a structured system for conducting mortality reviews on deaths occurring in hospitals. The PPIP only collects data from maternity and neonatal wards in the facilities where births are conducted whereas Child PIP collects data on neonatal deaths from children's wards or general paediatric wards.

To try to get as complete a picture on perinatal and neonatal deaths in the country as possible, the committee also gathered information on deaths occurring in private hospitals.

After the data from the different database sets and from provinces were presented to and reviewed by the committee, recommendations on what the country needs to do to reduce perinatal deaths were made. The committee has also made suggestions on how to implement these recommendations. In particular, obstetric and neonatal interventions that, if implemented, will have a significant impact in reducing neonatal deaths, are presented in this report.

II. FINDINGS AND COMMENTS OF THE COMMITTEE ON THE DIFFERENT DATABASES

A. THE DISTRICT HEALTH INFORMATION SYSTEM

1. Findings

The number of births occurring in the government healthcare facilities in the country have increased by 15% from 884, 544 in 2004 to 1, 016, 788 in 2009 (Table 1). From 2005 to 2009 more than 22 000 babies per year died before they were born (stillborns) (Table 1). This gives a stillbirth rate ranging between 24.7/1000 births in 2004 to 21./1000 births in 2009, showing a reduction of only 10% over a six year period. From 2004 to 2009 more than 8000 babies who were born alive died within the first week of life.

This gives an early neonatal mortality rate of 10.2/1000 live births in 2004 decreasing to 8.3/1000 live births in 2009, a reduction of 18.6%.

Table 1: The number births, stillbirths, neonatal deaths and mortality rates from 2004-2009

	2004	2005	2006	2007	2008	2009
Number of Births	884 544	944 737	982 733	980 270	1 011 497	1 016 788
Number of Stillbirths	21 358	22 192	23 269	23 110	22 681	22 026
Number of Early Neonatal Deaths	8 739	8 893	8 922	8 134	8 239	8 226
Stillbirth rate*	24.2	23.5	23.7	23.6	22.5	21.7
Early Neonatal Mortality Rates$	10.2	9.7	9.3	8.5	8.4	8.3
Perinatal Mortality Rate*	34.1	33.0	32.8	31.9	30.6	29.8

*- Stillbirth and perinatal mortality rates are per 1000 births

$- Early neonatal mortality rates are per 1000 live births

2. Comments

Information on stillbirths and neonatal deaths is collected in a standardized way in all public healthcare facilities that conduct births in the country, using the DHIS. The DHIS is able to provide substantial information on mortality indicators. The following gaps were noted in the data collected by DHIS:

- The information on late neonatal deaths is incomplete

- The DHIS does not provide data in universally accepted birth weight categories using 500 gram ranges (500-1000 grams, 1000-1499g, 1500-1999g, 2000-2499g and ≥2500 grams)

- There are differences in numbers of births and deaths acquired from provincial DHIS datasets when compared to those acquired from the national DHIS dataset

- The incomplete data and differences between provincial and national DHIS datasets is of major concern as it suggests inadequate verification processes of data as the data is passed on from facilities to provinces and from provinces to national DHIS.

This should be born in mind when interpreting any data from the DHIS.

A precise neonatal mortality rate for the country based on the DHIS datasets is not possible as neonatal mortality rate includes both early and late neonatal mortality rates, and data from DHIS on late neonatal deaths was incomplete.

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B. STATISTICS SOUTH AFRICA

1. Findings

The number of registered births in1997 were recorded to be 1, 154, 226 compared to 1, 080, 559 in 2008. There is a delay in registering births in the country; therefore births for 2008 are less complete than those for 1997. Most stillbirths and neonatal deaths are registered to have occurred in the healthcare facilities (79%), 8-10% occurred at home and in 11-13% of cases the place of death was not recorded. In order to get a reasonable estimate for the number of deaths in the country, the committee felt that it is important that the registered numbers of stillbirths and deaths are adjusted for under-registration. The adjusted number of stillbirths per year have increased over this period (1997 to 2008) from 13 163 in 1997 to 16 677 in 2008. This gives a stillbirth rate increasing from 11.4/ 1000 births in 1997 to 15.9/ 1000 births in 2008, with wide variations in-between. The adjusted number of all neonatal deaths decreased from 20 317 in 1997 to 15 043 in 2008 (Table 2). The neonatal mortality rate decreased from 16.2/1000 in 1999 to 13.9/1000 live births in 2008, but there was little change in neonatal mortality rate between 2001 (13.1/1000 live births) and 2008 (13.9/ 1000 live births) (Figure 1).

The leading causes of death during the neonatal period are short gestation (prematurity)and low birth weight, birth asphyxia and infections(Figure 2). Mortality rate from the causes listed above was stable over the period, with the exception of birth asphyxia which was noted to increase after 2005.

