



## SHORT REPORT

**Saving mothers: 1999 - 2001**

J Moodley

The 'big five' causes of maternal death in South Africa in the 3 years 1999 - 2001 were non-pregnancy-related infection (mainly AIDS), complications of hypertension in pregnancy, obstetric haemorrhage, pregnancy-related sepsis and pre-existing medical conditions. Women 35 years and older were at greater risk of dying than younger women, and women in their first pregnancy or who had had 5 or more pregnancies

were also at greater risk. Recommendations have been made by the National Committee on Confidential Enquiries into Maternal Deaths (NCCEMD) that address the problems of avoidable factors. If implemented, these should result in a reduction of maternal deaths.

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Information for the 'Saving Mothers' report comes from analyses of data on women who died in South Africa during pregnancy, labour or the puerperium during the 3 years 1999 - 2001.<sup>1</sup>

A total of 2 777 maternal deaths were reported during the 3-year period. Data were entered on 2 445 cases.<sup>1</sup> Reporting improved from the 1998 report,<sup>2</sup> and in most provinces the Maternal Death Notification Form and assessor's report was received by the National Committee on Confidential Enquiries into Maternal Deaths for more than 90% of reported deaths.

The health information systems in South Africa do not yet allow for accurate recording of all births, and the maternal mortality ratio (MMR) cannot be calculated with any accuracy for the whole country. A realistic estimate is between 170 and 200/100 000 live births, which indicates either an increase over the previous (1998) report,<sup>2</sup> or an improvement in reporting.

As in other countries, older women, especially those aged 35 years and over, were at significantly higher risk than those under 35 years of age. Women in their first pregnancy or who had had 5 or more pregnancies were also at greater risk of death. It is worth while stressing that the emergencies that led to mothers' deaths most commonly occurred in the puerperium.

The majority of maternal deaths occurred in level 2 hospitals (35.6%), level 3 having the second highest number (31.3%), followed by level 1 (28.3%). Deaths at home accounted for 2.0%, at community health centres for 1.3%, and at private hospitals for 1.5%. It is difficult to interpret these figures, as

there is no denominator to describe the rates of deaths per level of care. Considerable differences in causes of death were noted at the various levels. Obstetric haemorrhage was the commonest cause of death in the level 1 hospitals, whereas non-pregnancy-related infections were most common in level 2 hospitals and complications of hypertension in level 3. Sixty per cent of all anaesthetic-related deaths occurred in level 1 hospitals.

Of the women who died, 57.2% attended antenatal care, 23.6% did not attend and in 19.1% attendance was uncertain. HIV status was ascertained in 36.4% of cases, and of these women 76.1% were HIV-positive. This indicates that selective HIV testing was performed.

**Primary obstetric causes and final and contributory causes of death**

The 'big five' causes of death were non-pregnancy-related infections (mainly AIDS) (31.4%), complications of hypertension in pregnancy (20.7%), obstetric haemorrhage (13.9%), pregnancy-related sepsis (8.6%) and pre-existing medical conditions (7.0%). The 'big five' accounted for 85.4% of all the deaths (Table I). The proportion of deaths caused by non-pregnancy-related infections (including AIDS) has increased dramatically from 23% in 1998 to 31.4% in 1999 - 2001.

Deaths resulting from AIDS were probably significantly under-reported. The definition used for AIDS in this report is a positive HIV test and either a CD4+ count of less than 200/ $\mu$ l or an AIDS-defining condition such as tuberculosis, Kaposi's sarcoma, *Pneumocystis carinii* pneumonia or cryptococcal meningitis. HIV status was unknown in 63.6% of maternal deaths. There were 258 cases of tuberculosis, pneumonia and meningitis; it is possible that some of these could have been

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**Table I. Primary causes of maternal death for the 3 years 1999 - 2001, and a comparison with 1998**

Category	1999 - 2001		1998
	N	%	(%)
Direct causes	1 462	59.8	63.4
Hypertension	507	20.7	20.7
Antepartum haemorrhage	100	4.1	4.1
Postpartum haemorrhage	240	9.8	9.8
Abortion	120	4.9	5.6
Ectopic pregnancy	27	1.1	1.9
Pregnancy-related sepsis	210	8.6	8.6
Anaesthetic related	76	3.1	3.1
Embolism	48	2.0	1.6
Acute collapse (cause unknown)	134	5.5	5.7
Indirect causes	939	38.4	33.4
Non-pregnancy-related infections	768	31.4	23
Pre-existing medical disease	171	7.0	10.4
Unknown	44	1.8	3.2
Total	2 445	100	100
Coincidental	45		

reclassified to AIDS if the HIV status had been known.

Other significant causes of death were acute collapse and embolism (together 7.5%) and anaesthetic complications (3.1%). No cause of death could be allocated in 1.8% of cases and there were 45 coincidental deaths.

