

# Impact of HIV/AIDS on deaths certified at Mosvold Hospital, Ingwavuma, Northern KwaZulu-Natal from January to August 2003

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## Abstract

An analysis of the causes of death certified at Mosvold Hospital, Ingwavuma demonstrates the impact of HIV/AIDS in the region. HIV/AIDS appears to be responsible for about 45% of registered deaths in both males and females after the age of nine years. There is a significant difference in the mean age at death between males and females succumbing to the disease after the age of nine years: the average age at death of females from HIV/AIDS is 35 years, and the average age for males is 40 years. The younger average age of death from HIV/AIDS in females, together with a higher expected age of death from non-HIV causes, means that females lose considerably more years of life due to HIV/AIDS than males. The figures for this part of northern KwaZulu-Natal indicate a higher impact of HIV/AIDS on deaths than in previous assessments for South Africa as a whole. **(SA Fam Pract 2005;47(1): 51-57)**

## Introduction

Mosvold Hospital is situated in northern KwaZulu-Natal near the borders of Swaziland and Mozambique. According to estimates by the Department of Health, the hospital serves a population of about 108 000.<sup>1</sup> The population is rural and poor, with adult unemployment at 60%.<sup>1</sup> Five percent of households have piped water and 3.6% of households are supplied with electricity.<sup>1</sup> Government healthcare in the Mosvold Hospital sub-district is provided by the hospital, 10 residential clinics and three mobile clinic teams.

The author collected data on the causes of death certified at Mosvold Hospital by compiling a database (Microsoft Access). The database was initially envisaged to help provide statistics that were frequently requested by various parties. Reliable death statistics are also necessary as part of mortality review. Using a database allows flexibility in producing statistics that may be needed or demanded (such as infant mortality, under-five mortality, causes of death in adult women, or deaths from a particular disease). Data from the death certificates were captured entirely by the author, who is medically qualified and who could, it was hoped, interpret

and group diagnoses better than a non-medically qualified person. Doctors are often reluctant to write HIV or AIDS as a cause of death on death certificates, which distorts mortality statistics. Where a clear euphemism for HIV/AIDS or an AIDS-defining illness<sup>2</sup> had been given, the author entered the diagnosis as HIV/AIDS (see Table 1). The results of eight months of data entry, from January to August 2003, demonstrated the major impact of HIV/AIDS in the hospital catchment area, and these results are presented in this paper.

In a report, 'The impact of HIV/AIDS on adult mortality in South Africa', the authors estimate that 40% of the deaths of adults aged 15 to 49 years, and 20% of all adult deaths, in South Africa in the year 2000 were due to HIV/AIDS.<sup>3</sup> This estimate was based on the dramatic increase in female deaths in the 25 to 29 years age group compared to 1985, and a less marked increase in male deaths in the 30 to 39 age group. The peak for female deaths was found to be between 25 and 29 years, and the peak for male deaths to be between 30 and 35. The authors noted that the details completed on death certificates tend to concentrate on opportunistic infections, rather than on the underlying HIV/AIDS.

In another report, 'Causes of death in South Africa 1997-2001', the proportion of deaths due to HIV amongst females aged 15 to 29 was estimated to be 22.5%, compared to 8.5% for males of that age group.<sup>4</sup>

The National HIV and Syphilis Sero-Prevalence Survey of women attending public antenatal clinics in South Africa in 2002 estimated that KwaZulu-Natal had the highest provincial sero-prevalence of HIV amongst antenatal attendees at public antenatal clinics, with 36.5% of antenatal clinic attendees being HIV positive, compared to an overall national HIV prevalence of 26.5%.<sup>5</sup> With a higher antenatal HIV prevalence than the national average, it is probable that the province will also have a higher proportion of deaths from HIV compared to the rest of South Africa.

## Ethical considerations

The publication of statistics on the causes of death certified at Mosvold Hospital was approved by the Mosvold Hospital Ethical Committee on 11 September 2003.

