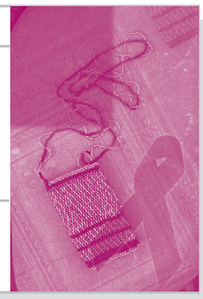
SURVEY

Maternal deaths due to non-pregnancy-related infections

Third report on Confidential Enquiry into Maternal Deaths in South Africa, 2002 - 2004



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Non-pregnancy-related infections (NPRIs) remain the leading cause of maternal deaths at all levels of care in the triennium 2002 - 2004, with AIDS deaths being the biggest challenge for the health sector. A total of 1 246 deaths from NPRIs were reported for the triennium. HIV testing of women increased from 37.6% in 1999 - 2001 to 50% in 2002 - 2004. Of all deaths from NPRI, AIDS contributed 53.1%, followed by pneumonia (25.4%), tuberculosis (8.3%) and meningitis (6.3%). Malaria deaths declined from 5.3% in 1999 - 2001 to 1.3% in 2002 - 2004. AIDS continues in this report to be underestimated because a strict definition of AIDS is used. Many women die before the results of HIV testing are known and it is conceivable that some of them would have been classified as having AIDS. In order to make a diagnosis of AIDS, a positive HIV test plus an AIDS-defining condition must be present.

There are provinces that need to improve access to voluntary counselling and testing.

AIDS remains the main cause of death in all age groups, followed by pneumonia, tuberculosis and meningitis, with the age category 25 - 29 years being at most risk for all four. The commonest final and contributory causes of death were respiratory failure or immune system failure, which occurred in more than 50% of patients. Deaths occurring at level 1 hospitals increased sharply. Deaths in level 2 hospitals were second highest. Patients presented with an emergency equally in the antenatal period (44.2%) and in the postpartum period (43.7%). Patient-related factors decreased from 68.8% in 1999 - 2001 to 46.2% in 2002 - 2004. These were reported as the commonest avoidable factors. Delay in seeking help was the main contributor, followed by lack of antenatal care. Lack of health care facilities, personnel and transport are the main administrative avoidable factors and may contribute to people feeling that they are not welcome in the health care system. The use of the CD4 cell count is not yet universal. There are personnel-related factors, such as fatalism and a non-caring attitude once a diagnosis of HIV infection is suspected or made. Delay in providing care is a factor in the management of many women with HIV and other infective conditions. There is also lack of utilisation of the ethical guidelines for management of women with HIV infection.

Non-pregnancy-related infections (NPRIs), as a category, are the leading cause of maternal deaths at all levels of care in the triennium 2002 - 2004. HIV-related infections are a major contributor to these deaths as well as the biggest challenge in the health sector. The antenatal prevalence continues to rise as reflected in Fig. 1, notwithstanding the absence of universal antenatal testing for HIV infection among pregnant women. Some provinces have a low rate of testing, so the impact of HIV in these provinces is underestimated. Deaths resulting from HIV-related conditions also continue to increase.

This indirectly reflects on access to HIV testing by pregnant women. While there has been an improvement in testing of pregnant women, probably due to the extensive rollout of the PMTCT programme, the target for at least 80% of pregnant women to have had an HIV test has not been attained. In all provinces, however, there has been an increase in the testing rate in the triennium. It is hoped that in the triennium 2005 - 2007 almost all pregnant women will have had an HIV test.

There has been an improvement in HIV testing of women (Fig. 2). In 2002 nearly 46% of women who died had HIV test results. In 2004, 50% had an HIV test result, compared with 30% in the triennium 1999 - 2001. Testing is not uniform throughout all provinces, with the Eastern Cape, Free State, Limpopo and Mpumalanga performing HIV testing in less than 40% of the women who died of NPRI.

