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What are the leading causes of death among South African children?

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Investing in the health and wellbeing of the children of South Africa is an investment in the future development of our country. South Africa still has a relatively youthful population with a third of the population under 15 years of age[3], although we are in the midst of demographic transition. The health of these children needs to be a priority, a principle adopted through the ratification of the1990 United Nations Convention of the Rights of the Child.

The level of mortality is a fundamental indicator of child health and understanding the causes of death of children provides insight as to how it can be reduced. The lack of reliable vital statistics has created a void when it comes to these indicators, but the recent burden of disease study has made use of available data from the emerging health information system to estimate the levels and causes[1].

The Medical Research Council published the Initial Burden of Disease Estimates for South Africa, 2000 in March 2003[1,2]. This was the first attempt to derive consistent and coherent estimates of all causes of death from a range of data sources and models. A major finding of the study was the quadruple burden of disease experienced in South Africa resulting from the combination of the pre-transitional causes related to underdevelop-ment, the emerging chronic diseases, the injury burden and HIV/AIDS. This policy brief examines the causes of mortality among children in more detail.

The 1998 Demographic and Health Survey[4] found that the Infant Mortality Rate was 45 per 1000 live births for the preceding 10 years. This overall figure is lower than the WHO 'Health for All' target of 50 per 1000 births, but does conceal the variations between population groups, according to socio-economic status or region. The survey also highlighted the wide racial and socio-economic status inequalities in child mortality. It also conceals the reversal in the downward trend that occurred during the 1990's. This has largely been ascribed to the impact of the HIV/AIDS epidemic. Furthermore, the level of mortality has not given any insight into the causes of mortality.

The South African National Burden of Disease Study (NBD)

Since the disease burden in South Africa is undergoing rapid change due to the spread of HIV/AIDS[5], the usual burden of disease approach was considered inappropriate and a modelling approach calibrated to empirical data was adopted. An adapted version of the 1990

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Global Burden of Disease (GBD) list of causes of death[6,7] was developed for the South African National Burden of Disease study. The total number of deaths, as well as the age-specific population was calculated using the ASSA2000 model of the Actuarial Society of South Africa[8]. Empirical estimates from surveys and vital registration of the level of childhood and adult mortality were used in the model for the period prior to the AIDS epidemic. Ill-defined causes within a disease category were reallocated proportionally by age and sex to specified causes within that category. Cause of death information processed by the Department of Home Affairs was used to estimate the overall proportion of deaths due to injuries by age and sex. Finally the UNISA/MRC national injury mortality surveillance system (NIMSS)[9] was used to estimate the profile of deaths arising from injury. The estimates are hence a synthesis derived by analysis of a variety of often incomplete data sources. Full details of the methodology appear in the complete report[1]. Variations of prevalence at a subnational level are not reflected in this study.

The NBD study estimated just over half a million deaths of which 106 000 were of children under the age of 5 years and a further 7800 were children aged 5-14 years. In general, young babies are much more vulnerable than older. In addition, the cause of death patterns in the different age groups are very different.

Infant and Under-5 mortality

The NBD study estimates that by the year 2000, the Infant Mortality Rate had risen to 60 per 1000 live births and the Under-5 mortality rate had risen to 95 per 1000. This deterioration in child health occurred despite the introduction of free health care and nutrition programmes and was attributable to paediatric AIDS, commensurate with the high prevalence of HIV observed among pregnant women.

The top twenty causes for children under the age of 5 are shown in Table 1 and by age and sex in Figures1 and 2. HIV/AIDS is the leading cause of death among young children and accounts for 40% of the deaths in 2000. Although the percentage of deaths due to HIV/AIDS is higher in the 1-4 year age group, the largest number of deaths occurs in the under-one age group. Low birth weight, diarrhoea, lower respiratory infections and protein energy malnutrition account for a further 30% of the childhood deaths. A large number of these deaths are preventable through the delivery of the standard conventional primary health care package approach. Birth defects, particularly of the heart and neural tubes also are among the top ranking infant deaths. Protein-energy malnutrition begins to show in the 1-4 age group. There is little gender difference in mortality among the under-fives.