Table 2: Registered and adjusted number of stillbirths and neonatal deaths, 1997-2008

Year	Births	Stillbirths		Early neonatal deaths 0-6 days		Late neonatal deaths 7-28 days		Neonatal deaths 0-28d
		Registered	Adjusted	Registered	Adjusted	Registered	Adjusted	Adjusted
1997	1,154,226	5,976	13,163	6,843	15,073	2,381	5,244	20,317
1998	1,149,711	7,726	16,369	7,629	16,163	2,467	5,227	21,390
1999	1,143,246	11,966	24,470	6,403	13,094	2,620	5,358	18,452
2000	1,134,620	12,561	24,824	6,354	12,557	2,591	5,121	17,678
2001	1,128,469	14,181	26,261	5,482	10,152	2,508	4,644	14,796
2002	1,124,624	13,285	21,886	7,159	11,794	2,581	4,252	16,046
2003	1,118,771	14,638	21,686	7,878	11,671	3,061	4,535	16,206
2004	1,111,539	15,819	20,814	7,917	10,417	3,317	4,364	14,781
2005	1,103,623	13,822	16,261	9,576	11,266	3,336	3,925	15,191
2006	1,095,651	14,363	16,377	9,757	11,125	3,818	4,353	15,479
2007	1,087,930	14,179	16,168	9,490	10,821	3,916	4,465	15,286
2008	1,080,559	14,626	16,677	9,572	10,914	3,621	4,129	15,043

Adjusted early neonatal and late neonatal mortality rates, 1999-2008
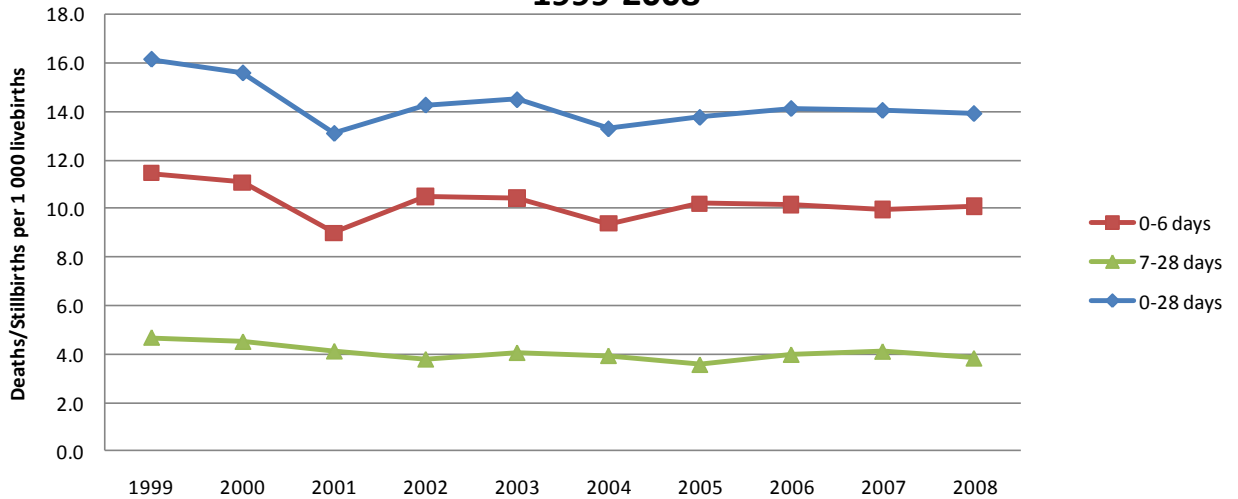

Figure 1: Adjusted mortality rates for the different neonatal periods, 1999-2008

Deaths of infants and newborns, 2008
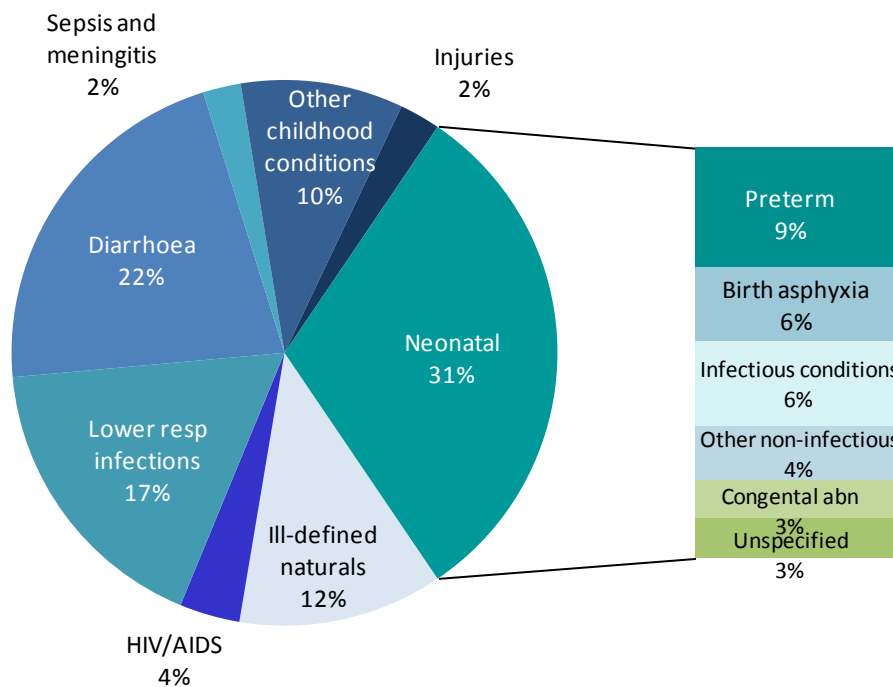### Stats SA (N=45 316)

Figure 2: Cause of death profile for infants and newborns, 2008

2. Comments

All deaths and stillbirths should be registered with the Department of Home Affairs. The number of stillbirths recorded in Stats SA is incorrect as it is much less than that recorded for the public sector only by the DHIS. It should be higher. Therefore, many stillbirths are not registered.