The magnitude of AIDS will, however, continue to be grossly under-estimated as long as HIV testing is not accessible to all pregnant women. The National Committee for the Confidential Enquiry into Maternal

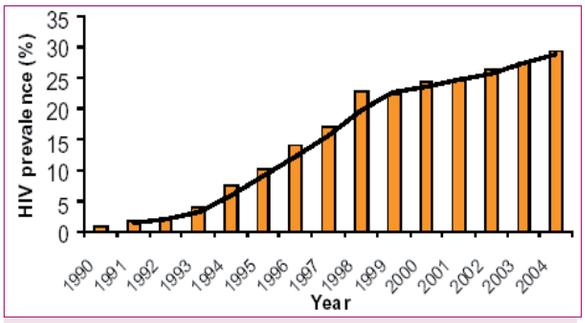

Fig. 1. Prevalence of HIV among antenatal care attendees in South Africa, 1990 - 2004.

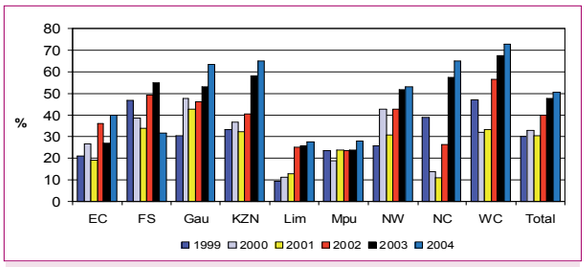

Fig. 2. HIV testing (%) of maternal deaths per province, 1999 - 2004.

Deaths (NCCEMD) uses a strict definition for AIDS, namely a positive HIV test **and** either a CD4 count of less than 200/µl or an AIDS-defining condition such as tuberculosis (TB), cryptococcal meningitis, *Pneumocystis carinii* pneumonia (PCP) and Kaposi's sarcoma. Access to CD4 cell counts became a possibility only in the latter part of the 2002 - 2004 triennium.

Some of the conditions contributing to death in the NPRI category (e.g. pneumonia, TB and meningitis) may be related to HIV and contribute to AIDS deaths but could not be confirmed as the HIV test result was not available, as shown in the sample below (Table I).

Table I. AIDS classification by assessors

NPRI	HIV+	HIV-	Unknown
AIDS	636	0	26
% total of all deaths	19.3%		
Tuberculosis	32	11	61
Pneumonia	146	13	157
Meningitis	2	3	35
Total	812		
% total deaths	24.6%		

The majority of patients with pneumonia and TB did not have HIV test results, while only a minority had a negative test result. This highlights the underestimation of AIDS deaths.

Table II shows the proportion of maternal deaths due to NPRIs in the various provinces compared with the triennium 1999 - 2001. There has been an increase in the proportion of deaths from NPRIs in all provinces except Gauteng and the Western Cape. The proportion of deaths almost doubled in Limpopo. This could, however, be a reflection of improved HIV testing in the province. There was also a sharp rise in the proportion of deaths in the Northern Cape.

Demographic data

The age distribution and primary cause of death in the NPRI group is similar to that in the triennium 2002 - 2004, as indicated in Table III. AIDS remains the main cause of death in all age groups, followed by pneumonia, tuberculosis and meningitis, with the prevalence in the age category 25 - 29 years being highest for all four. Malaria deaths have decreased from 5.3% in 1999 - 2001 to 1.3% in 2002 - 2004.

The prevalence of HIV seems to stabilise, although this is only in the categories < 20, 20 - 24 and the 45 - 49 years. In the 25 - 39-year category the trend continues to be upward (Fig. 3).

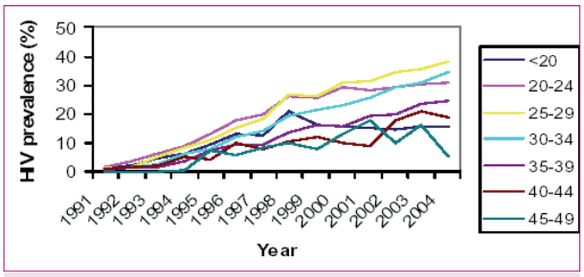

Fig. 3. HIV prevalence trends by age group among antenatal clinic attendees, South Africa, 1991 - 2004.