## Method

Counterfoils of form 83/BI-1663, Notification/Register of Death/Stillbirths

(Republic of South Africa, Department of Home Affairs) completed at Mosvold Hospital from 1 January 2003 until 31 August 2003 were studied and the data were entered into a database (Microsoft Access). The items that were entered were as follows:

- ID number
- Surname
- First name
- Date of birth
- Date of death
- Age
- Sex
- Race
- Pregnant
- Smoker
- Underlying (or only given) diagnosis
- Diagnosis presumed to be HIV/AIDS (if applicable)
- Immediate diagnosis
- Other significant diagnosis
- Method ascertained
- Place of death
- Facility name
- Home area

The items mainly followed items on the death notification form. The underlying diagnosis was captured in the same field as an only diagnosis.

Certain euphemisms and AIDS-defining illnesses for HIV/AIDS (Table I) were captured as HIV/AIDS. In the case of an underlying diagnosis being interpreted by the author as HIV/AIDS, the underlying diagnosis was entered as HIV/AIDS and the original diagnosis was recorded under 'Diagnosis presumed HIV/AIDS' (Table I). After the commencement of the data collection, medical officers were encouraged to be as clear and truthful as possible in their death notification entries.

The initial categories of diagnoses available in the database's drop-down list of diagnoses consisted of the notifiable medical conditions with the addition of HIV/AIDS. Other diagnoses were added to the list as they were encountered.

## Results

HIV/AIDS was by far the most common individual cause of death in both males and females older than nine years, being responsible for about 45% of deaths in both males and females (Tables II, III and IV; Figures 1, 2 and 3), and for nearly 44% of all deaths (Table VI). Of the 31 deaths in children aged younger than 10 years 4(13%) were attributed to HIV/AIDS (table V).

Plotting the numbers of deaths from all causes according to sex and age at death showed two peaks for both males and females after the age of four years (Figure 4). Amongst females there was a sharp peak of deaths in the 30 to 34 age group, and another peak between the ages of 70 and 79 (Figure 4). Males showed a broader peak than females in the 30 to 34 year age group, extending into the 45 to 49 year age group, with another peak also occurring between 70 and 79 years (Figure 4). The peak in the younger age group coincides with the peak of HIV deaths of both males and females (Figure 5). For both males and females, the peaks occurring in the ages from 30 to 49 years were mainly from deaths diagnosed as HIV/AIDS (Figures 6 and 7).

## Discussion

The diagnoses of HIV/AIDS are based on the opinion of medical practitioners as to the cause of death, and not all

were confirmed by an HIV test. Both males and females showed two peaks in mortality according to age group after the age of four years. In the case of females, there was a sharp peak in deaths in the 30 to 34 age group, and a second peak after the age of 70, while in males there was a slightly flatter, broader peak occurring between the ages of 30 and 49 and, as in the case of females, another peak after the age of 70 (Figure 4). Most of the deaths in the younger age group peak in both males and females were diagnosed as being from HIV/AIDS. It should be considered that a significant number of deaths listed under other diagnoses, such as tuberculosis, gastroenteritis and pneumonia, probably also had underlying HIV infection.

Although a smaller proportion of deaths of children before the age of 10 years (Table V) are attributed to HIV/AIDS than for adults, diagnoses such as pneumonia and gastroenteritis may be

**Table I :** Diagnoses interpreted and entered as HIV/AIDS

<b>Diagnoses presumed HIV/AIDS as underlying cause of death. Date of death Jan-Aug 2003. Deaths certified at Mosvold Hospital, Ingwavuma, KwaZulu-Natal.</b>			
	<b>Diagnosis</b>	<b>Males</b>	<b>Females</b>
	Acquired immunosuppression	2	0
	HIV/AIDS given under 'Other significant diagnosis'	2	3
	Immune deficiency	0	1
	Immunocompromised	4	0
	Immunosuppressed	2	0
	Kaposi's sarcoma	1	1
	Retroviral disease	0	3
	<b>Total of presumed HIV/AIDS diagnoses</b>	<b>11</b>	<b>8</b>
	Total deaths entered as HIV/AIDS	129	149
	<b>Percentage of HIV/AIDS presumed from other diagnoses</b>	<b>8.5%</b>	<b>5.3%</b>

