



REFLECTIONS ON THE MILLENNIUM DEVELOPMENT GOALS

MATERNAL HEALTH

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The evidence is that South Africa is definitely not on track to achieve MDG 5 and that maternal mortality has actually doubled since 1990. The top five causes of maternal mortality in the 2005-2007 triennium remained non-pregnancy-related infections, mainly due to AIDS, hypertension, obstetric haemorrhage, pregnancy-related sepsis and pre-existing maternal disease...

Millennium Development Goal (MDG) 5 focuses on maternal health and the target for 2015 is to decrease the Maternal Mortality Ratio (MMR) by 75% from the levels in 1990. This chapter reviews the current status of maternal mortality and maternal health in South Africa. The evidence is that South Africa is definitely not on track to achieve MDG 5 and that maternal mortality has actually doubled since 1990.

The top five causes of maternal mortality in the 2005-2007 triennium remained non-pregnancy-related infections (43.7%), mainly due to AIDS, hypertension (15.7%), obstetric haemorrhage (12.4%), pregnancy-related sepsis (9%) and pre-existing maternal disease (6%). The mortality rate of HIV-positive women was nearly ten times the rate of HIV-negative women, but preventable direct obstetric causes made up a significant proportion of deaths in both groups.

The recent guideline changes prioritising antiretroviral treatment for HIV-positive pregnant women will make a significant contribution to addressing HIV-related deaths if they are realised in practice. The other main priority is to improve the availability and quality of emergency obstetric care which is being targeted through initiatives such as the new Essential Steps in Managing Obstetric Emergencies training programme.

The high rates of antenatal care coverage and delivery by a skilled attendant in South Africa have not had any impact on the MMR. New indicators that are better correlated with maternal mortality in South Africa are required for planning and monitoring. The National Committee on Confidential Enquiries into Maternal Deaths (NCCEMD) is an important source of information on maternal deaths, but vital registration requires strengthening and regular Demographic and Household Surveys are required to monitor population-level process indicators.

The NCCEMD recommendations identify what needs to be done to improve maternal mortality, but have had little impact on maternal mortality over the last decade. Health system constraints that hinder implementation of the recommendations need to be overcome urgently.

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Introduction

Maternal health is an important global health priority. Nearly 400 000 women die in childbirth each year and many more suffer significant morbidity.^{1,2} Effective interventions to decrease maternal mortality and achieve optimal maternal health exist.^{3,4} However, maternal health remains the area of global public health with the largest disparities between rich and poor countries.⁵ Therefore, Millennium Development Goal (MDG) 5 deals exclusively with maternal health.⁶ In its own right, maternal health is an important public health priority for South Africa. Maternal mortality is higher in South Africa than in most other middle-income countries with similar levels of economic development, and inequities in the distribution of maternal deaths persist.^{7,8}

The initial formulation of MDG 5 by the United Nations (UN) in 2000 focused on maternal mortality and the agreed target was to decrease the maternal mortality ratio (MMR) by 75% from the 1990 levels by 2015. An important strategy to decrease maternal mortality is to increase the proportion of deliveries in health facilities by skilled health professionals,^{3,9} so this process indicator was added to monitor progress of MDG 5 (Table 1). The second target of MDG 5 is to achieve universal access to reproductive health by 2015. This target was added in 2005, with four additional indicators to monitor progress towards its attainment (Table 1).

Table 1: MDG 5 – targets and indicators

Target	Indicators
Target 5A: Reduce by three quarters, between 1990 and 2015, the maternal mortality ratio	1. Maternal mortality ratio 2. Proportion of births attended by skilled health personnel
Target 5B: Achieve, by 2015, universal access to reproductive health	3. Contraceptive prevalence rate 4. Adolescent birth rate 5. Antenatal care coverage (proportion with at least one visit, proportion with at least four visits) 6. Unmet need for family planning

Source: United Nations, 2003;¹⁰ United Nations, 2008.⁶

Only five years remain to achieve the MDG 5 targets. The achievement of a 75% reduction in MMR between 1990 and 2015 implies an average decrease in maternal deaths of 5.4% per year. Progress globally has been significantly slower and only very few countries will meet the MDG 5 target.¹¹ The average global annual reduction in MMR between 1990 and 2005 was less than 1%, and the average for sub-Saharan Africa was only 0.1%.^{1,12} In South Africa, rather than decreasing, the MMR effectively doubled between 1990 and 2008. The generally gloomy outlook for MDG 5 has resulted in unprecedented levels of focus on maternal health both within South Africa and internationally.

The purpose of this chapter is to review progress in maternal health in South Africa since publication of the 2008 South African Health Review.¹³ Given the other chapters in this review on the related topics of reproductive health (Chapter 3), sexual and gender based violence (Chapter 4) and child mortality (Chapter 5), the focus here is more narrowly on maternal health and MDG 5. However, there is significant overlap between these issues and interventions and services addressing them should be better integrated.¹⁴ The intention in this chapter is to focus on new data and new analyses and not to repeat information that has previously been reported.^{13,15,16} Some important recent developments in maternal health, both nationally and internationally, are summarised in Table 2.

Table 2: Key developments in maternal health, 2008-2010

Local Developments	International Developments	Upcoming Events
<ul style="list-style-type: none"> ➤ Every death counts, 2008¹⁷ ➤ NCCEMD 4th Report, 2008¹⁸ ➤ New Minister of Health, 2009 ➤ HIV and syphilis survey, 2009¹⁹ ➤ MNCWH and nutrition strategic plan, 2009²⁰ ➤ Health strategic plan, 2010-2012²¹ ➤ Lancet series on health in South Africa, 2010^{8,22} ➤ Revised ART guidelines, 2010²³⁻²⁵ ➤ District Health Barometer, 2008/09²⁶ 	<ul style="list-style-type: none"> ➤ Countdown to 2015 updates, 2008^{27,28} ➤ Countdown to 2015 conference in Cape Town, 2008 ➤ Countdown to 2015 decade report, 2010^{12,29} ➤ New global MMR estimates, 2010² ➤ UN MDG report, 2010¹¹ ➤ 2nd Women Deliver conference, Jun 2010 ➤ Global Maternal Health conference, Aug 2010 ➤ UN MDG Summit, Sep 2010 	<ul style="list-style-type: none"> ➤ 1st Global symposium on health systems research, Nov 2010

Figure 1 provides a diagrammatic representation of the key components required to address maternal health. The diagram is intended to highlight a number of points in relation to maternal health:

- Although MDG 5 focuses mainly on maternal mortality other outcomes, such as maternal morbidity and the quality of care received by women in childbirth, are also important priorities for maternal health.^{15,30}
- Improving maternal health requires not only the supply of good quality maternal health care by the health system but that women use the services provided. Ultimately, it is the match between supply and demand that determines maternal health outcomes, so interventions also need to target community access and uptake.³¹
- The essential package of interventions for addressing maternal health includes access to contraception and safe abortion services, effective screening during antenatal

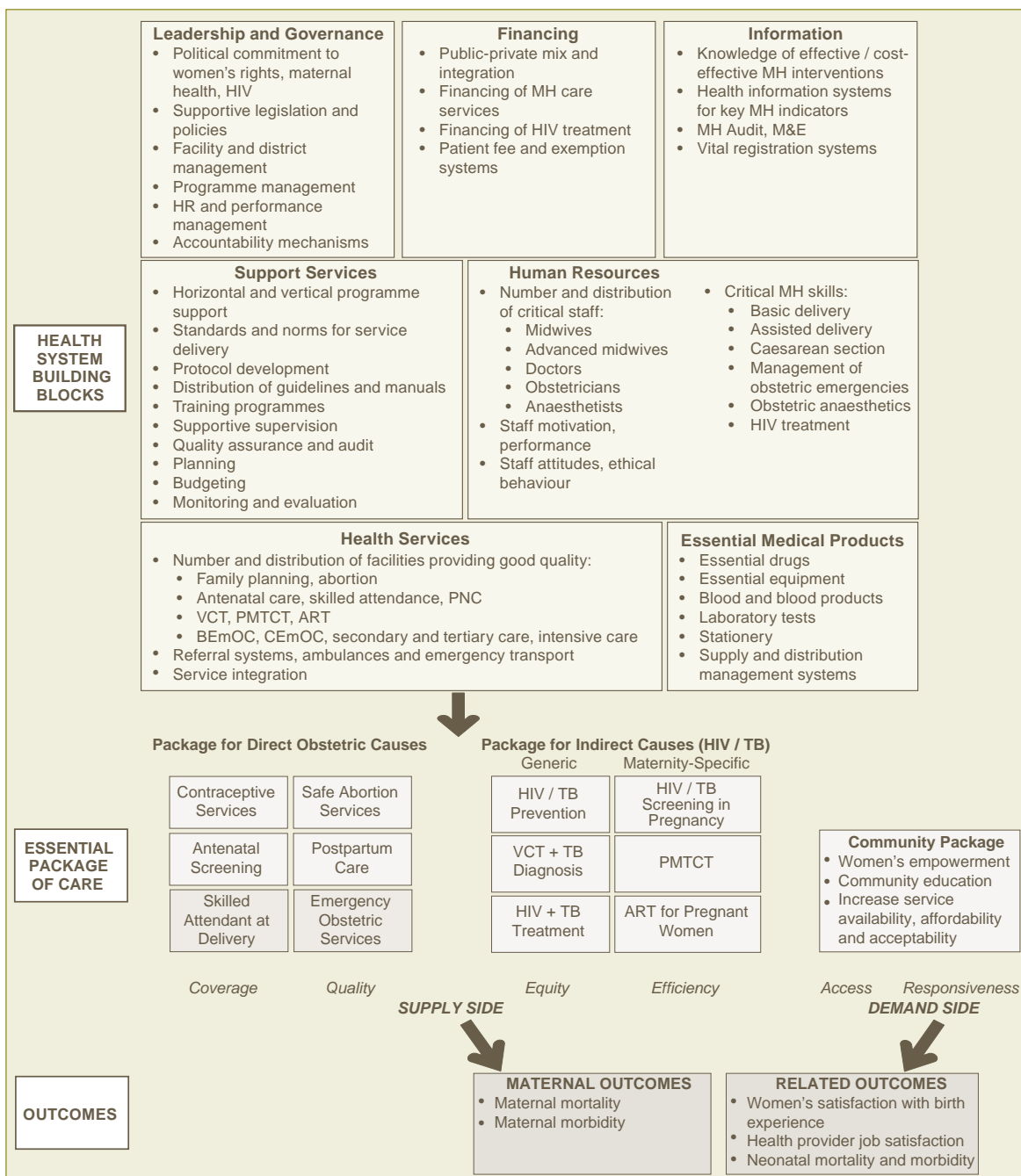
care, institutional delivery by a skilled attendant, emergency obstetric care (EmOC) for those that need it, and good postpartum care.^{4,32} Skilled attendance and a system for providing emergency obstetric services are thought to be the most effective strategies for decreasing maternal mortality.^{3,33}

- The traditional package of interventions promoted by the maternal health community is only effective for direct obstetric causes of death.³⁴ Countries such as South Africa, with a high proportion of indirect maternal deaths, require additional interventions targeted at the indirect causes in order to decrease maternal mortality.³⁵
- The maternal health care package is delivered by front-line health facilities supported by the health system. Key

health system components required to improve maternal health include human resources, essential drugs and equipment, programmatic support, financing, information and management.³⁶

This chapter is organised into four sections. The first section summarises the available data on the status of maternal health in South Africa. The next section describes current policy targets, strategies and activities to improve maternal health in South Africa. These two sections include a review of relevant recent literature from South Africa on maternal health. The third section briefly reviews some of the contemporary issues in the international maternal health literature. The final section of the chapter provides some key conclusions and recommendations.

Figure 1: Mapping of key maternal health components



Status of maternal health in South Africa

This section summarises what is known about the status of maternal health in South Africa, focusing on maternal health outcomes, access to the essential package of maternal health care, the availability of key health system resources and relevant demand-side issues (Figure 1).

There is some new data to review, primarily from the fourth report of confidential enquiries into maternal deaths in the period from 2005 to 2007.¹⁸ In addition, the *Every Death Counts* report¹⁷ and Chopra et al.²² provide good recent overviews on the status of maternal health in South Africa, while the *Countdown to 2015 Decade Report*²⁹ includes an updated country profile for South Africa. However, the postponement of the 2008 Demographic and Health Survey (DHS)³⁷ is a significant setback for the monitoring of MDG 5.