However, in recent years, there have been efforts to improve the registration of deaths with some degree of success. This needs to be considered when noting the increasing trend in the number of registered deaths. Aside from under-registration of deaths, there is also a degree of mis-classification of causes. Until such time as there is complete coverage of death registration as well as multi-level systems to ensure good quality cause of death certification, there will be uncertainty around the statistics derived from vital registration. It is important to engage with the data alongside other sources of information and interpret it carefully.

Vital statistics show increasing numbers of stillbirths and neonatal deaths for the period 1997-2008. It is possible that much of the increase was due to improved registration and that the neonatal mortality rate may have declined slightly during this period. It is estimated that in 2007, 90% of infant deaths were registered. These findings suggest that if these levels of registration can be maintained, the vital registration system is poised to be able to serve a useful health information role. The provincial trends to date are difficult to interpret and may reflect provincial differences in reporting as well as real differences in the underlying trend in mortality and stillbirth rates. It is hoped that as each province improves the quality and accuracy of its data, derived data and trends will closer reflect the reality of the South African perinatal population.

C. THE SOUTH AFRICAN DEMOGRAPHIC HEALTH SURVEYS (SADHS)

1. Findings

Two community surveys were conducted in the country in 1998 and 2003. The questionnaires used during these surveys were designed to collect data on a number of factors which included information on antenatal and postnatal care, and number of births and deaths. The 1998 survey interviewed 12, 247 households while the 2003 survey interviewed 7, 756 households. The neonatal mortality rates reported in these surveys were not different between the two years (Table 3).

Table 3. Comparison of neonatal mortality rates from the SADHS

Neonatal mortality (preceding 5 -10 years)	1998	2003
Neonatal mortality rate per 1000 live births according to sex		
Male	23.1	26
Female	14.6	14
Neonatal mortality rate per 1000 live births according to community		
Urban	16.4	20
Non-urban	22.0	18

2. Comments

According to the SADHS report, data problems arose from poor fieldwork, suggesting inadequate training, supervision and quality control during the survey. Fertility levels that were reported in SADHS

were low and were not consistent with other data sources. Therefore it is questionable whether data from these surveys provides an accurate reflection of what is happening in the country.

National household surveys are a useful and important source of information for policy makers and administrators when strategizing the national health service. Demographic and Health Surveys, using internationally tested questionnaires, have been conducted in many countries where shorter questionnaires and indirect demographic methods have been used. Ideally such surveys should be run every 3-5 years, so as to provide both 'snapshot' and trend information.

When conducted properly with appropriate quality controls, such a survey not only provides accurate information on the levels of mortality but also provides information on the coverage and access to strategic programmes aimed at improving newborn and child survival. In addition, national surveys cover the whole population including those who do not use the health services and those using the private sector.

Given the information gaps highlighted in this report, serious consideration should be given to how the next South African demographic household and health survey is conducted, and questionnaire content must be driven by National Ministerial cross-sectoral priority needs, The survey can and must only be carried out by high quality programme directors, within strict quality control systems.

D. THE PERINATAL PROBLEM IDENTIFICATION PROGRAM (PPIP)

1. Findings

The PPIP data are analyzed and published in the Saving Babies Report bi-annually. The 2008-2009 PPIP data is from41% of all public sector healthcare facilities that conduct births. Most births (59%) occur in Community Health Centers and District hospitals. According to PPIP, the low birth weight rate in the country varies between 15 and 20%. Most stillbirths and neonatal deaths occur in district hospitals (Table 4). The overall early neonatal mortality rate for all infants with a birth weight of ≥500g is 12/1000 live births and 8.5/1000 live births for those weighing ≥1000 grams. The overall perinatal mortality rate (PNMR) for birth weight ≥500g is 38/1000 births and 28/1000 births for those weighing ≥1000 grams. The PNMR was the highest for births to women less than 18 years of age (64.5/ 1000 births) followed by women more than 34 years of age (49.4/ 1000 births). For women between the ages 20 and 34 years the rate was 32.0/ 1000 births.

The common obstetric causes associated with perinatal deaths were unexplained intrauterine deaths (22%), spontaneous preterm labour (21%), intrapartum hypoxia and trauma (16%), maternal hypertension (15%) and antepartum haemorrhage (11%). In over two thirds of early neonatal deaths the causes of deaths were prematurity and labour-related. The final neonatal diagnosis was reported to be immaturity-related (45%), intrapartum asphyxia-related (28%), infections (10%) and congenital abnormalities (8%). Amongst babies weighing ≥2500 grams about half (48.9%) died due to intrapartum hypoxia.

