



# **Western Cape Burden of Disease Reduction Project**

**Volume 7 of 7**

## **Decreasing the Burden of Childhood Disease**

**Final Report 2007**

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# **Burden of Disease in the Western Cape**

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# Contents

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Overview .....	3
Background: The situation of children in South Africa .....	3
Child mortality in the Western Cape .....	8
Causes and trends in child mortality.....	9
Risk factors for child mortality .....	11
Risk factors for specific diseases.....	13
Technical interventions focused on childhood diseases.....	20
Comprehensive interventions to reduce death from childhood diseases .....	24
Recommendations .....	29
References .....	37
Appendices:.....	40
Appendix 1: Malnutrition	
Appendix 2: Low birth weight	
Appendix 3: Diarrhoeal disease	
Appendix 4: Acute respiratory diseases	
Appendix 5: HIV/AIDS	

## Overview

### **Background: The situation of children in South Africa**

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South Africa has taken major steps towards improving the situation of its children since the dawn of democracy 13 years ago. These include the ratification of the UN Convention on the Rights of the Child (UNCRC) in 1995; the unconditional inclusion of basic socio-economic rights for children in the Constitution in the following year; and, more recently, the adoption of the Millennium Development Goals (MDGs). Mothers and children have access to free health care in the public sector and access to child care grants has improved. Moreover, we are experiencing almost unprecedented economic growth.

Yet, South Africa's children are getting sicker rather than healthier. The under-5 mortality rate (U5MR) has increased 60 per 1,000 live births in 1990 to 66 in 2003<sup>1</sup>. (The UNICEF figure for U-5MR is lower than that of the Actuarial Society of South Africa, which gives a figure of 100 for U5MR in 2002.) We are one of the few countries in the world where under-5 mortality is increasing rather than decreasing (along with some other Sub-Saharan African countries: Botswana, Swaziland, Zimbabwe, Kenya, and Cote d'Ivoire). Our performance in child survival is poor in comparison with other low- and middle-income countries, where U5MR is falling progressively<sup>2</sup>.

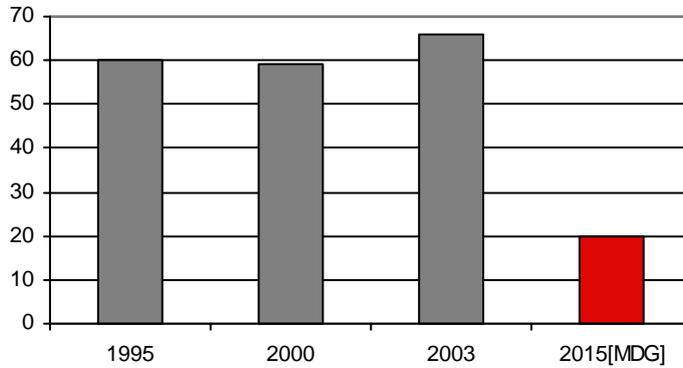
Our prospects for reaching our MDG goals in child health seem bleak, notwithstanding a highly optimistic progress report from the Southern African Regional Poverty Network.<sup>i</sup> MDG 4 commits us to *reduce by two-thirds, between 1990 and 2015, the under-5 mortality rate*. Since the U5MR in 1990 was 60, our target in terms of MDG 4 is to achieve a figure of 20.

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<sup>1</sup> UNICEF, *State of the World's Children, 2005*, UNICEF, New York, Statistical Tables, pp 142-5.

<sup>2</sup> UNICEF. *The State of the World's Children 2005*.

