Children Count
Abantwana Babalulekile

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Making a case for child survival

in South Africa's 'Age of Hope'

by Kashifa Abrahams, May 2006

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Definitions of terms

Child
As defined by the United Nations Convention on the Rights of the Child (CRC) and the South African Constitution, a *'child'* is any person from birth to the age of 18 years.

Child death
The death of a person, a child (<18 years) as defined by the Constitution and the CRC.

Developing countries
Based on rankings from the latest United Nations Children's Fund (UNICEF) report on the *State of the World's Children 2006*, the following countries have been listed in this category: Afghanistan, Algeria, South Africa, Zambia and Zimbabwe (these are but a few examples of countries listed).[1]

Least-developed countries
Based on rankings from the latest UNICEF report on the *State of the World's Children 2006*, the following countries have been listed in this category: Afghanistan, Angola, Somalia, Sudan …Yemen and Zambia (these are but a few examples of countries listed in this category).[2]

Mortality rate:

Perinatal mortality rate
Reflects the death rate of babies from 24 weeks gestational age to seven days after birth per 1,000 live births.

Neonatal death rate
Annual number of deaths within the first 28 days of life, per 1,000 live births during that year. The neonatal death rate (NNDR) is also called the Neonatal Mortality Rate (NNMR). These terms have been used interchangeably in this paper, based on the referencing source from where the information was gathered.

Infant mortality rate
The number of infants dying before reaching the age of one year per 1,000 live births.

Child mortality rate
Reflects the rate of deaths among children aged one up to five years of age per 1,000 live births.

Under-five mortality rate
Reflects the rate of deaths among children younger than five years of age.

Poverty
"The inability of individuals, households or communities to command sufficient resources to satisfy a socially acceptable minimum standard of living" (Committee of Inquiry, 2002:15).

[1] It is beyond the scope of this document to provide much more detail as to how UNICEF derived at the list of countries – readers are urged to source the relevant document. What appears to be a discrepancy in the listing of countries (some appear in both categories) in this document is an actual reflection of what UNICEF had indicated in its report.
[2] As above.

Abbreviations

Crime Information Management Centre	CIMC
Cultural Workshop Conference Initiative	CWCI
Health Systems Trust	HST
Human Development Index	HDI
Infant Mortality Rate	IMR
Integrated Management of Childhood Illness	IMCI
Maternal Child and Women's Health	MCWH
Millennium Development Goals	MDGs
National Burden of Disease Study	NBOD
National Committee on Confidential Enquiries into Maternal Deaths	NCCEMD
Department of Health	DOH
National Injury Mortality Surveillance System	NIMSS
Neonatal death rate	NNDR
Neonatal mortality rate	NNMR
New Partnership for Africa's Development	NEPAD
Perinatal Problem Identification Programme	PPIP
Prevention of Mother-to-Child Transmission	PMTCT
Primary Health Care	PHC
'Road To Health' Cards	RTHC
South African Medical Research Council	MRC
Statistics South Africa	StatsSA
South African Demographic and Health Survey	SADHS
Transkei, Boputhatswana, Venda, Ciskei	TBVC
Under-five Mortality Rate	U5MR
Under-five Problem Identification Programme	U5PIP
United Nations Convention on the Rights of the Child	CRC
United Nations Children's Fund	UNICEF
United Nations Development Programme	UNDP
World Health Organisation	WHO

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Introduction

Nearly 99% of the 10.9 million children under the age of five years who died in 2000 were from developing countries. This amounts to at least 29,000 deaths per day (UNICEF 2005). Of these deaths, 41% occurred in sub-Saharan Africa (UNICEF, in Black, Morris & Bryce 2003). More than half of all deaths of young children are due to communicable diseases such as pneumonia, diarrhoea, measles, malaria and HIV/AIDS, all of which are preventable and treatable (Black, Morris & Bryce 2003).

Under-nutrition was considered to be a key underlying cause that increased the risk of dying from these communicable diseases. It contributed to more than half (53%) of all deaths of children under the age of five years due to communicable diseases such as pneumonia, diarrhoea, measles and malaria (Bryce, Boschi-Pinto, Shibuya & Black 2005). Children living in poverty have poorer prospects for survival, since they are more likely to be malnourished, more susceptible to infectious diseases and are less likely to have access to appropriate health care (Victora, Wagstaff, Armstrong, Gwatkin, Claeson & Habicht 2003).

Furthermore, it has been estimated that over five million children in Africa have been infected with HIV/AIDS within the past decade as a result of vertical transmission, (Gisselquist, Potterat & Brody 2004). In the absence of timely interventions such as antiretroviral treatment, "fifty percent of vertically infected children in Africa are assumed to survive to 2 years old and 40% to 5 years old" (UNAIDS Reference Group 2002, in Gisselquist et al 2004: 109-110).

Purpose and scope of working paper

The working paper locates child survival in South Africa's current 'Age of Hope'. It was compiled to serve as a base document for a policy roundtable on child survival, hosted by the Children's Institute in May 2006, as one of the many initiatives that have evolved from its *Child Survival Project*. This paper provides the reader with a comprehensive understanding of child deaths in the country by describing the magnitude of the death rate among children, the causes of these deaths and the contributory factors that fuel the number of deaths on a yearly basis. It also aims to identify key challenges, and to develop an agenda for action that will be taken forward with key stakeholders. In effect, the roundtable meeting of experts was designed to consolidate the key findings presented in this paper, note any gaps and look at a way forward. An important premise of the paper is the application of a child rights framework to notions of child survival. '*Children'* refer to all persons under the age of 18 years as defined by the South African Constitution and the United Nations Convention on the Rights of the Child.

Child survival status in South Africa

In South Africa, children (0 – 18 years) constitute 43% (19,347,004) of the population (StatsSA 2003). Two-thirds of these children live in income poverty (StatSA 2005, in Children's Institute 2005) and are highly susceptible to the consequences of poverty. This includes children being highly at risk to preventable diseases caused by the lack of basic amenities such as food and clean water. This situation dates back to the apartheid era, when it was noted that, " *the health gap remains a material expression of the social inequality that is part of the definition of apartheid… black children continue to die from preventable afflictions at about 10 times the rate of their white counterparts*" (Andersson & Marks 1988: 667). Nearly two decades later, prospects for child survival have not improved; in fact, the country has regressed in terms of child survival outcomes.

Cause and extent of child deaths – the statistics

The numbers of child deaths per annum, already unacceptably high, are increasing. According to the Demographic and Health Survey (1998), the infant mortality rate (IMR) was 45 per 1,000 live births and the under-five mortality (U5MR) was 59 per 1,000 live births. The estimated rates for 2000, based on the South African National Burden of Disease Study (NBOD) (Bradshaw, Bourne & Nannan 2003) have been calculated at 60 per 1,000 live births (IMR) and the U5MR at 95 per 1,000 live births. More than 100,000 children die annually according to these statistics and national estimates indicate that childhood deaths are likely to continue to rise as a consequence of HIV/AIDS, diseases of poverty and trauma (ASSA 2000; Bradshaw, Nannan, Laubscher, Groenewald, Joubert, Nojilana, Norman, Pieterse, Schneider 2004).

In South Africa, every hour at least 10 children under the age of five years die from a preventable condition. Trauma and injury related deaths continue to be the lead causes of death for older children. (Bradshaw et al 2003)

How is this situation possible in a nation where children's rights have been held in such high regard? The latest UNICEF report, *The State of the World's Children 2006,* ranked South Africa in the bottom third of countries in terms of levels of child mortality. The statistics suggest a significant regression in combating avoidable child deaths. The Millennium Development Goals require every country to reduce infant and under-five mortality by at least two-thirds within the next 10 years. South Africa needs to take a serious look at its child survival initiatives given its progress in relation to infant and under-five mortality, as reflected below.

South Africa – IMR and U5MR

Indicator	1990 Dorrington et al (2004)	1998 SADHS	2000 MRC-NBOD (ASSA 2000)*	2015 MDG Target Dept. of Health
IMR	52/1,000	45/1,000	60/1,000	17/1,000
U5MR	72/1,000	59/1,000	95/1,000	24/1,000

* The researcher made use of model-based and empirical data at the time.
Source: Adapted from Abrahams (in press)

Urgent and proactive planning is required to ensure that the commitment to child survival as stipulated in the United Nations Convention on the Rights of the Child (CRC), the African Charter on the Rights and Welfare of the Child, the New Partnership for Africa's Development agreement (NEPAD) and the Millennium Development Declaration is met. The table above illustrates that South Africa has regressed in terms of child survival. The infant mortality and under-five mortality has increased. Hence achieving the desired Millennium Development Goal of reducing the respective mortality rates with two-thirds by 2015 is extremely challenging. In addition, deaths of children in the first month of life require urgent attention as well and would impact directly on the infant mortality rate. Maternal care, antenatal and post-natal care were identified as key mechanisms for addressing improved survival prospects for young babies (Lawn, Cousend & Zupan 2005; Pattinson 2003a, 2003b).

Furthermore, the deaths of children older than five years are of equal importance. However, there are no specific mortality indicators for children older than five years. With fewer mortality statistics available for older children, it is another challenge to develop an overall picture of child deaths in South Africa. What has been well documented is that more children die of injuries as they grow older. Where information

does exist, the data has not been disaggregated into a focus on children as a separate entity but instead is lumped together with data on young adults; for example, the 15- to 45-year-old age group commonly used to describe women of reproductive age. Hence the deaths of pregnant teenagers and their children also require attention and review given the impact of the HIV/AIDS pandemic on women of reproductive age. Furthermore, the initial Burden of Disease estimates (2000) for South Africa show the incredibly high percentage of male deaths due to homicide and violence. There is a huge sex differential with injuries (15 – 44 years) generally, and more so with homicide and violence.

Responses to child survival

The responses to child survival in this paper have been addressed in terms of international and regional-linked responses; creation of laws (legislation); and the implementation of policies and programmes and services. From the onset the government of national unity has made amazing strides in realigning itself with international human rights instruments, particularly regarding the advancement of children's rights. The ratification of the CRC and signing of the African Charter on the Rights and Welfare of the Child is proof of that commitment. The country continued in this vain by supporting initiatives such as the World Summit on Children and the Millennium Development Declaration, which stipulate particular goals for enhancing child survival prospects at a country level. The South African Constitution (Section 28) points to the high regard for children's rights. Various legislation and policies have had positive impacts on child survival outcomes, such as Free Health Care. However, of particular concern is that there is no comprehensive cross-departmental response to child deaths by the government; nor is there an integrated strategy within or across government departments to enhance child survival outcomes.

Conclusion

The government's response to children's deaths to date has been inadequate, since its commitment to child survival has not been marked with a comprehensive understanding or response to the matter. There is no clear link, for example, between mortality and the design of responses within a health programme and across government departments and sectors. Children remain a key focus in the transformation of South Africa's health sector. However, inequities in general access to health care and in the quality of health care persist. Child death data is a reflection of the significant inequities in the country. The information yielded by such data can be used to advocate for equity and to bring about policy reform. If equity is to be a priority in the design of child survival interventions and delivery strategies, mechanisms must be developed to ensure accountability at national and international levels (Victora et al 2003). The Millennium Development Goals (MDGs) is one such mechanism for achieving such accountability.

While the Department of Health has a leading role to play, given the multi-factoral nature of child deaths, a well-co-ordinated inter-sectoral approach to reducing child deaths is required. Enhancing children's prospects for survival requires a comprehensive, multi-pronged approach that would be rooted in the realisation of children's socio-economic, as well as their civil and political rights. A strong call for a parliamentary inquiry into child survival is made in this document and is but one of the many levels of responses that can be taken forward. The recommendations set forth are in line with the National Programme of Action (NPA) for children (1996) framework and the government's commitment to implementing its "first call for children" – a principle expressed in the Reconstruction and Development Plan as well. The NPA was not seen as a separate plan for children; it was regarded as "an integration of all the policies and plans developed by government departments and NGOs to promote the rights of children as embodied in the Convention" (NPA 1997: 17). The 'Age of

Hope' brings with it a renewed sense of energy: let this be an era of improved prospects for child survival.

Recommendations

The following recommendations were considered as vital for enhancing child survival prospects in the country namely: (a) advocate and lobby for a "first call for children"; (b) strengthen and co-ordinate planning and service provision; (c) reinforce accountability measures; (d) improve monitoring and evaluation mechanism; and (e) develop an integrated plan for child survival.

Linked to the plan should be an Integrated Child Survival Strategy targeted at different levels, namely:

- All government departments – Develop and/or refine Integrated Plans across all levels of Government and sectors (including the Department of Provincial and Local Government). This would be in keeping with other initiatives proposed for city-level interventions (Matzopoulos & Seedat 2005).
- Service delivery – Identify core interventions to improve child survival; and link child survival to clear performance indicators.

South Africa needs a **unified and co-ordinated survival strategy** for children that would be binding on all duty-bearers. The following were considered as four essential levels of intervention required in South Africa to improve child survival prospects:

1. Parliamentary inquiry into child survival.
2. Integrated national plan for child survival, thereby mainstreaming it across sectors.
3. Incorporate child survival in all Integrated Development Plans at a local government level.
4. Co-ordinated, quality data from different sources.

Part A: WHY CHILD SURVIVAL?

1. Introduction

When looking at the latest statistics on child deaths, the facts are hard hitting and speak for themselves: Nearly 99% of the 10.9 million children under the age of five years who died in 2000 were from developing countries. This amounts to at least 29,000 deaths per day (UNICEF 2005). Of these deaths, 41% occurred in sub-Saharan Africa (UNICEF 2005, in Black, Morris & Bryce 2003). In developed countries, the under-five mortality rate is six per 1,000 live births, compared to the developing world, which has a rate of 88 per 1,000 live births, and with the poorest countries having an even higher rate of 120 per 1,000 live births (Victora et al 2003).

More than half of all deaths of young children are due to communicable diseases such as pneumonia, diarrhoea, measles, malaria and HIV/AIDS, all of which are preventable and treatable (Black et al 2003). Under-nourishment was considered to be an underlying cause that increased the risk of dying from these communicable diseases that accounted for more than half (53%) of all deaths of children under the age of five years (Bryce, Boschi-Punto, Shibuya, Black 2005). Children living in poverty have poorer prospects for survival since they are more likely to be malnourished, more susceptible to infectious diseases and are less likely to have access to appropriate health care that enhance their survival (Victora et al 2003).

Furthermore, it has been estimated that over five million children in Africa have been infected with HIV/AIDS within the past decade as a result of vertical transmission (Gisselquist et al 2004). In the absence of timely interventions such as antiretroviral treatment, "fifty percent of vertically infected children in Africa are expected to survive to 2 years old and 40% to 5 years old" (UNAIDS Reference Group 2002, in Gisselquist et al 2004: 109-110).

In South Africa, children (0 – 18 years) constitute 43% (19,347,004) of the population (StatsSA 2003). Sixty-six percent of these children live in income poverty (Stats SA 2005, in Children's Institute 2006), and they are highly susceptible to the consequences of poverty such as preventable diseases caused by the lack of basic amenities like food and clean water. Child survival, which is a society's most basic responsibility towards its children, remains one of the country's key challenges. Andersson and Marks (1988: 667), in reflecting on apartheid and health in the 1980s, noted that "apart from improvements in black infant mortality in some urban areas, the health gap remains a material expression of the social inequality that is part of the definition of apartheid… black children continue to die from preventable afflictions at about 10 times the rate of their white counterparts". Nearly two decades later, prospects for child survival in the country have not improved; in fact, the country has regressed in terms of child survival outcomes.

The numbers of child deaths per annum, already unacceptably high, are increasing. According to the Demographic and Health Survey (1998), the infant mortality rate (IMR) was 45 per 1,000 live births and the under-five mortality rate (U5MR) was 59 per 1,000 live births. The estimated rates for 2000, based on the South African National Burden of Disease Study (NBD) (Bradshaw, Bourne & Nannan 2003) have been calculated at 60 per 1,000 live births (IMR) and the U5MR at 95 per 1,000 live births. More than 100,000 children die annually according to these statistics and national estimates indicate that childhood deaths are likely to continue to rise as a consequence of HIV/AIDS, diseases of poverty, and trauma (ASSA 2000; Bradshaw et al 2004). The child survival rate in South Africa also varies considerably between the rich and poor.

UNICEF's *The State of the World's Children 2006* report ranked South Africa in the bottom third of countries in terms of levels of child mortality. Against the background of alarming profiles of deaths among children, there is an urgent need for all duty-bearers to children's well-being (government and civil society) to plan proactively and to ensure that the commitment to child survival, as stipulated in the United Nation's Convention on the Rights of the Child and the Millennium Development Declaration, is met.