Projections indicate that without effective prevention of mother-to-child transmission (PMTCT), the child mortality rate is likely to have continued to rise in subsequent years[10]. This pattern, however, can be expected to change as the epidemic matures and as the roll-out of PMTCT takes effect, reducing the number of infected babies.

Table 1: Top twenty specific causes of death in children under 5 years, South Africa 2000

Rank	Cause of death	Deaths	%
1	HIV/AIDS	42749	40.3
2	Low birth weight	11876	11.2
3	Diarrhoeal diseases	10786	10.2
4	Lower respiratory infections	6110	5.8
5	Protein-energy malnutrition	4564	4.3
6	Neonatal infections	2920	2.8
7	Birth asphyxia and trauma	2584	2.4
8	Congenital heart disease	1238	1.2
9	Road traffic accidents	1219	1.1
10	Bacterial meningitis	1141	1.1
11	Fires	1102	1.0
12	Neutral tube defects	1019	1.0
13	Septicaemia	980	0.9
14	Tuberculosis	743	0.7
15	Homicide/violence	654	0.6
16	Drowning	532	0.5
17	Cot death	491	0.5
18	Down syndrome and other chromosomal	445	0.4
19	Congenital disorders of GIT	379	0.4
20	Congenital syphilis	257	0.2
	All causes	**106070**	

Most of the other causes of death of infants and toddlers are associated with poor socio-economic conditions. The 2001 census reveals extensive variations in living conditions. Over two thirds of households have formal homes, 16% are informal and 14% are traditional. Access to clean water and basic sanitation is important from a health perspective. The census shows that the majority of households do have access to piped water (84.5%) – whether it is in the home, the yard or a public facility. However, the Eastern Cape has a much lower proportion with only 62.4% of households having access to piped water. The Eastern Cape also had a very high proportion of households without any toilet facilities (30%). Nationally, 13.6% of households have no toilet facility, also a health hazard. Just over half the households have regular refuse removal services. The high levels of poverty and unemployment are clearly