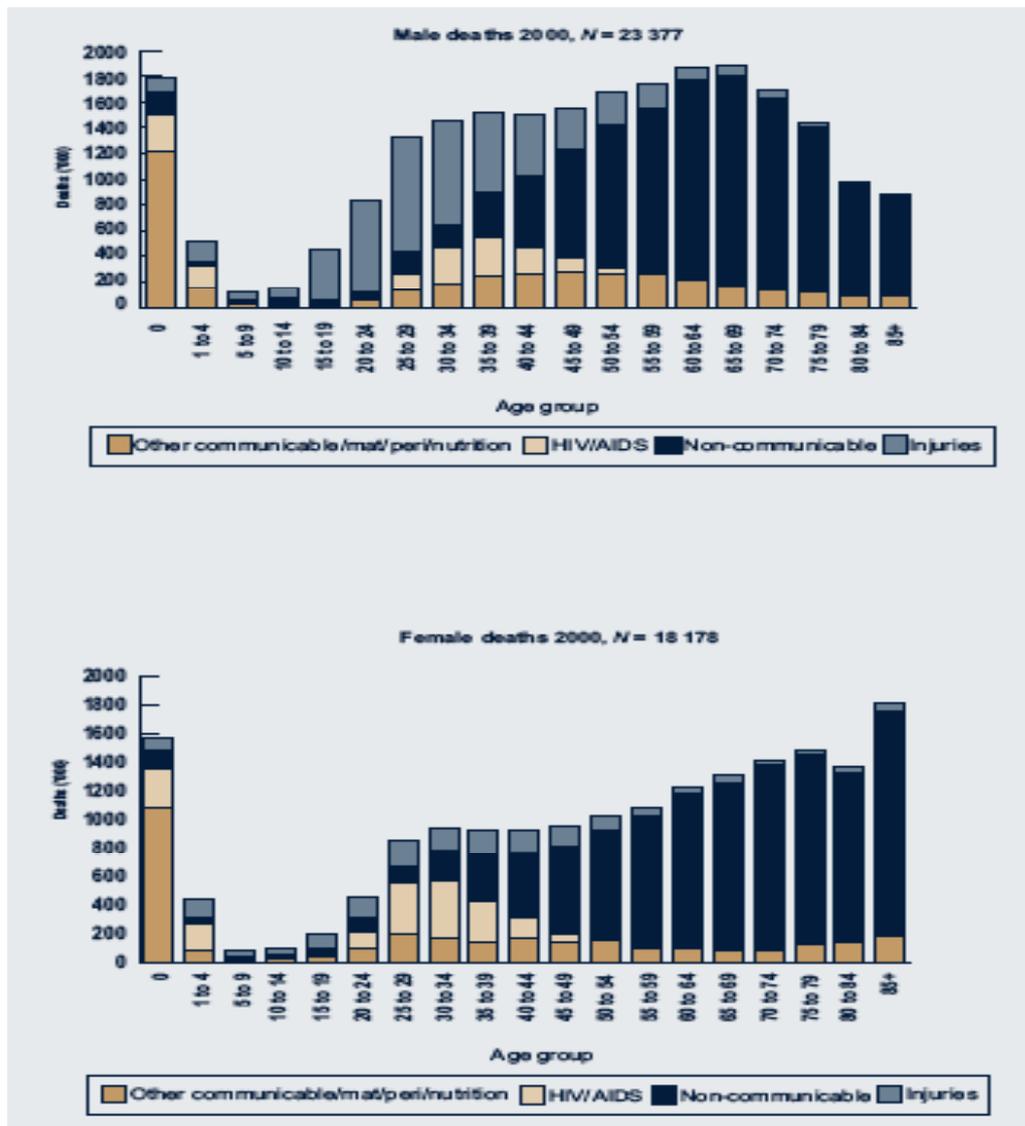
**Figure 1: South Africa's U5MR for 1990-2003 with 2015 MDG target<sup>ii</sup>**



This will be a daunting task: Figure 1 above shows current trends in U5MR in relation to our 2015 target according to the World Bank figures.<sup>iii</sup> Alarmingly, the trend is away from the target. If we are to have any hope of reaching it, we will have to deal effectively as a nation with the main causes of death among children under 5 years of age.

Young child death is not only a family tragedy but also often imposes a heavy financial burden on both families and the health services. Moreover, young-child morbidity — notably low birth-weight, malnutrition, and HIV/AIDS — exert a long-term negative impact on physical and mental development, as well as on the later emergence of non-communicable diseases. These longer term impacts have adverse consequences in both human and economic terms.

Figure 2: Age distribution of deaths, Western Cape, 2000.<sup>3</sup>



<sup>3</sup> Bradshaw, Nannan et al. Estimates of Provincial Mortality 2000. Western Cape Province. SA Burden of Disease Study, MRC.

As can be seen from the above bar chart the great majority of child deaths occur in infancy (under one year of age) and in the young child (1-4 years of age) age group. Moreover under five deaths account for a significant percentage of all deaths. They are due mainly to communicable diseases and malnutrition.

HIV/AIDS, diarrhoea, lower respiratory infections, under nutrition and perinatal problems (low birth weight, neonatal infections, perinatal asphyxia and birth trauma) account for more than 3 quarters of under-5 deaths in South Africa, as shown in Table 1 below. In addition to deaths directly attributable to under nutrition, malnutrition plays an important synergistic role in diarrhoea and respiratory infections.

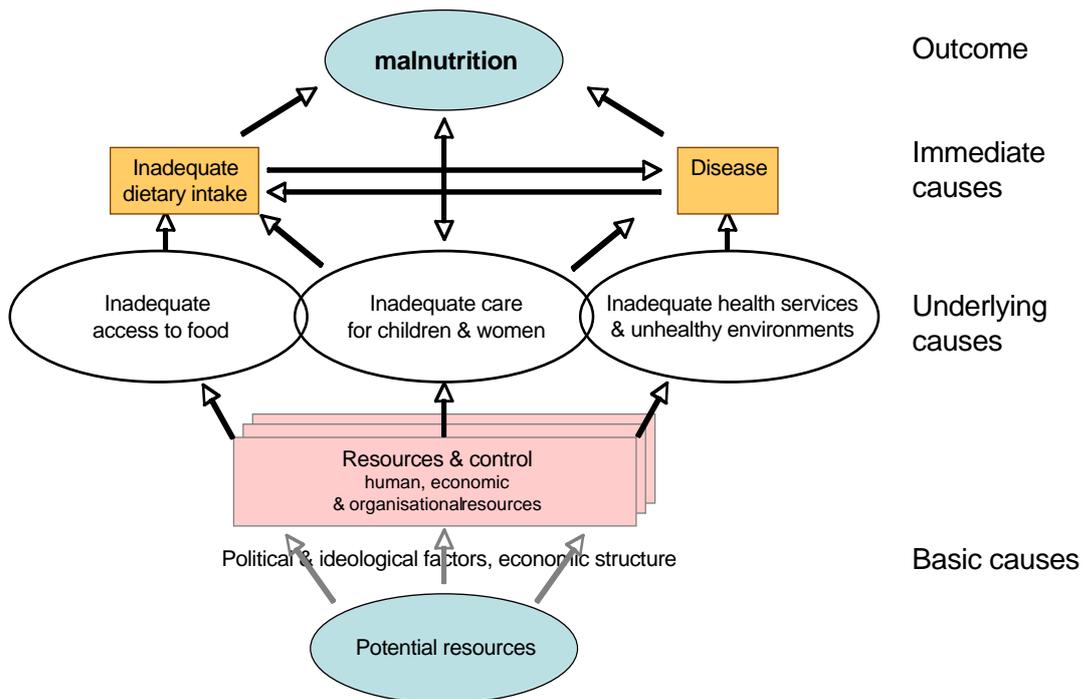
**Table 1: The top 20 causes of death in South African children under 5 years old in 2000<sup>iv</sup>**