The mortality of children is, however, a complex phenomenon and the deaths are due to a multiplicity of factors. Lack of access to basic services (such as water and sanitation, health services, including comprehensive HIV/AIDS interventions), poor socio-economic conditions and high levels of trauma and violence exacerbate the magnitude of children's deaths. Currently, both the number and causes of child deaths in South Africa are not adequately documented; not enough is known about the factors contributing to these deaths.

The information on child deaths is often inaccessible, inadequate and inconsistent because the data is not collated or analysed in the same manner by the different agencies. The relevant information systems and structures that manage child death data are located within government departments and research agencies. However, the information may not always be well co-ordinated between the government and the research agencies. This poses another challenge when trying to obtain a comprehensive understanding of deaths of children in this country.

Nonetheless, South Africa has undertaken to improve the survival prospects of its children substantially in the next 10 years by adopting the Millennium Development Goals (MDGs) in addition to the New Partnership for Africa's Development (NEPAD) goals. Both these initiatives have specific objectives that relate to enhancing child survival at a country level. Given the growing economy and a fairly stable political climate, there is the potential to deliver far more than what is currently in place.

President Thabo Mbeki, delivering the State of the Nation address in February 2006, paid tribute to Ingrid Jonker's well-known poem, *The child is not dead*. This poem was written at a time when the country was in political turmoil. The apartheid years saw scores of children and youth fall victim to ruthless killings, torture and detention without trial, which caused a huge outcry from the international community. Against this background, children's rights and well-being took precedence in the government of national unity. After 1994, there were many developments in which children's rights were held in high esteem. The child-centred provisions in the South African Constitution (Section 28) and the ratification of the United Nations Convention on the Rights of the Child were proof of the government's commitment to child rights.

The hard-hitting statistics on child deaths seems to be in direct conflict with a nation where children's rights are held in high regard. Unlike Jonker's hopeful vision, *"the child is not dead... this child who only wants to play in the sun in Nyanga is everywhere",* many children in this cited suburb, and in many others across South Africa, continue to die from preventable causes at an alarming rate.

The City of Cape Town's health statistics for 2002 revealed the following, actual account of child deaths in Nyanga:

Box 1: Prospects for child survival in Nyanga, Cape Town

- The infant mortality rate in 2002 was 40 per 1,000 live births.
- Children living in Nyanga are three times more likely to die before their first birthday than children living 20 minutes' drive away in the leafy suburb of Claremont, for example.
- The leading cause of infant deaths in Nyanga is HIV/AIDS, followed by diseases of poverty like diarrhoeal disease, low birth weight and pneumonia. Infants who have died due to HIV/AIDS make up at least 10% (60 infant deaths out of a total 626 HIV/AIDS deaths of persons in Nyanga) of the total number of these deaths in Nyanga.
- Furthermore, Nyanga is the suburb with the fourth highest number of violence-related deaths, according to a 2004 Medical Resource Council survey in Cape Town.

Source: City of Cape Town (2004) *Health Statistics – Infant Birth and Mortality Rate (2002 – 2005) and under 5 mortality rate*. Viewed at: http://www.capetown.gov.za.

These facts indicate that many of the causes of death are preventable and that the inequities can not be ignored. The 'Age of Hope' that President Mbeki referred to needs to be met with action that draws on the principles of *Batho Pele* ("People First") and that would realise children's rights. While Jonker's poem resonates with what the President called "the Age of Hope", it stands in sharp contrast with the reality for millions of children in South Africa. With at least 10 children under the age of five dying from a preventable condition every hour (Bradshaw et al 2003), the political will to address child rights needs reviving. The Age of Hope presents an opportunity to enhance child survival prospects in the country but this requires careful reflection of where we are at, what we have achieved and what is still required.

The discussion that follows describes the purpose of this paper in the light of the *Child Survival Project*, housed at the Children's Institute, University of Cape Town. A broad overview of the project is provided as a backdrop to the working paper. This is followed by a contextual analysis of child survival, which is presented within a theoretical framework. The main part of the working paper covers a situational analysis of children's deaths at international, regional and national levels by drawing on relevant literature and the most up-to-date research. Responses to child survival are explored from a legislative and service delivery perspective at both a global and local level. Finally, the discussion looks at the South African government's responses by highlighting positive developments and challenges that still need to be met.

2. Background

The *Child Survival Project* was initiated by the Child Health Services Programme of the Children's Institute at the University of Cape Town during 2003. This project started off with the aim of developing a coherent understanding of child deaths in the country 10 years after democracy by examining existing literature on the extent and causes of child deaths. The reason for this approach is that a more comprehensive understanding of child deaths at a population-based level is required (Rigby et al 2003) to improve child survival outcomes. Furthermore, no comprehensive review of child deaths that encapsulates all persons under the age of 18 years exists currently. The project was located within a child rights framework, while the aim and objectives of the study were developed in line with recommendations by the World Health Organisation (WHO) to member states at the Fifty-fifth World Health Assembly (2002). The research was intended to contribute further to the monitoring and evaluation of key treaties and goals such as the United Nations Convention on the Rights of the Child and the Millennium Development Goals. These initiatives have direct bearings on the country's commitment to the "first call" for children (National Programme of Action 2000).

As the research project gained momentum and grew in magnitude, a reference group was established to provide technical support and strategic direction. It became evident from interaction with stakeholders in the field of child deaths, and with the reference group, that the project could contribute greatly to research and advocacy on child survival and not only deaths, and it was at this stage that the Child Death Review Project changed its name to the *Child Survival Project*. Project activities, which include hosting a roundtable discussion on child deaths and advocating for a parliamentary inquiry into child survival, commenced after funding was received at the end of 2005. This means that the issue of child deaths still remains a focus of the project but is viewed as an avenue through which children can be placed back on the agenda of the government by framing it within the broader context of child survival and development.

The vision of the *Child Survival Project* is to develop an integrated plan with targeted interventions that would contribute to decreasing the large numbers of avoidable child deaths in South Africa in the era of HIV/AIDS. To ensure such an integrated response that would embrace all government departments and engage with civil society, dialogue is required between government decision-makers and civil society organisations.

3. Methodology

A key objective of the *Child Survival Project* was to undertake a comprehensive review of the literature to develop a composite understanding of child deaths within the South Africa context. Evidence-based practice, including the systematic review of evidence to inform practice and/or policy decision-making in the organisation and delivery of health and social care, has become increasingly popular in recent years. By identifying both what we do and do not know, systematic reviews can also assist in the planning of new primary research. These elements of conducting a systematic review have been incorporated in the *Child Survival Project*.

The literature review was compiled by systematically reviewing and synthesising evidence from child death literature in the country. The evidence generated out of the review contributes to a better understanding of how to improve the vital registration system and to develop a picture of the causes and extent of child deaths in South Africa. Hence, key lessons can be drawn from and recommendations made for improving service delivery to advance the prospects for child survival and well-being, and for channelling resources appropriately to the key needs that have emerged.

Essential aspects of the literature review have been drawn into this discussion paper. Given the scope of the paper, more literature on child survival interventions was sourced and included. These might not have appeared in the literature review of the *Child Survival Project*.

3. 1 Purpose

This discussion paper aims to locate child survival in South Africa's current 'Age of Hope'.

It was compiled to serve as a base document for a policy roundtable discussion on child survival, hosted by the Children's Institute on 23 and 24 May 2006. The paper intends to:

- provide the reader with a comprehensive understanding of child deaths in South Africa by describing the magnitude of the death rate among children, the causes of these deaths and the contributory factors that fuel the number of deaths on a yearly basis; and
- identify key challenges and to develop an agenda for action that will be taken forward by key stakeholders.

The roundtable meeting of experts was designed to consolidate the key findings presented in this paper, note any gaps, and look at a way forward. A key outcome of the discussions could be advocating for a formalised inquiry process at Parliament and at all levels of government. Such a process is needed on a regular basis because the monitoring and evaluation of child deaths is an index of child health, a basic tenet of children's right to survival and development, and a reflection of the country's socio-economic status.

3.2 Scope of the paper

It is intended to highlight the extent and causes of deaths of children in South Africa as compared to the rest of the world and to explore some of the contributory factors that perpetuate poor survival prospects. A brief synopsis of child survival interventions has also been provided. An important premise of this paper was the application of a child rights framework to notions of child survival. Hence, the paper deals with the survival of children (all persons under the age of 18 years) as defined by the South Africa Constitution and the United Nations Convention on the Rights of the Child.

This means that the scope of the paper is broader than the traditional, bio-medical perspectives on child survival by firstly considering all children and, secondly, by not limiting interventions to children under the age of five years. However, this does not mean the bio-medical perspective is not important; nor is there a disregard for the high proportion of deaths of children in the first five years of life. Both these perspectives are crucial and are acknowledged. However, is beyond the scope of this document to explore or discuss in any great detail childhood morbidity, background variables (for example socio-economic, cultural and health systems) and proximate determinants (for example maternal factors, environmental contamination, nutrient deficiency, injury and personal illness control) (Mosley & Chen 1984).

Part B: CHILD SURVIVAL IN CONTEXT

4. Theoretical constructs and frameworks

Child survival has been provided for in the United Nations Convention on the Rights of the Child (CRC) in Article 6 and was designated by the United Nations Committee on the Rights of the Child as a general principle. Within the CRC, child survival is linked to a child's right to life and development (Article 6) and appears as: "*Child's right to life and maximum survival and development*", the detail of which is listed below.

Box 2: Article 6, United Nations Convention on the Rights of the Child

1. *State Parties recognise that every child has the inherent right to life.*
2. *State Parties shall ensure to the maximum extent possible the survival and development of the child.*

The CRC has defined a '*child'* as a person under the age of 18 years. Hence, the terms "survival" and "development" were intended for the advancement of children of all ages. Furthermore, development was seen as holistic concept, with at least six other articles (18, 24, 27, 28, 29 and 31) making specific references to it. The role of parents and the family was also noted in relation to child development. In addition, protection from violence and exploitation was considered vitally important to maximise survival and development. Ensuring child survival is thus one of the most crucial elements of ensuring children's fundamental human rights.

Two other important human rights instruments that have prioritised child survival and which South Africa has signed are the International Covenant on Economic, Social and Cultural Rights and the African Charter on the Rights and Welfare of the Child. South Africa has ratified the latter.

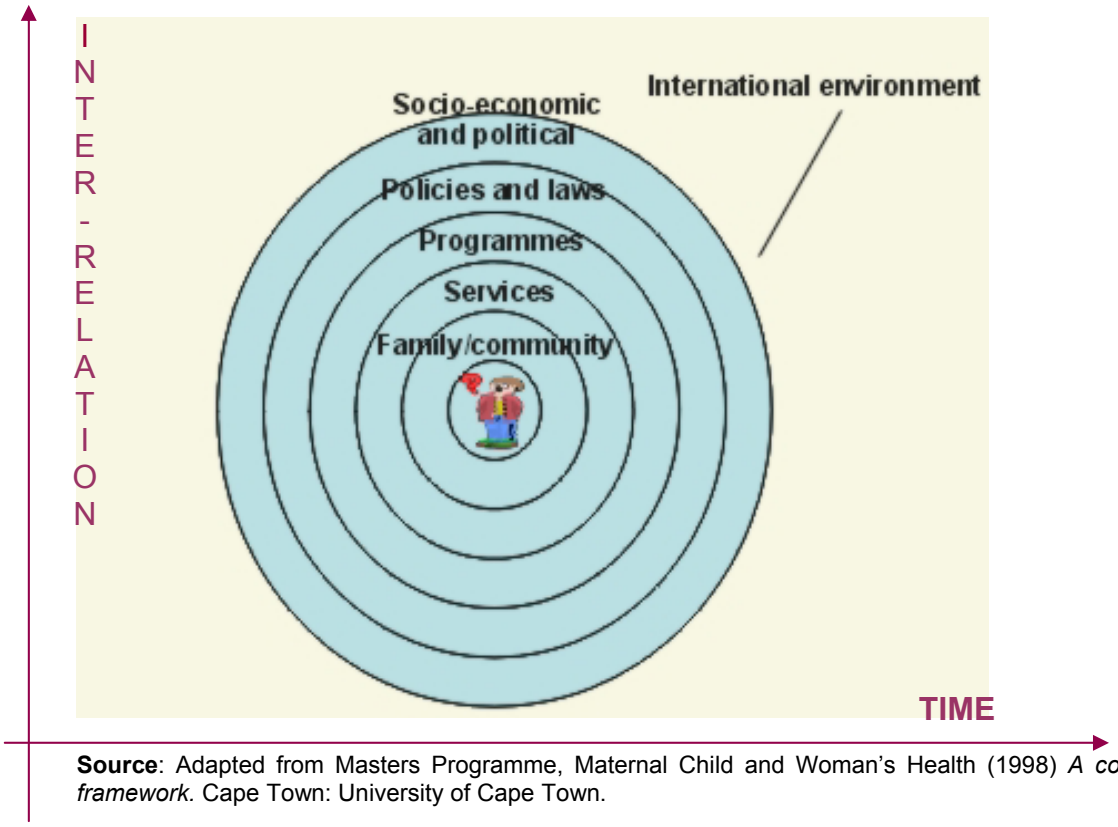
But child survival, as it is understood within the global health field, has taken on a particular meaning. Firstly, child survival initiatives within the context of the WHO, UNICEF, the United Nations Development Programme (UNDP) and the World Bank – along with many other international agencies, donors and funders – have been established predominantly for children younger than five years of age. Secondly, the development aspect in most instances is to be understood within a biomedical perspective and usually in relation to the sick, dying and deceased child younger than five years. Lastly, greater emphasis has been placed on understanding child survival in terms of mortality and morbidity of children under-five years. Even within these parameters, a particular disease-specific focus has emerged that was influenced by the international burden of disease causes affecting young children. Thus child survival initiatives are dominated by key burden of disease categories, namely communicable diseases, non–communicable diseases and childhood trauma and injuries. The most common of these diseases are: acute respiratory infection, diarrhoeal disease, pneumonia/sepsis, malaria, poliomyelitis, and malnutrition, among others. South Africa's disease and death profile is quite different from other developing or sub-Saharan African countries – this will be illustrated in the sections below.

The interventions that have been designed to ameliorate child survival were thus based on several of the aforementioned diseases, which were considered to be easily preventable. Child survival programmes are typically known to have "retained their roots in community-orientated, population-based, primary health care, but at the same time had the appeal of using relatively inexpensive medical technologies to reach specific, stated objectives" (Claeson & Waldman 2000). These objectives invariably

focused on the reduction of infant and child morbidity and mortality. Once again, it will be illustrated that the current child survival interventions that have been endorsed worldwide have predominantly focused on a limited set of diseases within a biomedical framework with some attempts at addressing the social determinants of health, e.g. access to water and sanitation.

Nonetheless, both frames of reference agree that the death of a child is the worst outcome for child survival. The causes of many child deaths are multifaceted and seek an interpretation that goes beyond the conventional medical model of disease. It is thus important to contextualise child survival. The following conceptual model, which has been adapted from a conceptual framework of the Masters Programme (Maternal Child and Woman's Health) at the University of Cape Town (1998) and referred to here as the *Spheres of Influence* (Diagram 1), is an attempt to understand child deaths within a country-specific context, namely the South African situation. The principle of "children first" was applied to the *Spheres of Influence* model. It means that the notion of "children first" is centred on the child as the focal point, and locates this understanding within a rights framework. The ecological framework (*Spheres of Influence*) presented here illustrates the layers of intervention and influence that are inter-related and impact on child survival over time. The layers of influence are significantly affected by the international environment, as indicated by the square box. These layers further demonstrate that necessary interventions to improve child survival are multi-dimensional and require a societal, rather than only a health sector response (Lagerdien 2005a, b).

Diagram 1: Spheres of Influence



Source: Adapted from Masters Programme, Maternal Child and Woman's Health (1998) *A conceptual framework*. Cape Town: University of Cape Town.

The social determinants of health are embedded within the context in which humans live. Two-thirds (66%, or 11.9 million) of South African children live in extreme poverty (Statistics South Africa 2005, in Children's Institute 2005). Close to a third of all deaths of children younger than five years are attributed to preventable diseases such as diarrhoea, malnutrition and acute respiratory infection (Norman, Bradshaw, Schneider, Pieterse, Groenewald 2005).