District and provincial hospitals recorded that 1 in 5 deaths were probably avoidable. The PPIP users felt that 46% of deaths due to labour-related complications were probably avoidable had the healthcare provider acted appropriately. Avoidable factors related to administrators were highest in the provincial tertiary hospitals and were mostly due to lack of appropriate facilities, staff and transport (Figure 3).

Table 4. Perinatal mortality rates per birth weight category according to hospitals

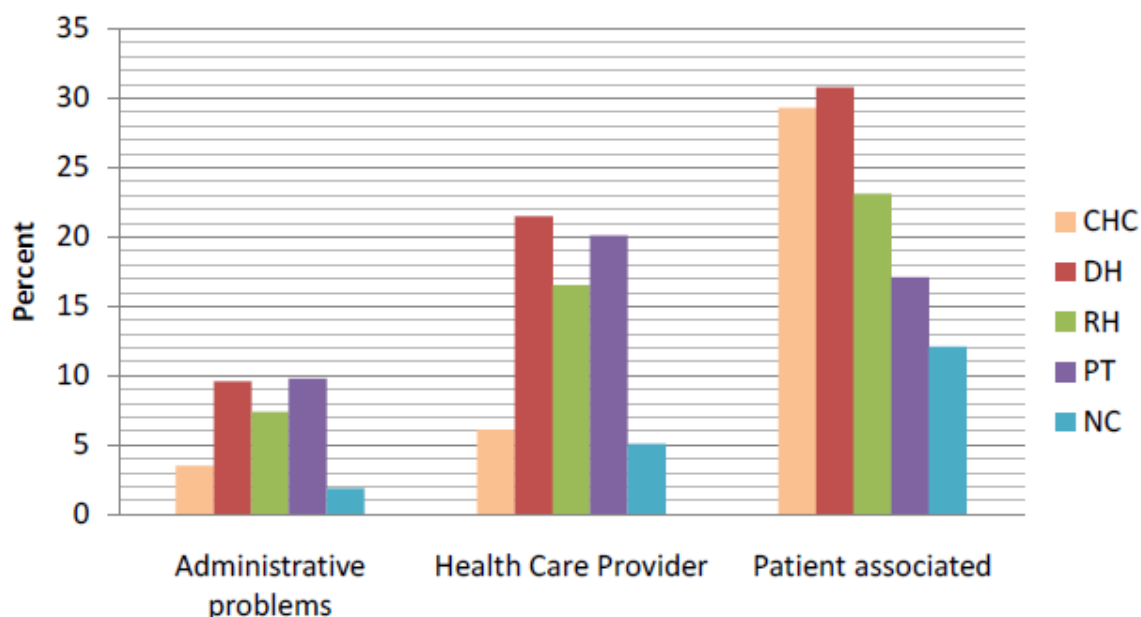| Weight category	Community Health Centres	District Hospitals	Regional Hospitals	Provincial Tertiary	National Centres
500 - 999g	712.50	777.72	742.34	689.43	649.82
1000 - 1499g	312.80	417.77	365.35	312.50	230.84
1500 - 1999g	100.15	178.60	151.67	138.73	122.96
2000 - 2499g	17.20	55.88	56.94	55.69	62.51
2500g+	2.59	14.03	13.21	14.41	15.54

Figure 3. Distribution of avoidable factors that probably resulted in death of the baby

2. Comments

The Perinatal Problem Identification Programme (PPIP) has been used as a facility-based audit system for monitoring the quality of care and perinatal mortality for more than 10 years. Data are collected from all types of hospitals and community health centres where deliveries are conducted. . Data collection is done on a voluntary basis. Staff working in the facilities decided that they wanted to monitor their own perinatal mortality data and also submitted their data to the national PPIP data base. The participating facilities from which data have been submitted have changed over time: some facilities have dropped out, while others have joined.

According to PPIP data the mortality rates have not changed over the last 10 years. The early neonatal mortality rate calculated from DHIS is similar to that recorded from PPIP for the babies weighing >1000 grams. Since DHIS has not recorded the weight categories, it is not clear if their mortality rate included or excluded babies weighing <1000 grams. Avoiding pregnancy at the extremes of reproductive age could be an important factor in reducing the PNMR in the country. A significant number of deaths

especially those related to asphyxia and prematurity can be avoided if healthcare workers acted appropriately and the administrators provided adequate space, equipment and staff.