**Table II:** Cause of death in persons older than nine years

<b>Top 10 underlying causes of death in persons aged older than nine. Date of death: Jan-Aug 2003. Deaths certified at Mosvold Hospital, Ingwavuma, KwaZulu-Natal, South Africa.</b>			
	<b>Underlying or only diagnosis</b>	<b>Number of deaths</b>	<b>Percentage</b>
	HIV/AIDS	274	45.3%
	Tuberculosis, pulmonary	40	6.6%
	Stroke	30	5.0%
	Pneumonia	29	4.8%
	Heart failure	27	4.5%
	Natural causes	17	2.8%
	Gastroenteritis	13	2.1%
	Hypertension, essential	12	2.0%
	Meningitis, bacterial	9	1.5%
	Tuberculosis, other	8	1.3%
	Other causes	146	24.1%
	<b>Total</b>	<b>605</b>	<b>100.0%</b>

Figure 1

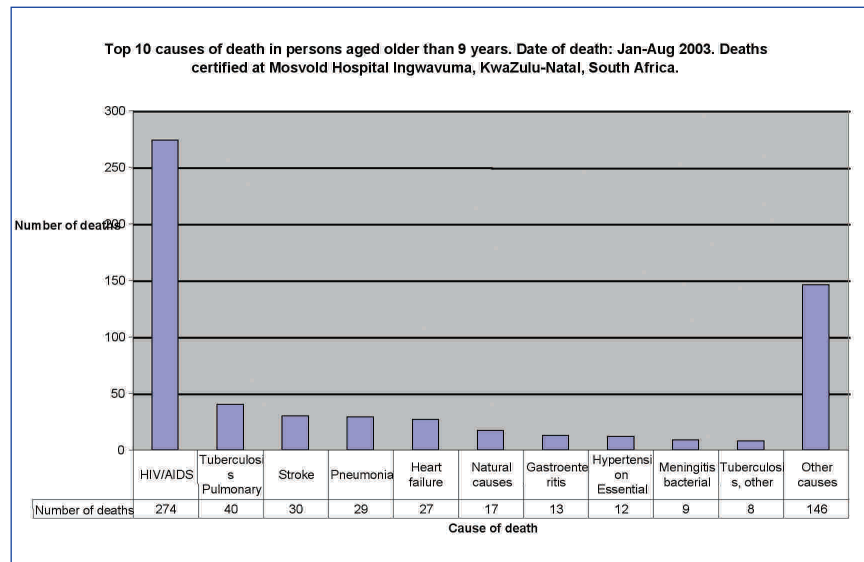
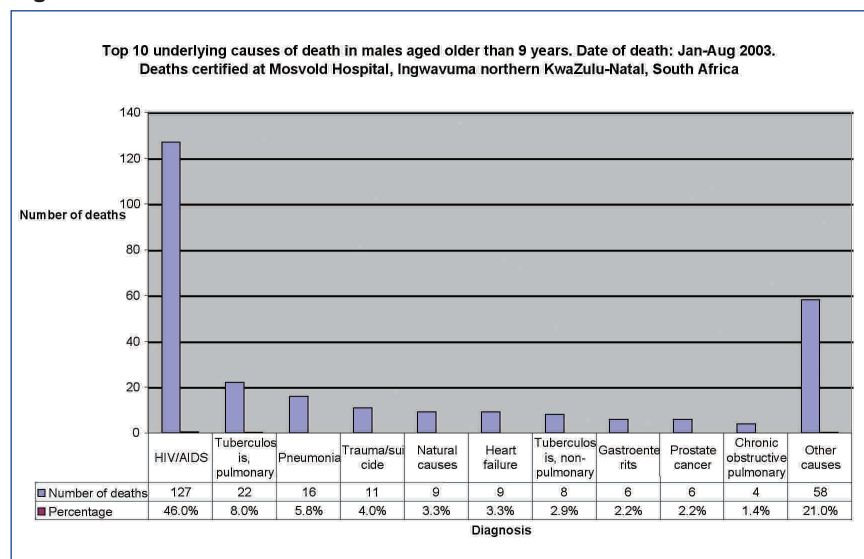


Table III: Cause of death in males older than nine years

**Top 10 underlying causes of death in males aged older than nine. Date of death: Jan-Aug 2003. Deaths certified at Mosvold Hospital, Ingwavuma, KwaZulu-Natal, South Africa.**