South Africa is in a stage of transition where political, economic, demographic and epidemiological extremes are the order of the day. Politically, it is a young democracy with a strong rights-based commitment, trying to undo the ills of the past political dispensation by implementing rights-based interventions across all sectors in an attempt to rectify past and current inequities. Economically, the country has a mixed economy with a widening equity gap and a large proportion of the population being unemployed and living in poverty. Demographically, one sector of the population follows a typical developed country ageing profile, while the greater portion of the population has a shrinking life expectancy, and the economically productive being adversely affected by the HIVAIDS pandemic. Epidemiologically, we are faced with the two classical disease profiles: one of a lifestyle similar to that of a developed nation (but here also affecting the poor); the second profile being the diseases of poverty, the scale and impact of which are hugely affected by the HIV/AIDS pandemic (Lagerdien 2005b).

While grappling with issues of child survival, we are also trying to aspire towards recognising and promoting the multiple facets of the development of children in a holistic and comprehensive manner. The discussion that follows hereafter outlines the prospects of child survival at international, regional and national levels, using child deaths as the key marker of survival. Child death indicators, specifically the IMR (children under one year) and the U5MR (children under-five years old), are universally accepted measures of children's prospects of survival. These indicators have become widely accepted measures of the social and economic progress of a country and indicate whether and to what extent that country adequately addresses children's needs. Given the range of issues that fall under child survival, for the purposes of this paper we decided to focus on child deaths in South Africa as a marker of their survival prospects. This will demonstrate the huge strides that need to be made to get to the point of addressing children's needs within a holistic and comprehensive rights-based framework.

Part C: CAUSE AND EXTENT OF CHILD DEATHS

5. Cause and extent

Bryce, Boschi-Pinto, Shibuya and Black (2005: 1147) emphasised that, "child survival efforts can be effective only if they are based on reasonably accurate information about the causes of deaths". Such information is necessary to prioritise which interventions are to be implemented, to determine the effectiveness of disease-specific interventions and to monitor trends in disease burden. The following section describes the extent and causes of children's deaths globally, regionally and nationally. Each section commences with an overview of child deaths, followed by an in-depth look at deaths of children according to known age groups. A developmental stages approach has been used to help construct a comprehensive picture of child deaths under the age of 18 years, in keeping with the purpose of this paper.

5.1 Global statistics

Towards the end of the century, mortality rates in children under-five years of age continued to decrease around the world from 146 per 1,000 live births in 1970 to 70 in 2003. However, the downward trend in under-five mortality rates in many regions of the world started slowing down; some areas, particularly sub-Saharan Africa, were even regressing (Rutstein 2000; WHO 2005). The inequities gap in child mortality between rich and poor countries is considered to be unacceptably wide; yet in certain instances this gap appears to be growing: "*In high-income countries, six of every 1 000 children die before their 5th birthday. In the developing world, the rate is 88 per 1 000, and in the world's poorest countries, the rate is a staggering 120 per 1 000*." (Victora et al 2003).

The latest WHO estimates (2000 – 2003) on the causes of deaths in children under the age of five years indicated that pneumonia, diarrhoea, malaria, neonatal pneumonia/sepsis, preterm delivery and asphyxia at birth accounted for 73% of the 10.6 million child deaths per year (Bryce et al 2005). All of these diseases could have easily been prevented and treated (Black et al 2003). Under-nutrition was considered to be an underlying cause that increases the risk of dying from these communicable diseases (Bryce et al 2005).

Poor children have poorer prospects for survival compared to better-off peers (Victora et al 2003). Children living in poverty are more likely to be malnourished, more susceptible to infectious diseases and are less likely to have access to appropriate health care (Victora et al 2003). These children have a greater exposure to health risks, are more susceptible to environmental hazards in the community, and generally have lower immunity because of under-nutrition.

Poor children have less resistance to common childhood diseases (Ibid). This was pointed out Lawn, Cousens & Zupan (2005: 15): "*Every year, 4 million babies still die in their first 4 weeks of life, most from preventable causes. This number is double the deaths due to HIV/AIDS; although AIDS is rightly hailed as a global emergency, newborn deaths are largely ignored*." Black et al (2003) maintained that, given the death profiles of poor children and their dismal prospects for survival, there is an urgent need to develop a more in-depth understanding of child health epidemiology at a country level as opposed to a geopolitical region.

During February 2003, child health experts gathered in Bellagio (Italy) to rework and rethink matters pertaining to child survival in an attempt to revive the mired child survival revolution of the 1980s. A study group, the Bellagio Child Survival Study Group (2003), made up of top scientists and policy-makers, was formed out of this meeting,

and has extensively published papers on the subject in *The Lancet* journal. They have attempted to transform knowledge into action with the aim to reduce child mortality by advocating for the following prerequisites: leadership, strong public health systems, adequate and targeted resources, and awareness and commitment to action. Furthermore, the group has stated that "advances in child health epidemiology have strengthened the basis for sound programmes, that 63% of all child deaths could be prevented and that 98% of under-fives who die are in developing countries" (WHO 2003, in Child Survival Technical Support Plus Project 2003).

A key criticism of the Bellagio series on child survival published in *The Lancet* was the gap in providing adequate information and action on deaths of newborn babies (in the first four weeks of life, commonly known as the neonatal period) (Lawn, Cousens, Bhutta, Darmstadt, Martines, Paul, Knippendberg, Fagstadt, Shetty & Horton 2004). Neonatal deaths have been said to account for at least four million deaths per annum that go "unseen, undocumented and have low visibility on the global agenda" (Ibid: 7). The neonatal survival series in *The Lancet* has attempted to put newborn health back on the global agenda (Lawn et al 2005). The latest estimates for the year 2000 (Zupan & Ahman, in Lawn et al 2005) indicated that 38% of all child deaths occurred in the first month of life. The variation in death rates – even within the neonatal period – is very different, with the highest proportion of deaths occurring in the first 24 to 48 hours of life.

According to the Save the Children (2001) report, *Saving Newborn Lives. The state of the world's newborns: a report from Saving Newborn Lives*, the global estimate for the neonatal mortality rate was 31 per 1,000 live births. The main direct causes of neonatal deaths worldwide were infections (36%), preterm birth (28%) and asphyxia (23%). Furthermore, 60 – 80% of neonatal deaths occurred among babies with low birth weight. In regions where the neonatal mortality rate was considered high (>45 per 1,000 live births), and based on the latest WHO estimates, approximately half of these deaths were attributed to severe infections, tetanus and diarrhoea. In regions where the NNMR was low (<15 per 1,000 live births), sepsis or pneumonia accounted for less than 20% of deaths, while tetanus and diarrhoea did not even feature as a leading cause of death (Lawn et al 2005). Thus the main problems that contributed to the deaths of neonates were related to access to obstetric and post-natal care.

Mortality statistics for adolescents are poorly described in the literature in comparison to the mortality information available for the younger age groups, e.g. IMR. Even the latest *The World's Youth 2006 Data Sheet* by the Population Reference Bureau (2006) of the United States of America contained no data on the mortality of adolescents. Where the deaths of adolescents have been described, it is usually in relation to unintentional injuries and trauma. The most up-to-date statistics from the WHO indicate that the highest number of homicides occurred among males and females in the 15- to 44-year age group (WHO 2001, in Meel 2005). Approximately 60% of all suicides were males and over half (53%) of all suicides occurred among persons between the ages of 15 and 44 years (Ibid: 963).

5.2 Regional statistics

The majority of the deaths described in *The Lancet* series on child survival took place in developing countries; 42% occurred in the Africa region. This amounted to a total of 4.396 million deaths of children younger than five years (Bryce et al 2005). In addition, it has been estimated that over five million children in Africa have been infected with HIV/AIDS within the past decade as a result of vertical transmission (Gisselquist et al 2004). "Fifty percent of vertically infected children in Africa are assumed to survive to 2 years old and 40% to 5 years old, with subsequent low mortality for an undetermined period" (UNAIDS Reference Group 2002, in Gisselquist et al 2004: 109-110).

Table 1 below is a summary of the WHO estimates for the Africa region for the period between 2000 and 2003. Bryce et al (2005: 1150) indicated that the burden of disease distribution was "heavily skewed towards the WHO Africa region".

Table 1: WHO Africa region cause of death estimates in children younger than five years

Cause of death	Percentage*
Malaria	94
HIV/AIDS	89
Pneumonia	46
Diarrhoea	40

*% of global deaths
Source: Bryce et al 2005

More than three-quarters of neonatal deaths occurred in sub-Saharan Africa and south Asia, where less than a third of all deliveries have a skilled attendant present (Lawn et al 2004; Lawn et al 2005). The majority of countries where one in five children had died before their fifth birthday had experienced major armed conflict since 1999. Eight of the nine countries listed in the *State of the World's Children 2006* report (UNICEF 2005) were in Africa. In sub-Saharan Africa the U5MR was estimated at 175 per 1,000 live births (UNICEF 2004). This rate appears to have been largely stagnant since 1990. The current UNICEF (2005) report indicates that the least-developed countries have an U5MR of 155 per 1,000 live births for 2004 and an IMR of 98 per 1,000 live births for the same period. By comparison, the developing countries have an U5MR of 87 per 1,000 live births and an IMR of 59 per 1,000 live births. The global estimates are 79 per 1,000 live births and 54 per 1,000 live births for the U5MR and IMR respectively. According to the UNICEF report (2005), South Africa is regarded as a developing country. So, where does South Africa feature in relation to these figures?

5.3 National statistics

The last Human Development Report[3] (2003) rated South Africa at number 111 on the Human Development Index (HDI) scale with an average life expectancy at birth of 50.9 years, based on 2001 statistics. Mortality indicators from that report specific to children were as follows:

Table 2: South Africa's ranking on the Human Development Index (2003)

Indicator	Year (1970)	Year (2001)
IMR	80	56
U5MR	115	71

The State of the World's Children 2006 report (UNICEF 2005) reveals a telling picture about South Africa's progress in enhancing child survival. There were no estimates provided for the 1970 U5MR but the rates for 1990 and 2004 were estimated at 60 and 67 per 1,000 live births. This placed South Africa in the bottom third of countries with an overall under-five mortality ranking of 65; Sierra Leone was at the top with an U5MR of 283 per 1,000 live births in 2004. Iceland was at the opposite end with an U5MR of three per 1,000 live births for the same year.

[3] The Human Development Report is an independent report commissioned by the United Nations Development Programme (UNDP). It was first launched in 1990 with the aim of putting people back at the centre of the development process in terms of economic debate, policy and advocacy. The reports go beyond mere income assessment to assessing the level of people's long-term well-being as well.

Below follows a more detailed description of the causes of death by age group. Each sub-section covers the extent of deaths based on the available statistics, including the problems and gaps in relation to the mortality information. The causes have been unpacked in two parts, namely the direct cause of death and the underlying causes.

5.3.1 Perinatal and neonatal deaths

The perinatal and neonatal deaths refer to young babies who have died within the first month of life. Deaths that occur during the neonatal period, more so than during the perinatal period, need to be interpreted in the context of maternal morbidity and mortality, as the health of a baby is inextricably linked to health of the mother.

a) Statistics – trends, problems and gaps

Currently, the perinatal care surveys[4], which are conducted at particular public hospitals across the country, have provided some valuable insights into the causes of deaths of babies, albeit only from a facility-based perspective. The *Saving Babies 2003: Fourth Perinatal Care Survey of South Africa* report maintained that, since the inception of these surveys, it had become quite evident that the common causes of deaths in nearly half of the cases reported were in fact remediable (MRC Unit for Maternal and Infant Health Care Strategies, PPIP Users & National Department of Health 2003).

The neonatal mortality has been stagnant for some time (DHS 1998). In South Africa, the largest proportion of infant deaths occur during the post-neonatal stage, indicating children are more at risk from factors related to socio-economic status and environmental exposures. The latest national perinatal mortality rate (PNMR) was estimated to be 40 per 1,000 live births (Pattinson 2000), while the latest national neonatal death rate **(**NNDR) was 20 per 1,000 live births (South African Demographic Health Survey 1998). The latest perinatal care survey, the *Saving Babies 2003* report, produced a national perinatal mortality rate, a stillbirth rate and a neonatal death rate but this was based on public health facility data only. A synopsis of these estimates is presented in Table 3 below.

Table 3: Perinatal Problem Identification Programme (PPIP) facility-based indices

≥ 1 000g	SA	Metropolitan	City & Town	Rural
Perinatal morality rate	27.63	24.24	32.56	27.18
Stillbirth rate	17.88	16.92	20.18	16.53
Neonatal death rate	9.90	7.44	12.48	10.83

Source: Adapted from MRC Unit for Maternal Health et al 2003: *Table 1.1: Comparison of perinatal care indices between the different areas of South Africa*

The Perinatal Problem Identification Programme has provided insights into perinatal, neonatal deaths and stillbirths, but only from a public health facility base. There is generally a lack of data around stillbirths, as noted in the review of the literature (Yach & Botha 1986a, 1986b; Van der Merwe, Yach, & Metcalf 1991; Moodley, Adhikar & Naidu 1995; Bachman, London & Barron1996) by Abrahams (in press). This lack of data on stillbirths is of concern. What is more concerning is that perinatal/neonatal mortality studies conducted during the early 1980s, at a time when the country was in political strife and when populations in the former Bantustans were often excluded in

[4] The Perinatal Problem Identification Programme (PPIP) is managed by the South African Medical Research Council. It is a hospital audit system conducted within public health facilities across selected sites in the country. The reviews are limited to deaths of babies in the perinatal period. The key instrument used to conduct the audit is the perinatal care survey.

studies, yielded death profiles of babies similar to those with which the country is currently faced (Connor 1970; Rip, Keen & Kibbel 1986; Rip, Keen & Woods 1986; Yach, Katzellenbogen & Conradie 1987; Andersson & Marks 1988). In 1979, the PNMR was "several times higher among urban blacks than among urban whites in Cape Town" (Andersson & Marks 1988); five years later, the same trend was still evident.

Table 4 below is an extract from a journal article and points to the relationship between death rates and race. Nearly three decades later the same scenario still persists – why is that? The 1998 South African Demographic Health Survey provided some insights in this regard by illustrating the relationship between neonatal mortality, post-neonatal mortality, infant mortality, child mortality and under-five mortality with other socio-economic variables and environmental factors (Appendix IV). Some of these issues will be elaborated on further in the section on infant and under-five deaths.

Table 4: Death profile of children, by age and race

Age group	Black (%)*	Coloured (%)	Asian (%)	White (%)
Early neonatal (< 7 days)	**15.6**	**19.9**	**41.3**	**42.6**
Late neonatal (7 – 27 days)	**7.1**	**7.2**	**9.5**	**9.6**
Post-neonatal (28 days – 1 year)	**50.2**	**44.7**	**30.8**	**24.6**
Early childhood (1 – 4 years)	**27.3**	**28.2**	**18.4**	**23.3**

* Percent of deaths 0 – 4 years

Source: Adapted from Yach & Botha 1986a: *Table 1: Number of deaths in children 0-4 years of age by population group and age at death – using 1980 registered deaths*.

Unlike the PPIP, there are many unaccounted deaths of babies, as in the case of Yach & Botha (1986a), where stillbirths were excluded and data coverage was of registered deaths only. What this study points to was the heavy reliance on registered deaths as a credible source of data as opposed, for example, to information obtained from surveys that, during the apartheid years, were considered unreliable, since blacks were poorly represented (resulting in a huge under-reporting of deaths). Nonetheless, the study yielded some valuable information (Table 3 above), which would need to be interpreted in the context of poor representation of black children's deaths and reliance on registered deaths only. Hence a huge problem with under-reporting exists, and which can not be adjusted.

b) Direct and underlying causes of deaths

Evidence of the poor quality of antenatal care that emerged from the perinatal care survey (MRC et al 2003) was further reinforced by the fact that nearly half of the macerated stillbirths were the result of complications because of hypertension in pregnancy. In many of these cases the avoidable factor was the lack of referral to the appropriate level of care. Eighty percent of deaths due to immaturity were attributed to spontaneous preterm birth. Finally, *abruptio placent*a was another major cause (12%) that was identified particularly in the urban areas. *Abruptio placenta* was noted as the only primary cause of death in this age group (perinatal period) where no clear strategy or solution to reduce the number of such deaths were identified. Lifestyle adjustment measures to prevent *abruptio placenta,* for example to stop smoking during pregnancy, were considered a possible solution to avoid this cause of child death.