E. THE CHILD HEALTHCARE PROBLEM IDENTIFICATION PROGRAM (CHILD-PIP)

1. Findings

Child PIP uses the hospital-based mortality review process to assess quality of care children receive in the South African health system. One fifth of South African hospitals are using Child PIP. , Neonates account for 7% of admissions to children's wards. About 10% of neonatal deaths recorded in children's wards arrive in hospital dead, and another 45% die within 24 hours of admission suggesting either late recognition of signs of illness, inadequate transport or inadequate care in the facilities. About half (48%) of neonates who die in children's wards weigh below the normal weight for age, and only 8% were classified as being born preterm or low birth weight (Figure 4). More that three quarter of these neonatal deaths were recorded as having no underlying problem.
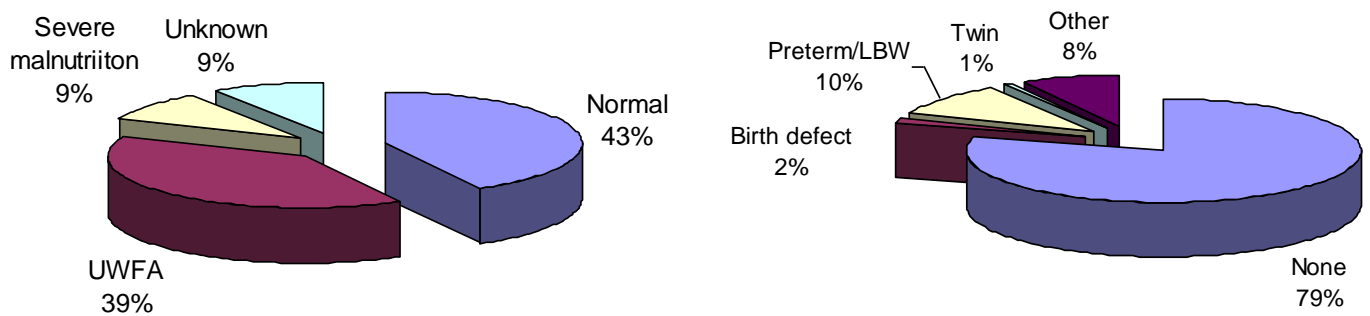

Figure 3. Nutritional status and underlying condition in neonates admitted to children's ward

Among the 63% with known type of feeding, 28% were exclusively breastfed, 26% were exclusively formula fed and 9% were given mixed feeding. About half of the neonates who die in the children's wards have an unknown maternal HIV status. Only one third of neonates who were born to mothers who were HIV positive were receiving anti-retrovirals for PMTCT.

The majority of deaths in neonates was caused by infections. Of the infections, septicaemia was the most common cause, followed by pneumonia, acute diarrhoeal disease, meningitis, PCP. Surprisingly perhaps in this age group, TB was the sixth most common cause of death. Health workers considered that only one quarter of the neonatal deaths occurring in children's wards were unavoidable leaving a very significant number of deaths, many due to infections, where a difference in overall care could have changed the outcome for the baby.

2. Comments

Large numbers of neonates (7% of all admissions) are still admitted to children's wards which are not designed to adequately accommodate them. Within the health system, HIV care is seriously suboptimal. Quality of care provided in this context needs drastic and urgent attention. Overall, basic, simple clinical

care processes are often not followed in hospitals, and at clinic level IMCI approaches are not used. Major resource allocation problems with regard to both neonatal high and intensive care facilities have been identified in this survey, as well as deficiencies in the allocation of skilled clinical personnel.

F. THE PRIVATE SECTOR

1. Findings

Three large hospital groups, Life Healthcare, Netcare and Medi-Clinic, provided data from117 hospitals, with delivery numbers for the individual hospitals ranging from around 4000 to less than 50 deliveries per year. Not included in this report are deliveries from the relatively small number of independent private hospitals not part of one of these hospital groups. The number of deliveries in these hospitals is unknown.

Deliveries in the private sector make up about 10% of all births in the country. The caesarean section rate was 68%. The stillbirth rate was 7.5/1000 deliveries and the neonatal mortality rate 4.0/1000 live births.

2. Comments

The mortality rates in the private sector are comparable to those reported from developed countries of the world. If these deaths are registered with Department of Home Affairs, these numbers will be included in the country mortality rates from Stats SA. While the mortality rates are pleasing to note, the high caesarean section rate is cause for concern and it is not clear as to what drives this.

III. NATIONAL SURVEY ON EQUIPMENT FOR NEONATAL CARE

Two thirds of district hospitals did not have the essential equipment required for the resuscitation of neonates. One third of regional hospitals did not have equipment to monitor vital signs. More than a third of hospitals do not have ventilators required to support infants who are critical ill with respiratory problems. The high number of deaths due to hypoxia in the district hospitals could be due partly to lack of or inadequate equipment needed for neonatal resuscitation. The absence of essential equipment from many hospitals may contribute to avoidable deaths of newborn babies. Inadequate equipment in regional hospitals contribute to high mortality rates in district hospitals as regional hospitals are not equipped to care for patients in need of respiratory support in their own hospitals let alone those from district hospitals.

IV. PROVINCIAL REPORTS FROM NaPeMMCc-ESTABLISHED PROVINCIAL COMMITTEES (ProPeMMCos)

Establishing the ProPeMMCos has not been widely successful. Overall three provinces, (Limpopo, Mpumalanga and the Western Cape) have achieved most of the objectives of the NaPeMMCo, four provinces are showing some progress (Eastern Cape, KwaZulu-Natal, North West and Northern Cape) and two provinces have not been functional for the period 2007 to 2009 (Gauteng and Free State).

Only two provinces were able to report with confidence that their DHIS data was accurate. Systematic auditing of perinatal deaths using PPIP is complete in 3 provinces, on track to involve all provincial maternity units in 4 provinces and dysfunctional in 2 provinces. Child PIP is a relatively new child health care audit system and has complete penetration in 1 province, and is progressing at various speeds in

the remaining 8 provinces. Audit data useable for planning is available in 5 provinces, some information in 2 and not available in 2. There has been a comprehensive attempt to implement the NaPeMMCo recommendations in 3 provinces, some progress in one and no reliable information in five provinces.