Women of low parity (< 3) were at highest risk of dying from all categories of NPRI (Table IV). Of women who died of AIDS, 82% were of low parity (0 - 2) (Table V).

There appears to be a shift from the lower ages, with an increase in AIDS deaths in the 30 - 34 age category (Table V). While the most affected age group is 25 - 29 years, there is an increase in maternal deaths in the age group 30 - 34 years. There is a decrease in the parity 0 group and an increase in the other parities. The increase is sizeable in the parity 1 group. AIDS deaths in the parity 0 group, although high, are declining, while deaths are increasing for parity 2 and 3.

When ages of mothers who died of AIDS are compared with a general population of women who registered the birth of their child, there was an excess of deaths in the age groups 25 - 29 years and 30 - 34 years (Table VI).

The majority of deaths occurred at level 1 hospitals, followed by level 2 hospitals (Table VII). In previous *Saving Mothers* reports, the majority of deaths were occurring in level 2 hospitals. A high proportion of deaths still occur at level 2 and 3 facilities. NPRIs were responsible for 2 out of 5 deaths in level 1 and level 2 hospitals and 1 out of 3 deaths in level 3 hospitals. Three-quarters of all the deaths due to AIDS occurred in level 1 and 2 hospitals, and a quarter in level 3 hospitals. AIDS is the most common cause of death at each level of care.

Table II. The proportion of maternal deaths due to NPRIs per province

Province	1999 - 2001 No. of deaths reported	1999 - 2001 % of deaths reported	2002 - 2004 No. of deaths reported	2002 - 2004 % of deaths reported
Eastern Cape	64	24.4	108	29.2
Free State	83	33.3	161	37.3
Gauteng	133	31.3	211	31.5
KwaZulu-Natal	257	37.2	326	45.2
Limpopo	21	14.6	79	28.1
Mpumalanga	80	31.5	110	37.5
North West	82	40.0	153	46.9
Northern Cape	14	22.6	39	36.8
Western Cape	34	29.3	59	28.5
Total	768	31.9	1 246	36.6

Table III. Age distribution and primary cause of death in the NPRI group

Cause	< 20	20 - 24	25 - 29	30 - 34	35 - 39	40 - 44	45+	Unknown	Total *N*
Pneumonia	20	84	76	89	38	8	1	0	316
AIDS	22	153	219	177	69	14	4	4	662
TB	10	17	32	32	7	5	1	0	104
Endocarditis	1	0	0	0	0	0	0	0	1
UTI	1	2	3	0	0	0	0	0	6
Malaria	1	5	4	4	2	0	0	0	16
Meningitis	9	22	24	16	7	1	0	0	79
Other	5	9	23	15	7	1	1	1	62
Total	69	292	381	333	130	29	7	5	1 246

UTI = urinary tract infection.

Table IV. Parity and primary cause of death in the NPRI group

Cause	0	1	2	3	4	5	6+	Unknown	Total *N*
Pneumonia	104	91	59	31	11	4	6	10	316
AIDS	186	207	150	59	15	6	8	31	662
TB	33	30	19	11	5	1	1	4	104
Endocarditis	1	0	0	0	0	0	0	0	1
UTI	2	2	0	2	0	0	0	0	6
Malaria	2	3	4	1	0	0	0	6	16
Meningitis	22	27	16	7	2	1	0	4	79
Other	15	16	13	8	4	2	0	4	62
Total	358	376	261	119	37	14	15	59	1 246

UTI = urinary tract infection.

Primary obstetric causes and final and contributory causes of death

Primary obstetric causes of death in various sub-categories are set out in Table VIII.

Table VIII shows that AIDS remains the main cause of death in the NPRIs category in the triennium 2002 - 2004, contributing more than half of all NPRIs. There is a slight increase in the percentage of women dying from complications of pneumonia, TB and meningitis. Malaria deaths decreased from 5.3 in 1999 - 2001 to 1.3% in 2002 - 2004.