The overarching problem identified from the PPIP was thus the poor management of women in labour, which leads to detrimental effects for both mother and child. The poor quality of care in the antenatal, intrapartum and/or neonatal period was the result of a series of factors of which the following were considered to be the most important to address: lack of personnel, facilities, knowledge and poor morale. The PPIP highlighted the interrelation between women's health (maternal care, antenatal care) and child health, as supported by the evidence on obstetric and gynaecological care presented by Moodley et al (1995) and Wilkinson (1991). Research conducted nearly three decades ago identified similar findings (Yach & Botha 1986a, 1986b; Yach et al 1987; Andersson & Marks 1988). For example, neonatal deaths (under-one month) were caused by factors relating to pregnancy (health of the mother, her nutritional status and work ability in the last trimester), quality and availability of perinatal care and low birth weight (Yach & Botha 1986a, 1986b; Andersson & Marks 1988).

It was also established that children less than one month of age were seven times more likely to die than singleton children born at home, who were three-and-half times more likely to die than those born in the clinic. This was further complicated in instances where there were multiple births (Yach et al 1987). Post-neonatal deaths (one month to one year) were predominantly caused by socio-economic and environmental factors that increased the risk of infections. Other relevant determinants of health that the perinatal care survey of the MRC did not pursue, given the nature of the audits that Yach and Botha (1986a) included, were overcrowding, poor availability of water and sanitation and low levels of maternal education. These were referred to peripherally in the PPIP surveys.

Misclassification of deaths on the death register was also noted to be a problem. Ill-defined causes accounted for a large proportion of deaths among blacks in Yach and Botha's (1986a) study and ranked as a major cause of death among children. Yet no specific mention was made of it in the Yach and Botha (1986a) study. This problem appears to have continued into to the 1990s, based on a review of the literature. A study by Van der Merwe, Yach and Metcalf (1991) noted a very high percentage of neonatal deaths that were certified by the police in Port Elizabeth, which may have suggested problems with access to care at the time, even in this urban setting. The Van der Merwe et al study (1991) compared death data from Port Elizabeth with national averages for a particular period.

The two studies referred to here merely illustrate that it is problematic to give a cause of death for large categories of ill-defined diseases: firstly, it shows a lack of skills on the part of the personnel certifying the death; secondly, not knowing the cause of death is of no use to decision-makers when planning for appropriate health care interventions.

Recommended actions to remedy the situation have been described more fully under Part E: RESPONSES TO CHILD SURVIVAL below.

5.3.2 Infant deaths

The significance of determining the infant mortality rate (IMR) for South Africa was pointed out aptly by Nannan, Bradshaw, Mazur and Simphiwe (1998). Firstly, the IMR could be used for investigating and monitoring inequalities in health status and socio-economic conditions. Secondly, given the HIV/AIDS pandemic, the IMR would have a particular importance as a proxy measure for assessing the impact of vertical transmission of the disease.

However, according to Nannan et al (1998), the IMR is not known with any certainty in this country since the last 1998 South African Demographic Health Survey (SADHS) – a see Table 4 below. Linked to this is the issue of birth data, which is a key component in determining not just the IMR but many other health status indicators. Nannan et al (1998) reviewed birth registration data from all nine provinces and compared it to a percentage of births recorded by the health services to assess how birth registration could be improved in the health service. The impetus for improved child health statistics was spurred on even further by the push from global agendas like those of the World Summit for Children, which set a target to reduce IMR and U5MR by one-third by the year 2000. South Africa did not reach the target by this date.

a) Statistics – trends, problems and gaps

At an international conference on family law and child rights held in Cape Town, Lagerdien (2005a) focused on child deaths in South Africa by highlighting the context, achievements and challenges faced by the country in improving child survival prospects. The evidence presented at the conference brought to bear a child rights framework on child survival through a reflection on the commitments for child survival in the CRC and the Constitution, and the progress that has been made by the government in meeting the Millennium Development Goals and the World Summit Goals on child survival. It was quite evident from the statistics presented (see Table 5 below) that South Africa has indeed regressed in terms of infant and under-five mortality rates.

Table 5: South Africa – IMR and U5MR

INDICATOR	1990 Dorrington et al (2004)	1998 SADHS	2000 MRC-NBOD (ASSA 2000)*	2015 MDG Target Dept. of Health
IMR	52/1,000	45/1,000	60/1,000	17/1,000
U5MR	72/1,000	59/1,000	95/1,000	24/1,000

* The researcher made use of model-based and empirical data at the time.

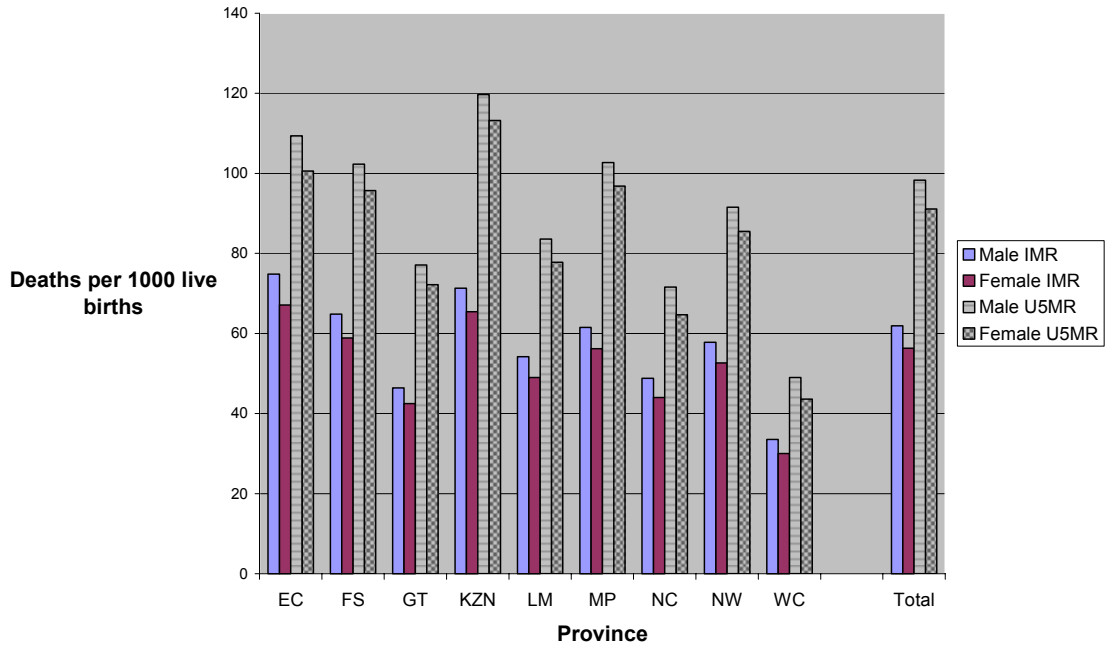
Source: Adapted from Abrahams (in press)

The report by Dorrington, Bradshaw, Johnson and Budlender (2004) estimated an IMR of 52 and U5MR of 72 per 1,000 live births for the year 1990. According to the Demographic Health Survey (1998) estimates, the IMR was 45 per 1,000 live births and the U5MR was 59 per 1,000 live births. The estimated rates for 2000 have been calculated at 60 per 1,000 live births (IMR) and the U5MR at 95 per 1,000 live births, based on the South African National Burden of Disease Study (NBOD) (Bradshaw et al 2003).

Focusing on the last column of Table 5 above, it would appear that South Africa will have great difficulty in achieving the desired Millennium Development Goal for child survival – reducing the IMR and U5MR by two-thirds by 2015. The estimates provided in the last column were those of the Department of Health in a publication produced at the end of 2005, which reflected the country's progress in attaining the MDGs.

Diagram 2 below indicates that provincial estimates reveal even greater challenges given the inequities that exist.

Diagram 2: IMR and U5MR, by sex (2000)



Source: Bradshaw D, Nannan N, Laubscher R, Groenewald P, Joubert J, Nojilana B, Norman R, Pieterse D & Schneider M (2004) South African National Burden of Disease Study 2000: Estimates of Provincial Mortality. *Cited in*: Children's Institute (2006) *Children Count – Abantwana Babalulekile*. Viewed 31/01/2006: http://www.childrencount.ci.org.za.

The IMR estimates for South Africa, illustrated in Table 5 on the next page, have numerous limitations that have been reviewed and documented elsewhere (Abrahams in press). In summary, the estimates reviewed may not have always reflected the entire South African population, as the (former) Transkei, Boputhatswana, Venda and Ciskei (TBVC) areas have been omitted in some instances. Some of the differences in the data could be attributed to the omission of the TBVC data, while inclusion of the TBVC could have increased the average rate even more. Over and above this omission, the variability of the IMR ranged from 11 to 81 per 1,000 live births.

Table 6 on the next page illustrates the discrepancies in terms of a wide range of mortality rates due to different survey instruments and geographical coverage and so forth that were used before the new political dispensation. The huge variations between different sources of data make it incredibly difficult for policy-makers and planners to know which statistics to use in decision-making. The question is however: How can this *status quo* persist 12 years post democracy?

Research undertaken on the Cape flats in the Western Cape province by Bachman et al (1996) revealed huge intra-urban variations in IMRs. The IMR for coloureds living on rural farms (34 per 1,000 live births, 95% Confidence Interval 29-40) and blacks residing in informal settlements (35 per 1,000 live births, 95% Confidence Interval

31-35) were concerning. More so was the exceptionally higher rate for coloureds living in informal settlements (60 per 1,000 live births, 95% Confidence Interval 43-82). Coloureds living on farms (within a 50km radius from the centre of Cape Town) have a poor indicator of health status that could have reflected the level of poverty and poor access to health care. However, the relative contributions of poverty and health care to mortality were unclear (Ibid). Race was therefore an important variable that had to be considered. As expected, the IMR differed substantially between different categories of race, with the white IMR at 11 per 1,000 live births compared to coloureds at 19 per 1,000 and blacks at 33 per 1,000.

Table 6: Estimates of the South African IMR from 1990

Source	TBVC*	Year	IMR/1,000
Development Bank of Southern Africa *South African Health Review* (1995) Durban: Health Systems Trust & Henry J Kaiser Family Foundation: 27.	-	1990	40.2
Department of Welfare (Health) Department of Health (1995) *Health trends in South Africa 1994*. Pretoria: Department of Health: 8.	-	1991	46.0
UNICEF UNICEF (1994) *Cited in*: National Institute for Economic Policy (1995) *Children, Poverty and Disparity Reduction: Towards Fulfilling the Rights of South African Children*. Johannesburg: National Institute for Economic Policy.	+	1992	71.0
Southern African Labour Development Research Unit Poverty Survey Mazur RE (1995) *Population structure, fertility and childhood mortality in South Africa: Lessons to be learnt from analysis of the poverty survey*. Centre for Epidemiological Research in Southern Africa, South African Medical Research Council.	+	1993	81.0
October Household Survey Nannan N (1996) *Assessment of infant, child and adult mortality levels using the South Africa October Household Survey, 1993*. Masters Thesis, London School of Hygiene and Tropical Medicine: University of London.	-	1993	14.6
Ministry of Welfare and Population Ministry for Welfare and Population Development (1997) *Draft White Paper on Population Policy*. Cape Town: Ministry of Welfare and Population.	-	1994	41.0
October Household Survey Maphumulo S (1997) *Estimation of Infant and Childhood Mortality from the 1994 October Household Survey*. Poster presented at the 18th African Health Sciences Congress in Collaboration with the 15th Epidemiological Society of Southern Africa Conference, Cape Town, 14 – 17 April 1997.	+	1994	11.0
Institute for Futures Research Haldenwang BB & Boshof SC (1996) *Forecasts of the South African Population, 1991 – 2026*. Stellenbosch: Institute for Futures Research, University of Stellenbosch.	+	1991–1996	56.1

*Transkei, Boputhatswana, Venda, Ciskei

Source: Adapted from Nannan et al (1998): *Table I*

b) Direct and underlying causes of deaths

Diseases of poverty such as low birth weight, diarrhoeal disease, lower respiratory infections and protein-energy malnutrition constitute 28.6% of childhood deaths (Norman, Bradshaw, Schneider, Pieterse & Groenewald 2005). A large number of such deaths are preventable with the delivery of primary health care interventions. HIV/AIDS was noted as one of the leading causes of deaths among young children (under-five

years). It accounted for up to 29% of deaths in 2000, according to the Medical Research Council's Burden of Disease Unit (Ibid). Similar findings were reported in a study conducted by Grandin, Westwood, Lagerdien and Shung-King (2005) on deaths at the Red Cross Children's Hospital between 1999 and 2003. The deaths of children under the age five years are described in more detail in the following section.

In the MRC's *Estimates for Provincial Mortality* (Bradshaw et al 2004), the ranking of diarrhoeal death rates was identical to the ranking of provinces by household income (percentage of household with monthly income below R800 in 1996). What this showed was the potential impact of socio-economic status on child survival outcomes (Kark & Cassel 1952; Connor 1970; Bachman, London & Barron 1996). Poor socio-economic status has negative implications for accessing health care, nutritional status and education, which all impact on mortality outcomes of children (Victora et al 2003; UNICEF 2004, in Nannan, Bradshaw, Mazur & Simphiwe 1998; UNICEF 2005). These negative implications have been well documented in research undertaken in South Africa (Connor 1970, Kark & Cassel 1952; Krynauw 1983; Yach & Botha 1986a, 1986b; Rip, Keen & Woods 1987; Yach et al 1987; Bachman, London & Barron 1996).

Connor's study (1970) conducted in the Qumbu district of the old Transkei attributed the high child mortality to malnutrition and/or gastroenteritis. These two diseases of poverty were jointly the cause of more than half of the deaths of children in the Transkei at the time. The time of deaths in Connor's study were linked to the weaning period and changes in feeding patterns (babies taken off breast milk and fed mealie cereal). A similar finding was noted in a study conducted in the Hewu district of the Ciskei (Yach et al 1987), where a rise in the diarrhoeal disease rate observed in children over five months suggested that breastfeeding was most likely stopped between four and seven months and at this stage children are increasingly exposed to contaminated water supply and soil. Bachman, London and Barron's study (1996) of the IMR in Cape Town revealed huge variations by racial category and place of residence. The highest IMR for coloureds occurred in informal settlements, which suggested a particularly vulnerable sub-group. The high percentage of ill-defined deaths noted in rural areas, compared to other residential areas, was indicative of poor access to rural health care and poor certification by non-medical personnel. The latter took place when deaths occurred in rural areas where there were no doctors present, and where magistrates and police completed the death certificates. The Van der Merwe, Yach and Metcalf study (1991) revealed similar challenges related to certification by non-medical professionals and high levels of ill-defined deaths.

5.3.3 Under-five deaths

The indicators linked to this age group are the U5MR and the child mortality rate. The key difference between the two indicators is the omission or inclusion of deaths of children younger than a year old, referred to as '*infants'* in the section above. This means the U5MR includes infants, while the child mortality rate excludes them. It is important to consider where South Africa is at in terms of under-five deaths.

a) Statistics – trends, problems and gaps

According to the *State of the World's Children 2006* report (UNICEF 2005), the country was ranked at number 65 in relation to its U5MR (see Table 7 on the next page) .

Table 7: South Africa's U5MR ranking

Country	Rank	U5MR (1990)	U5MR (2004)
South Africa	65	60	67
Brazil	88	60	34
Mexico	98	46	28

Source: UNICEF (2006) *State of the World's Children 2006.* Geneva: UNICEF

As mentioned previously, South Africa lies in the bottom third of countries in terms of levels of child mortality and has regressed over the past few years (UNICEF 2005). The UNICEF report (2005) highlighted the following key issues as South Africa reflects on its child survival prospects. Firstly, Brazil and Mexico were two countries in the same time period that have comparable income levels to South Africa and that have made significant gains in terms of child survival – indicating that it can be done. It is evident from these statistics that South African children have relatively poor prospects of survival as the under-five mortality is rated on par with some of the poorer countries in the world, despite South Africa having a thriving economy. Secondly, even though children in South Africa have the right to equality, the poorest children make up a disproportionate share of the mortality figures. The report makes explicit that income inequalities threaten children's survival and that the poorest 20% of children are four times more likely to die before their fifth birthday than the richest 20% of children in South Africa. Thirdly, deaths of children under-five years of age in South Africa remain unacceptably high despite being preventable.

b) Direct and underlying causes of deaths

The Under-five Problem Identification Programme (U5PIP) illustrated the causes of under-five deaths aptly (see case study in Box 2 on the next page). It was established, under the same auspices as the PPIP, as a hospital audit system for the public health sector (Krug et al 2005a, 2005b). The case study provides some deeper insights into the deaths of under-five-year-olds from selected public health facilities across the country.

As indicated by the case study on the next page, HIV/AIDS and diseases of poverty dominate as the main causes of death in children under-five years. The Medical Research Council's National Burden of Disease Study confirms this pattern of deaths for the year 2000, when diseases of poverty contributed to 28.6% of all deaths and HIV/AIDS contributed to 29% of all deaths (Norman et al 2005).