Maternal health outcomes

The key indicator for MDG 5 is the MMR. The MMR is defined as the number of women dying in a year while pregnant or within 42 days of the termination of pregnancy, from causes related to or aggravated by the pregnancy, per 100 000 live births in the same year. Figure 2 classifies maternal deaths by timing and cause of death. Deaths occurring within 42 days of the termination of pregnancy are defined as early maternal deaths, while those occurring between 42 days and one year are termed late maternal deaths. Four main groups of causes can be differentiated:

- direct obstetric causes;
- causes aggravated by pregnancy (termed indirect causes);
- HIV infection; and
- incidental causes unrelated to pregnancy.²

The HIV category (category C) is complicated, particularly when population HIV prevalence rates are high. Pregnancy and HIV certainly interact to cause what would be classified as indirect maternal deaths,³⁸ but an HIV-positive status may obscure a direct obstetric cause of death and some HIV deaths may be incidental to the pregnancy. Nevertheless, for international comparisons the MMR is defined to include categories A, B and C of Figure 2. In many developed countries with low MMRs, attention has shifted to both early and late maternal deaths.³⁹

Figure 2: Definitions of maternal death and maternal mortality

	Direct	Indirect	HIV	Incidental
Early maternal death (< 42 days)	A	B	C	D
Late maternal deaths (> 42 weeks and < 1 year)	E	F		

Source: Hogan et al., 2010.²

National MMR estimates for South Africa

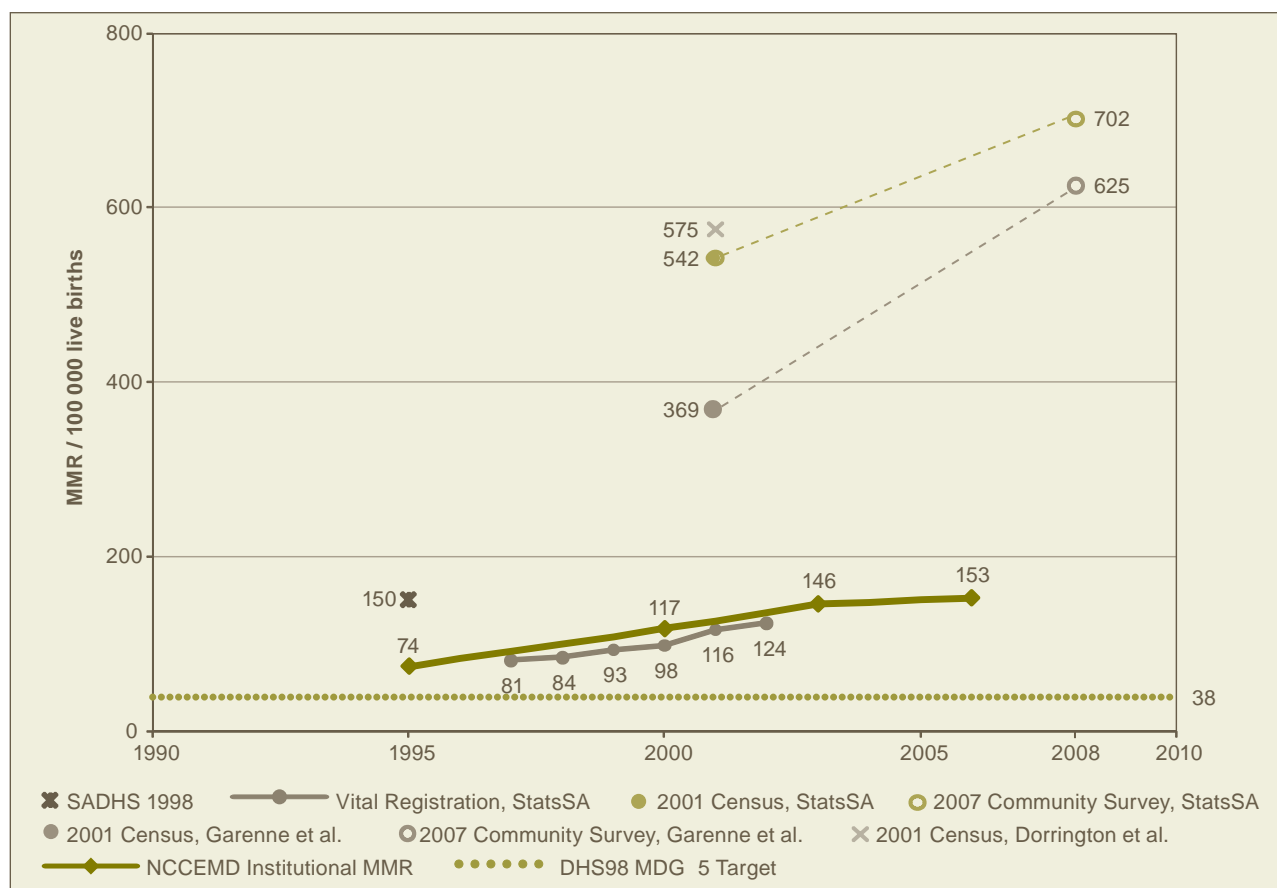
The MMR is difficult to measure accurately and South Africa does not have reliable and consistent, locally-produced, national MMR estimates.⁴⁰ South African policy-makers rely on various local measurements as well as international modelling. Figure 3 provides a summary of most of the recent local MMR sources and estimates. Many of these are single point estimates, although there are one or two potential sources of trend data. The estimates cover a wide range of possible values. Few of the national studies have calculated confidence intervals, though these are likely to be very wide.

The most widely quoted figure is still an MMR of 150 per 100 000 live births, obtained from the 1998 South Africa Demographic and Health Survey (SADHS).⁴¹ DHS surveys employ a continuous sisterhood method to estimate the MMR which, therefore, relates to the five years prior to the survey. This estimate is thus now very out of date. However, it is the estimate closest to 1990 and therefore provides a baseline for MDG 5. A 75% reduction from 150 would equate to an MMR of 38 per 100 000 live births in 2015. Despite the questionable validity of the baseline, 38 deaths per 100 000 is now commonly cited as the MDG 5 target for South Africa^{17,22,46} and is represented as such in Figure 3. Due to data quality problems, a MMR could not be estimated from the 2003 SADHS⁴⁷ and due to a lack of resources, the SADHS was not repeated in 2008 as planned.³⁷

Statistics South Africa (StatsSA) was responsible for producing the official MDG country reports from South Africa for the UN in 2005, 2007 and 2008.^{45,48} For MDG 5 in these reports, StatsSA relied exclusively on death registration data which produced the very low MMR estimates shown in Figure 3, increasing from 80.7 in 1997 to 123.7 per 100 000 in 2002.⁴⁵ Despite the upward trend in MMR, StatsSA concluded that:

The South Africa: Millennium Development Goals Country Report clearly indicates that South Africa is well on course to meet all Millennium Development Goals and targets.⁴⁵

Figure 3: National data for South African MMR



Source: National Department of Health, 2002;⁴¹ Statistics South Africa, 2005;⁴⁵ Statistics South Africa, 2010;⁴⁶ Garenne et al., 2008;⁴³ Garenne et al., 2009;⁴⁴ Dorrington et al., 2004;⁴² National Committee on Confidential Enquiries into Maternal Deaths, 2005-2007.¹⁸

These StatsSA estimates are likely to be biased by under-reporting and misclassification, particularly in relation to HIV-related maternal deaths. Civil society groups, non-governmental organisations (NGOs) and academics criticised the reports as being more politically motivated than accurate. The new government has taken a different approach to HIV-related data and the preparation of the 2010 South African MDG report to the UN was much more scientific, transparent and consultative.⁴⁹

The 2001 National Census included a question on pregnancy as a cause of death. Different analyses of the data have produced the much higher MMR point estimates of 575 and 542 per 100 000,^{42,43} though strictly speaking these are pregnancy-related maternal mortality rates rather than a true MMR. National censuses occur every ten years which is too infrequent for monitoring MMR trends. However, in 2007 StatsSA completed the Community Survey, a large household survey designed to monitor trends in key indicators between census years. The 2007 Community Survey used a similar questionnaire to that of the census, including the question on pregnancy-related deaths. The pregnancy-related maternal mortality rate calculated from the 2007 Community Survey by Garenne et al.⁴⁴ was 702 per 100 000, a 30% increase of their estimate from the 2001 Census, using similar adjust-

ments. The unadjusted estimates by StatsSA are 369 per 100 000 for the 2001 Census, and 625 per 100 000 for the Community Survey. These were the MMR estimates cited in the 2010 South African MDG progress report tabled recently at the UN, and which rated the likelihood of achieving the MMR target by 2010 as “unlikely”.⁴⁶ The next Census, due in 2011, should produce an updated MMR estimate from this source.

Maternal deaths were made a notifiable condition in 1997 and the National Committee on Confidential Enquiries into Maternal Deaths (NCCEMD) is responsible for the collation, analysis and reporting of these results. In more recent reports, the NCCEMD has used the notification data, together with birth data from the District Health Information System (DHIS), to calculate a national MMR. The NCCEMD is careful to term this an institutional MMR because of concerns about under-reporting of deaths that occur at home and difficulties in obtaining accurate data for live births.^{50,51} The NCCEMD estimates (Figure 3) also show an upward trend, although the Committee cautions that this may partly be due to improved notification. The latest report from the NCCEMD was released in 2008 and covered the 2005-2007 triennium.¹⁸ The institutional MMR for South Africa for 2005-2007 was calculated as 153 maternal deaths per 100 000 live births.

Sub-national MMR estimates for South Africa

There are also MMR studies from South African demographic surveillance sites. In the Agincourt site, an MMR of 335 per 100 000 live births was calculated for the period from 2000 to 2005,⁵² while the MMR in the Hlabisa site was 769 per 100 000 between 2000 and 2007.¹⁸ These are obviously sub-national estimates and may reflect specific local dynamics, but have produced very high MMR figures that are a cause for concern.

Facility-based MMR studies may be biased due to incomplete recording of maternal deaths and births in an area and also cannot be generalised to the country as a whole.⁴⁰ However, such studies can provide information on the magnitude of the problem and indicate local trends. A 50-year audit of MMR data from maternity facilities in the Cape Peninsula found that the MMR decreased from 301 per 100 000 live births in 1953 to a low of 31 per 100 000 in 1987-1989; was fairly stable at that level for the next decade; but then increased after 1999 to 112 per 100 000 live births in 2002.⁵³ A review of maternal mortality at Charlotte Maxeke Johannesburg hospital from 2003 to 2007 produced an institutional MMR of 289 per 100 000 [95% CI: 237-349], but no clear trends for that review period.⁵⁴ However, a previous study at the same

hospital had calculated MMRs of 183 per 100 000 live births for 1995-1996 and 354 per 100 000 for 2000-2001.⁵⁵

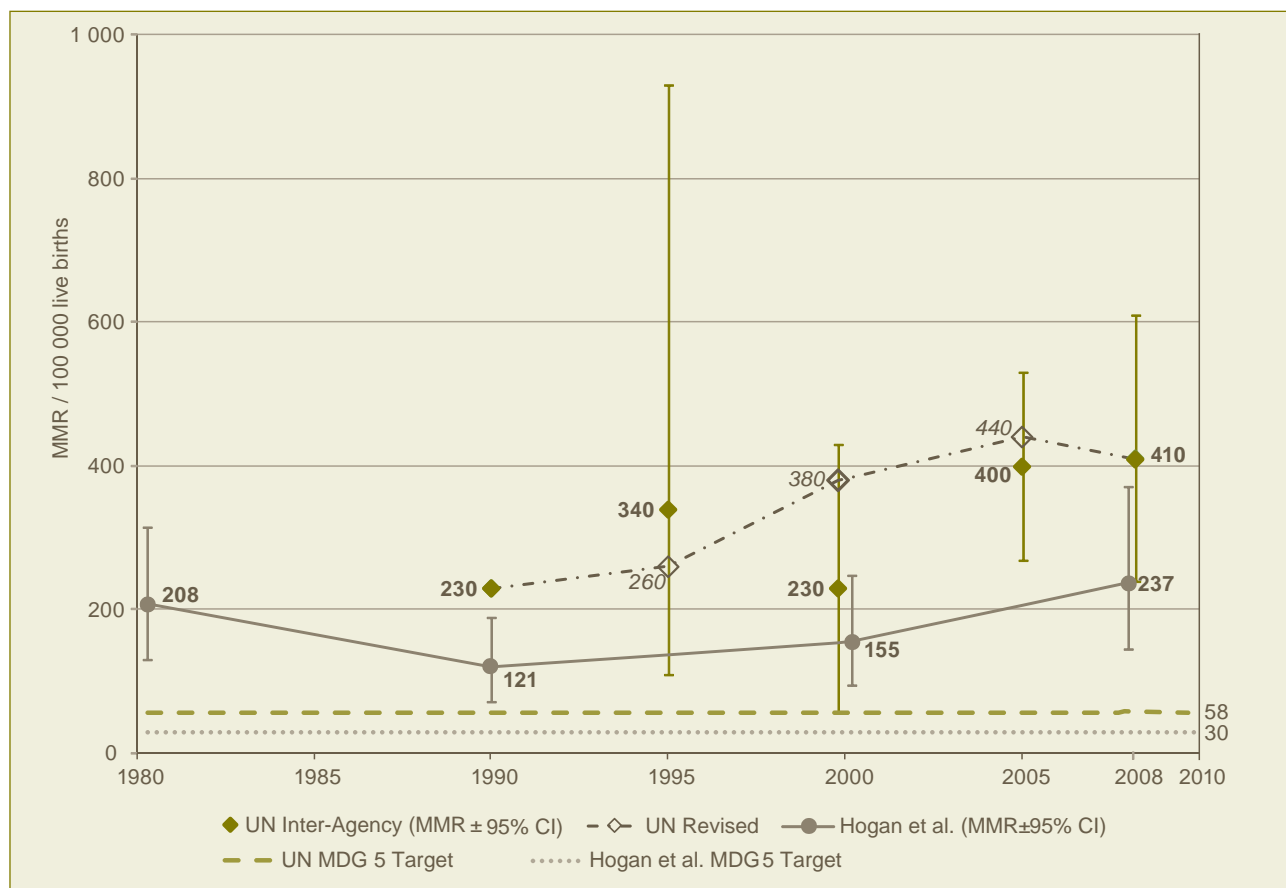
Overall, there is still considerable uncertainty about the MMR level for South Africa and all of the available estimates are probably biased, albeit in different ways. Nevertheless, the available trend data indicate a significant increase in the MMR over the last 15 years, related to the increase in HIV prevalence and an increase in HIV-related maternal mortality.¹⁸

International estimates of MMR for South Africa

Figure 4 shows estimates for the MMR in South Africa based on two different international models.