Diagnosis	Number of deaths	Percentage
HIV/AIDS	127	46.0%
Tuberculosis, pulmonary	22	8.0%
Pneumonia	16	5.8%
Trauma/suicide	11	4.0%
Natural causes	9	3.3%
Heart failure	9	3.3%
Tuberculosis, non-pulmonary	8	2.9%
Gastroenteritis	6	2.2%
Prostate cancer	6	2.2%
Chronic obstructive pulmonary disease	4	1.4%
Other causes	58	21.0%
<b>Total</b>	<b>276</b>	<b>100.0%</b>

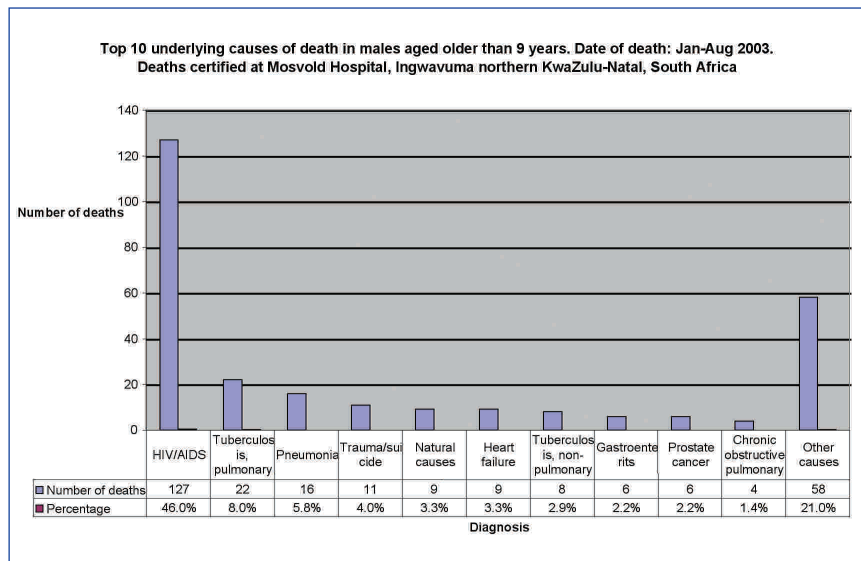
Figure 2



**Table IV:** Cause of death in females older than nine years

<b>Underlying causes of death in females aged older than nine. Date of death: Jan-Aug 2003. Deaths certified at Mosvold Hospital, Ingwavuma, KwaZulu-Natal, South Africa</b>		
Underlying diagnosis	Number of deaths	Percentage
HIV/AIDS	147	44.7%
Stroke	28	8.5%
Tuberculosis, pulmonary	18	5.5%
Heart failure	18	5.5%
Pneumonia	13	4.0%
Hypertension, essential	10	3.0%
Trauma/suicide	9	2.7%
Gastroenteritis	7	2.1%
Cervical carcinoma	6	1.8%
Meningitis, bacterial	6	1.8%
Other causes	67	20.4%
<b>Total</b>	<b>329</b>	<b>100.0%</b>

**Figure 3**



**Table V:** Cause of death in children aged younger than 10 years

<b>Underlying cause of death in children aged younger than 10. Date of death: Jan-Aug 2003. Deaths certified at Mosvold Hospital, Ingwavuma, KwaZulu-Natal, South Africa</b>		
Underlying diagnosis	Number of deaths	Percentage
Pneumonia	6	19.4%
Malnutrition	4	12.9%
HIV/AIDS	4	12.9%
Gastroenteritis	4	12.9%
Prematurity	2	6.5%
Cholera	2	6.5%
Natural causes	2	6.5%
Undetermined	1	3.2%
Stillborn	1	3.2%
Septic arthritis	1	3.2%
Poisoning by agricultural or stock remedy	1	3.2%
Failure to thrive	1	3.2%
Cerebral palsy	1	3.2%
Burns	1	3.2%
<b>Total</b>	<b>31</b>	<b>100.0%</b>