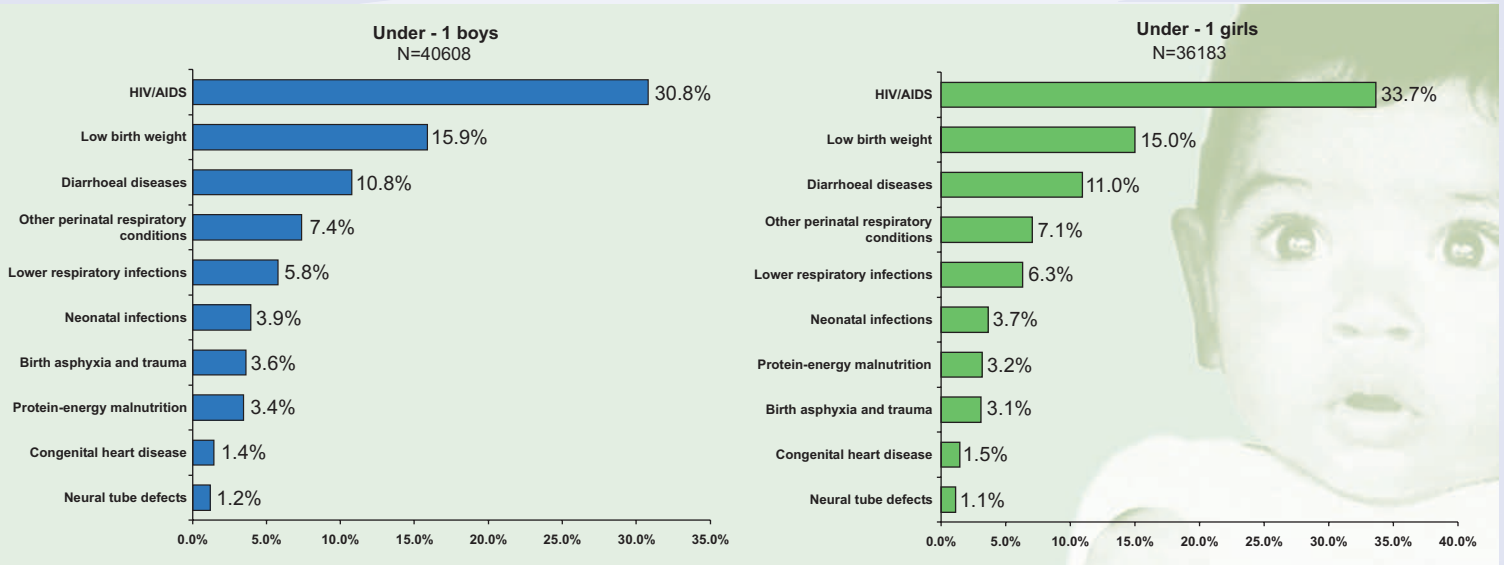

Figure 1. Leading causes of death among infants under 1 year of age, South Africa 2000

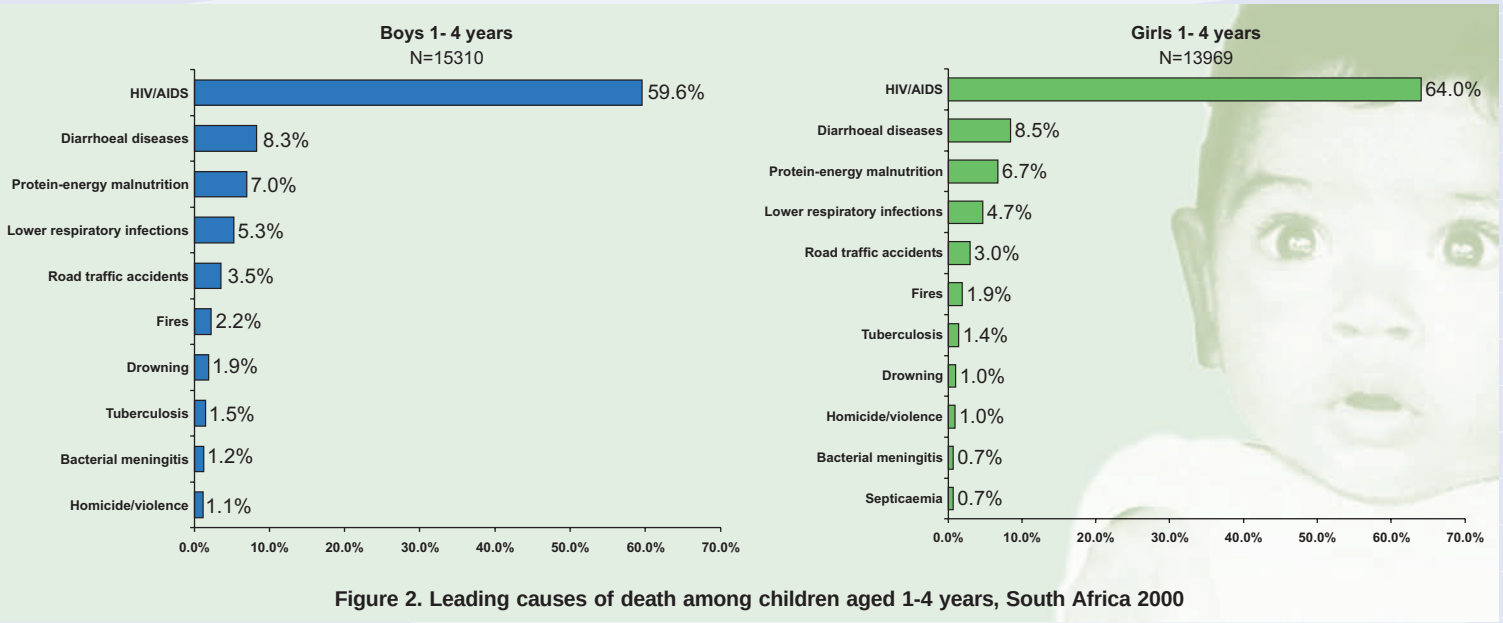

Figure 2. Leading causes of death among children aged 1-4 years, South Africa 2000

fundamental issues that bear on child health, also indicated by the estimated 4564 deaths from protein-energy malnutrition (Kwashiorkor). Many of these deaths can be prevented. Reducing poverty, meeting basic needs and adopting a comprehensive primary health care approach with renewed vigour must be high on the agenda in the next few years.