Since 1990, a number of UN agencies have combined efforts to produce national, regional and global MMR figures every five years.^{1,56-59} Although there are a number of methodological criticisms, the UN inter-agency estimates have become widely used in the international maternal health community. The estimates for 2005 were developed jointly by the World Health Organization, United Nations Children's Fund, United Nations Population Fund and the World Bank.^{1,39} As shown in Figure 4, the estimate for 2000 in South Africa was 230 per 100 000 [95% CI: 58-430] while in 2005 it increased to 400

Figure 4: International estimates for South African MMR



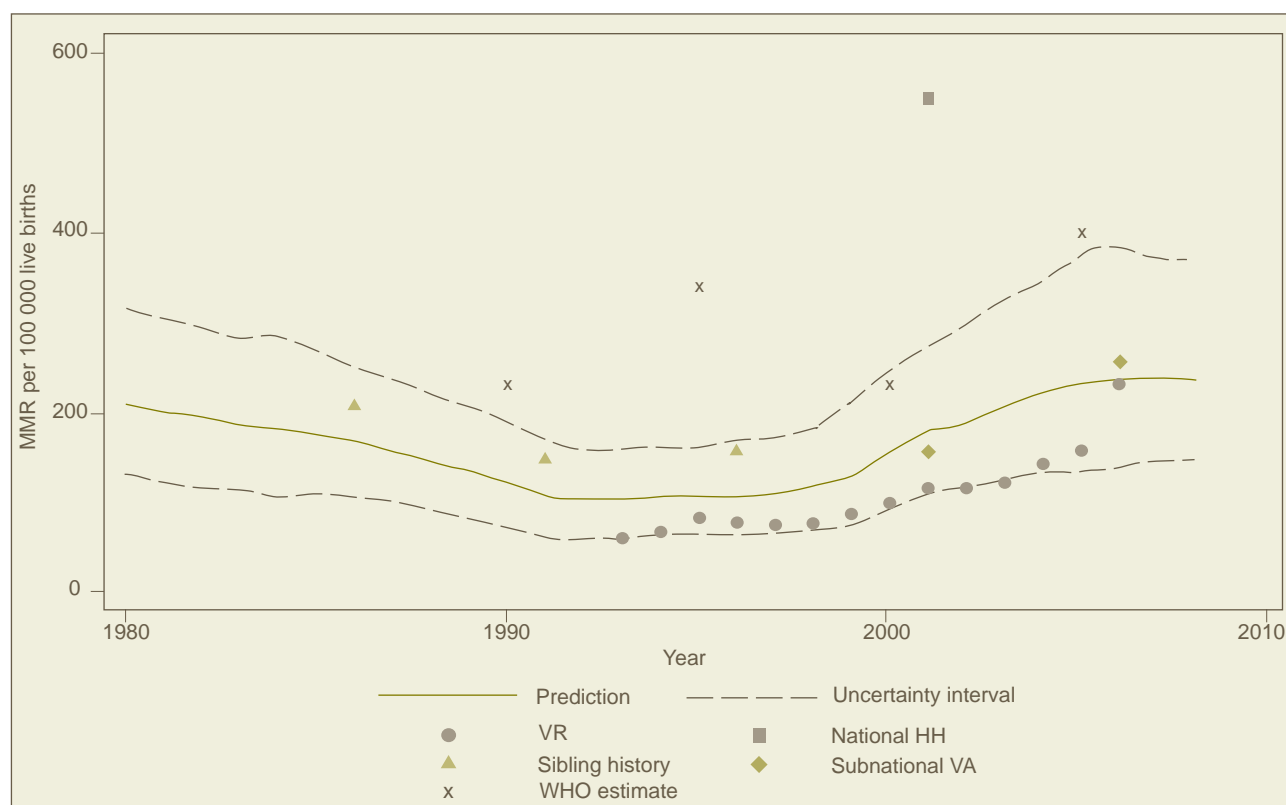
Source: World Health Organization et al., 2007;¹ World Health Organization et al., 2010;⁵⁹ and Hogan et al., 2010.²

per 100 000 [95% CI: 270-530]. However, the UN figures cannot be compared over time because the methods used to produce the estimates have changed for each report.¹ The 1990, 1995 and 2000 estimates for South Africa were derived completely from regression models rather than MMR measurement, and the 2005 figure was largely an adjustment of the 2001 National Census point estimate.^{1,39} Nevertheless, the UN figure of 400 per 100 000 has been cited in a number of recent South African government documents.^{21,60} Shortly before the finalisation of this chapter, the UN produced an updated report with new estimates for 2008 and revised figures for previous years.⁵⁹ These data are also shown in Figure 4. The UN estimate for South Africa for 2008 was 410 per 100 000 [95% CI: 240-610]. In comparison to the figures published previously, they revised their figure for 1995 downwards, but increased their estimates for 2000 and 2005. The revised UN figure for 2005 is now 440 which indicates that the UN models suggest a downward trend in the MMR between 2005 and 2008,⁵⁹ although the confidence intervals for the two years probably overlap. The inter-agency estimate for South Africa for 1990 was 230 per 100 000 which would translate into an MDG 5 target for 2015 of 58 per 100 000. The most recent UN calculations indicate that South Africa is very far from that target.

Hogan et al. have recently published completely new MMR estimates for 181 countries for the period from 1980 to 2008.² The figures reported for South Africa are also shown

in Figure 4 and indicate a decreasing MMR from 1980 to 1990, followed by a steady increase to a high of 237 per 100 000 in 2008 [95% CI: 146-372]. These MMRs are lower than the UN estimates for South Africa. Indeed, their models suggest that the global maternal mortality burden is significantly lower than previously thought, which has resulted in significant controversy in the international maternal health community.^{61,62} However, Hogan et al. claim that their models are based on more data points and use more robust statistical analysis to correct for known biases in MMR estimates from sources such as demographic and health surveys and vital registration.² The underlying data on which their South African estimates are based are shown in Figure 5 and would appear to be an improvement on the regression models and single point estimates used in the UN reports. However, as was discussed above, some of the national data points shown in Figure 5 are significantly biased and it is not clear what adjustments have been made in each case. The MDG 5 target for South Africa derived from the study by Hogan et al. would be 30 per 100 000 (Figure 4). In the analysis by Hogan et al. the MMR in South Africa has been increasing since 1990 rather than decreasing, and by 2008 the MMR was 425% higher than it should have been at that point if South Africa had been on track to achieve MDG 5. Again, the confidence intervals calculated by Hogan et al. (Figure 4) indicate that a trend cannot be confirmed and that both increasing and decreasing patterns would be consistent with the data.⁶²

Figure 5: Modelling of MMR – South Africa

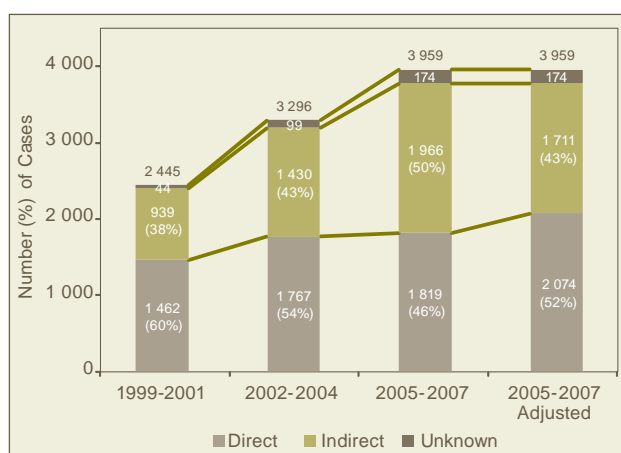


Source: Hogan et al., 2010.²

Causes of maternal deaths

At present, the best source of data on the causes of maternal deaths in South Africa is the assessment conducted by the NCCEMD. The fourth report on confidential enquiries into maternal deaths in South Africa, covering the period from 2005-2007 shows that the total number of maternal death notifications has increased in each successive triennium since 1999.¹⁸ Figure 6 shows that the increase in maternal mortality is due largely to the increase in maternal deaths resulting from non-obstetric (indirect) causes.

Figure 6: Trends in categories of maternal death



Source: National Committee on Confidential Enquiries into Maternal Deaths, 2005-2007.¹⁸

Table 3 compares the primary obstetric causes of death for the three triennial review periods. The total number of maternal deaths notified for the 2005-2007 triennium was 3 959, a 20.1% increase from the previous report. On initial assessment, indirect causes made up 49.7% of all maternal deaths in the 2005-2007 triennium. The top five causes remained the same as in previous reports namely: non-pregnancy-related infections (43.7%), hypertension (15.7%), obstetric (ante-partum plus post-partum) haemorrhage (12.4%), pregnancy-related sepsis (5.6%) and pre-existing maternal disease (6%). Together these top five causes accounted for 83.4% of all deaths. The NCCEMD assessors attributed 23.1% of maternal deaths in the 2005-2007 report to AIDS.

Hypertension, obstetric haemorrhage and pregnancy-related sepsis were the top three direct obstetric causes of death, together accounting for 33.7% of all maternal deaths. Other important direct obstetric causes of death include abortion-related deaths (3.4%) and acute collapse (3.2%). One positive finding in the 2005-2007 report was that deaths from hypertension showed a statistically significant decrease from the previous triennium, suggesting that efforts to improve the treatment of hypertension in pregnancy through guidelines, protocols and training may be beginning to have an impact.^{63,64} The slight increase in postpartum haemorrhage, and the decrease in rates of antepartum haemorrhage, when compared to the 2002-2004 report, were not statistically significant.¹⁸

Table 3: Comparison of obstetric causes of death over time

Primary Obstetric Cause	1999-2001		2002-2004		2005-2007		2005-2007 *Adjusted	
	N	%	N	%	N	%	N	%
Direct	1 462	59.8	1 767	53.6	1 819	45.9	2 074	52.4
Hypertension	507	20.7	628	19.1	622	15.7	622	15.7
Postpartum haemorrhage	240	9.8	313	9.5	383	9.7	399	10.1
Antepartum haemorrhage	100	4.1	129	3.9	108	2.7	108	2.7
Ectopic pregnancy	27	1.1	47	1.4	55	1.4	55	1.4
Abortion	120	4.9	114	3.5	136	3.4	194	4.9
Pregnancy-related sepsis	210	8.6	274	8.3	223	5.6	404	10.2
Anaesthetic related	76	3.1	91	2.8	107	2.7	107	2.7
Embolism	48	2.0	64	1.9	57	1.4	57	1.4
Acute collapse	134	5.5	107	3.2	128	3.2	128	3.2
Indirect	939	38.4	1 430	43.4	1 966	49.7	1 711	43.2
Non-pregnancy-related infections	768	31.4	1 246	37.8	1 729	43.7	1 474	37.2
AIDS	416	17.0	662	20.1	915	23.1	774	19.5
Other infections	352	14.4	584	17.7	814	20.6	700	17.7
Pre-existing maternal disease	171	7.0	184	5.6	237	6.0	237	6.0
Unknown	44	1.8	99	3.0	174	4.4	174	4.4
Total	2 445	100.0	3 296	100.0	3 959	100.0	3 959	100.0
Coincidental	45		110		118		118	
Total reported	2 490		3 406		4 077		4 077	

Source: National Committee on Confidential Enquiries into Maternal Deaths, 2005-2007.^{18,65}

* The Adjusted column has been recalculated by the authors of this chapter.