The commonest final and contributory causes of death were respiratory failure or immune system failure, which occurred in more than half of patients (Table IX). Cerebral complications followed in frequency.

Table X lists the final and contributory causes of women's deaths due to AIDS, and Table XI illustrates other conditions that accompanied AIDS. The majority of women had TB, followed by bacterial pneumonia and then meningitis.

Table V. Comparison of age and parity 1999 - 2001 and 2002 - 2004 with AIDS

Age (yrs)	1999 - 2001 (%)	2002 - 2004 (%)	Parity	1999 - 2001 (%)	2002 - 2004 (%)
< 20	5	3.3	0	35.6	28.1
20 - 24	24.5	23.1	1	26.2	31.3
25 - 29	36.5	33.1	2	21.2	22.7
30 - 34	18.5	26.7	3	8.5	8.9
35 - 39	10.1	10.4	4	5.7	2.3
40 - 44	2.9	2.1	5	1.7	0.9
45+	0.2	0.6	6+	0.6	1.2

Table VI. Comparison of ages of pregnant women who died of AIDS with the general pregnant population

Age (yrs)	% AIDS	% gen. pop.
< 20	3.3	10.5
20 - 24	23.1	26.5
25 - 29	33.1	24.1
30 - 34	26.7	20.2
35 - 39	10.4	12.0
40 - 44	2.1	5.2
45+	0.6	1.5

% gen. pop. refers to the distribution of ages of women at the birth of their babies. Data from the Population Register 2002-2004 from Statistics South Africa.[1]

Many women died either of respiratory failure or general immune system failure, a diagnosis often difficult to define. Some provinces (KZN and North West) were more likely to make the diagnosis than others, which may reflect health personnel bias and/or capacity.

Women present with NPRIs equally in the antenatal and postpartum periods. The proportion presenting in the antenatal period probably reflects the facts that testing has improved and the diagnosis is being made sooner (Table XII).

Avoidable factors, missed opportunities and substandard care

Avoidable factors, missed opportunities and areas of substandard care are summarised in Tables XIII - XVI. Patient-related factors have decreased from 68.8% in 1999 - 2001 to 45.8% in 2002 - 2004 but remain the commonest avoidable factors. Delay in seeking help is the main contributor, followed by lack of antenatal care. The majority of women, however, do attend antenatal care.

Lack of health care facilities, personnel and transport are the main administrative avoidable factors (Table XV and XVI). The major contributor is delay in seeking help, with nearly 30% falling into this category, down from the previous triennium level of nearly 52%. The proportion of women not attending for antenatal care has dropped from 25.7% to 21.6% in 2002 - 2004.

The health system factors have remained fairly similar to those in the previous triennium. There has not been an appreciable improvement. There are still avoidable factors, such as delay in transport and lack of appropriately trained personnel. Lack of access to health facilities is also a major factor in 5.8% of cases. Lack of appropriately trained staff is the second commonest factor cited as responsible for the death of women.

For all health care provider-related avoidable factors, there has been a marked decrease from the 1999 - 2001 triennium. While there was a marked improvement in initial assessment in level 1 institutions, there was no corresponding decrease in deaths from NPRIs. The proportion of deaths from NPRIs, especially AIDS, showed an increase. It would seem that health care providers and assessors do not adequately use the available guidelines as standards for the management of women with HIV infection in pregnancy. The assessors recorded only 9.1% of NPRI deaths, and only 4.5% of deaths where a diagnosis of AIDS had been made, as clearly avoidable within the health system. The availability of antiretroviral (ARV) therapy should bring about a change in these proportions as clinicians learn to use the new drugs that should be available to all women requiring them.

Resuscitation is still suboptimal, especially correction of circulation (Table XVII). In about 47% cases circulation was not corrected. There was poor monitoring, with only a minority (11.3%) being properly monitored.