The causes of such preventable deaths are exacerbated by a lack of access to basic services like water and sanitation (with close to half of South Africa's children not having access to adequate water supplies and sanitation), good child health services including comprehensive HIV/AIDS interventions, and high levels of trauma and violence to children (Bradshaw et al 2003).

Box 3: Case study 1

Saving Children 2004: A survey of child health care in South Africa

Authors: A Krug and M Patrick [5]

Aim: Field-testing a paediatric mortality audit system in 12 South African hospitals to assess its feasibility, to collect local data on common causes of death in children under-five years and to determine health system failure, missed opportunities of intervention and sub-standard care.
Methods: The study tested the Under-five Problem Identification Programme (Krug, Pattinson & Power 2004a, 2004b). *Setting:* Twelve hospitals representing different levels of paediatric healthcare participated: Kalafong (Gauteng province), Metsimaholo-Sasolburg (Free State), Witbank (Mpumalanga), Kimberley (Northern Cape), Edendale (Polokwane), Greys, Northdale (both in Pietermaritzburg, KwaZulu-Natal); Lehurutshe, Zeerust, Mafikeng provincial, Thusong and Gelukspan (all in the North West province). *Study period*: 1 September 2003 – 31 August 2004. *Study population*: Under-five patients admitted to study hospitals. *Cases:* Under-five patients who died in study hospitals.
Results: In total, 1,532 under-five deaths occurred out of 19,695 admissions, representing a case fatality rate of 7.8%. Sixty-six percent of under-five deaths occurred during the first year of life. Sixty-nine percent of these children were underweight; 30% had severe malnutrition (marasmus, kwashiorkor or marasmic kwashiorkor).

U5PIP 2004: Probable main causes of under-five deaths in 12 hospitals in South Africa

Causes	Number of cases	% of total
Lower respiratory tract infection (LRTI)	501	33
Acute gastroenteritis (GE)	226	15
Septicemia/possible serious bacterial infection	186	12
AIDS	158	10.3
Chronic diarrhoea	65	4.2

The most-common *associated causes* of death were: severe malnutrition (24%), lower respiratory tract infections (21%), sepsis (15%), diarrhoeal diseases (13%), AIDS (7.4%) and tuberculoses (7.4%). *Sixty percent of deaths were HIV/AIDS related*. Of these 18% were clinical AIDS with a positive Elisa test, 29% were symptomatic HIV infection with a positive Elisa test and 13% were symptomatic HIV infection or clinical AIDS without a blood test (Child PIP group et al, 2004).

A significant factor in diminishing child survival and deepening child poverty in South Africa is the HIV/AIDS pandemic – yet another highly preventable condition. Every hour, 10 children under the age of five die from a preventable condition (Norman et al 2005). Poverty remains the root underlying cause. Nearly 70% of children live in poverty at present (Woolard 2001, in Children's Institute 2005).

What has remained consistent over time is the fact that many child deaths could have been averted. Yet, heeding to the valuable lessons of the past that highlighted consistent trends about preventable diseases as the main cause of deaths among children under-five years of age (Kark & Cassel 1952; Connor 1970; Yach & Botha 1986a, 1986b; Bachman, London & Barron 1991, Nannan et al 1998) appears to be a utopian aspiration. Trauma was found to be a leading cause of death even in this (under-five) age group. This is illustrated in the study by Meel (2003), which showed that there was one paediatric trauma death for every 10 adult trauma deaths reported. Twenty-eight percent of children who died were aged 0 – 5 years. The trauma-related death-toll amongst this age group was three to four times higher during the festive periods in January, April and December. Furthermore, road-traffic accidents and

[5] The case study was captured by two members of the Child PIP group (Child healthcare Problem Identification Programme) and they would like to acknowledge the following members of the group as well, namely: Chuntarpursat I, France H, Frerich S, Jooste JP, Malek E, Mulaudzi MC, Pattinson RC, Steinberg WJ, Stephen C & E Visser.

violence, which includes homicide and suicide, are thus another group of high-mortality conditions that will require dedicated interventions particularly for children under and over five years.

5.3.4 Older children (5 – 14 years)

a) Statistics – trends, problems and gaps

There are no specific mortality indicators that reflect the deaths in this age group or in the subsequent adolescent group. Hence the statistics that are available are directly related to the cause of death and will be described as such. The absence of overarching mortality indicators for the older children and adolescent groups means that they are often overlooked or even lumped together with adult deaths. Research studies both nationally (MRC-NBOD and the MRC-National Injury Mortality Surveillance System) and at local level (Flisher, Joubert & Yach 1992; Meel 2003) have played a strong role in providing more insight into deaths of older children.

b) Direct and underlying causes of deaths

Diagram 3 on the next page reflects the common causes of deaths in older children, aged 5 – 14 years, per province and by sex for 2000 (Bradshaw, Bourne & Nannan 2004). The causes of death were grouped according to disease categories, namely communicable, non-communicable and injuries – commonly known as the *'burden of disease profiles'* used by research and government agencies.

The communicable diseases category refers to conditions resulting in death due to infections, for example tuberculosis, diarrhoeal disease, acute respiratory infections, perinatal conditions such as low birth weight, and nutritional deficiencies like protein-energy malnutrition. Collectively, these causes of death are commonly referred to as *diseases of poverty,* as they are detrimental to the lives of poor children and could be largely prevented if socio-economic conditions improved. HIV/AIDS is one condition that falls under this communicable diseases category but requires particular monitoring because of its pandemic status in South Africa. Hence it was listed as a separate entity in the diagram below (Bradshaw, Bourne & Nannan 2004).

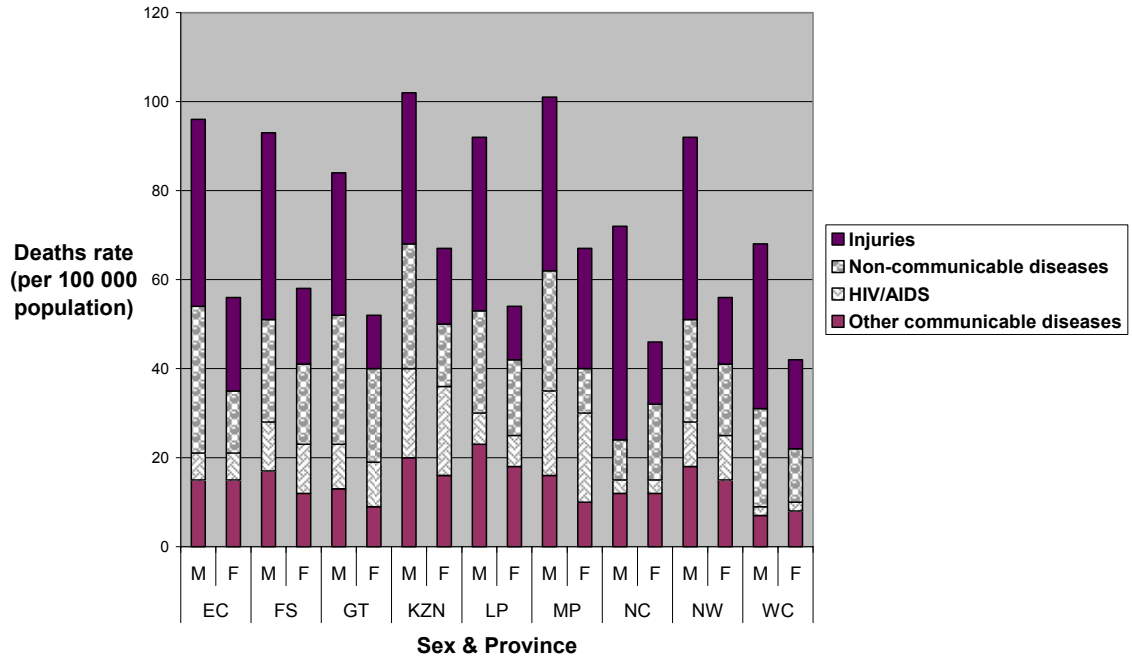
The non-communicable diseases group refers to different cancers; nervous systems disorders such as epilepsy; particular respiratory conditions such as asthma; and congenital abnormalities, for example congenital heart disease. What is interesting is that epilepsy featured as a leading cause of death for female children living in the Free State and the Northern Cape provinces (Ibid).

Group III injuries refers to those deaths that were termed unintentional, such as road-traffic accidents, falls, drowning, fires and poisoning, as well as intentional injuries due to suicide and homicide. Road traffic accidents were a common cause of death across most provinces within the injury group but in the Free State, Mpumalanga, the North West, the Northern Cape and the Western Cape provinces drowning also featured as a leading cause of death for males. Homicide was as one of the leading causes of death for both males and females in the Western Cape province (Ibid). A recent study conducted in two districts in one of the poorest provinces in South Africa, namely the Eastern Cape, revealed some alarming statistics on trauma for under-15-year-olds as well (Meel 2003).

The burden of disease profile in this age group presents a mixed picture of a developed and a developing country. Diseases of poverty feature high on the cause-of-death list in a developing country context, in contrast to developed countries where chronic diseases of lifestyle dominate. The impact of the HIV/AIDS pandemic in South Africa has given rise to a "quadruple burden" of disease with consequent high mortality rates

(particularly for children) as compared to other countries with similar income levels and health expenditure (Bradshaw et al 2004: 1; UNICEF 2005).

Diagram 3: Death rates for children 5 – 14 years for 2000, by sex and by group cause



Source: Bradshaw et al (2004) *South African National Burden of Disease Study 2000: Estimates of Provincial Mortality. Estimates of Provincial Mortality*. Cape Town: South African Medical Research Council.

5.3.5 Adolescents

Compared to that for infants and under-fives, there is generally very little information about deaths in the adolescent age group, as in the case with five- to 14-year-old children, discussed in the previous section.

a) Statistics – trends, problems and gaps

There is little data about the causes of deaths of adolescents in the 15- to 18-year category, which makes it difficult to present the main causes of death for this age group in a holistic manner. What has been well documented is that more children die of injuries as they grow older. Where information does exist, the data has not been disaggregated into a focus around children as a separate entity; instead the data is lumped together with young adults, for example, the 15- to 45-year-old age group commonly used to describe women of reproductive age. Hence the deaths of pregnant teenagers and their children also require attention and review given the impact of the HIV/AIDS pandemic on women of reproductive age. The initial Burden of Disease estimates for South Africa show the incredibly high percentage of male deaths due to homicide and violence. There is a huge sex differential with injuries (15 – 44 years) generally and more so with homicide and violence.

Wigton's study (1999) conducted in Cape Town on firearm-related injuries among children and adolescents between 1992 and 1996 revealed some alarming fatality statistics. Data was retrieved from hospitals offering a 24-hour service, state mortuaries and the police. Of the 1,736 persons younger than 19 years that were injured, 322 died (18.5%). It was found that 19% of the children and adolescents died because of firearm-related injuries. The incidence of mortality-related injuries tripled over the study period.

The same nearly applied to the firearm mortality rate (see Table 8 below) that increased from 3.8 per 100,000 (1992) to 10.3 per 100,000 (1996). Sixty percent of the victims were coloured males, of whom 86% were teenagers aged between 13 and 18 years. Twenty-one percent of all the deceased victims aged over 12 years were intoxicated. Seventy-six percent of incidents happened on roads or pavements (drive-by shootings) and 15% of cases in children's homes. The majority of firearm victims were seen at public tertiary hospitals. Children and adolescent victims presented at all levels of public health facilities (e.g. tertiary, secondary and district) in Cape Town. Wigton (1999: 409) points out that, "The burden of violence-related injuries appears largely to be borne by the public sector". A study by Van der Spuy (cited in Meel 2005) determined that the approximate cost of treating firearm-injured patients who presented to the tertiary hospital in 1993 was R4 million.

Table 8: Firearm injuries of under-19-year-olds in Cape Town (1992 – 1996)

Year	Firearm-injury mortality rate Per 100,000	Firearm-injury incidence rate Per 100,000
1992	3.8	20.2
1993	5.1	28.9
1994	8.4	37.7
1995	10.6	60.8
1996	10.3	58.1

Source: Adapted from Wigton 1999: *Table I: Total number of firearm-related injuries and deaths in the under-19 age group in Cape Town, 1992 – 1996*.

A surge in trauma-related deaths was also reported by Meel (2003 & 2005) within the former Transkei region of South Africa. Meel's study (2003) was conducted in two districts in one of the poorest provinces in South Africa, namely the Eastern Cape. The most-recent article by Meel (2005) indicated that trauma remained the leading cause of death (73%) in the former Transkei region. The average violent death rate was estimated at 165 per 100,000, which is five times higher than rates in lower-to-middle income countries and 11 times higher than in high-income countries, as was identified by the WHO (cited in Meel 2005). Furthermore, detailed comparisons of the firearm-homicide rate revealed that it was 50% higher in the former Transkei than in Cape Town during 1999. Despite the significance of the findings, such vital information from localised studies (Tollman, Kahn, Garenne & Gear 1999; Meel 2003) was not recorded nationally in a formalised and systematic way.

b) Direct and underlying causes of deaths

High levels of poverty, coupled with low levels of education and employment status in the Transkei, were considered to be responsible for the high violence in the area, as was noted by Meel (2005). According to the MRC 2003 mortuary data from predominantly urban settings, firearm-related deaths are the leading cause of fatal injury for all ages between 15 and 65 years. Motor-vehicle–pedestrian collisions were the leading cause of death for children (3 – 14 years). Homicide, transport accidents and suicide remained the top three causes of injury-related deaths for males and females in the 15- to 19-year age group (Matzopoulos 2005). A closer look at trauma-related injuries at a provincial, even city and district, level has revealed even more concern in particular areas of the country.

According to the analysis of work done in the early 1980s by Flisher, Joubert and Yach (1992), the mortality rates in South Africa adolescents were high and risk-taking behaviour was an important consideration to bear in mind as this may have contributed to many of the deaths at the time. These deaths, however, would need to be

interpreted within the context of the political climate at the time when the country had surges of unrest and deaths related to political violence (Flisher & Parry 1994).

Part D: DATA SOURCES

6. Providing a comprehensive picture of child deaths – factors that impact

Many of the social determinants of health that have been shown to impact directly on the deaths of children have been discussed in the previous section. The factors that have been considered in this part of the discussion were seen as contributing to a better understanding of the magnitude of child deaths and their causes. These include taking a look at (1) administrative systems and national surveys, with a particular emphasis on the role of information systems as a mechanism for providing a comprehensive picture of child death statistics; (2) data credibility and the problems with certification of deaths and (3) infrastructural constraints, particularly in relation to the services provided by the public health domain.

6.1 Administrative systems and national surveys

At present, there are no formal national structures that regularly review child deaths in a comprehensive manner. The current Confidential Inquiry managed by the National Council for the Confidential Enquiry into Maternal Deaths (NCCEMD) only reviews maternal deaths. The PPIP and Under-five Problem Identification Programme (U5PIP) operate at facility level and were designed as hospital audit systems to improve the quality of data on death statistics of children under-five years. But many more children who are not officially registered continue to die outside of the public health system. These children do not exist within official record systems and die as invisible.

Nonetheless, government departments such as the Department of Health and research organisations like the Medical Research Council currently collate child deaths statistics. Hence a range of data is available. However, these statistics are not co-ordinated and are drawn from different sources of data such as routine administrative data, large national surveys, etc. (see Appendix I for a comprehensive list of sources of data). In addition, information on child deaths could also be yielded by individual studies that were conducted across the country but which focused only on a subset of the population, as in the studies referred to previously in this paper. No uniform database exists to collate or co-ordinate the various sources of information on child deaths. All certified deaths, including child deaths, are reported to StatsSA but reports on these are not timeous. Furthermore the criteria for defining and collecting the data vary between agencies (Nannan et al 1998), which further complicates the task of collating. Case study 2 below illustrates the value of research and alternative sources of localised data in generating valuable information on child deaths, and the importance of research in this field of practice.

Box 4: Case study 2

Child mortality in rural KwaZulu-Natal
Author: Anupam Garrib 2005

Reliable health information is essential for health planning and policy formation. However, in those countries that have the highest mortality rates, this information is often not available [1]. It is estimated that less than 10% of Africa is covered by death registration systems and that the deaths of infants and younger children are less likely to be reported than the deaths of adults [2]. The information on cause-specific mortality patterns in sub-Saharan Africa is also generally of

questionable quality [3]. Burden of disease information is essential to determine health priorities, to guide the allocation of scarce resources, to inform the development of health programmes and to evaluate the impact of disease specific interventions [4].