HIV and maternal deaths

A more careful analysis of the deaths attributed to AIDS revealed that 255 of the AIDS-related deaths were also found to have a direct obstetric cause of death.⁶⁵ Reclassifying these deaths by direct obstetric cause of death produces the adjusted figures shown in Figure 6 and Table 3. Table 3 also includes an adjustment for the misclassification between AIDS and other non-pregnancy-related infections of 24 maternal deaths diagnosed as AIDS without an HIV test result and 138 deaths of HIV-positive patients with tuberculosis (TB) that should have been classified as AIDS.

The implications of reclassifying 255 deaths from AIDS to a direct obstetric cause are significant.⁶⁵ After adjustment, the majority of maternal deaths (52.4%) are the result of direct obstetric causes and there is a significant increase in the contributions of postpartum haemorrhage, pregnancy-related sepsis and abortion. The number of deaths due to pregnancy-related sepsis nearly doubled after the adjustment, suggesting that HIV-positive status may mask the importance of this treatable cause of maternal death. Prior to the adjustment, the proportion of abortion-related maternal deaths appeared to have decreased, but the reclassification suggests that this category is still important, with 194 abortion-related maternal deaths in the 2005-2007 period (Table 3). However, compar-

isons of the adjusted data with previous periods to identify trends should be undertaken with caution because previous reports did not employ the same reclassification exercise.

After reclassification, non-pregnancy-related infections (NPRIs) make up 37.2% of cases and, within the NPRIs, AIDS specifically is responsible for 775 (19.5%) deaths. These data suggest that the contributions of AIDS and NPRIs, may be stabilising when compared with the 2002-2004 triennium, although NPRI is still by far the most important cause of maternal death in South Africa (Table 3). TB remains one of the most important other infectious causes of maternal death.^{66,67}

Table 4 shows the breakdown of cause of death by HIV status. The NCCEMD used DHIS 2007 data on the distribution of HIV status among antenatal care attendees, extrapolated to the total number of live births recorded in the DHIS for 2005-2007, to calculate institutional MMRs by HIV status (Table 4). The total institutional MMR for HIV-positive women was 328 per 100 000 live births, which was 9.5 times the rate of 34 per 100 000 calculated for HIV-negative mothers. In the five-year review of maternal deaths at Charlotte Maxeke Johannesburg hospital, the institutional MMR for HIV-positive women was 776 per 100 000 [95% CI: 591-1 000] compared to 124 [95% CI: 72-199] for those that were known to be HIV-negative, a 6.3 times difference.⁵⁴

Table 4: Cause of death and institutional MMRs by HIV status (adjusted data)

Primary Obstetric Cause	HIV+ve			HIV-ve			HIV Unknown			Total		
	N	%	Ins. MMR	N	%	Ins. MMR	N	%	Ins. MMR	N	%	Ins. MMR
Direct	656	35.0	114.8	359	71.5	24.6	1 059	66.8	183.7	2 074	52.4	79.5
Hypertension	111	5.9	19.4	136	27.1	9.3	375	23.7	65.1	622	15.7	23.8
Postpartum haemorrhage	95	5.1	16.6	83	16.5	5.7	221	13.9	38.3	399	10.1	15.3
Antepartum haemorrhage	15	0.8	2.6	21	4.2	1.4	72	4.5	12.5	108	2.7	4.1
Ectopic pregnancy	6	0.3	1.1	5	1.0	0.3	44	2.8	7.6	55	1.4	2.1
Abortion	98	5.2	17.2	5	1.0	0.3	91	5.7	15.8	194	4.9	7.4
Puerperal sepsis	272	14.5	47.6	38	7.6	2.6	94	5.9	16.3	404	10.2	15.5
Anaesthetic related	18	1.0	3.2	19	3.8	1.3	70	4.4	12.1	107	2.7	4.1
Embolism	10	0.5	1.8	21	4.2	1.4	26	1.6	4.5	57	1.4	2.2
Acute collapse	31	1.7	5.4	31	6.2	2.1	66	4.2	11.4	128	3.2	4.9
Indirect	1 159	61.9	202.9	114	22.7	7.8	438	27.6	76.0	1 711	43.2	65.6
Non-pregnancy-related infections:	1 092	58.3	191.2	55	11.0	3.8	327	20.6	56.7	1 474	37.2	56.5
AIDS	774	41.3	135.5	0	0.0	0.0	0.0	0.0	0.0	774	19.6	29.7
Other infections	318	17.0	55.7	55	11.0	3.8	327	20.6	56.7	700	17.7	26.8
Pre-existing disease	67	3.6	11.7	59	11.8	4.0	111	7.0	19.3	237	6.0	9.1
Unknown	57	3.0	10.0	29	5.8	2.0	88	5.6	15.3	174	4.4	6.7
Total	1 872	100.0	327.7	502	100.0	34.4	1 585	100.0	274.9	3 959	100.0	151.8
		43.7			12.7			40.0			100.0	
Total live births			571 257			1 460 748			576 474			2 608 479

Source: Derived from National Committee on Confidential Enquiries into Maternal Deaths, 2005-2007.^{18,65} HIV+ve and Total columns have been recalculated by the authors of this chapter.

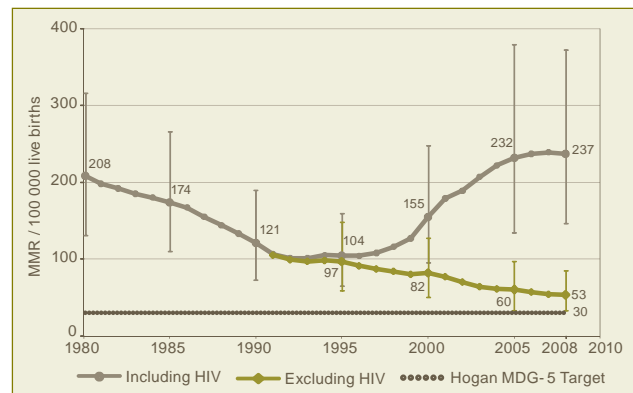
The NCCEMD institutional MMR for the 40% of women who had not been tested was also very high at 275 per 100 000. The high mortality rate and the distribution of causes of death in this group suggests that it probably includes a significant proportion of HIV-positive cases. A similar result was found in the Charlotte Maxeke study, where the MMR for those that had not been tested was 195 per 100 000 [95% CI: 131-278].⁵⁴

In the latest NCCEMD report, indirect causes contributed to 61.9% of HIV-positive maternal deaths and to 22.7% of deaths in the HIV-negative group. Direct obstetric causes made up 71.5% of HIV-negative and 35% of HIV-positive maternal deaths (Table 4). However, in comparing institutional MMRs, the cause-specific MMRs for direct obstetric causes are higher in the HIV-positive than the HIV-negative group. The institutional MMRs for abortion and pregnancy-related infection, in particular, were very high in HIV-positive women and considerably above the average for all women combined.

Part of the explanation for the high rates of direct obstetric causes in HIV-positive women is that the NCCEMD report identified a number of problems with the quality of care provided to this group, related to the persistent perception that “if the woman is HIV positive, there is nothing active to do for her”.⁶⁸ The NCCEMD noted with concern, a lack of caring for HIV-positive women among health professionals and the deterioration in ethical practice identified in some institutions. These problems were highlighted in previous NCCEMD reports⁵¹ and indicates that, until recently, HIV was a ‘blind spot’ in terms of obstetric care in South Africa.³⁸ The focus has been on Prevention of Mother-to-Child Transmission (PMTCT) programmes and ‘saving the baby’, with much less attention given to improving the management of opportunistic infections in pregnant women or to ensuring maternal access to HIV treatment.⁶⁹

Hogan et al. constructed models which speculate about the likely trends in MMR if HIV had not intervened.² The results of the analysis for South Africa are shown in Figure 7, which indicates that the MMR estimates including and excluding HIV diverge after 1990. As noted above, the 2008 MMR estimate for South Africa, including HIV, is 237 per 100 000 live births [95% CI: 146-372]. However, the model suggests that in the absence of HIV, the MMR for South Africa would have been 53 per 100 000 [95% CI: 33-85] in 2008. Interestingly, these figures are not that dissimilar from the institutional MMRs calculated for HIV-positive and HIV-negative women by the NCCEMD.

Figure 7: MMR estimates for South Africa, with and without HIV



Source: Drawn from data obtained from Hogan et al., 2010.²

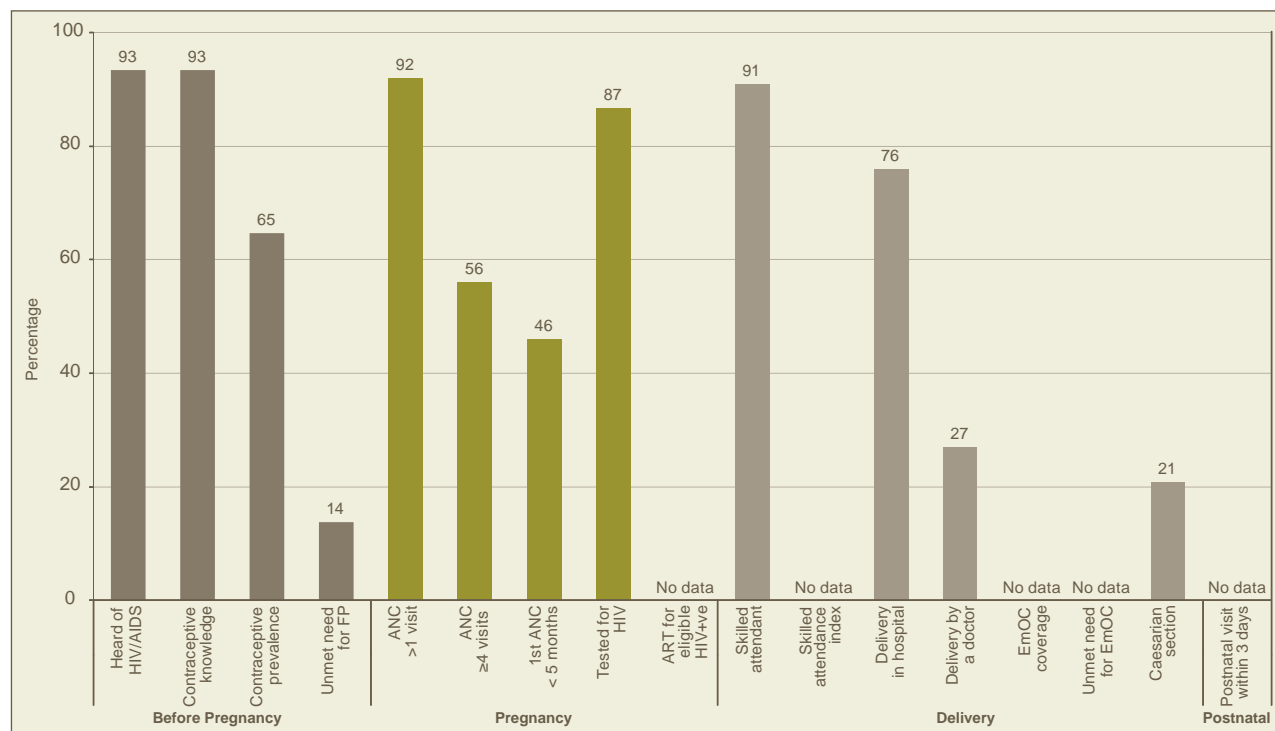
Coverage, quality and equity of key maternal health interventions

The essential package of interventions for addressing maternal mortality is shown in Figure 1. In the absence of good quality MMR data, the maternal health community has come to rely on monitoring access to this essential package, in the hope that such process indicators are correlated with improvements in maternal outcomes.

A fairly standard set of coverage indicators is reported in recent assessments of the national and global reports towards achieving MDG 5.^{17,22,28,29} The available evidence on access to some key maternal health interventions in South Africa is summarised in Figure 8. Most of the indicators require data collected through population-based surveys, and the most recent data remains that of the 2003 SADHS.