Table VII. Percentage of total deaths per level of care caused by non-pregnancy-related sepsis

	1999 - 2001			2002 - 2004		
Level	Total deaths	NPRI deaths	%	Total deaths	NPRI deaths	%
Level 1	713	214	30.0	1 103	459	41.6
Level 2	856	329	38.4	1 241	477	38.4
Level 3	753	208	27.6	941	293	31.1

Table VIII.	Primary obstetric causes of death in the sub-categories			
	1999 - 2001		2002 - 2004	
Sub-categories	**N**	**%**	**N**	**%**
Pneumonia	176	22.9	316	25.4
AIDS	416	54.2	662	53.1
TB	50	6.5	104	8.3
UTI	8	1.0	6	0.5
Endocarditis	0	0.0	1	0.1
Malaria	41	5.3	16	1.3
Meningitis	32	4.2	79	6.3
Other	45	5.9	62	5.0

UTI = urinary tract infection.

Discussion

NPRIs continue to be the leading cause of maternal deaths (Department of Health, 2003). This triennial analysis confirms the continuation of that trend. The antenatal prevalence continues to rise as reflected in Fig. 1. Although a plateau seems to have been reached in the prevalence of HIV among pregnant women, it will take some time for maternal deaths trend to mirror this; deaths due to HIV-related conditions continue to increase.

The analysis of NPRI deaths is complicated by the increase in HIV prevalence and in reporting. The difference in assessors, complicated by inadequate documentation, also adds to the complexity of the task. It is however clear that more and more women die from NPRIs, especially HIV-related infections.

HIV testing of pregnant women remains a challenge. It is of concern that only 50% of all women who died had an HIV test result. All provinces have improved except for Limpopo, Mpumalanga and the Free State. These provinces need to establish the causes of their low testing rates. There is a great need for concerted and continuing efforts at prevention and voluntary testing. The low HIV testing rates also impact on the expansion of the PMTCT programme. Some of the conditions contributing to death in the NPRI category (pneumonia, TB, meningitis, etc.) may have been related to HIV and contribute to AIDS deaths but this could not be confirmed as no HIV test result was available (Table I), leading to a lower estimation of the impact of HIV on women's health. Other conditions such as malaria, also seemed to be associated with HIV infection.

It is apparent that the age 25 - 34 years is the most vulnerable period in terms of death. According to the 2004 HIV prevalence study (Fig. 3) this age group has a very high HIV prevalence. The age group 30 - 34 years has shown an increase compared with the previous triennium. This may be because of the carry-through from the 25 - 29-year age group in the previous triennium. It is encouraging that there is a decrease in the proportion of deaths in the younger age groups. The decrease may be because women are delaying childbearing, or practising safer sex, or both.

Women of low parity (< 3 previous viable births) were at highest risk of dying from all categories of NPRIs (Table IV). Eighty-two per cent of women with low parity (0 - 2) died of AIDS (Table V). There is therefore a need for strategies that will be effective in this age group and their partners.

A proportion of women with HIV and other NPRIs seem to present late for care. There may be cultural and familial factors that influence this behaviour, and poverty may play a role. The stigma associated with HIV diagnosis is still prevalent. In order to make a positive change, these factors must be addressed.

Many deaths occur in the postpartum period (Table XII). It is therefore important to monitor these women *after* delivery. There is a need to review the follow-up schedule for postnatal care, and for comprehensive

Table IX.	Final and contributory causes of maternal death* for NPRIs: comparison with 1999 - 2001			
	1999 - 2001 deaths		2002 - 2004 deaths	
Organ system	***N***	**%**	***N***	**%**
Hypovolaemic shock	8	1.0	10	0.8
Septic shock	39	5.1	109	8.7
Respiratory failure	449	58.5	782	62.8
Cardiac failure	14	1.8	36	2.9
Renal failure	6	0.8	52	4.2
Liver failure	5	0.7	8	0.6
Cerebral complications	106	13.8	171	13.7
Metabolic complications	3	0.4	23	1.8
DIC	2	0.3	37	3.0
Multi-organ failure	50	6.5	127	10.2
Immune system failure	87	11.3	710	57.0
Unknown	19	2.5	30	2.4

* A patient can have more than one final and contributory cause of death.
DIC = disseminated intravascular coagulation.