Older children 5-14 years

As children get older, external causes of death (eg. road traffic injuries and drowning) rise in importance. This is particularly noticeable among boys who die in greater numbers than girls. This pattern becomes particularly marked among the 10 -14 year age group, where road traffic accidents is the leading cause of death. Homicide and suicide feature in the top causes

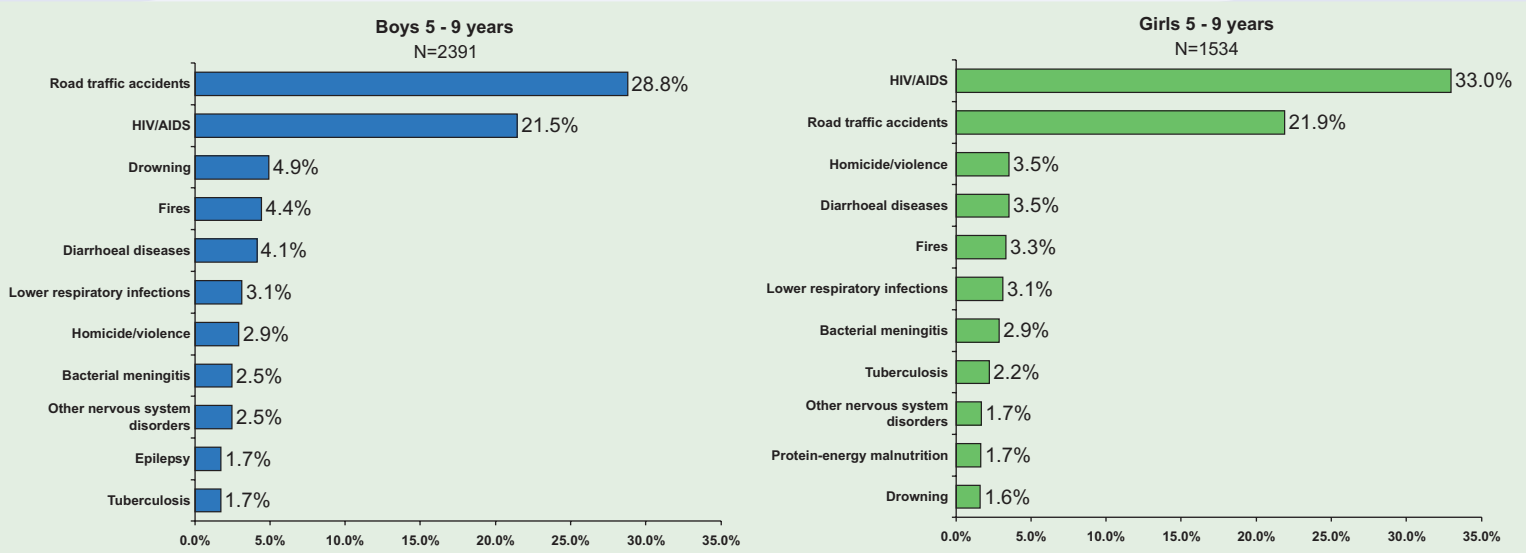

Figure 3. Leading cause of death among children aged 5-9 years, South Africa 2000