The *coverage gap* refers to the proportion of people who need a service but aren't able to get it. The unmet need for family planning (the proportion of women who do not want to become pregnant and are not able to access contraception) is 13.8% (Figure 8).⁴⁷ Nationally only 8% of women do not attend antenatal care and 9% deliver without a skilled attendant. Both of these indicators are very low by developing country standards. However, detailed local studies have found much higher rates of home births. For example, analyses from demographic surveillance sites calculated the proportion of home births as 63.5% between 2000 and 2007 for Hlabisa, and 23.1% between 2000 and 2005 for Agincourt, while a figure of 50% was proposed for a hospital in the Eastern Cape in 2005.^{70,71} Postnatal care has received little attention to date and the proportion of women having a postnatal visit within three days is very low, although there are no reliable national data on this indicator at present.

It is a concern that the MMR for South Africa has increased significantly since 1990, while coverage indicators for antenatal care and skilled attendance at delivery are already relatively high and have continued to improve.⁴⁷ A number of factors may explain the apparent paradox.

Figure 8: Coverage of key maternal health interventions along the continuum of maternal care

Source: National Department of Health, 2007;⁴⁷ District Health Barometer, 2008/09.²⁶

The first explanation is that a significant proportion of maternal deaths in South Africa are due to HIV and other non-pregnancy-related infections. Traditional process indicators may be important for monitoring interventions effective against direct obstetric causes of death, but indirect causes of death require an additional package of interventions (Figure 1) and therefore different process indicators.³⁴ DHIS data from the PMTCT programme indicated that 86.7% of pregnant women were tested for HIV during pregnancy in 2008/09,²⁶ although, as already noted, only 60% of maternal deaths in the 2005-2007 triennium had an HIV result (Table 4). The proportion of pregnant women eligible to receive treatment for HIV who actually get it, and get it in time, is not accurately known at present, but would be an important process indicator for monitoring the coverage gap for interventions targeted at indirect causes of death in South Africa.

Secondly, there is a significant *quality* gap in the provision of critical maternal health services.¹⁷ The quality gap indicates the difference between simple access and receiving the best quality care available within current system constraints. There is not yet consensus on which indicators would best measure the quality gap in maternal health. An example of quality gap indicators for antenatal care might include the proportion of pregnant women who have at least four antenatal care visits; or the proportion who initiate antenatal care before 20 weeks. Both these indicators represent higher standards of care than a single antenatal care visit. Only 56.1% of women in the 2003 SADHS had at least four antenatal care visits, and 46.1% had their first visit before 20 weeks, indicating much lower levels

of access to quality antenatal care than is suggested by the antenatal care coverage rate of 92% (Figure 8).

For intrapartum care, basic skilled attendance may not be an adequate indicator for quality care. It is recognised that the evidence relating skilled attendance to improved maternal mortality is weak.^{72,73} Also, the actual skills of so-called skilled attendants vary widely, and skilled attendants only perform optimally when they work in an enabling environment.⁷⁴ Hussein et al.⁷⁴ have proposed an indicator, called the *skilled attendance index*, which measures the proportion of deliveries performed by health professionals with the required skills and in settings providing all essential resources. Unfortunately, measurement of this indicator depends on detailed record review and it has not been calculated for South Africa. Of the data available from the SADHS, it is possible to identify the proportion of deliveries occurring in hospital and those performed by a doctor. In the 2003 survey, although 91.5% of women had a skilled attendant, only 76.2% delivered in hospital and 26.5% were delivered by a doctor. Graham et al. have shown that the correlation with lower MMRs is stronger for delivery by a doctor than delivery by any skilled attendant.⁷² However, research is required to investigate if these indicators do in fact indicate better quality care in the South African context, because studies from high-income countries have shown that midwives have equivalent, or better, outcomes than doctors for routine intrapartum care.⁷⁵

A third problem with the traditional indicators discussed so far is that they don't measure access to EmOC, a critical

component required to decrease maternal mortality.⁷⁶⁻⁷⁸ For some time UN agencies have promoted six additional process indicators for monitoring access to emergency obstetric care (Table 5). With the exception of the caesarean section rate, these indicators have not been used in South Africa. In the 2003 SADHS, 20.9% of women nationally delivered by caesarean section.⁴⁷ More recent data from the 2008/09 DHIS puts the national figure at 16.1%, although this is an institutional rather than a population-based rate.²⁶ These figures are above the 5% minimum norm (Table 5) suggesting that national access to surgical interventions is reasonable. However, there is no national data on the availability of emergency obstetric care facilities, or the unmet need for emergency obstetric care.

Table 5: UN Emergency Obstetric Care Indicators

Indicator	Acceptable Level
1. Availability of emergency obstetric care: basic (BEmOC) and comprehensive (CEmOC) care facilities	There are at least five emergency obstetric care facilities (including at least one comprehensive facility) for every 500 000 population.
2. Geographical distribution of emergency obstetric care facilities	All subnational areas have at least five emergency obstetric care facilities (including at least one comprehensive facility) for every 500 000 population.
3. Proportion of all births in emergency obstetric care facilities	Minimum acceptable level to be set locally.
4. Met need for emergency obstetric care: proportion of women with major direct obstetric complications who are treated in such facilities	100% of women estimated to have major direct obstetric complications are treated in emergency obstetric care facilities.
5. Caesarean sections as a proportion of all births	The estimated proportion of births by caesarean section in the population is not less than 5% or more than 15%.
6. Direct obstetric case fatality rate	The case fatality rate among women with direct obstetric complications in emergency obstetric care facilities is less than 1%.

Source: World Health Organization et al., 2009.⁷⁹

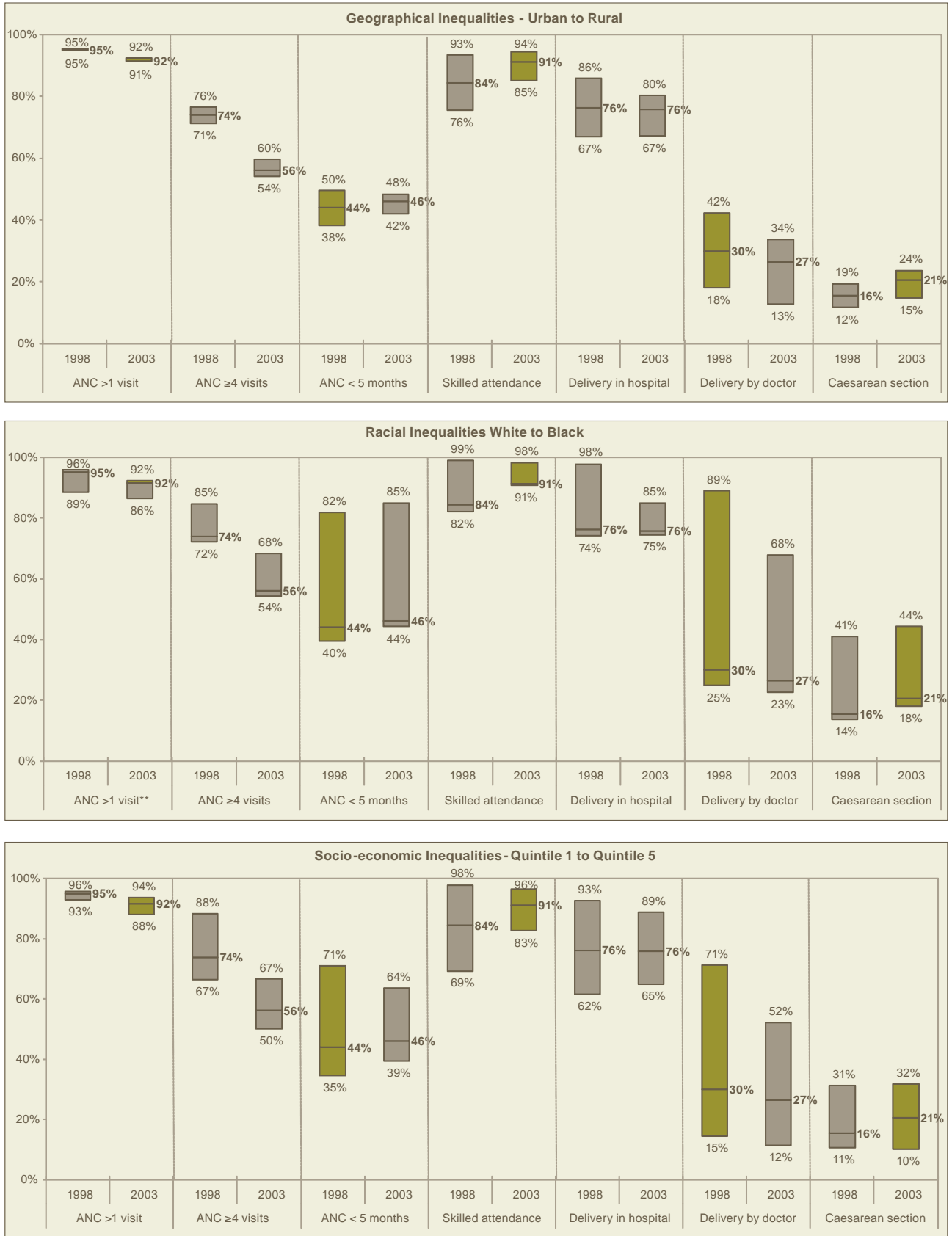
Lastly, there is also a significant *equity gap* in maternal health care in South Africa. Given the limited availability of quality MMR data, it is not surprising that there is little information on differentials in maternal health outcomes. The NCCEMD does now provide institutional MMRs by province but has not produced MMR estimates by race or socio-economic status. Comparison of MMRs between provinces is complicated by variations in HIV prevalence but, focusing only on direct obstetric causes, there was a 4.2 times difference between the best and worst provinces in the 2005-2007 triennium.¹⁸ The institutional MMR for direct obstetric deaths in the Free State was 307 per 100 000 compared to only 73 per 100 000 in the Western Cape. Using their analysis of the 2001 Census data, Garenne et al. calculated that the MMR for white women was 67 per 100 000 while it was 614 per 100 000 in blacks, a 9.2 times increase.⁴³ Socio-economic patterns were more complex but there was a 19.2 times difference between the highest and lowest wealth index categories.

There is also an equity gap in access to key maternal health interventions. National indicators suggest good coverage, but national averages can hide significant differentials in access across the country.⁷ Figure 9 provides an analysis using process indicators available from the SADHS to investigate geographical, racial and socio-economic disparities in access to key maternal health interventions and compares changes between the 1998 and 2003 surveys.

In Figure 9 the ends of each bar represent the rates for the best off and worst off in each category, while the dark central line indicates the national average. The length of each bar in Figure 9, therefore, is a measure of inequality. Antenatal care coverage rates are high and there are no significant inequalities. With regard to skilled attendance at delivery, the official MDG 5 process indicator, the 1998 national figure of 84% suggested good access but obscures significant inequalities: only 76% of rural women compared to 93% of urban women had a skilled attendant at delivery; 82% of black women compared to 99% of white women; and 69% of women from the poorest quintile compared to 98% of women from the richest quintile were delivered by a skilled attendant. The 2003 data show not only that the national skilled attendance coverage rate increased from 84% to 91%, but that all bars are smaller indicating decreasing geographical, racial and socio-economic inequalities.⁸⁰

With regard to the indicators proposed above to measure the quality of antenatal care, the proportion of women attending more than four antenatal care visits declined from 1998 to 2003, while the proportion having their first visit before five months stayed much the same. Inequalities for the first indicator showed little change but there are significant racial and socio-economic disparities in the proportion of women attending antenatal care early: 85% of white women compared to only 44% of black women have their first antenatal care visit before 5 months, with little change in this pattern from 1998 to 2003. Hospital delivery and delivery by a doctor are presented to investigate access to better quality delivery services than is reflected in basic skilled attendance, because these are the only indicators currently available. For hospital delivery, the national figure did not change between 1998 and 2003 but inequalities decreased primarily because rates for the advantaged groups were lower. The largest disparities in Figure 9 are in access to delivery by a doctor: 13% of rural women compared to 34% of urban women, 23% of black women compared to 68% of white women, and 12% of the poorest quintile compared to 52% in the richest quintile, were delivered by a doctor in the 2003 survey. Again, inequalities appear to have improved due to a decrease in access of the advantaged group, though this may reflect sampling differences between the two surveys that are not corrected by the weighting.

Figure 9: Inequalities in access to key maternal health interventions, 1998-2003



Source: Blaauw, 2009;⁸⁰ National Department of Health, 2002;⁴¹ National Department of Health, 2007.⁴⁷

** Interestingly, the differentials for this indicator are in the opposite direction. More black women attend antenatal care than white women.

As discussed above, there is no information on differentials in unmet need for emergency obstetric care, although this indicator might be more directly associated with maternal mortality in South Africa. The only emergency obstetric care process indicator available for South Africa is the caesarean section rate. The national caesarean section rate from the SADHS increased from 1998 to 2003 but levels of inequality did not change (Figure 9). However, the lowest caesarean sections in each category are all significantly above the recommended 5% minimum for this indicator (Table 5).