Figure 4

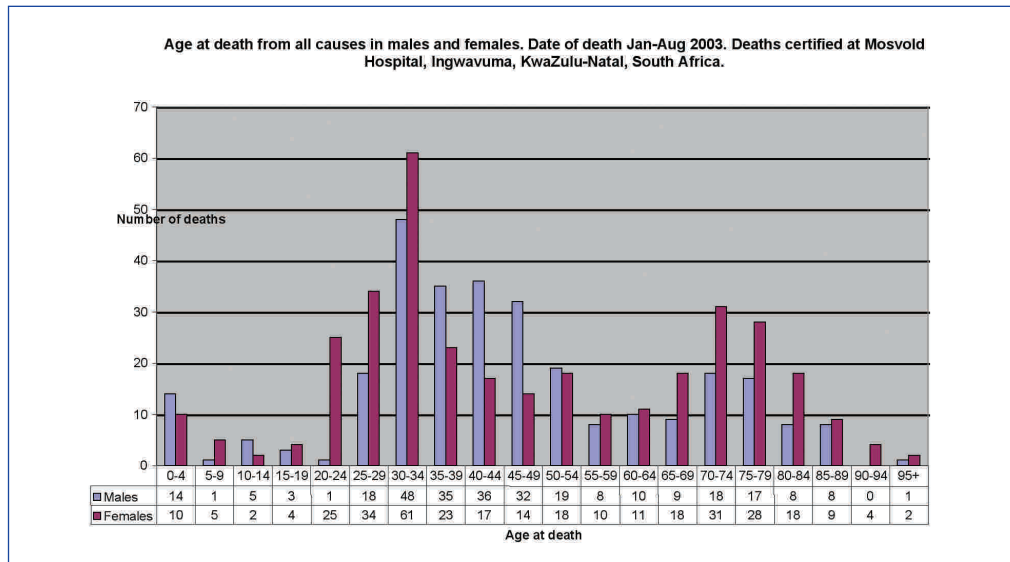


Figure 5

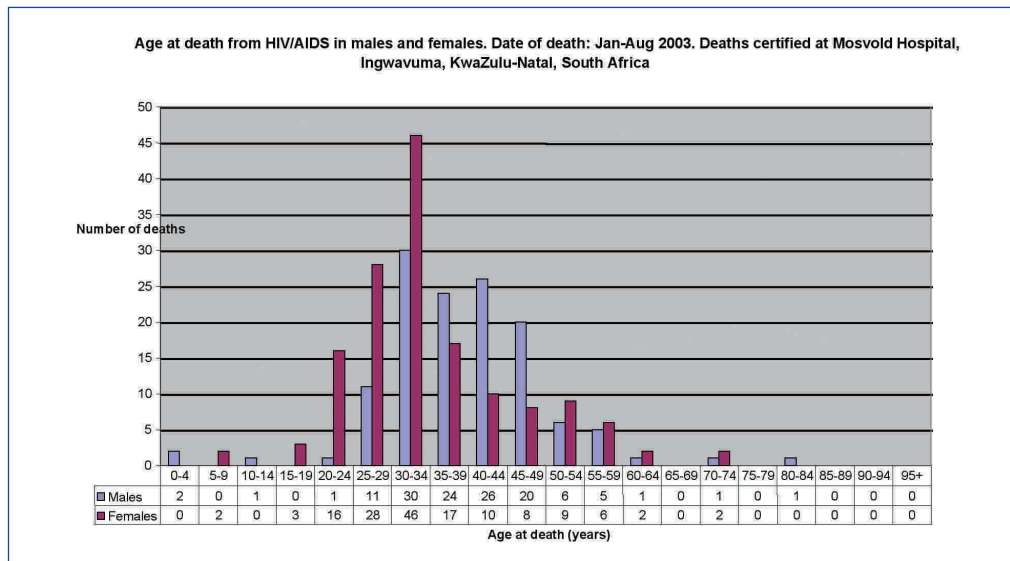


Figure 6

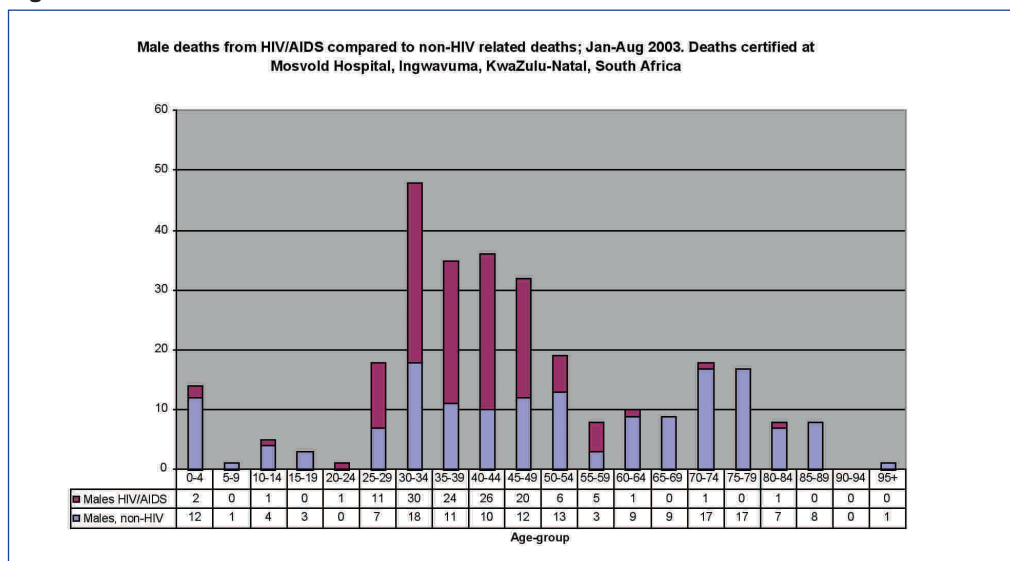


Figure 7

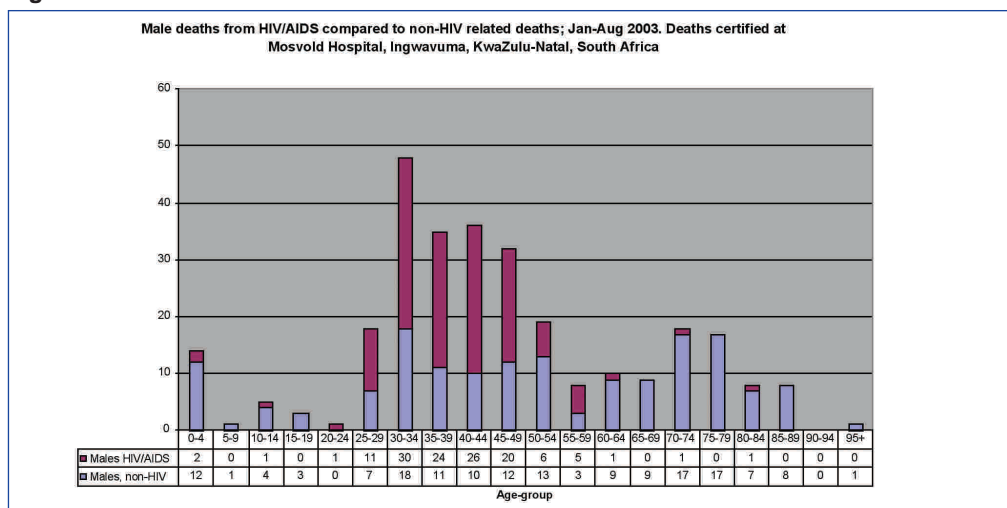


Table VI: Proportion of deaths attributed to HIV/AIDS

Proportion of deaths attributed to HIV/AIDS. Deaths certified at Mosvold Hospital, Ingwavuma, KwaZulu-Natal. Deaths occurred Jan-Aug 2003				
Age/sex group	Total number deaths	HIV/AIDS deaths	% HIV/AIDS	95% C.I. %HIV/AIDS
Persons of all ages	635	278	43.8	39.9 - 47.7
All persons aged older than nine	605	275	45.3	41.3 - 49.3
Males aged older than nine	276	127	46.0	40.1 - 51.9
Females aged older than nine	329	147	44.7	39.3 - 50.1
Adults aged 15 to 49	351	240	68.4	63.5 - 73.3
Males aged 15 to 29	22	12	54.5	Small sample
Females aged 15 to 29	63	47	74.6	63.8 - 85.4
Males aged 15 to 39	104	66	63.5	54.2 - 72.8
Females aged 15 to 39	147	110	74.8	67.8 - 81.8

Table VII: Average age at death certified at Mosvold Hospital, Ingwavuma, KwaZulu-Natal, South Africa from January to August 2003 according to age/sex group and cause of death