Various methods of estimating child mortality and cause-specific patterns have been developed to fill this data gap. Population-based surveys are an important source of data on child mortality rates and are able to provide regular and up-to-date estimates of child mortality levels. Verbal autopsy methods are often used in population-based surveys to generate cause-specific mortality data. In this study we used an established demographic surveillance system for determining mortality rates and a verbal autopsy method to estimate causes of death in a rural area with very high HIV prevalence.

Verbal autopsies are an indirect method used by the Africa Centre Demographic Information System (ACDIS)[6] to establish cause of death by conducting a detailed interview with a member of the family, preferably the caregiver, of the deceased. The verbal autopsy method has been used to generate cause-specific mortality data in areas where people may not access health services before death, vital registration systems are weak, and cause-of-death data is incomplete or unreliable [4, 7 - 9]. The method has been used extensively to investigate causes of death in children. Verbal autopsy data can be used to establish the public health importance of different causes of death, to study trends in cause-specific mortality over time, to identify ways to reduce mortality, to evaluate the effect of health interventions and to investigate differentials in cause-specific mortality between groups [8, 10]. Verbal autopsies are a tool that have been used to fill the gap in available cause-specific mortality data and need to be further developed and assessed for use in high HIV-prevalence areas.
The analysis of mortality at this site creates a baseline against which to measure the trend in child mortality levels and causes of death to monitor the effect of the HIV epidemic on child health and the impact of intervention strategies on mortality due to HIV. There is little published data on mortality in adolescents in developing countries, both globally and in South Africa, and this study will provide some insight into the rates and causes of death in the early adolescent period. This study also provides some information on the use of verbal autopsies in child deaths in high HIV prevalence areas.

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[6] The Africa Centre Demographic Information System (ACDIS) is an established demographic surveillance site (DSS) in northern KwaZulu-Natal, South Africa. The DSS is situated in the Hlabisa sub-district of the larger Umkhanyakude district. It is a 435 km^2 area, in which there are 11,000 inhabited homesteads, housing approximately 90,000 people. Births, deaths, family composition, economic circumstances and health are monitored in the longitudinal surveillance of this population [5, 6].

Nannan et al (1998) noted that, "the extent of completeness of the birth registration system was 19%, which indicates a need for urgent improvement in order to provide key health status indicators". Completeness of data between provinces ranged dramatically, with the Eastern Cape province scoring a mere 10%. Vital registration systems have been noted as being severely incomplete and this has led to the emergence of Demographic Health Surveys, UNICEF surveys and other survey collecting epidemiological information. As a result, demographers have had to revert to compensatory means of deriving much-needed information through the "calculation of rates from the analysis of data obtained indirectly through a series of interrelated questions, or by adjusting incomplete and defective data" and developing models to attain project estimates (demographic estimation). Furthermore, "[t]he two data sources necessary for estimation of the IMR, namely vital registration and surveys, are both problematic in South Africa" (Nannan et al 1998:1586). Poor vital statistics (birth registration and death notification) had undoubtedly a direct impact on the outcome of the review undertaken by Nannan et al (1998). Similar sentiments were expressed by Rama (2000) in the article *Vital secrets still go the grave*.

Wigton's study (1999) indicated that the information systems of the South African Police Service (SAPS) and the Department of Health were incomplete and inadequate; thus it is highly likely that numerous firearm-related injuries were not counted and that the true incidence of such injuries was indeed higher than reported. "In 13 of the 18 months reviewed, the mortuary cases recorded for Cape Town alone were higher than the SAPS reported cases for the entire WC" (Wigton 1999: 409). What this showed was that, in a so-called, well-resourced province like the Western Cape, the link between SAPS and Department of Health information systems is very poor and warrants action (Ibid). There is an urgent need for an integrated injury and death reporting system and this has been urgently recommended. The study highlighted the poor quality of records kept at public health facilities because of missing registers, illegible, incomplete, or destroyed records and overall paucity of detail about the incident in both registers and folders. Mortuary records were extensively affected by missing and incomplete data. Police records were inaccurate; at least 20% of firearm-related deaths (<18 years) were found to be missing from police records (Ibid).

The challenges faced with developing a coherent understanding on child deaths statistics persist for various reasons. A newspaper opinion-editorial on World Health Day, *We can't make children count until we count the children,* by Lagerdien (2005) from the Children's Institute, highlighted issues for concern related to child death statistics. Lagerdien's editorial was in response to the Department of Health's adoption of the WHO theme for World Health Day in that year: "Make every mother and child count". What the article revealed were the huge discrepancies in the overall number of deaths of children between an official report from Statistics South Africa for deaths between 1997 and 2003 and the 1998 South African Demographic and Health Survey. The article pointed out a shortfall of 18,000 deaths of children under the age of five in the StatsSA data – a difference of at least 30% between these two key sources of data.

6.2 Data credibility

In the literature review conducted by Abrahams (in press), it was found that, in the majority of studies that were conducted, data was obtained from the then-Central Statistical Services, now known as Statistics South Africa (StatsSA). What emerged from the review was a reliance on routine administrative data by most researchers and an assumption that the data had originated from a credible source; hence there was no, or a limited, critique of the source. There appeared to be an over-reliance on formalised information systems to produce accurate data, which was found to under-report significantly.

a) Under-reporting

Under-reporting of child deaths came through strongly in most articles in the review conducted by Abrahams (in press) and was shown to be a perpetual problem within and across research studies. Andersson and Marks (1988) had noted the huge under-reporting of stillbirths among blacks in the 1980s and the fact that that there "were no details of the infant mortality rate as we do not have data concerning the number of live births". Furthermore, "reliable estimates of the rates are difficult to find" (Botha et al 1985, in Andersson & Marks 1988). Botha and Bradshaw (1985), cited in Yach et al (1987), noted that the births and deaths registrations of blacks were incomplete, which resulted in inaccurate national estimates of mortality rates. Bah (2003) reported that the under-registration of deaths had geographical and structural origins and the misclassification of the causes of death was due to poor certification practice, as well as system-related problems, particularly in relation to injury-related deaths. Subsequently, Bah (2005) noted that the quality of cause-of-death data was considered to be mediocre.

b) Certification of deaths

The certification of deaths was another significant factor identified in the review by Abrahams (in press) that severely impacted on the credibility of data. Certification of deaths was a problem in terms of the process of completing the form. Of concern was the recording of the main/immediate causes of death and not the underlying causes. In the first instance, research had shown that where professionals were ill-equipped and unskilled in verifying the cause of death, this led to numerous cases of misclassified deaths that later became a growing body of ill-defined causes of death (Van der Merwe, Yach & Metcalf 1991; Wigton 1999; Bradshaw et al 2005).

Van der Merwe et al (1991) concluded that the two major reasons for the high number of ill-defined deaths were the high number of deaths certified by the police and, in the absence of a medical practitioner to oversee the certification, being classified as natural deaths. Secondly, medical practitioners noted the mechanism of death on many of the death certificates instead of the direct or underlying cause of death, even though that information was known at the time of the death certification.

Andersson and Marks (1988: 669), writing about their report to the WHO on *Apartheid and Health* in South Africa in early 1981, noted "the absence of basic statistical data (births and deaths) for the entire country, or any confident inferences about mortality". Five years later, in 1986, the *status quo* remained the same. The Browne Commission of Inquiry (1986) described South African health information "as generally inadequate in both quality and quantity" and that there were no "serious attempts to obtain comprehensive birth and death registration". Nearly a quarter of a century later similar remarks still resonate, as evident from commentary by Dorrington et al (2004) on Census 2001 and how South Africa is unable to confidently use the generated information to produce reliable statistics on the U5MR.

Furthermore, Andersson and Marks (1988) maintained that, as census reporting became more sophisticated, the bigger picture concerning mortality was more "obscure". In the previous political dispensation, blacks residing in some of the "homelands", better known as "Bantustans" (Transkei, Boputhatswana, Venda, and Ciskei) were omitted from the official figures because the homelands were regarded as "independent" by the apartheid government. This meant that "homeland" inhabitants were classified as "foreigners" as they were located outside the State's jurisdiction and were thus not entitled to claim any "wealth of the country". Many of these challenges persist but have taken on a different form and to some extent it still involves foreigners such as refugees and asylum-seekers. However, much of it also involves continued

under-reporting of births and deaths and misreporting about the causes of deaths of children, particularly in the under-five age group (Abrahams in press).

c) Misclassification – Ill-defined causes of death
Ill-defined causes of death were seen as problematic when trying to establish a comprehensive understanding of deaths. Misclassification of the causes of deaths leads to a skewed representation of an overall profile of deaths (Bradshaw et al 2005). Causes of child deaths were subjected to both these issues and posed a huge problem, as illustrated by Van der Merwe, Yach and Metcalf (1991). Their study focused primarily on adult deaths within the public health sector, the majority of which were ill-defined. Yet the sum total of ill-defined deaths in the under-five age group was 53.9% for coloureds and 48.4% for blacks – far greater than the older age groupings.

During the study period, the police certified 50% of the deaths in Port Elizabeth, of which the main cause of death was "natural causes", making up 36.7% of all deaths. In those deaths certified by medical practitioners, the cause of death was not adequately stated in 25.9% of the cases studied. In 25% of all medically-certified deaths, the mechanism, as opposed to the cause, of death was noted, for example cardiac arrest. Ninety-two percent of the autopsies conducted by the police at the time of this study had outstanding information on the cause of death.

This study points to the huge problem incurred due to misclassification. As indicated earlier, Van der Merwe et al (1991) concluded that the major reasons for the high number of ill-defined deaths were the high number of police-certified deaths, very often classified as natural in the absence of a medical practitioner, and because medical practitioners noted the mechanism of death on many of the death certificates instead of the direct or underlying cause of death. Their study also points out that police officers were not appropriately trained to note the correct cause of death, yet were expected to do so. Hence police officers at times noted "jondis" and in some instances measles after querying if the child had a rash at the time of death.

In essence, an improvement in South Africa's vital registration system is crucial if we are to produce credible statistics, such as the IMR. The information system forms but one component of the public health system in which many children have found their unfortunate demise. The following section describes other aspects of the public health service that impact on the survival of children.

6.3 Infrastructure – Public Health Service

The Perinatal Problem Identification Programme, which yielded information on confidential enquiries into perinatal deaths, has attempted to shed light on the magnitude of the problem and the reasons why these babies have died. An important outcome of these surveys was the insights gained on the health system failures as key contributory factors in the cause of many of the deaths that could easily had been prevented (MRC Unit for Maternal and Infant Health Care Strategies, PPIP Users & National Department of Health 2003). A positive outcome of the PPIP was the attempt to link to the system that houses essential information on the mother through the National Committee on the Confidential Enquiry into Maternal Deaths in South Africa.

The systemic failures identified by the PPIP have been attributed to poor quality of health care provided, lack of access to appropriate health care and the unavailability of care in the majority of cases (Pattinson 2000, 2003a, 2003b). The U5PIP produced similar results (Krug et al 2004a, 2004b). What Krug et al (2004a, 2004b) also highlighted was the poor interface between primary and secondary levels of care. Abrahams' review (in press) noted that a shortcoming of the U5PIP was the heavy

reliance on 'road to health' cards (RTHC) as a proxy measure for the type and quality of care rendered at a primary health care (PHC) level. There was thus a danger of creating strong vertical child health programmes at the expense of strengthening the health system in general.

Part E: RESPONSES TO CHILD SURVIVAL

7. Variety of responses, from international to local levels

A child's death evokes a level of unease in people irrespective of the relation to the deceased child and has been regarded as the second highest stressful event in the life of any person (http://www.success.net.au). The responses to child deaths globally varied from actual commitments made at an international and regional level through to the ratification of treaties and goals by States, pledging to improve child survival prospects actively, and national and local level child death inquiries, like the Climbié Inquiry (Lord Laming 2003) and reviews (Bowes 1998; Zachariak 1998; Onwuachi-Saunders, Forjuoh, West & Brooks 1999; Alcalde & Elster 2002; Child Death Review Committee 2002-2003; Webster et al 2003), as well as the implementation of child survival programmes. Throughout each of these responses, research has played an important contributory role.

7.1 International goals and treaties

There are a number of international human rights instruments that have a direct bearing on child survival outcomes at a country level. Internationally accepted goals were subsequently linked to many of these treaties with the emphasis on enhancing child survival by reducing child deaths within and across countries. A select few that have focused specifically on child survival have been chosen for the purposes of this discussion:

a) United Nations Convention on the Rights of the Child (CRC)
The CRC is underpinned by four general principles, namely: non-discrimination (Article 2); the best interest of the child principle (Article 3); the right to maximum survival and development (Article 6); and child participation (Article 12). The ratification of the CRC places important responsibilities on a range of duty-bearers, including planners and implementers of child health services. Article 24 (2) (a) of the CRC, "recognises the right of the child to the enjoyment of the highest attainable standard of health" and stipulates the obligations of states parties to reduce infant and child mortality and combat disease and malnutrition (Office of the High Commissioner for Human Rights 1989). All the CRC articles are indivisible and interdependent. Hence Article 24 needs to be considered with regard to the four general principles stated previously and at least 15 other articles that refer to a range of issues, such as parental guidance (Article 5) and the protection of children against violence, exploitation and abuse (Articles 34, 35, 36).

b) World Summit Goals
The World Summit on Children and the Millennium Declaration Summit identified specific goals for reducing child mortality but only for those children younger than five years old. The infant mortality, under-five mortality and the child mortality rates were developed as prime indicators for monitoring deaths of children under-five years. These indicators became synonymous with analysing child survival prospects.

The World Summit required each country to reduce their IMR and U5MR by one-third by 2000. The major goals for child survival in the World Summit formed part of goals aimed at the protection and development of children. Other sectoral goals that supported this included: women's health and education; nutrition, water and sanitation; and children in especially difficult circumstances. These goals were formulated through a broad consultative process internationally.

c) Millennium Development Goals
"In September 2000, at the United Nations Millennium Summit, world leaders agreed to a set of time-bound and measurable goals and targets for combating poverty, hunger, disease, illiteracy, environmental degradation and discrimination against women" (UN 2002). What evolved out of this was the Millennium Development Goals (MDGs), to be achieved by 2015. The MDGs have been described as the key to implementing the Millennium Declaration and a framework for measuring progress in human development. Child survival was identified as one of the important goals to achieve. The relevant MDG requires each country to reduce their IMR and U5MR by two-thirds between 1999 and 2015.

Box 5: Millennium Development Goal 4: Reduce child mortality

This goal is directly linked to Articles 6 and 24 (paragraph 2.a.) of the CRC and Article 12 (paragraph 2a) of the International Covenant on Economic, Social and Cultural Rights (ICESCR).
Target 5: (1990 – 2015)
Two-thirds reduction in the U5MR
Indicators:
U5MR, IMR, proportion of one-year-old children immunised against measles

7.2 Regional goals and treaties

On the African continent, several countries, including South Africa, have committed themselves to eradicating poverty through the African Charter on the Rights and Welfare of the Child, and their allegiance to the New Partnership for Africa's Development (NEPAD). The purpose of NEPAD was to "create structures which can lead to the social and economic transformation of the continent" (Noor 2002). One specific NEPAD objective for 2015 is to reduce the infant mortality rate by two-thirds and halve the proportion of people living in extreme poverty.

7.3 Country-level responses

The prevention of child deaths is considered to be the responsibility of civil society, agencies and Government (Bowes 1998; Zachariak 1998). Various methodologies for dealing with child deaths have evolved over time. Governments' and civil societies' response to child deaths is usually one of shock and alarm. This is followed by a need to remedy the situation and intervene either formally or informally. The death of Victoria Climbié in the United Kingdom illustrates this.

Box 6: The Climbié Inquiry, United Kingdom

Victoria Climbié was an eight-year-old girl from West Africa who went to live with her aunt in the United Kingdom (UK). She died of hypothermia within a year of staying in the UK. Prior to her death, she was officially known to three London authorities and a series of professionals as she sustained numerous physical injuries. A formal investigation was launched into Victoria's death, which later became well known as the Climbié Inquiry (Lord Laming 2003).

The British government has subsequently published a Green Paper, *Every Child Matters* (Department of Education and Skills 2003). Prime Minister Tony Blair publicly proclaimed that the intention of the Green Paper was not just to reform and improve care for children but to "maximize the opportunities open to them" and "to improve their life chances, to change the odds in their favour" (Department of Education and Skills 2003). This highlights the positive aspects that can arise from an inquiry into child deaths.