Table X. Final and contributory causes of maternal deaths for AIDS

	2002 - 2004 deaths	
Organ system	***N***	**%**
Hypovolaemic shock	3	0.5
Septic shock	49	7.4
Respiratory failure	410	61.9
Cardiac failure	19	2.9
Renal failure	28	4.2
Liver failure	5	0.8
Cerebral complications	74	11.2
Metabolic complications	10	1.5
DIC	26	3.9
Multi-organ failure	70	10.6
Immune system failure	476	71.9
Unknown	4	0.6

DIC = disseminated intravascular coagulation.

Table XI. Other conditions diagnosed in women dying due to AIDS* (sample of 377)

Category	***N***	**%**
TB	170	45.1
PCP	39	10.3
Bacterial pneumonia	125	33.2
Cryptococcal meningitis	12	3.2
Bacterial meningitis	36	9.5
Kaposi's sarcoma	2	0.5
Oesophageal thrush, weight loss, chronic diarrhoea, generalised lymphadenopathy	43	11.4
Hepatitis	5	1.3
Toxoplasmosis	6	1.6
Lactic acidosis	2	0.5
AIDS diagnosed but no info.	21	5.5
Total	377	100

*A patient can have more than one final and contributory cause of death.
PCP = *Pneumocystis carinii* pneumonia.

Table XII. Timing of emergency event leading to the maternal death

	1999 - 2001		2002 - 2004	
Category	***N***	**%**	***N***	**%**
Early pregnancy	70	9.3	115	9.2
Antenatal period	208	27.7	551	44.2
Intrapartum	9	1.2	31	2.5
Postpartum period	453	60.3	544	43.7
Unknown	33	4.4	19	1.5

review of each woman seen during this period. Infection with HIV places women at high risk. These women must be checked for any evidence of latent or overt infection. It appears that the response to infection during pregnancy complicated by HIV is less dramatic, thus making the diagnosis difficult. Normal vaginal

Table XIII. Avoidable factors, missed opportunities and substandard care for NPRIs and comparison with 1999 - 2001

	Avoidable factors in assessable cases			
	1999 - 2001		2002 - 2004	
Category	***N***	**%**	***N***	**%**
Patient orientated	449	68.8	494	46.2
Administrative factors	139	23.6	196	17.1
Health worker orientated				
Emergency management problems				
Level 1	166	23.7	207	33.8
Level 2	138	19.6	156	29.3
Level 3	68	9.5	75	26
Resuscitation problems	50	10	108	9.7

Table XIV. Avoidable factors, missed opportunities and substandard care with respect to patient-orientated problems for NPRIs and a comparison with 1999 - 2001

	1999 - 2001		2002 - 2004	
Major problems	***N* = 653**	**%**	***N* = 1 076**	**%**
Non-attendance antenatal care	168	25.7	232	21.6
Infrequent attendance	70	10.7	61	5.7
Delay in seeking help	339	51.9	324	30.1
Other	46	7.0	42	3.9

delivery is also not a guarantee against life-threatening infections.

Many women receive substandard care once their HIV status is known or suspected. The guidelines for the management of HIV seem not to be widely practised. Whether this is due to fatalism on the part of health workers is not known. Health workers seem also to lack skills. There was limited utilisation of guidelines for the management of women infected (see Guidelines in *Saving Mothers 1999 - 2001*[2]).

The attitude of some health workers is cause for major concern. Discrimination against some women who present as emergencies cannot be ruled out. Some women wait for long periods before they are assessed and treated appropriately.

Nutritional support must be available to women with HIV infection, especially in pregnancy, in order to delay the progression of HIV infection to AIDS. Ongoing psychosocial support, safer sex, a balanced diet and nutritional supplements must all be made accessible to the women. Opportunistic infections and other conditions must also be actively searched for, both before and after delivery. Tuberculosis is still the commonest treatable opportunistic infection, yet little is done with regard to its active diagnosis and management.