V. CONCLUSION

There is a high number of babies dying every year in South Africa. More than 22 000 babies die before they are born. In addition, more than 8000 babies are born alive but die within the first week of life. These numbers refer to deaths occurring within the healthcare facilities only. According to StatsSA,21% of stillbirths and neonatal deaths are reported to have occurred at home or the place of death is unknown. Therefore in addition to the more than 30 000 babies dying in healthcare facilities there are another more than 7 000 babies dying outside the healthcare facilities.

Determining the stillbirth rate and neonatal mortality rate for the country is difficult with the current available information from the different data sets. The data are often missing or the data are given with incomplete information. For example, Stats SA adjusted numbers for neonatal deaths and stillbirths are lower than those recorded in government healthcare facilities. Yet Stats SA should have data for the whole country including data from government healthcare facilities, private sector hospitals, and communities. The best estimate of the stillbirth rate seems to be that derived from the PPIP and the DHIS, and is in the range of 21 to 25 per 1000 births. The early neonatal mortality is in the range of 8 to 13 per 1000 live births estimated from the DHIS, the PPIP and Stats SA. Late neonatal deaths are poorly recorded in the PPIP and the DHIS. The best estimate therefore seems to be from Stats SA, which gives the late neonatal mortality rate to be 3.8 per 1000 live births. Adding these estimated early and late neonatal mortality rates gives a neonatal mortality rate of 11.8 to 16.8 per 1000 live births. There has been no change in these mortality rates over the last five years.

Most of the deaths occur in district hospitals. The common causes of these perinatal deaths are related to spontaneous preterm labour and intrapartum hypoxia.

Major factors that contribute to these perinatal deaths have been identified and majority of them are due to health system failures, which include healthcare providers not performing their work as expected and inadequate facilities and staff. Since these health system failures have been identified and contribute to a significant number of perinatal deaths, targeting them will significantly reduce the perinatal mortality rates in the country. The committee is of the opinion that its recommendations on specific interventions are to some extent addressing these failures and where this is happening, should result in significant reductions perinatal mortality rates.

VI. RECOMMENDATIONS

A. IMPROVING ACCESS TO APPROPRIATE HEALTHCARE

Recommendation 1
Regional Clinicians should be appointed to establish, run and monitor and evaluate outreach programmes for maternal and neonatal health

- Outreach posts must be dedicated, and have specific job descriptions. There must be posts for both doctors and nurses.

- Each province must have at least two clinicians (a doctor and an advanced midwife) who conduct and co-ordinate the outreach program in both maternal and neonatal care.

- Depending on the population size of the province there might be a need for more than two outreach clinicians. Large provinces might be divided into regions (having a number of districts combined), with two outreach clinicians responsible for each.

- Ideally there should be 1 paediatrician going with a neonatal nurse, and 1 obstetrician going with a midwife in each province or region. If this is not possible then there should be 1 family physician who will cover both maternal and neonatal care and an advanced midwife who will cover both midwifery and neonatal care.

Recommendation 2
Improve transport system for patients and establish referral routes

- Women in labour and sick neonates must be treated as emergency patients

- The response time from receiving the call to arrival of an ambulance should be less than 60 minutes

- Referral routes must be established and adhered to

- Referral systems must be set up in such a way that patients who need to be referred to regional or tertiary hospitals do not have problems of access.

- Referral systems must ensure that midwifery obstetric units and clinics are well supported by the hospitals and that the district hospitals are well supported by regional and tertiary hospitals.

Recommendation 3
The Government should ensure that constant health messages are conveyed to all and understood by all

- Community

- Patient/client

- Health Care Provider

B. IMPROVING QUALITY OF CARE

Recommendation 4
Improve the training of health care professionals

- Undergraduate/Pre-service Training

  - Maternal and "Neonatal" Guidelines must be part of and emphasized in the curricula in medical schools and nursing colleges

  - Training must put more emphasis on clinical skills therefore more time must be spent in the wards than classrooms

  - Teaching in medical schools and nursing colleges must include training in medical, obstetric and neonatal emergency care including resuscitation

  - Medical doctors during their internship training must spend at least a month in the neonatal units during their rotation in the departments of paediatrics

  - The Health Professionals Councils of South Africa (HPCSA) should consider including a requirement for certification of competency in emergency obstetrics and neonatal care before providing registration to practice as a doctor

  - After the usual four year nursing training, nurses should spend at least one year in a maternity unit (obstetrics and neonatology).

  - Government should train and employ Community Healthcare Workers (CHW) to assist with postnatal care of mothers and babies

- In-service Training.

  - Any in-service training should provide both theoretical knowledge and practical skills for the management of obstetric conditions identified as major contributors to perinatal deaths and to focus on skills identified as lacking by the PPIP.

  - Both doctors and nurses working in clinics and hospital wards that care for pregnant women and neonates should go through in-service training on appropriate management of women in labour and immediate care of both sick and well newborn infants.