Health service and health system constraints

The prevention of maternal mortality and morbidity requires the proper functioning of the entire health system, from primary health care clinics providing effective antenatal care to tertiary hospitals with sufficient intensive care unit (ICU) beds (Figure 1). There has been no recent audit of the resources available for providing maternal health-care services in South Africa. For example, the distribution of hospitals able to perform a caesarean section, or the availability of skilled midwives working in labour wards, or the performance of ambulance services, are not known with any accuracy for the whole country.

Some information on the health service and health system problems related to maternal mortality is provided in the NCCEMD reports. The NCCEMD assessors identify avoidable factors, missed opportunities and sub-standard care resulting from the actions of health workers and health management.¹⁸ The frequency of different problems in the relevant assessable cases from the 2005-2007 report is summarised in Table 6.

The NCCEMD assessors identified problems with the emergency obstetric care provided by health workers in 58% of deaths at Level 1, 49% at Level 2 and 30.1% of maternal deaths at Level 3. The main weaknesses were with problem diagnosis and sub-standard management (Table 6). The sub-standard management of patients actually increased from the previous triennium so that in 2005-07, 29% of cases at Level 1, 30.3% of cases at Level 2, and 19.8% of cases at Level 3 had not been managed correctly. Similar high rates of health worker problems were found in the study by Lombaard et al. which investigated the management of postpartum haemorrhage in 12 maternal deaths and 182 near-misses in Tshwane from 2002-2006.⁸¹

Table 6: Percentage of relevant assessable cases with specific health worker and administrative problems

Health Worker Problems	Level 1 58%	Level 2 49%	Level 3 30.1%
Initial assessment	12.1	8.1	5.4
Problem with recognition / diagnosis	22	17.9	9.4
Delay in referring patient	15.6	3.8	0.6
Managed at inappropriate level	13.7	3.1	0
Incorrect management (Incorrect diagnosis)	7.3	4.2	2.3
Substandard management (Correct diagnosis)	29.6	30.3	19.8
Not monitored / Infrequently monitored	7.3	5.6	4.5
Prolonged abnormal monitoring without action	6	6.1	4.1

Resuscitation Problems	22.7%
Airway not secured	16.0
Circulation not corrected	56.5
Inappropriate drugs given	1.6
Incompletely investigated	8.2
Not appropriately monitored	1.7

Health Management Problems	29.9%
Transport problem home to institution	1.9
Transport problem between institutions*	8.4
Barriers to entry	1.0
Lack of accessibility	1.3
Lack of specific health care facilities	8.6
Lack of ICU facilities**	9.2
Lack of blood for transfusion***	19.0
Lack of personnel	0.4
Lack of appropriately trained staff	8.9
Communication problems	4.2
Other	6.8

Source: National Committee on Confidential Enquiries into Maternal Deaths, 2005-2007.¹⁸

- * Of cases transferred between institutions
- ** Of women managed in tertiary institutions
- *** Of cases requiring urgent blood transfusions

Of the management problems identified in the latest NCCEMD report (Table 6), it is concerning that 19% of patients who needed blood were not able to get it. Other important health system problems identified in the report were: transport between institutions (8.4%); the lack of specific health care facilities (8.6%) and ICU services (9.2%); and insufficient appropriately trained staff (8.9%). The NCCEMD has set a target of one hour for ambulance response times, but in a small recent study in the Cape Peninsula it was found that in only 35.5% of cases did the ambulance arrive within an hour of being called.⁸²

A particularly useful analysis undertaken by the NCCEMD is to identify the clearly avoidable deaths within current health system constraints. The results shown in Table 7 indicate that

1 519 (38.4%) of the total maternal deaths reported between 2005 and 2007 should have been prevented. If all the clearly avoidable deaths had not occurred, the institutional MMR would have been 94 per 100 000. Further analysis revealed that 85% of anaesthetic-related deaths and 77.8% of obstetric haemorrhage deaths were avoidable, and 48.9% of the hypertensive deaths could have been prevented. Together these causes accounted for 51.2% of all the avoidable deaths. Given the increasing access to antiretroviral (ARV) drugs, a larger percentage of deaths due to non-pregnancy-related infections (20.5%) was classified as avoidable in this triennium.

A number of other recent studies have identified health system challenges that exist in providing good quality maternal health services.^{69,81,83-86} Chopra et al.²² in the Lancet series in 2009, argued that the sub-optimal implementation of interventions that are known to be effective and affordable is a key explanation for why South Africa is unlikely to meet MDG 5. The article further suggests that strategies to improve health worker motivation and commitment to providing good quality, patient-centred care are an important priority and that leadership and accountability mechanisms need strengthening at all levels of the health system in South Africa.

Table 7: Avoidable deaths per category

Primary Obstetric Cause	Total Deaths	Number Avoidable	% Avoidable	% of Total Avoidable Deaths
Direct	1 819	1 065	58.5	70.1
Hypertension	622	304	48.9	20.0
Postpartum haemorrhage	383	308	80.4	20.3
Antepartum haemorrhage	108	74	68.5	4.9
Ectopic pregnancy	55	37	67.3	2.4
Abortion	136	74	54.4	4.9
Pregnancy-related sepsis	223	128	57.4	8.4
Anaesthetic related	107	91	85.0	6.0
Embolism	57	15	26.3	1.0
Acute collapse	128	34	26.6	2.2
Indirect	1 966	421	21.4	27.7
Non pregnancy-related infections	1 729	355	20.5	23.4
AIDS	915	161	17.6	10.6
Pre-existing maternal disease	237	66	27.8	4.3
Unknown	174	33	19.0	2.2
Total	3 959	1 519	38.4	100

Source: National Committee on Confidential Enquiries into Maternal Deaths, 2005-2007.¹⁸

Demand-side issues

There is limited information on community-level dynamics influencing women's access to and utilisation of maternal health care services. As in previous NCCEMD reports, the assessors investigated patient-related factors contributing to maternal deaths. Table 8 shows that patient problems were identified in 45.9% of the maternal deaths reported in the 2005-2007 period. Almost 18% of cases had not attended antenatal care at all which is significantly higher than the general population; 26.7% of women had delayed seeking medical care; and a quarter of the abortion-related deaths were caused by an unsafe abortion.

Table 8: Percentage of relevant assessable cases with specific patient problems

Patient Problems	45.9%
No antenatal care	17.7
Infrequent antenatal care	6.0
Delay in seeking medical help	26.7
Unsafe abortion*	25.7
Other	6.9

Source: National Committee on Confidential Enquiries into Maternal Deaths, 2005-2007.¹⁸
* Of women who died due to abortions

Tlebere et al. completed a community-based analysis of the factors influencing the utilisation of maternal health care services in three sites in the Western Cape, Eastern Cape and KwaZulu-Natal.⁸⁷ They found that distances to facilities and the lack of transport were the biggest problems, but complaints about the quality of care received, and provider communication with patients and their families, were also reported. Results from a recent research project investigating the interaction of supply and demand-side issues in access to maternal health are shown in Box 1.

Policy initiatives in maternal health

The overview provided of the state of maternal health in South Africa indicates no prospect of achieving the MDG 5 target by 2015. Despite a shortage of robust data, the likelihood is that the MMR has been steadily increasing rather than decreasing since 1990. Although largely a result of HIV and AIDS, a significant number of women, both HIV-negative and HIV-positive, still die of preventable direct obstetric causes each year. The change in leadership in the National Department of Health (NDoH) brings expectations of greater effort and effectiveness in tackling maternal mortality, particularly in relation to HIV-related maternal deaths. This section reviews current policy initiatives and activities in maternal health in South Africa.

Box 1: REACH – Researching Access to Comprehensive Obstetric Care

The Researching Equity in Access to Health Care Project is an ongoing collaborative research project between the Centre for Health Policy, Health Economics Unit, Rural Aids and Development Action Research, the Africa Centre for Health and Population Studies, and McMaster University. REACH is investigating access to priority health services including obstetric care. Access is conceptualised as the degree of fit between patient demand and health service supply in relation to the availability, affordability and acceptability of services. The research is being conducted in two urban and two rural sub-districts combining a number of research methods.

Client Survey

Exit interviews were completed with 1231 women after delivery in eight CEmOc facilities. The study did not find any consistent geographic or socio-economic inequalities in access to maternal care services. However, women in rural areas spent longer getting to facilities and paid more for transport costs. Although services for pregnant women are free, many women had to raise considerable funds for additional costs incurred on items such as transport, food, childcare, phone calls and materials they needed for themselves and the baby. In one research site women were also charged a fee for registration at the facility. Most women had received support in raising these funds, but some, particularly those from rural areas, indicated it had been difficult to do so.

Although over 90% of women stated that they were satisfied with services, there were some problem areas. Twenty per cent of women reported being shouted at during labour and respondents in rural areas were less likely to feel respected by staff than women delivering in urban facilities. At one of the sites 84% of women had a companion during delivery, but at another site only 2% of women had companions, even though many women indicated they would have liked one. Between 45-68% of women from the different sites reported that they did not receive sufficient pain relief.

Maternal Record Reviews

Record reviews were carried out on the maternity records of women who had exit interviews. Analysis of this data did not find any client characteristics, including HIV status, to be consistently associated with the quality of care the women received. However, an important finding was that there were significant differences in the quality of care provided by different facilities.

Client Interviews

Seventeen in-depth interviews were conducted with women with a range of delivery experiences. The interviews revealed the huge challenges that many women faced in terms of poverty, unemployment, homelessness, dysfunctional families and violent partners. Patients' experiences of accessing maternity services and interacting with health care workers varied considerably but were not all negative. Two characteristic comments are given below:

"[The nurse] started shouting at me and I got so angry because she was treating me as if I was a liar or something".

Middle-aged woman after delivery

"You know, the reason why I didn't go is that I was scared that when I go there they will judge me and shout at me on top of that, the other thing I thought they would tell me that I'm still young and I'm having sex already, you know people have a tendency to judge without understanding what led you to doing what you did....but the people were very friendly, they didn't judge me in a way that I thought they would, so they talked to me nicely actually."

Young unemployed woman with little antenatal care and birth before arrival at facility

Health Worker Interviews and Facility Observation

Qualitative data was also collected at two urban and one rural site and included 25 interviews with providers and observation of services during both day and night shifts. Many of the providers expressed regret that the quality of care that was provided to women was not better. They argued that due to shortages of staff they had to prioritise sicker women, leaving others unattended. In the facility observations it was clear that there were times that health care workers were very busy, but there were also times when health care workers sat around chatting seemingly unconcerned with patient care. Problems in communication between patients and providers were observed, with patients often not understanding what was happening or why. It was also noted that some women were left alone, scared, in pain and uncared for. At one site, problems with the referral criteria and relationships between clinics and hospitals resulted in patients suffering due to health care workers' frustrations with their colleagues in other facilities.

Policy priorities and targets

The 10 recommendations outlined in each report of the NCCEMD have been fundamental in defining efforts in maternal health in South Africa. In addition, strategic plans of the Presidency, NDoH and the Maternal, Neonatal, Child and Women's Health (MNCWH) Directorate all include priorities and targets for maternal health.