Table XV. Avoidable factors, missed opportunities and substandard care with respect to administrative problems for NPRIs and a comparison with 1999 - 2001

	% of assessable cases with avoidable factors			
	1999 - 2001		2002 - 2004	
Major problems	***N* = 589**	**%**	***N* = 1 143**	**%**
Delay in transport from home to institution	29	4.9	18	1.6
Delay transport between institutions*	5	2.3	15	3.3
Barrier to entry	1	0.2	4	0.3
Lack of accessibility	3	0.5	7	0.6
Lack of health care facilities	47	8.0	66	5.8
Lack of ICU beds	0	0.0	11	1.0
Lack of blood products	1	0.2	2	0.2
Lack of personnel	1	0.2	1	0.1
Lack of appropriately trained staff	42	7.1	50	4.4
Communication problems	20	3.4	20	1.7
Other	9	1.5	37	3.2

*Denominator is number of patients transferred.

Table XVI. Health care providers' avoidable factors, missed opportunities and substandard care in NPRIs and a comparison with 1999 - 2001

	1999 - 2001						1999 - 2001					
	Level 1		Level 2		Level 3		Level 1		Level 2		Level 3	
Description	***N***	**%**	***N***	**%**	***N***	**%**	***N***	**%**	***N***	**%**	***N***	**%**
Initial assessment	106	50.0	81	34.8	34	20.6	75	15.1	61	14.8	18	7.3
Problem with recognition/diagnosis	99	46.7	76	32.6	32	19.4	78	15.7	56	13.6	25	
10.2												
Delay in referring patient	46	21.7	11	4.7	1		45	9.0	14	3.4	0	0.0
Managed at inappropriate level	44	20.8	15	6.4	NA		44	8.8	4	1.0	NA	
Incorrect management (incorrect diagnosis)	22	10.4	15	6.4	3	1.8	22	4.4	14	3.4	9	3.7
Substandard management (correct diagnosis)	38	17.9	55	23.6	26	15.8	65	13.1	81	19.7	40	16.3
Not monitored/ infrequently monitored	23	10.8	36	15.5	11	6.7	20	4.0	18	4.4	10	4.1
Prolonged abnormal monitoring without action	6	2.8	14	6.0	6	3.6	9	1.8	16	3.9	8	3.3
Total assessable deaths	212		233		165		498		411		245	

Table XVII. Emergency management including resuscitation

	1999 - 2001				2002 - 2004			
	Avoidable factor in assessable deaths per level of care		Distribution of avoidable factor per level of care		Avoidable factor in assessable deaths		Distribution of avoidable factor	
Description	***N***	**%**	***N***	**%**	***N***	**%**	***N***	**%**
Resuscitation	76	76.0			63	5.1		
Airway not secured			0	0.0			6	9.5
Circulation not corrected			59	77.6			30	47.6
Inappropriate drugs given			2	2.6			4	6.3
Incompletely investigated			13	17.1			10	15.9
Not appropriately monitored			2	2.6			7	11.1

Women with HIV infection have a high prevalence of anaemia. It would appear that oral or parenteral haematinics are not utilised appropriately. Nutrition is the basis of the immune response to infection, yet in most cases there was no evidence that nutrition was considered as an integral part of the management.

There is still lack of clarity on where women with HIV infection should be treated. *There must be plans for where effective treatment is on offer.* Health managers must ensure that health workers are familiar with and competent to implement the policies and guidelines, in order to minimise the mortality and morbidity rate from preventable causes. Many women die in level 1 hospitals. This may be the appropriate level of care; there is a need to avoid community 'dumping' in the name of home-based care (there are cases where hospitals send patients home although they are ill and the families do not basic basic resources to care for them).