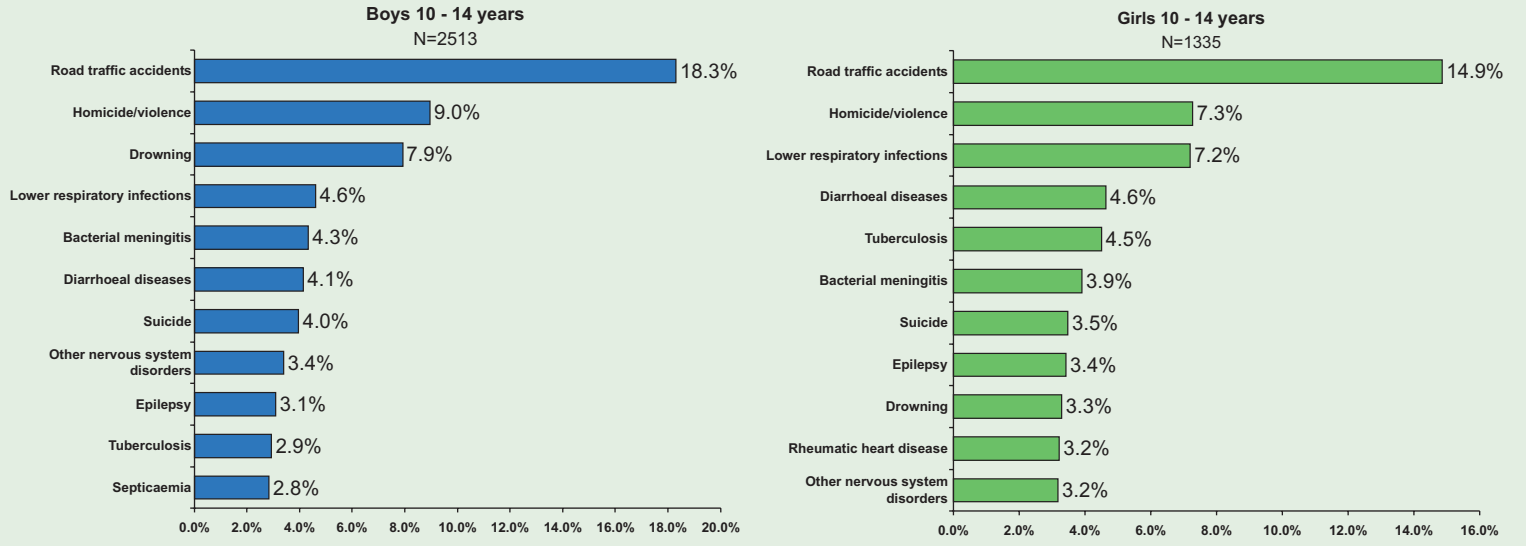

Figure 4. Leading Causes of death among children aged 10-14 years, South Africa 2000

Policy Implications

The mortality data indicates that many of the child deaths occurring in South Africa are preventable. We have identified three broad areas that will require differing approaches for intervention:

- The prevention of mother-to-child transmission of HIV, even at its current efficacy, is the single most effective intervention to reduce mortality among under-5-year olds, eclipsing all other interventions for other causes of death combined.
- Although dominated by the rise of HIV/AIDS, the classic infectious diseases such as diarrhoea, respiratory infections and malnutrition are still important causes of mortality. Environment and development initiatives such as access to sufficient quantities of safe water, sanitation, reductions in exposure to indoor smoke, improved personal and domestic hygiene as well as comprehensive primary health care will go a long way to preventing these diseases. Poverty reduction initiatives are also important in this regard.
- Road traffic accidents and violence, which includes homicide and suicide is another group of high mortality conditions that will require dedicated interventions.

The data presented in this policy brief represent an average for the whole country and do not highlight the inequalities in health care and outcomes that exist in different parts of the country. Detailed investigation of these inequalities will, however, require more comprehensive information systems than are currently available, and are beyond the scope of this policy brief.

of death in these ages and among the 10-14 year age group, homicide is the second leading cause of death. HIV/AIDS is no longer a leading cause of death, in this age group, although other infectious diseases make up a large proportion of the remaining top causes.

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The Impact of Adult Mortality on Child Mortality

In recent years, mortality among young adults, and in particular young women, has increased dramatically as a result of HIV/AIDS. Such mortality and also the illness preceeding it, has a devastating effect on children leading to increased morbidity, mortality and orphanhood. One of the most important results of the roll-out of anti-retroviral therapy among the general population will be the extension of the lives of AIDS sick parents leading to a dramatic decline in the number of orphans. [11]

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