The detailed recommendations, indicators and targets from the fourth NCCEMD report are presented in Table 9 and the key strategies are shown diagrammatically in Table 10 in relation to the continuum of maternal health care. The 10 recommendations have changed little since the first report in 1998, although the implementation plans have become more specific and detailed.¹⁸

The NCCEMD recommendations have not yet had a demonstrable effect on maternal mortality, suggesting either that

they have not been implemented or that they have been ineffective. Early evaluations indicated limited progress with implementation.⁵¹ However, this may be improving, with the NDoH 2008/09 annual report claiming that 89% of institutions had implemented the guidelines.³⁷ How this complicated indicator was measured is not explained, and there are no other published studies. Pattinson and Bergh⁸⁸ discuss that effective implementation of the recommendations needs to be supported by changes in policy, management and clinical practice – all resistant to change. They argue that improved, on-site, face-to-face training is critical for changing clinical practice, and also suggest that proper systems need to be established for monitoring and evaluating the implementation of the NCCEMD recommendations. In terms of the effectiveness of the policy recommendations, a recent study indicated that the guidelines for the management of hypertension in pregnancy, at least, are based on good quality evidence.⁸⁹

Table 9: NCEMD 2005-2007 recommendations, indicators and targets

Recommendation	Indicators	Targets
1. Protocols on the management of important conditions causing maternal deaths must be available and utilised appropriately in all institutions where women deliver. All midwives and doctors must be trained in the use of these protocols.	<ul style="list-style-type: none"> i. Availability of relevant written protocols in the form of posters, individual booklets or tool kits in relevant sections of health facilities ii. Availability of a functioning training programme for all institutions at district level iii. Availability of a functioning programme on quality assurance for proper use of guidelines by midwives and doctors at district level 	<ul style="list-style-type: none"> i. All institutions must have relevant written protocols in the form of posters, individual booklet or tool kits in relevant sections of these facilities ii. All districts must have a written functioning training programme in all institutions iii. All districts must have a written functioning programme on quality assurance for proper use of guidelines by all health professionals including midwives and doctors
2. Training should be provided for all health professionals working in maternity units in practical obstetrical and surgical skills. Skills should be provided in anaesthesia, especially in Level 1 institutions.	<ul style="list-style-type: none"> i. Availability of a ESMOE skills training programme for all institutions at district level ii. Availability of ESMOE fire-drills and skills training in health care facilities iii. Availability of a functioning programme on quality assurance for assessing skills of midwives and doctors at district level iv. Anaesthetic indicator 	<ul style="list-style-type: none"> i. All hospitals must have implemented ESMOE fire-drills and skills training ii. All sub-districts must have access to ESMOE skills training programme for all institutions in the sub-district iii. All districts must have a functioning programme on quality assurance for assessing skills of all health professionals including midwives and doctors
3. All pregnant women should be offered information on, screening for and appropriate management of non-pregnancy-related infections and common medical disorders.	<ul style="list-style-type: none"> i. Percentage of institutions providing appropriate maternity care, offering information on screening for and appropriate management of non-pregnancy-related infections and common medical disorders 	<ul style="list-style-type: none"> i. All institutions that perform maternity care should provide: <ul style="list-style-type: none"> ➢ Provider-initiated counselling and testing for HIV, HIV staging, dual therapy and HAART treatment ➢ Appropriate history taking and examination for TB and anti-TB therapy ➢ Malaria screening in malaria areas and malaria prophylaxis ➢ Screening for anaemia, hypertensive disorders in pregnancy, and cardiac disease
4. Criteria for referral and referral routes must be established and utilised appropriately in all provinces. Emergency transport facilities must be available for all pregnant women in need.	<ul style="list-style-type: none"> i. Availability of referral routes and criteria for referral in the relevant areas in hospitals and emergency services ii. Time from call for ambulance to arrival of the ambulance at site 	<ul style="list-style-type: none"> i. All facilities providing maternity services must have functional referral routes and referral criteria ii. 70% of ambulances on red code calls must arrive at the emergency site within 1 hour of call
5. Postnatal care must be strengthened.	<ul style="list-style-type: none"> i. Recorded visits at DHIS as a percentage of births in the sub-district 	<ul style="list-style-type: none"> i. 60% of women and children attend postnatal care at 6 weeks ii. Establish a mechanism to monitor the number of post-partum visits within 6 days of delivery
6. Staffing and equipment norms must be established for each level and for every health institution concerned with the care of pregnant women.	<ul style="list-style-type: none"> i. Availability of guidelines on allocation of human resources for maternal and neonatal health services ii. Availability of guidelines on essential equipment for provision of maternal and neonatal health care at different levels 	<ul style="list-style-type: none"> i. Written guidelines for human resource allocation and for essential equipment must be available at national, provincial, district and facility level
7. Blood for transfusion must be available at every institution where caesarean sections are performed.	<ul style="list-style-type: none"> i. Percentage of applicable institutions having adequate emergency blood available 	<ul style="list-style-type: none"> i. All applicable institutions
8. Contraceptive use must be promoted through education and service provision.	<ul style="list-style-type: none"> i. Sustained increase in women using contraceptive services having tubal ligations, IUCD insertions and vasectomies performed ii. All districts must provide information on all forms of contraceptives and family planning iii. All regional and provincial tertiary and national central hospitals to have contraceptive services 	<ul style="list-style-type: none"> i. Implementation strategy
9. The number of deaths from unsafe abortion must be reduced.	<ul style="list-style-type: none"> i. Percentage of functioning TOP services in relation to designated public sector units separately for first and second trimester pregnancies ii. Availability of strategies for advertising TOP services within the district 	<ul style="list-style-type: none"> i. All sub-districts must be able to provide first trimester TOPs ii. 70% of sub-districts must be able to provide second trimester TOPs
10. Women, families and communities at large must be empowered, involved and participate actively in activities, projects and programmes aiming at improving maternal and neonatal health as well as reproductive health in general.	<ul style="list-style-type: none"> i. Percentage of functioning community empowerment programmes at sub-district level ii. Availability of appropriate Information, Education and Communication (IEC) Material or Behaviour Change and Communication (BCC) material addressing major issues around maternal deaths for women and the general population 	<ul style="list-style-type: none"> i. 70% of sub-districts must be able to conduct at least quarterly activities targeting women and the general population to raise awareness and facilitate change of behaviour regarding maternal and neonatal health plus reproductive and sexual health in general; the activity should be documented and reported to the maternal health unit of the NDoH ii. 70% of sub-districts must be able to provide appropriate IEC or BCC material addressing major issues around maternal deaths for women and general population at all times

Source: National Committee on Confidential Enquiries into Maternal Deaths, 2006-2007.¹⁸

Table 10: Government strategies and targets for maternal health

Level	Strategies	Targets
The Presidency – Measurable Performance & Accountable Delivery, 2010 ⁶⁰	<ul style="list-style-type: none"> i. Increase the proportion of designated health facilities providing Choice on Termination of Pregnancy services ii. Increase the proportion of facilities providing Basic Antenatal Care iii. Enhance the clinical skills of health workers iv. Improve the use of clinical guidelines and protocols v. Increase the percentage of health facilities that have health workers trained in EmOC and CEmOC 	<ul style="list-style-type: none"> i. Decrease MMR to 100 per 100 000 or less by 2014/15 ii. Increase the percentage of pregnant women who book for antenatal care before 20 weeks gestation from 20% to 50% iii. Increase the percentage of infants requiring dual therapy for PMTCT who actually receive from 10% to 60% iv. Increase the percentage of maternity care facilities which review maternal and perinatal deaths and address identified deficiencies from 45% to 80% v. Increase the percentage of mothers and babies who receive postnatal care within 6 days of delivery from under 5% to 70%
National Department of Health Strategic Plan, 2010/11-2012/13 ²¹	<ul style="list-style-type: none"> i. Increasing access to health care facilities ii. Increasing the percentage of pregnant women who book for antenatal care before 20 weeks gestation iii. Increasing the percentage of mothers and babies who receive postnatal care within 3 days of delivery iv. Increasing the percentage of maternity care facilities which review maternal and perinatal deaths and address identified deficiencies v. Enhancing the clinical skills of health workers and improve the use of clinical guidelines and protocols 	<ul style="list-style-type: none"> i. Decrease MMR to 100 per 100 000 live births ii. All eligible women to be initiated on ART iii. 100% of maternity facilities to conduct perinatal review meetings iv. 95% of primary level facilities providing BANC v. 70% of primary care facilities with health providers trained in EmOC and CEmOC
Strategic Plan for Maternal, Neonatal, Child & Women's Health & Nutrition 2009-2014 ²⁰	<ul style="list-style-type: none"> i. Addressing inequity and social determinants of health ii. Development of a comprehensive and co-ordinated framework for provision of MNCWH & Nutrition services iii. Strengthening community-based MNCWH & Nutrition interventions iv. Scaling-up provision of key MNCWH & Nutrition interventions at PHC and district level v. Scaling-up provision of key MNCWH & Nutrition interventions at district hospital level vi. Strengthening the capacity of the health systems to support the provision of MNCWH & Nutrition services vii. Strengthening human resource capacity for the delivery of MNCWH & Nutrition services viii. Strengthening systems for monitoring and evaluation of MNCWH & Nutrition interventions and outcomes 	<ul style="list-style-type: none"> i. Decrease MMR to 50 per 100 000 live births ii. 75% contraceptive prevalence rates iii. 18% teenage pregnancy rate iv. 98% of women to attend antenatal care v. 90% of women to attend antenatal care at least 4 times vi. 90% skilled attendance rates

Different formulations of the current national priorities in maternal health by different levels of government are shown in Table 10. Although the strategies and targets are not exactly the same there is reasonable consistency across the strategic plans.

Current Activities

The core maternal health package prioritised in the most recent MNCWH plan consists of:

- Contraception services, including pregnancy confirmation and emergency contraception;
- Choice on termination of pregnancy (CTOP) services;
- Basic Antenatal Care (BANC);
- HIV testing during pregnancy, with initiation of ART where indicated;
- Intrapartum care (with specific focus on correct use of the partogram and the implementation of protocols for managing complications); and

- Essential Postnatal (EPOC) care for mother and baby.²⁰

The NDoH plans to scale up the BANC programme, which focuses on improving the quality of routine antenatal care by:

- ensuring booking before 20 weeks;
- at least four scheduled and focused visits for each woman; and
- the integration of PMTCT.²⁰

The Essential Steps in Managing Obstetric Emergencies (ESMOE) training programme aims to improve the capacity of doctors and advanced midwives to deal with obstetric emergencies. ESMOE has 12 training modules and involves practical on-site training sessions and emergency drills.⁹⁰ ESMOE is being rolled out to districts throughout the country, with master trainers appointed in each province. With a renewed focus on postnatal care, the National MNCWH Directorate aims to ensure that all women have a postnatal visit within

three days. The suggestion is that postnatal visits should be home-based, which would require the involvement of community health workers, although it is acknowledged that facility visits may be more practical in some settings.²⁰ The EPOC targets are that all women and neonates are checked in the first six hours after delivery, and again within six days and at six weeks.

Other current activities of the National MNCWH Directorate include developing and distributing updated treatment guidelines and improving maternal health record-keeping. The birth register has been revised, a postnatal card has been developed, and a new integrated Antenatal-Maternity Care Record is due to be implemented. A detailed monograph on postpartum haemorrhage has been launched and the development of a second monograph on caesarean sections is planned. Interactions between the NCCEMD and the South African National Blood Transfusion Services aim to improve the availability and storage of blood-products at all hospitals performing caesarean sections.

South African academics have been prominent in the promotion of clinical audit⁹¹ so the commitment to increasing the use of maternal and perinatal audits to improve the quality of maternal health is encouraging (Table 10). Audits need to be implemented where they are not happening and existing audits need to be improved to identify problems, develop solutions and monitor improvements. Incorporation of near-miss methods would also strengthen the audit process.⁹² In addition, there have been efforts to improve the clinical governance of obstetric services. Three provinces have already appointed provincial co-ordinating obstetricians to help strengthen management in key areas required to support obstetric care.

HIV and AIDS-related maternal mortality is a key obstacle to South Africa reaching the MDG 5 target. The recent revision of the treatment guidelines is a critical component in tackling AIDS as a cause of maternal death. The CD4 treatment threshold for pregnant women has been increased to 350 cells/mm³ (compared to the standard 200 cells/mm³) and pregnant women are among those prioritised for fast tracking treatment initiation (ARVs should be started within two weeks of being eligible).^{23,24}

The new ARV treatment guidelines should have a significant positive impact on maternal and neonatal health.^{93,94} Black et al.⁵⁴ found no clear improvement in MMRs with increased ARV access at Charlotte Maxeke Hospital between 2003 and 2007. However, Abdool Karim et al.⁹⁵ suggest that South Africa may be beginning to “turn the tide” in terms of HIV and maternal health, with greater collaboration between the maternal health and HIV communities, better integration in the ARV treatment of pregnant women and improved management of

maternal conditions aggravated by HIV. However, there are a number of studies documenting the problems that persist within overloaded ARV services.^{54,69,83} For example, a recent study from KwaZulu-Natal found that, although 97.3% of pregnant women had been tested for HIV and 91.3% of eligible women had received nevirapine for PMTCT, referral of women for ARV treatment was problematic – only 54.8% of HIV-positive women had a CD4 result and only 8.7% were on ARV treatment.⁹⁶ The challenge is to ensure that HIV treatment services are available throughout the health system and not only in innovator sites which have committed staff and, often, additional external funding. Debates relating to task-shifting and midwife-led initiation of ARVs have not yet been completely resolved. For example, a study by Kunene in 2009 found that 97% of midwives wanted to be able to initiate ARVs, but few had received sufficient training to do so.⁹⁷

The NDoH's 10 Point Plan aims to improve the functioning of the health system, which is essential for improving maternal health care service delivery.²¹ It remains to be seen how forthcoming health system initiatives, such as the implementation of National Health Insurance, the updating of the Human Resource Plan for Health, the revitalisation of primary health care and the proposed revisions to the qualifications framework and scope of practice for nurses and midwives, will impact on maternal health services.

International perspectives

In this section, current discussions and debates in the international maternal health arena are presented, including areas where South African academics and policymakers have made a significant contribution.

