This executive summary gives a short overview of the confidential enquiries into maternal deaths that occurred in health institutions in South Africa from 2008-2010 and provides some key recommendations that if wholly implemented would reduce the number of deaths.

The report covers the maternal deaths that were reported to the NCCEMD secretariat by 15th April 2011, and that occurred in the triennium 2008-2010. The same definitions used in previous Saving Mothers reports were used in this report.

Key findings

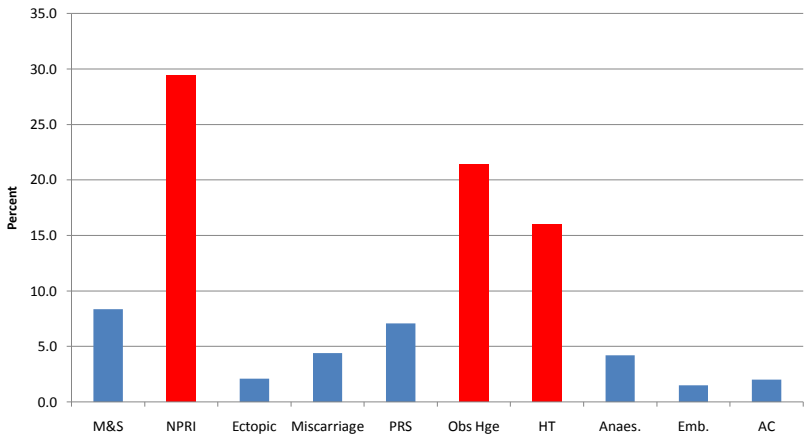
- More maternal deaths were reported in 2008-2010 (4867) than in any of the previous years. The distribution of deaths between the provinces has remained the same.
- The institutional Maternal Mortality Ratio (MMR) has increased to 176.22/100000 live births from 151.77/100000 live births in 2005-2007 and the Institutional MMR increased at every level of care.
- The pattern of disease has remained similar to 2005-2007 report. In 2008-2010, the "big 5" underlying causes of maternal death were non pregnancy related infections (NPRI): (40.5%, mainly deaths due to HIV infection complicated by Tuberculosis (TB), Pneumocystis Carinii Pneumonia (PCP) and other pneumonias), complications of hypertension in pregnancy (14.0%), obstetric haemorrhage (14.1%), pregnancy related sepsis (9.1%, includes septic miscarriage and puerperal sepsis) and medical and surgical disorders (8.8%). These five account for 86.5% of maternal deaths.
- The top three causes of maternal death NPRI, obstetric haemorrhage and hypertension) accounted for almost 70% of all deaths.
- HIV infection is the most common contributory condition. Almost 4 out of 5 women who died in pregnancy, childbirth or the puerperium were tested for HIV infection throughout South Africa. Of those tested 70% were HIV infected.
- Two thirds of the women with AIDS had respiratory complications namely TB (26.9%), PCP pneumonia (13.3%) and other non-specified pneumonia (26.7%). The second largest group of underlying causes in women with AIDS was meningitis (12.9%).
- The majority of HIV infected women who died were diagnosed in the antenatal period (52%), whereas the majority of these women (61%) died postnatally, giving a chance to health care workers to initiate treatment.
- Complications of antiretroviral therapy, although fairly rare, increased significantly in 2010 when compared with 2008 and 2009. Liver complications and Stevens-Johnson syndrome were the most common complications
- Anaemia was a common contributory condition of maternal death. 42.9% of women who died and had their haemoglobin measured were anaemic.
- The reduction in deaths due to complications of hypertension in pregnancy reported in the 2005 -2007 report seems to have slowed down.
- The pattern of missed opportunities, avoidable factors and sub-optimal care has remained the same as in previous reports.
- Obstetric haemorrhage continues to be the most common avoidable cause of maternal death and appears to be increasing. Bleeding during and after caesarean section is the largest category and accounts for 26.2% of deaths due to obstetric haemorrhage. The majority of the haemorrhage during and after caesarean section occurs in district and regional hospitals.
- Complications of anaesthesia remain the most clearly avoidable deaths in this report.
- Maternal deaths due to obstetric haemorrhage and hypertension were thought to be possibly and probably preventable in 81% and 61% of cases respectively.
- Resuscitation was sub-optimal in 22% of cases where it was attempted and the cases had sufficient information to assess.

- Maternal deaths due to NPRI, obstetric haemorrhage and hypertension were the three biggest contributors to preventable maternal deaths, accounting for two-thirds of avoidable deaths
- Preventing maternal deaths due to NPRI, obstetric haemorrhage and hypertension should have the highest priority

Key recommendations

The 2008-2010 report has clearly identified three conditions that contribute to the majority of **preventable** maternal deaths, namely non-pregnancy related infections, obstetric haemorrhage and complications of hypertension in pregnancy. These conditions comprise 66.7% of the possibly and probably preventable maternal deaths. This is illustrated in figure 1 below.