  - The training must include management of medical and obstetric emergencies, neonatal resuscitation and obstetric anaesthesia.

  - This training must be structured and be easily accessible to all health workers. The equipment needed for training on practical skills such as mannequins and teaching videos must be made available.

  - The provinces must ensure that all health professionals (nurses and doctors)who need to go for training are supported to attend the training

  - The training package that includes training in anaesthesia, neonatal resuscitation, and management of medical and obstetric emergencies should be encouraged as it covers

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both the mother and the newborn. Currently this package is provided by the course called Essential Steps in Medical and Obstetric Emergencies (ESMOE). Provincial Departments of Health should request that ESMOE become the standard of care for maternal and newborn services throughout the country.

- o Midwives/Nurses and doctors should be trained or given an update on programmes that are implemented in the country and have been shown to improve the quality of care and reduce mortality for example Perinatal Education Programme (PEP) course.

Recommendation 5
National maternal and neonatal guidelines should be followed in all healthcare facilities

- All national guidelines on management of neonatal and maternal conditions must be available in all healthcare facilities

- Management of patients should be according to national guidelines

    - o Maternal guidelines

    - o Neonatal guidelines

Recommendation 6
Improve provision and delivery of postnatal care

- Healthcare workers must ensure that mothers and neonates are examined within 6 hours post-delivery, and are seen again within 6 days of life, at 6 weeks, and at 6 months

- Where possible the healthcare facilities should consider keeping all women and babies in the facility for 24 hours unless they can be seen the next day by a health care provider

- Government should train and employ Community Healthcare Workers (CHW) to assist with postnatal care of mothers and babies

- Community health care workers should be informed of the discharge of a mother so they can be seen within 3 days of discharge at their homes

- Communication between site of delivery and clinic to be improved so that relevant information is transferred between health institutions through appropriate use of Road to Health Card

- Patient carried card to be used as communication method

Recommendation 7
Normalization of HIV infection as any chronic disease

- All health care providers must provide HIV counselling and testing. Certification for counselling and testing must be abolished and restrictions on whom does the counselling and testing must be removed. HIV counselling and testing should be governed by the same principles and follows the same procedures as all other medical investigation.

- All HIV infected women must get antiretroviral drugs either for PMTCT or HAART. HAART must be started within 2 weeks of HIV diagnosis in appropriate cases

C. ENSURE THAT ADEQUATE RESOURCES ARE AVAILABLE

Recommendation 8

Provide adequate nursing and medical staff, adequate equipment for the health needs of both mothers and babies, especially the equipment required for emergency and critical care

- *Staffing*

    o Norms specified (Appendix 3) must be followed in labour ward, maternity units and neonatal care.

    o Staff must be used in the most efficient way.

    o Working environment and salaries must be improved/ adjusted so that the public healthcare facilities are able to attract and retain staff

    o Consideration should be given to task shifting, for example employing Clinical Associates to assist with performance of caesarean sections.

    o There should be an increase in the number of nurses and doctors trained in the country.

- *Equipment*

    o All clinics and hospitals should have basic equipment required during

    o Antenatal care

    o Intrapartum care

    o Resuscitation for both babies and mothers

    o Postnatal care of mothers

    o Postnatal care for sick babies and low birth weight babies (Appendix 4).

Recommendation 9

Provide an adequate number of hospital beds for the health needs of mother and babies at all levels of health care, including critical care beds.

- Increase the number of neonatal beds to accommodate the number of sick neonates. The following norms should be provided:

    o Level 1 beds: 3-4 per 1000 live births

    o Level 2 beds: 2-3 per 1000 live births

    o Level 3 beds: 1 per 1000 live births

- Increase number of beds to accommodate mothers for at least 24 hours post delivery

D. AUDITING AND MONITORING

Recommendation 10
Improving data collection and review

- All provinces must ensure that all healthcare facilities collect data using PPIP in addition to the data collected by DHIS.

- Each province must have a PPIP co-coordinator for collection and collation of data from facilities. If there is/are outreach/ regional clinician/s the function of the PPIP co-coordinator could be done by this person or one of them.

- National standardized registersforlabour wards and neonatal wards/nurseries should be used by all provinces.

- The ProPeMMCos should be strengthened and supported in all provinces to review data gathered by all available databases in the province and give a feedback to the MNCWH on the performance of the province.

For this to happen these committees need to be supported by the Provincial Department of Health.

This support includes ensuring that all representatives of provincial DHIS, MNCWH co-coordinators, provincial PPIP co-coordinator, provincial Child PIP, provincial PNMMC facilitator and representative from Home Affairs attend the committee meetings.

The Provincial Department must provide for travelling and accommodation requirements for these meetings.