Global burden of maternal mortality

As discussed above, Hogan et al.² have recently produced revised MMR estimates for 181 countries for 1980-2008, modelling data from vital registration, censuses, DHS surveys and verbal autopsy studies. The estimates are significantly lower than those previously reported by UN agencies. The last UN report estimated there were 536 000 maternal deaths across the world in 2005, equating to a global MMR of 400 per 100 000 [95% CI: 220-650]. However, Hogan et al.² calculated that there were only 342 000 maternal deaths worldwide in 2008 and a reduction of the global MMR from 320 per 100 000 in 1990 to 251 [95% CI: 221-289] in 2008, which is a picture of “persistent and welcome progress”.⁶¹ Even so, this overall picture hides considerable variation between regions and countries. Egypt, China, Ecuador and Bolivia are examples of countries where maternal health has significantly improved. South Africa falls into the group that is not making progress. More than 50% of all maternal deaths

are now concentrated in only six countries: India, Nigeria, Pakistan, Afghanistan, Ethiopia and the Democratic Republic of Congo.

The new estimates have aroused considerable debate in the maternal health and measurement world – with researchers and campaigners from various countries querying the differences between these and other estimates, challenging the review process and arguing that the results might cause “potential political damage to maternal advocacy campaigns, confusion among countries, policymakers and the media”.⁶¹ As a way forward it has been suggested that there needs to be further debate about how the estimates were produced, and the impact of these estimates on global maternal health policymaking and advocacy.^{61,62}

Interventions to reduce maternal mortality

Countdown to 2015 for Maternal, Newborn and Child Survival monitors coverage of 26 priority interventions identified as crucial to achieving the maternal and child health MDG goals in 68 countdown countries, including South Africa.^{12,28} Also monitored is the equity of coverage²⁷ and the underlying policy and health system factors that influence coverage for the interventions.⁹⁸ The initiative is ‘supra-institutional’ involving UN agencies, funders, academics and professional organisations. South African academics have played a key role in the initiative as well.

The latest Countdown to 2015 Report concludes that progress is being made, though not fast enough in many countries, and that sub-Saharan Africa is doing particularly badly.^{12,29} The report identifies Brazil and Bangladesh as countries that have done well in addressing socio-economic and gender disparities in health outcomes, but suggests that in many countries profound inequalities in coverage and health outcomes persist. The report concludes that it is still possible to meet the 2015 targets for maternal and child health, but only with increased political commitment and with additional funding directed towards strengthening health systems.

In the past it has been argued that maternal health loses out in joint maternal and child health initiatives,⁹⁹ but currently there is increasing support for the idea that maternal health should be seen as part of the continuum of maternal, newborn and child survival.^{14,100} Attempts have also been made to frame maternal health in the context of wider development,⁵ human rights and health systems strengthening.¹⁰¹⁻¹⁰³ More recently, linked to the Women Deliver 2010 international conference, the contention has been that maternal mortality will only be tackled successfully if understood in the context of gender equality and women’s empowerment, promoted by MDG 3.¹⁰⁴

Financing and maternal health

A current international debate relates to financing of maternal health. Strong calls for the abolition of user fees for maternal health have been countered by concerns about the impact this may have on facility functioning and staff morale in areas where user fees are used to top-up staff pay and fund facility activities.¹⁰⁵⁻¹⁰⁷ Suggestions have also been made for better integration with the private sector in initiatives to improve maternal health.¹⁰⁸

In countries where skilled attendance at delivery is still low, conditional cash transfers to encourage women to deliver in facilities are seen as one way of increasing uptake. A range of different programmes have been implemented in India, Nepal, Malawi, Bolivia and elsewhere. Early results seem to suggest that these programmes do lead to increased numbers of women accessing services and to reductions in perinatal mortality,¹⁰⁹ though the impact on maternal mortality is less certain. Also, challenges remain in these initiatives about which women benefit,¹¹⁰ how the system is administered and the quality of care that women receive.

Task shifting and maternal health

The lack of human resources has been identified as a major constraint to increasing access to skilled attendance at delivery.^{111,112} However, there has been little improvement in the supply of trained midwives,¹¹³ and there is no consensus on interim human resource strategies to improve access.¹¹⁴ Influenced by calls for task shifting in the HIV and AIDS field, there is increasing recognition that mid-level health-care workers can play an important role in maternal health programmes.¹¹⁵ For example, a number of programmes have effectively trained clinical officers to provide caesarean sections.^{116,117} Following the re-evaluation of community participation prompted by the 30th anniversary of the Alma Ata Declaration,¹⁰⁰ new programmes are considering the utilisation of community health-care workers to help women access maternal services and to provide antenatal and post-natal care.^{105,109}

Using audits to improve maternal health

Finally, partly in response to work done in South Africa, there is increased use of audits for maternal deaths, near-misses and perinatal deaths as a way of improving the quality of care provided in maternal health services.^{30,91,92} Pattinson and others,^{91,118} however, caution that maternal audit needs to be carried out in a way that does not alienate staff and that completes the loop between identifying the problem and making attempts to address it. Hussein et al. working in Ghana and Indonesia, have suggested changes in maternal mortality audits to make sure that positive elements of treatment are

recorded and that, in the case of near-miss, interviews with patients are included.¹¹⁹

Conclusions

MDG 5 has focused considerable international and national attention on maternal mortality and maternal health. The target set for MDG 5 to decrease the MMR by 75% by 2015 is ambitious, with only very few countries worldwide set to achieve it. South Africa is not on target and is actually in the small group of countries where the MMR has increased since 1990.

What is the cause of South Africa's failure when countries with fewer resources, such as Egypt, Sri Lanka and China, have succeeded? A particular feature of maternal mortality in South Africa is that non-pregnancy-related infections, mainly AIDS, are the most important cause of death. The relationship between maternal mortality and HIV was exacerbated by the previous administration's prevarication and confusion in dealing with the epidemic. Renewed national optimism with regard to HIV and the recent revision of the ARV treatment guidelines prioritising treatment for pregnant women marks an important step in focusing on the health of mothers as an end in itself, rather than just a means to PMTCT. However, guidelines do not, by themselves, produce access to essential quality care. Significant weaknesses in already overstretched ARV services should urgently be addressed in order to ensure that the increased number of eligible pregnant women actually access treatment. A clear implementation plan is required, outlining how the assurances in the new guidelines will actually be realised. Among the other non-pregnancy-related infections TB, as a cause of maternal death, has been somewhat overshadowed by HIV but also now requires more attention and dedicated interventions.

It is likely that without HIV the MMR would be decreasing in South Africa. However, the decrease would probably still not have been fast enough to meet MDG 5. The mortality rate due to direct obstetric causes of death is unacceptably high for a country with South Africa's resources. Despite the rollout of guidelines and training courses, the proportion of maternal deaths in which sub-standard care could be identified actually increased in the last triennium, particularly at Level 1 and Level 2 hospitals. Also, 1 065 (58.5%) of the direct obstetric deaths were classified as clearly avoidable by NCCEMD assessors in 2005-2007. The small decrease in the mortality rate from hypertension in pregnancy will hopefully be sustained in the next triennium, but it is important to note that hypertension-related deaths still made up 20% of all the avoidable deaths. Of concern is the lack of improvement in the management of obstetric haemorrhage and that 85% of anaesthetic-related deaths in the 2005-2007 triennium were avoidable. An important insight from the latest NCCEMD

report is the high rate of direct obstetric causes of death in HIV-positive women, partly reflecting persistent problems in the management of obstetric emergencies in general. However, there are also indications that health professionals are less aggressive in managing obstetric emergencies in HIV-positive compared to HIV-negative women. This breach in ethical practice should clearly be addressed.

The quality of MMR estimates for South Africa needs to be improved. Many of the available data are of questionable validity and there is no reliable trend data. Not only is the MMR the main outcome measure for MDG 5, but a key indicator for monitoring the implementation of the government's strategic plans for maternal health. However, the strategic plans do not explain how the MMR, and the other maternal health target indicators for that matter, will be measured over time. The NCCEMD is clearly an important institution producing critical data on maternal mortality in South Africa and the validity of the institutional MMRs calculated by the NCCEMD will continue to improve over time. However, a number of maternal deaths occur at home or are not reported to the NCCEMD and using the DHIS to measure the number of live births is questionable. The NDoH needs to work with the Department of Home Affairs and StatsSA to tackle the quality of MMR estimates from vital registration by improving cause of death registration and increasing the registration of births.

South Africa has high coverage of routine indicators, such as antenatal care coverage and having a skilled attendant at delivery. Some evidence suggests that basic access for poor rural black women is improving and that the equity gap for indicators such as skilled attendance is decreasing. However, South Africa cannot be complacent about the performance on these indicators given that the MMR continues to rise. The conclusion must be that these crude national indicators are not particularly helpful for targeting and monitoring maternal health initiatives in South Africa. Additional indicators are required to identify differentials in access to quality maternal care, access to emergency obstetric services and access to antiretroviral treatment, because these factors are more directly associated with maternal mortality in South Africa.

Data derived from health facilities can be significantly biased. Therefore, population-based Demographic and Health surveys are one of the few data sources available for monitoring MDG 5 coverage and outcome indicators. It is unacceptable that other, less-resourced countries in the region – including Uganda, Kenya, Tanzania and Malawi – are able to produce regular, good quality district health system surveys,¹²⁰ but South Africa has only managed two surveys in twelve years. Furthermore, there are significant quality concerns with the data from the 2003 survey. Plans for completing the next SADHS seem uncertain, as it has already been postponed at least once.³⁷

There is no shortage of recommendations, strategies, plans and targets for addressing maternal health in South Africa. The package of activities prioritised by government matches the identified shortcomings but, as with many other policy initiatives in South Africa, the problem lies in effective implementation. Maternal health services cannot be delivered by stand-alone vertical programmes but require effective health facilities supported by a functional health system. However, there are deficiencies in the fundamental health system building blocks required to support maternal health care service delivery. There is a critical shortage of human resources in the public health system – particularly midwives, advanced midwives, doctors and obstetricians – but no clear plan for tackling the issue. It also appears that there are problems with the motivation and performance of some existing maternal health staff. Drug and equipment supply systems have generally improved, but the lack of blood, inadequate emergency transport and insufficient ICU facilities contributed to a number of maternal deaths in the 2005-2007 period. Poor health worker practice and sub-standard care were commonly identified in Level 2 and Level 3 hospitals, despite the availability of more specialised resources in these facilities. This is of concern because a functional referral system and good quality secondary and tertiary services are essential for the effective management of obstetric emergencies. Overall, these deficiencies suggest that facility and programme management also need strengthening.

Again, there is inadequate data on the system resources available for supporting maternal health care service delivery. The availability of such information, from routine information systems or regular surveys, would significantly improve planning and management. More rigorous studies investigating the functioning and outcomes of maternal health services are required. The NCCEMD only obtains information on women who have died and, without counterfactual data, it is difficult to make strong claims about the associations between identified problems and outcomes. It is encouraging, however, that maternal audit is becoming institutionalised and that the use of near-miss methods is expanding.¹²¹

South Africa will not achieve a 75% reduction in maternal mortality from 1990 levels by 2015. Indeed, the immediate objective is to reverse the current upward trend in maternal deaths. The main priorities are to increase access to ARV treatment for HIV-positive pregnant women and to improve the availability and quality of emergency obstetric care. There is a clear outline of what needs to be done to improve maternal mortality, but it will require concerted collective action and strong leadership to make it happen.

Recommendations

Some key recommendations of this chapter are summarised below:

Recommendations for maternal health services

- Ensure implementation of the NCCEMD recommendations.
- Expansion and strengthening of sites providing antiretroviral therapy. Continued integration of HIV and AIDS care and maternal health services.
- Better integration of services for sexual and reproductive health, maternal health, and child health.
- Minimising access barriers for all women by ensuring that maternal health services are accessible, affordable and acceptable.
- Improving managerial and clinical supervision of maternal health services.
- Increasing the use of maternal audits at all levels. Expansion of near-miss methods and incorporation of the mother's perspective in audits.

Recommendations for the health system

- Developing policies to ensure the availability of sufficient numbers of suitably trained and motivated obstetricians, doctors and midwives at all levels.
- Strengthening of the health system at all levels, from primary health care clinics to tertiary hospitals. Strengthening support services, including emergency transport, blood supply, Level 2 and 3 hospitals and ICU services.
- Improving leadership, management and accountability systems within the health system to ensure that existing policies are implemented.
- Ensuring continued improvements in the equity of access for all South Africans to good quality health services.

Recommendations for information and research

- Continued strengthening of the NCCEMD process.
- Improving the quality of information for monitoring of MDG 5 by developing better indicators, improving vital registration and implementing a regular demographic and health survey.
- Implementing regular national surveys of maternal health care services to document the quality of maternal care services and to investigate the key determinants of quality care.

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