Average ages of deaths certified at Mosvold Hospital, Ingwavuma, KwaZulu-Natal, South Africa according to age/sex group and cause of death. Date of death Jan-Aug 2003			
Age/sex group	Cause of death	Ave age at death (yrs)	95% C.I.(yrs)
Males aged older than nine	All causes	47.8	45.7 - 49.9
Females aged older than nine	All causes	49.7	47.4 - 52.0
Males aged older than nine	HIV/AIDS	39.8	38.2 - 41.5
Females aged older than nine	HIV/AIDS	34.9	33.2 - 36.6
Males aged older than nine	Non-HIV related	54.6	51.3 - 57.9
Females aged older than nine	Non-HIV related	61.6	58.5 - 64.6

Table VIII: Impact of HIV/AIDS on life expectancy

Impact of HIV/AIDS on life expectancy, based on deaths certified at Mosvold Hospital, Ingwavuma, KwaZulu-Natal, Jan-Aug 2003		
Population group	Difference between averages in years	95% C.I.
Males aged older than nine: Difference between average age at death from all causes and average age at death from HIV/AIDS	8.0	5.3 - 10.7
Males aged older than nine: Difference between average age at death from non-HIV causes and average age at death from HIV/AIDS	14.8	11.1 - 18.5
Females aged older than nine: Difference between average age at death from all causes and average age at death from HIV/AIDS	14.8	11.9 - 17.7
Females aged older than nine: Difference between average age at death from non-HIV causes and average age at death from HIV/AIDS	26.7	23.2 - 30.2



due to underlying HIV infection.

These results are similar in pattern, but not identical, to those of the Medical Research Council (MRC), which found the peak of female deaths to be in the 25 to 29 year age group and that of males to be in the 35 to 39 year age group.<sup>3</sup> The Medical Research Council's estimate of HIV/AIDS causing 20% of all deaths in adults in South Africa after the age of 15 in 2000 compares to the figure in this study that HIV/AIDS causes 45% of deaths after the age of 10. The MRC's estimate of HIV/AIDS being the cause of 40% of adult deaths in adults aged 15 to 49 years compares to the figure of 68% in this study (Table VI). These figures suggest that the impact of HIV/AIDS on mortality in northern KwaZulu-Natal may be considerably greater than the national average, even allowing for the epidemic having worsened between 2000 and 2003. The results of this study are consistent with the findings of Statistics South Africa, which estimated a much greater death toll from HIV before the age of 30 years amongst women compared to men.<sup>4</sup> However, the impact of HIV/AIDS in northern KwaZulu-Natal appears to be greater than that estimated in the Statistics South Africa report. The report estimated that 24.3% of deaths in females between the ages of 15 and 29 (the most HIV-affected group) in the country as a whole between 1997 and 2001 were caused by HIV. This study, however, estimated that nearly 75% of deaths of females between 15 and 29

years were due to HIV/AIDS (Table VI). Bradshaw et al estimated that 30% of all deaths in South Africa in 2000 were due to HIV/AIDS, which is closer to the 44% found in this study (Table VI), but still suggests that northern KwaZulu-Natal is affected by HIV/AIDS more than the average for South Africa.<sup>7</sup>

The Nelson Mandela/HSRC Study of HIV/AIDS found that, in the 15 to 24 year age group in South Africa, male HIV prevalence was 6.1%, compared to 12.0% in females, which implies that females are contracting the disease earlier than males and could explain the finding that women are dying earlier of HIV/AIDS.<sup>8</sup> Explanations for females contracting the disease earlier include increased biological vulnerability and females tending to have sex with older males.<sup>8</sup> Sexual relations between younger females and older males also provide an explanation for how a sexually maturing generation of initially predominantly HIV-negative adolescents acquires HIV – the HIV infection coming from an already infected older generation. Warnings about the special risks of sexual activity between young females and older males should be a message to be included in education to prevent the spread of HIV/AIDS.

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#### Conflict of interest

The author has no financial or personal relationship which may have inappropriately influenced him in writing this paper.

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## ERRATUM

### Childhood obesity

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(*SA Fam Pract* 2004;46(6): 15-18)

### SHOULD HAVE READ

### Childhood obesity

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(*SA Fam Pract* 2004;46(6): 15-18)

### WE APOLOGISE FOR THIS MISREPRESENTATION