The Provincial Department must provide secretarial support to the committee. The committee is expected to meet four times a year

VII. SUGGESTED SPECIFIC OBSTETRIC AND NEONATAL INTERVENTIONS TO REDUCE STILLBIRTHS AND NEONATAL DEATHS

A. OBSTETRIC INTERVENTIONS

1. Reducing unexplained intrauterine deaths

- Early start of antenatal care, that is as soon as the women has missed a menstruation period

- Educate women on recognizing and reporting decrease in fetal movements

- Educate communities on bad foetal outcomes related to smoking and alcohol

- Train health workers training antenatal foetal assessment

- Foetal assessment algorithms: movements, CTG, delivery

- Symphysis-fundus measurement chart

- Implement on-site syphilis testing

- Provision of patient-held antenatal record to all health practitioners and requirement that essential information recorded whenever a pregnant woman is seen

- Train healthcare workers on Basic Antenatal Care (BANC)

- Implement baseline early pregnancy ultrasound scans by midwives (dating, encourage attendance)

- Algorithms for early delivery for previous unexplained intrauterine death, post-dates, poor growth, hypertension, diabetes, APH, reduced fetal movements

2. Reducing deaths related to spontaneous preterm birth

- Enquire about history of previous pregnancies in order to identify women with previous mid-trimester pregnancy losses, who might benefit from use of cervical cerclage

- Diagnosis and treatment of infections, e.g. UTI, HIV

- Maternal steroids (plus tocolysis) to prevent respiratory distress syndrome in the newborn.

3. Reducing deaths due to intrapartum asphyxia

- Correct use of the partogram

- Health worker training on intrapartum foetal assessment

- Safe labour induction (e.g. extra-amniotic saline)

- Provide adequate facilities to perform caesarean sections (C/S), including mid-level workers to do C/S where doctors not available

- Use of beta-stimulants (tocolysis) for foetal distress while women are being transportedduring labour and women awaiting caesarean section

4. Reducing deaths related to maternal hypertensive disorders
- Availability of sphygmomanometers

- BANC training

- Protocols for management of hypertensive disorders (e.g. on posters)

5. Reducing deaths related to antepartum haemorrhage (APH)
- Educate pregnant women in getting medical assistance early when having vaginal bleeding

- Protocols for management of APH to be strictly followed

6. Interventions to reduce unplanned pregnancies
- Strengthening of family planning services

- Re-introduction of choice of family planning methods including the intrauterine device (IUD)

B. NEONATAL INTERVENTIONS

1. Reducing neonatal deaths due to asphyxia:
- Prompt recognition of neonates requiring resuscitation

- Starting resuscitation immediately,

- Close monitoring and on-going care of neonates who required resuscitation,

2. Reducing deaths in low birth weight infants:
- Appropriate management of infants with respiratory distress – provide oxygen therapy, appropriate fluid therapy, antibiotics, non-invasive ventilation that is providing continuous positive airway pressure (CPAP), and surfactant replacement therapy[3,4].

- Temperature control: keep babies warm, avoid hypothermia

- Blood sugar control: regular monitoring of glucose levels

- Fluid balance: provide appropriate amounts of fluids; enteral, parenteral or both

- Provide oxygen therapy as needed with appropriate oxygen delivery system and monitoring of oxygen levels in babies (saturations)

- Enforce strict aseptic techniques at all times: Washing of hands and/ or use of alcohol-based hand-rubs

- Recognition of jaundice and the management thereof

- Treating neonatal infections- early recognition, and appropriate antibiotic use[5]

- Promote breastfeeding or feeding breast milk for all babies

- Feeding choices – Encourage breast feeding including in those who are born to HIV positive mothers[6],

- Provide flash heating of breast milk from HIV positive mothers

- Provide formula feeding only if appropriate criteria are present

- Provide Kangaroo mother care (KMC)

- Follow-up care of low birth weight infants

- monitor growth and development of the high risk infant with appropriate interventions as indicated,

- maternal education with respect to the Road to Health Card, oral rehydration, signs of illness, feeding and weaning

- maternal education and literacy, contraception, condom usage and birth spacing,

3. Reducing HIV related deaths through prevention of mother to child transmission of HIV infection

- Chapter 5 has highlighted that a number of babies die without their mothers or their HIV status being known. This results in the following missed opportunities 1. for mothers and their babies getting anti-retroviral drugs for prevention of mother to child transmission of HIV, 2. for those babies who are exposed to get prophylaxis against pneumocystii and 3. for those babies who might be infected with HIV getting HAART. To prevent deaths related to HIV infection the following must be done:

- All pregnant women must be tested for HIV using the approach of provider-initiated HIV testing (opt-out)

- All health professionals to provide HIV counseling, in addition to caregivers trained in HIV counseling.

- Implement PMTCT regimen in HIV positive pregnant women

- Fast-track HAART for eligible pregnant women

- All babies who are HIV exposed must receiveART for prophylaxis

- Maternal history for tuberculosis and other co-infections must be obtained

- HIV PCR testing should be performed on all babies by six weeks of age

- Mothers must be advised on condom usage, child spacing and contraception, noting that contraception in the HIV positive women require specific considerations.

4. Reducing all neonatal deaths through improving clinical and procedural skills of healthcare workers

- Healthcare workers require training in clinical, procedural skills

- Clinical skills should include resuscitation and examination of newborn, monitoring and management of ill babies

- Procedural skills include blood sugar monitoring and heel prick, blood letting, insertion of peripheral intravenous and umbilical catheters, and insertion of oro-/naso-gastric tube.