It should not be a foregone conclusion that mortality from AIDS should be high if the prevalence of HIV is high. AIDS

should be viewed and managed as a chronic condition. *Step-down facilities should be considered for women who do not have ready access to health facilities after delivery. Antiretroviral drugs must be accessible to women in as short a time as possible.* Women need to be able to access these drugs, so that by the time they deliver the majority are on the comprehensive programme.

There is also a need for training of health workers on the ethics guidelines for the management of women with HIV infection in pregnancy. Emergency management of women with HIV must also be improved.

In order for women to benefit from the knowledge of their status, it is important to consider an opt-out position with regard to antenatal testing for HIV. In this way the majority of women will access services. However, the associated stigma poses a problem for many women.

The reduction in malaria deaths comes at a time when there is a change in the strategy for preventing malaria through vector control measures. While South Africa has taken a different route of prevention, as other measures (ITBN) failed to show effectiveness,[3] it is hoped that even if the decrease is sustained vigilance is maintained, as cases are now seen in non-malaria zones such as Gauteng and North West provinces, probably because of ease of travel. There is no evidence that intermittent treatment with anti-malarial drugs is being implemented in the provinces with endemic malaria. It is important to note that all women who died of malaria were HIV positive. The interaction between malaria and HIV infection has been shown.[4,5]

Conclusion

HIV continues to be a challenge and a major contributor to women's ill-health and death. The approach to the epidemic is less than satisfactory, as shown in the low proportion of women accessing voluntary HIV testing. There is also a lack of uniform approach to the epidemic, despite the fact that guidelines are available. Health workers have to overcome the sense of fatalism and helplessness, and actively seek to improve the health of those infected with the virus. The HIV epidemic has not displaced other causes of mortality, but has added to the complexity of the other causes of maternal mortality. Infections must be sought and treated enthusiastically.

Prevention remains the major intervention in the struggle against HIV. It is also important that access to comprehensive care of people with HIV infection, including ARV drug therapy, is improved. Health care workers must recognise the complexity and potential toxicity of the ARV drugs in order to maximise the benefits of this health technology.[6] Optimal care includes best practices aimed at the prevention and treatment of other infections.

Ethical guidelines must be enforced so that health workers are able to make decisions that benefit *women*, first and foremost. Health workers also need to apply the Batho Pele principle. As many women die soon after delivery, closer monitoring during this period is also essential. There are however no guidelines in other countries for the management of the puerperium in HIV-infected women.

Key recommendations

1. Provinces must improve access to counselling and voluntary testing, ensuring that results are obtained in order to manage pregnancy and delivery appropriately. This is a matter of urgency. HIV is the commonest infection among pregnant women and a threat to their survival. An opt-out option must be considered.
2. The Department of Health's ethical guidelines must be adhered to. There must never be discrimination based on HIV status. These guidelines must be followed, in order that women with HIV infection may benefit from comprehensive and holistic care. Prevention of mother to child transmission is only part of the care in pregnancy.
3. Women with HIV must be treated humanely as people with a chronic condition. ARV guidelines for pregnant women must be widely disseminated and health workers must be empowered to manage these cases. Training has to be expanded.
4. Access to nutrition, ARV therapy and other supportive measures must be accelerated in all provinces. Poverty underlies most clinical situations, yet the health system does not appear sensitive to the needs of these women. Adherence to the treatment schedules of most diseases depends on patients being able to present at the health facilities.
5. Special attention must be paid to postnatal care, as many women succumb to ill-health at this time. Women who have recently delivered must have access to supportive environments and accommodation. Step-down facilities should be considered for women who need them. The impact of the HIV and other epidemics is such that few social and community support structures are left for women to benefit from. Infrastructural and system improvements must address the needs of women who are pregnant or have recently delivered.

We wish to acknowledge the Ministry and the Department of Health, as this article is part of *Saving Mothers 2002 - 2004,* a report of the National Committee for Confidential Enquiry into Maternal Deaths in South Africa. The authors were members of the Committee during the period 2002 - 2004.

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