A growing trend to review child deaths and the causal factors related to them through formal structures has emerged internationally (Bowes 1998; Zachariak 1998; Onwuachi-Saunders et al 1999; Alcalde & Elster 2002; Child Death Review Committee 2002 – 2003; Webster et al 2003). The establishment of child death inquiries and review teams at a national level has predominantly occurred in more-developed countries such as Australia, New Zealand, the United States of America and Canada (Bowes 1998: Zachariak 1998, Onwuachi-Saunders et al 1999; Child Death Review Committee 2002 – 2003; Webster et al 2003).

Child death reviews/inquiries have been described as a "mechanism to more accurately describe the causes and circumstances of death among children" (Webster et al 2003: 58). Most child death review teams are multi-disciplinary and multi-agency in nature (Bowes 1998; Zachariak 1998; Onwuachi-Saunders et al 1999). Child death inquiries are not concerned with assigning blame but are rather aimed at improving service delivery (systems), thus working towards achieving better outcomes for children and young people (Munro 1996, in Bowes 1998). In most instances, there is an inquiry into the death of each child where maltreatment and/or abuse has occurred or was suspected, (Webster et al 2003).

These inquiries are used to identify "best practice" models and to learn from bad outcomes. In America, fatality reviews were established to "identify failures or oversights in care, gaps in the service, trends and patterns and systems weaknesses; properly classify causes of deaths, have a judicial impact on specific causes of child deaths and improve accurate counting and reporting of maternal deaths" (Alcalde & Elster 2002: 1). The information yielded is used to inform practice. Such inquiries are considered to be a quality assurance technique and are regarded as valuable diagnostic tools. The purpose is to move beyond problem identification towards finding solutions (Bowes 1998; Zachariak 1998).

The Philadelphia Interdisciplinary Youth Fatality Review Team in America has called their child death review process a "gold mine" with a "public health mission to prevent youth mortality and promote a healthy lifestyle" (Onwuachi-Saunders et al 1999: 278). Their child death review process is unique since it is linked to Philadelphia's violence prevention and peace promotion initiative. The review and analysis of child deaths provide a better understanding of strategies for prevention. In addition, barriers and enabling factors surrounding the children's deaths are identified. Not only are such factors important for intervention strategies, they are also incorporated into decision-making about the efficient use of resources. The emphasis has therefore shifted towards a public health approach in which strategies are devised that would benefit the population at large (Ibid).

The success of child death reviews has been linked to legislation endorsed by national governments. New South Wales (Australia) has recently amended their child death review team legislation, known as Commission for Children and Young People Amendment Act 2003, Number 26. This Act was amended on the basis of input from children and young people in the country. The findings produced from national inquiries into child deaths have proven to be most beneficial. According to the annual report of

West Australia's Child Death Review Committee (2003), the review by the Child Death Review Team of reported deaths showed that the family of the deceased child experienced a myriad of problems that included family violence, financial difficulties and homelessness. This highlighted the need for holistic assessment of the family unit (family as client) and understanding the needs of the family unit. The recommendations from the report were thus focused on improving or modifying policies, procedures and organisational systems.

The human rights treaties and goals that have a bearing on child survival in South Africa will be discussed further in the next section.

7.4 South Africa's responses

What has South Africa's position been in relation to the aforementioned international and regional goals and treaties, as well as responses from other countries? How has the South African government responded to child survival to date?

a) Internationally linked responses
In South Africa, the key global treaties and goals that shape the country's commitment to child survival include the United Nations Convention on the Rights of the Child (CRC), the African Charter on the Rights and Welfare of the Child, the World Summit Goals and the Millennium Development Goals. The South African government expressed its commitment to enhancing child survival by ratifying the CRC and by pledging its support for the goals identified at the World Summit for Children and in the Millennium Declaration.

Prof. R.C. Pattinson rightfully stated in the *Saving Babies 2003* report (MRC Unit for Maternal and Infant Health Care Strategies, PPIP Users & National Department of Health 2003) that political will was required to bring about the desired changes to prevent more babies dying within the public health domain.

The same sentiment goes for ensuring that more lives of children of all ages in South Africa are saved. By adopting the Millennium Development Goals, South Africa has undertaken to improve the survival prospects of its children substantially within the next decade. So far, South Africa's progress towards the MDG goal of reducing child mortality (Goal 4) has been slow, as revealed by *The State of the World's Children 2006.* The country was ranked in this report in the bottom third in terms of levels of child mortality (UNICEF 2005). This is in sharp contrast to countries such as Brazil and Mexico that have comparable income levels and yet have managed nearly to halve their under-five mortality rate.

These figures contradict the optimism conveyed by the Minister of Health's briefing at Parliament on International Woman's Day this year, where she maintained that "*the main factors impacting on maternal deaths as well as infant and child mortality are being attested and as a result the infant and child mortality, including maternal death rates are decreasing year after year*" (Tshabalala-Msimang 2006: 3). The denialism around the HIV/AIDS pandemic and South Africa's poor child survival prospects is no more evident than in media coverage on these issues, as in the case of Lagerdien's opinion-editorial referred to previously. Nonetheless, the responses to child survival in South Africa warrant further investigation. The section that follows begins to explore what these responses have amounted to.

b) Regionally linked responses
On the African continent, South Africa reinforced its child survival commitments by adopting the African Charter on the Rights and Welfare of the Child and the NEPAD agreement, discussed above.

7.4.1 Legislation

This section provides a historical look at the legislative and structural developments in South Africa, which is helpful in judging how the country has responded to calls for enhancing child survival.
The South African Constitution is regarded as one of the most progressive, pro-poor constitutions in the world. It draws on many of the principles of key international human rights instruments, like the CRC. The Constitution assures children's entitlement to health and health care, thus obligating decision-makers and service providers to give priority and explicit attention to children in all health endeavours. Furthermore, the Constitution affirms children's right to life, survival and development. The right to life was clearly stipulated in Section 11 ("everyone has the right to life") in the Constitution, supported by Article 6 of the CRC (see Box 2 on page 11).

Section 28 (2) (c) of the Constitution was drafted as a dedicated section for furthering children's socio-economic rights and specifies that, "Every child a has a right to basic nutrition, shelter, basic health care services and social services…..". This particular section of the Constitution has often been referred to as the 'Bill of Rights for Children'.

After the first democratic elections, former President Nelson Mandela committed the country to the first National Programme of Action for children, also known as the NPA framework (1996). The NPA identified seven policy cluster areas, namely: nutrition; child health and maternal health; water and sanitation; early childhood development and basic education; social welfare development; leisure and cultural activities; and child protection measures.

A year later, South Africa ratified the CRC and in 1997 the government submitted the initial country report to the UN Committee on the Rights of the Child. The report covered the achievements made to realise the right to life, survival and development. With regard to the right to survival and development, the report noted children's civil and political rights (Section 11) as well as socio-economic rights (Section 28 (2) (c)) as stipulated in the Constitution (Bill of Rights), bringing into effect a child's right to survival and development. Furthermore, it was also noted that the Reconstruction and Development Programme had identified a "*first call for children*" along with various presidential lead projects, which included:

- Housing
- Water and sanitation
- Electrification
- Health care services
- Primary school nutrition
- Clinic-building programmes
- HIV/AIDS awareness and prevention

In addition, free health care was made available to pregnant and lactating women as well as children under the age of six years at primary, secondary and tertiary levels of care at public health facilities. Free primary care was also made available to all South Africa residents at public health facilities (NPA 1997). Three years later, a supplementary report was submitted in January 2000 when the country delegation made an oral presentation to the UN Committee. The year 2004 marked the seventh anniversary of South Africa's ratification of the CRC, and the country was expected to

deliver its second progress report in 2005 to the UN Committee on the Rights of the Child. To date it is unclear as to whether a report has been delivered to the UN Committee.

After 1994, the Government of National Unity created several systems and structures such as the South African Human Rights Commission, the Office on the Rights of the Child, the Commission on Gender Equality and the Youth Commission, all of which focus on child rights in various ways. Furthermore new laws specific to the Department of Health have been introduced, such as the National Health Act (2004), as well as the establishment of a specific directorate, namely the Maternal, Child and Woman's Health Directorate.

Even though children are a key focus in the transformation of South Africa's health sector, inequities in access to health care persist. The lack of child death data should be regarded as one of the huge inequities that exist in the country. The collation of child death data is thus important. The information yielded from such data can be used to advocate for equity and to bring about policy reform. If equity is to be a priority in the design of child survival interventions and delivery strategies, mechanisms must be developed to ensure accountability at national and international levels (Victora et al 2003). One such mechanism that can contribute to the design of such interventions and delivery strategies is the Millennium Development Goals (MDGs).

Other key pieces of legislation having a bearing on the survival of children, including the Choice of Termination of Pregnancy Act (1996) – which prevents maternal deaths due to unsafe abortions – as well as the Birth and Death Registration Act (1992) and the Firearms Control Act (2003).

A key development was the decentralisation of services through the District Health System and the provision of free health care for pregnant and lactating women and children under-six years of age. This has recently been extended to people with disabilities.

7.4.2 Policy and programmes

a) Health sector

It is important to note that in South Africa, maternal deaths have been notifiable since the enactment of the National Health Policy Act No. 116 of 1990. The Maternal, Child and Women's Health (MCWH) sub-directorates in the provincial Departments of Health collate all maternal death notification forms. A provincial assessor then assesses each death and compiles a report that is forwarded to the National Committee on Confidential Enquiries into Maternal Deaths (NCCEMD). "The NCCEMD was established to determine where breakdowns in the health system are occurring, which in turn will allow for remedial action" (NCCEMD 2000: 367). There are currently no formal structures nationally on the same scale as the NCCEMD to review child deaths. The Perinatal Problem Identification Programme and the Under-five Problem Identification Programme are facility-based mortality audit systems located at selected public health hospitals and clinics. Inquisitions on children's deaths due to intentional injuries are also done. The role of information systems and vital registration in contributing to a better understanding of child deaths nationally will be discussed later.

Child survival programmes in particular are primarily located within the health sector, and consist of a limited set of interventions that had proven to be effective and could be conducted with a limited set of resources. This approach has become commonly known as "selective primary health care" (Walsh & Warren 1979, in Claeson & Waldman 2000). The programmes that fall under this umbrella term of child survival include: the WHO's Expanded Programme on Immunisation; a programme to control

diarrhoeal disease; and UNICEF's so-called GOBI interventions made up of growth monitoring, oral rehydration therapy, breastfeeding promotion and immunisation. Later, nutrition, family planning and female education were added to the GOBI interventions list.
In 2005, the World Health Organisation released *The World Health Report. Make every mother and child count,* where, in Chapter 6 – Redesigning child care: survival, growth and development (2005:115), a list of core interventions to improve child survival were identified (see Box 7 below).

Box 7: Core interventions

- ☑ Nurturing newborns and their mothers
- ☑ Infant feeding
- ☑ Vital vaccines
- ☑ Combating diarrhea
- ☑ Combating pneumonia and sepsis
- ☑ Combating malaria
- ☑ Prevention and care for HIV

Source: World Health Organisation (2005) *The World Health Report 2005. Make every mother and child count.* Geneva: World Health Organisation.

The South African Health Department has implemented all of the interventions listed above. The Bellagio Child Survival Study Group has identified 23 child survival interventions (see Appendix II) that are seriously considered to be able to prevent many of the childhood deaths in countries that account for 90% of the world's under-five mortality (Jones, Steketee, Black, Bhutta & Morris 2003). The table in Appendix II was drafted to illustrate what these interventions are and these were cross-checked against South Africa's response to see whether they were implemented within the public health system.

The South African government has successfully introduced most of these initiatives within a primary health care approach. Subsequent policies and programmes have been developed at a national and provincial level to put into effect these typical child survival initiatives. It is beyond the scope of this document to go into any great detail about all of these initiatives, let alone their effectiveness. What has been described in this paper broadly covers the interventions that have been put in place by the Department of Health and, where relevant, policies and programmes in other sectors that are relevant to child survival, along with research to substantiate the effectiveness of these initiatives.

The National Department of Health Strategic Framework (1999 – 2004) elaborated on the rights to survival and development (CRC, Constitution) through their ten-point plan to reduce "mortality and morbidity rates through strategic interventions", (Department of Health 1999). A number of programmes to improve child and adolescent health – and thereby the survival rates of these groups – have been implemented. These include: Breastfeeding Promotion: kangaroo mother care; the Expanded Programme on Immunisation; the National School Nutrition Programme; the Integrated Management of Childhood Illness (IMCI); Prevention of mother-to-child transmission (PMTCT) Programme; the National Adolescent-Friendly Clinic Initiative (NAFCI); and a wide spectrum of curative and rehabilitative health care services, all with the potential of enhancing child survival. The successes of these programmes to date vary. For instance, Immunisation coverage rates have improved (SADHS 1998) but measles notification has dropped; there are no known cases of neonatal tetanus and the eradication of poliomyelitis is on the horizon.

A key health development was the decentralisation of services through the District Health System. This system was rooted in a primary health care approach and housed most of the child survival initiatives. Free health care for pregnant women, for children under-six years and for people with disabilities was another important policy decision taken by the government to ensure a measure of equity for those considered as the most needy and vulnerable. So the question that again comes to mind is: Why are South Africa's children still dying at such an alarming rate? What are the fundamental problems, from a systems perspective, that cause children to die at the rates discussed earlier?

b) Recommendations based on research studies

The review of literature on child deaths in South Africa by Abrahams (in press) identified particular themes around the recommendations made by researchers and academics from the old to the new political dispensation to improve child survival. What was evident from many of the recommendations was that there was nothing novel about them. Instead they were repeated decade after decade. The review indicated that many of the traditional child survival interventions were recommended as noteworthy programmes to be implemented where research identified areas of need (Kark & Cassel 1952; Krynauw 1983; Yach & Botha 1986a; Yach et al 1987; Bachman, London & Barron 1996; Meel 2003; Pattinson 2003a, 2003b; Chopra, Patel, Cloete, Sanders & Peterson 2005).

The *Saving Babies 2003* report's recommendations (MRC Unit for Maternal and Infant Health Care Strategies, PPIP Users & National Department of Health 2003) were compiled in collaboration with the National Committee on the Confidential Enquiry into Maternal Deaths (NCCEMD) and focused on health system issues (e.g. access to appropriate and adequate care, training, capacity building, improving referral systems, development of norms and standards as well as clinical protocols, mortality audits) and health education. What was quite evident from the recommendations and implementation strategy proposed was the attempt to link health system management of the mother and the baby. However, given the high prevalence of HIV/AIDS among women of reproductive age, a glaring gap was strategies to incorporate PMTCT.

Furthermore, the evidence presented indicated quite clearly that inequities resulted once again in masked difference in mortality rates: this time of babies across the urban-rural divide as well as intra-urban variations. The areas where the perinatal mortality rate, national neonatal death rate and stillbirth rate were higher were synonymous with poor socio-economic conditions. Yet, recommendations described in the *Saving Babies 2003* report were located within a medical model regime, which in itself is fundamental but not adequate or sustainable unless combined with options that address the social determinants of health too. Such provisions would be in keeping with a primary health care approach and the sentiments of the Alma Atta Charter. These provisions also link to the practical suggestions made by Kark and Cassel (1952) more than a half a century ago.

c) Other sectors

Other sector developments worthy of note that aid the fight for child survival were the Department of Water and Forestry's Free Basic Water policy and the Department of Social Development's Social Security System, to mention but two. Dr. Maylene Shung-King, acting director of the Children's Institute, at the launch of UNICEF's *State of the World's Children 2006* report*,* welcomed the advances made by the Department of Social Development in trying to reduce poverty levels in children by extending access to the Child Support Grant. She highlighted, however, that 1.9 million children who are currently eligible still do not have access to this grant (Shung-King 2006). Lack of documentation such as birth certificates was noted as the primary reason for the

ineligibility and delay in access to the grant. Yet, the right to a name and identity is stipulated in the Constitution as the most basic civil right that children are entitled to (Constitution of the Republic of South Africa 1996). There is a need to address these issues as a matter of urgency in the context of a comprehensive national poverty alleviation strategy.

Part F: PROSPECTS FOR ENHANCING CHILD SURVIVAL

8. The challenges

8.1 Whose responsibility is it?

A paper produced for the recently held conference *Countdown 2015: Tracking Progress in Child Survival* in London, looked closely at the issue of accountability (Buse, Behague, McCoy & Walt 2005) as both a reactive and proactive approach. The former was regarded more as a punitive means (Brinkerhoff 2004, in Buse et al 2005) as it could lead to inaction. The latter approach was seen more as a means of transforming relationships between decision-makers and those affected by the outcome of those decisions (Blagescu et al 2005, in Buse et al 2005). The actors that Buse et al (2005) identified as those that should be held accountable were largely based in the health sector. However, the *Spheres of Influence* model presented at the start of this discussion opens up new opportunities to rethink the accountability framework suggested by Buse et al (2005) because that model suggests that the accountability lies across sectors and departments, with the child at the centre.