**Direct causes** were responsible for 59.8% of maternal deaths and **indirect causes** for 38.4%. There has been a marked increase in indirect causes in comparison with the 33.6% for 1998. This increase is mainly due to the HIV/AIDS pandemic. When considering direct causes of maternal death alone, hypertensive conditions were responsible for more than 1 in 3 cases (34.6%) and haemorrhage and pregnancy-related sepsis (including septic abortions) for more than 1 in 5 (22.3% and 20.8% of cases respectively). In 564 cases hypertension (including abruptio placentae with hypertension) was present (23.1% of all deaths), while haemorrhage (antepartum haemorrhage, postpartum haemorrhage, ectopic pregnancies and abortions with haemorrhage) was involved in 399 cases (16.3% of all deaths) and sepsis (septic abortions and sepsis following viable pregnancies) in 304 (12.4% of all deaths). Obstructed labour contributed directly to 101 deaths (4.1%), by being a predisposing factor for either haemorrhage or puerperal sepsis. Almost a third of the women who died (30.4%) received an anaesthetic procedure at some point in the process. There were 45 coincidental deaths, motor vehicle accidents being the commonest and suicide the second most common cause.

### Avoidable factors, missed opportunities and substandard care

In just over half of the cases there was a missed opportunity to prevent the mother's death, related to the actions of the woman herself or those of her community (54.1%), or to administrative factors (41.5% of cases). These figures are similar to those in the 1998 report. In over half the cases in which a mother died (56.8%) there were health worker-related avoidable factors in management of the event: this was most significant at the primary level, with avoidable factors at some point in the woman's care in just under three-quarters of cases in which there was sufficient information to make the case assessable. The figure fell to two-thirds for secondary level and to just under half for tertiary level. Problems in patient resuscitation were experienced in just over a quarter of cases.

The most common patient-orientated avoidable factors were not attending antenatal care and delaying seeking help. It is not known what the specific reasons for not attending antenatal clinics or delaying seeking help were. Delays in seeking help are probably related to difficulties in getting to a health institution rather than unwillingness to go there, and indicate transport problems rather than non-compliance. Termination of pregnancy had been self-induced in 30% of women who died from complications of abortion.

Specific administrative problems resulting in maternal death differed markedly from those reported in 1998. This could be due to a number of reasons, including increased awareness of administrative problems, an increased number of assessors and deteriorating service. Transport remains a problem, affecting at least 10% of cases. This is probably a gross under-estimate when delay in seeking help (32.6%) is taken into account. Lack of transport might also have been a factor in the large number of cases in which there was a delay in referring patients (17%) or they were managed at an inappropriate institution (17%). Thirty six per cent of women were referred to the units in which they died. However, there was a delay in transporting patients between institutions in 13.6% of cases in which transport was required. The problem varied considerably between provinces. The impact of transport problems is probably even greater than the above figures indicate in that delays in transporting women from their homes to health institutions, which could not be estimated due to lack of information, are probably reflected in the 'delay in seeking help' category (32.6%).

Lack of appropriately trained staff was an administrative factor commonly recorded by assessors. The reasons for this assessment are debatable and controversial and include failure to follow clinical protocols and, more importantly, whether medical and nursing students are being appropriately trained. The latter needs to be brought to the attention of the Health Professions Council of South Africa to ensure an appropriate curriculum for training of health professionals.



## Conclusions

The main findings of the Confidential Enquiry into Maternal Deaths for the 3 years 1999 - 2001 are:

1. There has been an increase in the number of maternal deaths notified in South Africa.
2. Non-pregnancy-related infections (mainly AIDS) are the most common cause of maternal death.
3. Avoidable factors, missed opportunities and substandard care are associated with half of the maternal deaths.
4. Lack of transport is the major avoidable factor related to health care administration.
5. Substandard care by health care providers is associated with maternal deaths in more than half the cases and is most prevalent in the primary level of care.

The **key recommendations** of the Report are:

1. Guidelines on the management of important conditions causing maternal deaths must be displayed and used in all institutions where women deliver.
2. Criteria for referral and referral routes must be established and utilised appropriately in all provinces.
3. Emergency transport facilities must be available for all pregnant women with complications (at any site).
4. Blood must be available at every institution where caesarean sections are performed.
5. Establishing staffing and equipment norms for each level of

care must be performed for every health institution concerned with the care of pregnant women.

6. The distribution of public sector termination of pregnancy (TOP) services (especially with respect to second-trimester TOPs) must be expanded and the sites must be advertised to the public.
7. Correct use of the partogram should become the norm in every institution conducting deliveries. A quality assurance programme should be implemented, using an appropriate tool.
8. Skills in anaesthesia should be improved at all levels of care. Regional anaesthesia should be promoted at all sites performing caesarean sections.
9. Contraceptive use must be promoted through education and service provision, especially for women aged 35 years or older, or those who have had 5 or more pregnancies.
10. Counselling and voluntary HIV testing should be made available for all pregnant women.

It is hoped that if implemented these recommendations would result in dramatic reductions in maternal deaths in South Africa within the next 10 years.

## References

1. Department of Health. *Saving Mothers: Second Report on Confidential Enquiries into Maternal Deaths in South Africa, 1999 - 2001*. Pretoria: DOH, 2002.
2. Department of Health. *Saving Mothers: Report on Confidential Enquiries into Maternal Deaths in South Africa, 1998*. Pretoria: DOH, 1999.