Figure 1. Underlying causes as a proportion of avoidable deaths



The three conditions have many common preventable factors which are mostly related to the knowledge and skills of the health care providers and the challenges within the health care system. The committee has summarised its recommendations into five key points namely the **5 H's**:

- **H**IV
- **H**aemorrhage
- **H**ypertension
- **H**ealth worker training and
- **H**ealth system strengthening

For each of these points there are specific actions that need to be taken and these are summarised under each point below. Health care providers, health care managers, health care policy makers, the community and each individual pregnant woman are involved with all five points and have specific responsibilities in each.

The 5 H's

HIV and AIDS

- **Promote the "Know your status" and "plan your pregnancy" messages in communities and in the health sector; and ensure non judgemental approaches.**
- **Ensure every maternity facility is able to screen for HIV infection and perform early initiation of HAART therapy; and to recognise and treat co-infections, especially respiratory infections.**

Critical Clinical Commentary

Most HIV infected pregnant women die from respiratory complications due to TB, PCP and community acquired pneumonia

Search for and treat lung infections aggressively

Complications of antiretroviral therapy, although fairly rare, increased significantly in 2010

Use efavirenz (EFV) instead of nevirapine (NVP) when initiating women on HAART after the first trimester

Haemorrhage

- **Promote preventive interventions**: community education, prevent prolonged labour, prevent anaemia; use of safe methods for induction of labour and practice active management of the third stage of labour (AMSTL).
- **Severe obstetric haemorrhage must have the status of a 'major alert' requiring a team approach; with immediate attention to diagnosis of the cause of haemorrhage, resuscitation and stepwise approach to arresting the haemorrhage.**

Critical Clinical Commentary

The management of ongoing Haemorrhage, when initial measures to stop bleeding are unsuccessful, is frequently substandard.

A doctor must be called to assess and coordinate further treatment of all women who are suspected of bleeding more than 1 litre

Haemorrhage post CS is responsible for a quarter of maternal deaths due to haemorrhage

Monitoring after C section, must be improved in terms of frequency of observations and action on abnormal observations.

Hypertension

- **All maternity facilities must provide calcium supplementation to all women throughout their antenatal care, and ensure the detection, early referral and timely delivery of women with hypertension in pregnancy**
- **Severe hypertension, imminent eclampsia, eclampsia and HELLP syndrome must be recognised as life threatening conditions (Major Alerts) requiring urgent attention.** All maternity facilities must be able to administer magnesium sulphate to prevent convulsions, administer rapid acting agents to lower severely raised blood pressure, provide close monitoring prior to and following delivery and manage fluid balance safely.
- **Promotion of Family Planning Services in the population at large (women, their partners, families and communities).**

Critical Clinical Commentary

Cerebral complications were the final cause of death in half the women with complications of hypertension

Aggressively control the high blood pressure, especially persistent systolic blood pressure, prior ,during delivery and in the immediate post delivery period(first 48 hours, by the use of colour coded early warning observation charts)

Pulmonary oedema is the most common final cause of death in women with complications of hypertension

The fluid balance must be very carefully monitored before and following delivery in severe hypertension, imminent eclampsia, eclampsia and the HELLP syndrome.

Approximately 50% of women who died from hypertension in pregnancy were under the age of 25 years and a large proportion were teenagers

Contraceptive Services (including reproductive health matters) must be promoted amongst teenagers in particular and in women over the age of 35 years

Health worker training

- **Train all health care workers involved in maternity care in the ESMOE-EOST programme and obstetric anaesthetic module, with emphasis on the following:**
  - Standardised observation and monitoring practices which stipulate the frequency of observations and aid interpretation of severity e.g. early warning monitoring charts. These would enable earlier detection of haemorrhagic shock following delivery and after CS; and also enable earlier interventions for complicated pre-eclampsia.
  - The skills of safe labour practices; use of and interpretation of the partogram , AMTSL, use of uterotonic agents, safe CS, and additional surgical procedures for complicated CS.
  - To achieve competence in the management of obstetric emergencies e.g. PPH, eclampsia, acute collapse.
- **Train all health care workers who deal with pregnant women in HIV advice, counselling, testing and support (ACTS), initiation of HAART, monitoring of HAART and the recognition, assessment, diagnosis and treatment of severe respiratory infections.**

Health system strengthening

- **Ensure 24 hour access to functioning emergency obstetric care (EmOC) both basic and comprehensive**
  - Adequate and appropriately trained staff for acute areas such as labour wards and theatres but also for antenatal clinics and postnatal monitoring areas.
  - Maternity dedicated inter-facility transport system within health care facilities
  - Standardised referral criteria for set conditions e.g. Hypertension
  - The development of maternity waiting homes
  - Maternal mortality and morbidity audit meetings to occur regularly with minutes documenting plans for rectifying modifiable factors. Progress on key indicators to be displayed as graphs and charts for staff to review.
- **Ensure accessible and appropriate contraceptive services for all women which are integrated into all levels of health care and which must be available on site for women post-miscarriage and postpartum women**

Every woman who becomes pregnant and continues with her pregnancy does so in the expectation of delivering a healthy child and the joy and satisfaction of watching the child grow. Surely, it is the duty of society and the health care profession to do the utmost to fulfil this expectation? To this end, the deficiencies identified in this report must be urgently addressed. The committee are anxious to see clear signs of progress by the next triennial report.