Nonetheless, the root of all problems with accountability and the lack of an integrated plan has been that the Department of Health continued to be viewed as the *de facto* primary duty-bearer for ensuring that the nation's children do not die. However, most of the required interventions to improve child survival and enhance well-being lie with other sectors that do not understand their contributory role. Indeed, it could be said that many do not even recognise themselves as duty-bearers for children's rights. For example, many deaths of young children are still due to the lack of basic service provision such as water and sanitation. Health service provision, access and quality are highly inequitable across the country.

Developing equitable interventions that apply practically to individuals and groups across the country is even more challenging, given the rural–urban divide and socio-economic inequalities. The HIV/AIDS pandemic adds to the magnitude of challenges. The next section attempts to capture these challenges more succinctly.

8.2 What are the key challenges?

Work currently underway at the Children's Institute[7] has identified many of the challenges that the government face in responding to child survival. The challenges identified were as follows (Lagerdien 2005a; 2005b):

a) HIV/AIDS
The HIV/AIDS pandemic has impacted directly on child survival.

b) Co-ordinated planning and service provision

[7] Review of child deaths in South Africa: 10 years post democracy; *Project 28* – includes a policy review on rights to basic health care services for children and its related indicates; *The Means to Live*: A project to evaluate the targeting of poverty alleviation as it affects children living in poverty.

Joint planning is essential. Just as important is considering whether dedicated versus integrated programmes (1) are more sustainable and (2) will have the desired impact of actively reducing the number of child deaths in South Africa.
Integrated Development Plans (IDPs) are under-utilised as mechanisms for addressing the child at a municipal level. A recent review of selected IDPs in nine provinces in the country by the Health Systems Trust revealed that almost all of the IDPs had little or no emphasis on health, let alone child health (Moodaley 2004).

c) Intersectoral collaboration
Rendering sustainable interventions for child survival would involve creative participation. This would entail intersectoral collaboration between government departments, civil society and the international community to work towards a coherent, unified sectoral response to child survival.

d) Holding duty-bearers accountable
Holding other sectors accountable for interventions that impact on child survival could possibly provide the key to better child well-being outcomes. This would entail clearly identifying the obligations of Government and other service providers towards ensuring child survival, and ensuring that these duty-bearers understand what is required in terms of the CRC and Constitution, and the use of child impact assessments.

e) Evidence-based planning and practise
There is a continued need for developing evidence to support sustainable interventions that are cost effective, efficient and beneficial. Further investigations are required to review the current child survival interventions by examining the manner in which they are being delivered and ascertaining whether a targeted or universal approach would be best suited to the needs of the nation's children. Victora et al (2003) have written at length about the inequities in health and the pros and cons in relation to a targeted or a universal coverage of core child survival interventions.

The value of conducting research to gain insights into the mortality of children has long been recognised (Krynauw 1983). However, cost implications, time and experienced personnel were key factors that made conducting primary research at a population level challenging and often impractical/unrealistic (Abrahams in press).

f) Provision of basic services
Child mortality rates in South Africa are on the increase. The main cause of death remains the lack of provision of basic services such as water and sanitation – in spite of the government's Free Basic Water policy. Since 2001, the State has instituted a national provision to fulfil the right to water by supplying 6 kilolitres of free, clean water per household per month. However, access to water is more than just supply; it involves access to safe, convenient, affordable and sufficient water. Another important consideration was that access to sanitation should not merely be improved but also should be adequate. Improved sanitation may only refer to pit latrines that are often "shared with other households and poorly maintained" (Satterwaite 2003: 36). Access to, and quality of, health service provision continued to be highly inequitable across the country.

g) Addressing inequities
Developing equitable interventions that apply practically to an individual, group and population level across the country is even more challenging given the rural–urban divide and differences in socio-economic status.

h) Monitoring and evaluation
Improving service delivery, monitoring and evaluation, reporting mechanisms and statistics are all self-evident, since the information on child deaths is poor with high levels of under-reporting.

i) Information systems
The role of information systems in relation to child mortality has been shown to be vital. There are currently no formal structures nationally to review child deaths in a co-ordinated manner. No uniform database exists to collate information on child deaths in South Africa. Furthermore, the criteria for defining and collecting the data vary between agencies.

j) Quality of child death data
Bradshaw et al (2005) stipulated that the quality of mortality data**,** including the poor registration of child deaths, would need to be improved. Improved information that would provide ongoing monitoring of progress was essential from the national level right down to a health-district level. Furthermore, the medical certification on the causes of death and manner of death in terms of injuries would need to be improved substantially.

9. Conclusion

This discussion paper has attempted to present the extent and key causes of child deaths in South Africa. The discussion elaborated somewhat on the contributory factors of child deaths and the subsequent responses to remediate child survival.

While the Department of Health has a leading role to play, given the multi-factoral nature of child deaths, a well-co-ordinated intersectoral approach to reducing child deaths is desperately required. The response to child deaths from the South African government has been sporadic and un-co-ordinated. Of concern is that there is no comprehensive cross-departmental response to child deaths from the South African government. And, despite the government's commitments to international and regional treaties and goals discussed earlier, and the South African Constitution guaranteeing children's right to survival, the government has no comprehensive plan to reach the Millennium Development Goal for child survival by 2015. (There are however attempts to address aspects of this goal within and between departments and sectors, for example by the Department of Social Development through the social security system (Care Dependency Grant, Child Support Grant, Foster Child Grant) and important legislation, such as the Children's Bill, provides a safety-net and is aimed at furthering the well-being of all children in South Africa.) The statistics on child deaths, however, are not used in formulating unified responses. Given the complex and disparate data available, alluded to previously in this paper, it becomes difficult to track if and how statistics related to child survival are in fact being used, and whether these are interpreted appropriately.

Despite the South African government's pledge to ensure the survival, safety and protection of the nation's children through the ratification of the treaties and goals mentioned earlier, there are currently no formal structures nationally to review child deaths. The Confidential Inquiry managed by the National Council for the Confidential Enquiry into Maternal Deaths (NCCEMD) only reviews maternal deaths. Currently child deaths statistics are collated by both governmental (StatsSA) and non-governmental agencies (Medical Research Council Burden of Disease Study and NIMSS). Hence a range of data from different sources is available but these are not co-ordinated.

The recommendations that have been made in previous research studies – and the mission of the *Child Survival Project* – are in line with the position taken at an international level that calls for integrated approaches. Firstly, to deal efficiently with the changing array of problems (extent and causes of deaths) that need attention; and secondly, to broaden the focus of care from the child's survival to its growth and development, as this is what is required from a public health point of view. It is also what families expect (Bhutta 2004; Buse et al 2005). We would like to take this suggested broader focus one step further by recommending tackling the issue of child deaths and survival from a child rights perspective and by reinforcing the principle of "children first", which places the responsibility on all duty-bearers.

In summary, the key problems relate to the piecemeal nature of the information on child death data and the difficulties with the systematic collection and analysis of nationwide data. Furthermore, the contributing factors related to children's deaths are important to consider in developing a coherent picture of child mortality. As discussed previously, the underlying causes of the majority of child deaths are embedded within the social determinants of health and systems failure.

President Mbeki has spoken often about new prospects for shared growth. Dr. Maylene Shung-King, acting director at the Children's Institute, concurred in her keynote address at UNICEF's launch of *The State of the World's Children 2006*. But Dr. Shung-King went further by pointing out that the economy cannot continue to grow without investing in its children. She stressed the fact that South Africa is a politically stable, middle-income country with the necessary resources, skills base and commitment in civil society and the government to deliver on its obligations to all people, including its children. Her sentiments were clear: The country has the potential to deliver far more than what is currently in place; therefore, the 'Age of Hope' needs to be met with action.

Children are citizens with their own specific rights and needs and should not be sentimentalised objects of social care, blame or indifference. The twentieth century saw great strides in the development of social movements that opposed domination and injustice based on race and gender. It may be the task of the twenty-first century to recognise the "excluded and invisible" (UNICEF 2005), especially those groups whose poverty and invisibility rob them also of their citizenship and rights.

Writing on the challenge of sustainable child health in developing countries in a recent journal article, *Beyond Bellagio,* Zhulfika Bhutta (2004: 483), a prominent writer on child health and survival, remarked: "*In order to make a meaningful contribution to maternal and child health and survival, a multi-pronged approach is needed which not only focuses on the proximal determinants of child health but also some of the underlying factors governing the status of women on society and expenditures on health and development*."

Enhancing children's prospects for survival in South Africa requires a comprehensive, multi-pronged approach that would be rooted in the realisation of children's socio-economic, as well as their civil and political rights. A strong call for a parliamentary inquiry into child survival has been made in this document; this is but one of the many levels of responses that can be taken forward. The recommendations set out in the next section are in line with the National Programme of Action for children (1996) framework and the government's commitment to implementing its "first call for children" – a principle expressed in the Reconstruction and Development Plan as well. The NPA was not seen as a separate plan for children; rather it was regarded as "an integration

of all the policies and plans developed by government departments and NGOs to promote the rights of children as embodied in the Convention" (NPA 1997: 17).

10. Recommendations

What are the responses that are required to address these challenges?

I. Advocate and lobby for the "first call for children"

- Revive duty-bearers' understanding of, and obligations as a country to, the CRC and the Constitution.
- Raise general awareness of why and how children should be prioritised.
- Understand child survival within context (child well-being and the relation to socio-economic rights).

II. Co-ordinated planning and service provision

- Create child-centred and sustainable policies and programmes across government departments in an effort to address child survival and well-being more holistically, including budgeting (apply child impact assessments).
- Poor socio-economic conditions and a lack of basic services provision exacerbate the main causes of child deaths; hence poverty and inequity need to be addressed. The rendering of basic services is thus crucial.

III. Accountability

- Government departments should be held accountable for interventions that impact on child survival. This process could be aided by clearly identifying their obligations towards ensuring child survival in terms of the CRC and the Constitution. Local government plays an essential role in this regard, particularly in setting up Integrated Development Plans for towns and cities.
- Parliament – Call for an annual Child Survival Inquiry: This would create an opportunity to hold government departments accountable and to report on their duties to enhance child survival. Such an annual inquiry would also provide civil society with the opportunity to raise concerns about the unacceptably high number of child deaths in the country. These suggestions are clearly in line with proposals by Buse et al (2005) for mechanisms for accountability in reaching the MDG for child survival. Hence "it changes the focus from merely the delivery of results to the process of decision-making in multiple arenas. Because the determinants of child survival are many and operate at multiple levels, both reactive and proactive systems of accountability affect many actors" (Buse et al 2005: 2-3).

IV. Monitoring and evaluation mechanism

- Improved information and ongoing monitoring of progress in reducing child deaths.
- Both the reporting mechanisms and the quality of child death statistics would need to be improved. For example, police records should provide more detail regarding the characteristics of the victims and the perpetrators, such as the types of gun used in a homicide. Improved information will enable more informed public debate and policy development (Wigton 1999).

V. Develop an integrated plan for child survival

Linked to the plan should be an Integrated Child Survival Strategy targeted at different levels, namely:

- All government departments – Develop and/or refine Integrated Plans across all levels of governments and sectors (including the Department of Provincial and

Local Government). This would be in keeping with other initiatives proposed for city-level interventions (Matzopoulos & Seedat 2005).
- Service delivery – Identify core interventions to improve child survival and which are linked to clear performance indicators.
- Intersectoral collaboration is vital to developing and implementing an effective integrated plan.

VI. Specific health interventions by the health sector
The following key health interventions should be strengthened and implemented effectively as they could avert many child deaths:
- Perinatal services
- PMTCT
- Health promotion initiatives to counter deaths that can easily be prevented

VII. Research
Develop an evidence base to identify and support sustainable interventions that are cost effective, efficient and beneficial.

It is clear from the recommendations above that South Africa needs a **unified and co-ordinated survival strategy for children** that would be binding on all duty-bearers. The following **essential levels of interventions** are required in South Africa to improve child survival prospects:

1. **Parliamentary inquiry into child survival.**
2. **Integrated national plan for child survival, thereby mainstreaming it across all sectors.**
3. **Incorporate child survival in all Integrated Development Plans at local government level.**
4. **Co-ordinated, quality data from different sources.**

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Appendix I

Sources of data

Official Sources

Census
Routine administrative systems via Department of Health, Home Affairs, Education, Social Development

Large National Surveys

South African Demographic Health Survey
October Household Survey

Localised Sources

Hospital Routine Systems
Local Authority – Health information systems

Research Studies

Agin-Court study
Hlabisa study
PPIP
U5PIP

Appendix II

INTERVENTION	SA RESPONSE
Preventive interventions	
Breastfeeding	Breastfeeding initiative, baby-friendly clinics
Insecticide-treated materials	N/A
Complementary feeding	Protein-Energy Malnutrition scheme, National School Nutrition Programme
Zinc	
Clean delivery	NCCEMD
Hib vaccine	Expanded Programme on Immunisation
Water, sanitation, hygiene	Free water
Antenatal steroids	
Newborn temperature management	
Vitamin A	Vitamin A supplementation, Food fortification, National School Nutrition Programme
Tetanus toxoid	
Nevirapine and replacement feeding	PMTCT programme
Antibiotics for premature rupture of membranes	
Measles vaccine	Expanded Programme on Immunisation, measles campaign
Antimalarial intermittent preventive treatment in pregnancy	
Treatment interventions	
Oral rehydration therapy	Integrated Management of Childhood Illness
Antibiotics for sepsis	
Antibiotics for pneumonia	Integrated Management of Childhood Illness
Antimalarials	
Zinc	
Newborn resuscitation	
Antibiotics for dysentery	Integrated Management of Childhood Illness
Vitamin A	Vitamin A supplementation, Food fortification, National School Nutrition Programme

Appendix III

Questions to consider for the roundtable discussion

Some key questions were considered namely;

- What information is currently available on child deaths in South Africa to develop a comprehensive understanding of child deaths in the country?

And/combine:

- What information is currently available on child deaths in South Africa to effectively monitor and evaluate our Constitutional responsibilities (Article 28), obligations set forth in the United Nation's Convention on the Rights of the Child and in the 2015 Millennium Development Goals and the NEPAD goals on child survival (reduce U5MR and IMR by two-thirds)?

Developing a plan
How can a co-ordinated response be mustered to improve child survival in South Africa?
What discreet macro-level steps can be taken?

Data
How can we improve the quality of data and co-ordinate data?

Advocacy and lobbying
How to raise a civil society voice on this issue?

Levels of responses
Political – For Parliament to take evidence and issues seriously

Structures, law reform, policy
National government departments – within and across sectors & departments
Local government – IDPs

Service delivery
Bilateral agencies

Further research?
Funding

Appendix IV

Infant and child mortality by environmental factors (SADHS, 1998:105, Table 6.5)
(Neonatal, post-neonatal, infant, child, and under-five mortality rates for the ten-year period preceding the survey by selected environmental factors, South Africa 1998)

Environmental factor	Neonatal mortality (NN)	Post-neonatal mortality (PNN)	Infant mortality (1q0)	Child mortality (4q1)	Under-five mortality (4q0)
Drinking water					
Piped	17.3	18.0	35.3	11.6	46.5
Other	25.0	39.0	64.0	27.7	89.9
Sanitation					
Flush	16.3	13.1	29.4	7.7	36.9
Latrine	20.2	25.2	45.4	15.0	59.7
Other	23.5	41.0	64.4	34.9	97.1
Floor type					
Sand/bare	23.2	39.3	62.5	28.0	88.8
Cement	20.2	25.6	45.9	16.8	61.9
Covered cement	15.9	11.9	27.8	7.2	34.8
Other	15.9	15.3	31.2	25.3	55.7
Wall type					
Mud/mud cement	21.7	41.3	63.0	24.5	85.9
Plastic/iron/prefab	18.2	26.6	44.8	21.9	65.8
Bare block/unfinished	17.6	19.8	37.4	8.2	45.3
Plastered	19.4	17.4	36.7	7.4	43.9
Other	22.5	12.2	34.7	24.8	58.6
Cooking fuel					
Electricity	16.2	11.3	27.4	4.4	31.7
Gas/paraffin	13.9	24.0	37.9	14.9	52.2
Wood/coal/dung/other	26.0	36.6	62.7	22.3	83.5
Total	**19.2**	**23.0**	**42.2**	**15.4**	**56.9**

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