Rank	Cause of death	No. of Deaths	Percentage of total
1	HIV/AIDS	42749	40.3
2	Low birth weight	11876	11.2
3	Diarrhoeal diseases	10786	10.2
4	Lower respiratory infections	6110	5.8
5	Protein-energy malnutrition	4564	4.3
6	Neonatal infections	2920	2.8
7	Birth asphyxia & trauma	2584	2.4
8	Congenital heart disease	1238	1.2
9	Road carnage	1219	1.1
10	Bacterial meningitis	1141	1.1
11	Fires	1102	1.0
12	Neural tube defects	1019	1.0
13	Septicaemia	980	0.9
14	Tuberculosis	743	0.7
15	Homicide violence	654	0.6
16	Drowning	532	0.5
17	Cot death	491	0.5
18	Chromosomal disorders	445	0.4
19	Congenital GIT disorders	379	0.4
20	Congenital syphilis	257	0.2

Most of these conditions are preventable or, when prevention fails, treatable. Overwhelmingly they affect children living in conditions of poverty and social and economic exclusion.

**Figure 3: A conceptual framework for the causation of malnutrition**

## Conceptual framework: malnutrition



While the health sector's role in health promotion, disease prevention, treatment and rehabilitation is vital, many of the determinants of children's health lie outside the direct ambit of the health sector. In this paper we examine the main causes of under-5 mortality as well as their determinants in an attempt to understand not only what children die of, but why they die.

The objective of this workgroup is to devise recommendations for interventions to reduce the burden of childhood diseases in the Western Cape.

A range of child-health experts directly involved at a senior level in the clinical management of, research into, and aspects of policy relating to the major diseases responsible for the overwhelming majority of childhood deaths contributed to this document.

We focus on children who die before their 5<sup>th</sup> birthday for 2 reasons. Firstly because the Under-5 Mortality Rate (U5MR) is recognised and used by UNICEF and other technical health agencies as a robust indicator of children's health in a country. Secondly, because of South Africa's

Millennium Development Goals to reduce U5MR by two thirds from the 1990 figure of 60 per 1000 live births by 2015.

Our approach has been to analyse the prevalence and impact of each of the main childhood diseases, the immediate causes of each disease, examine the underlying causes, and then identify and analyse the key basic determinants of disease and death, particularly those that are common to the above causes. In this analysis we use the conceptual framework for undernutrition (shown below) as a template to develop similar frameworks for the other dominant childhood illnesses. The frameworks for diarrhoea and ARI are very similar to that for undernutrition.

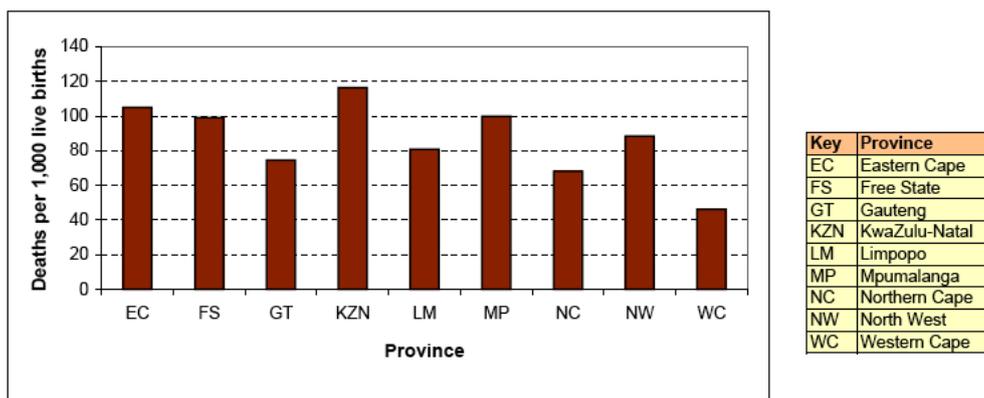
Next, we look at solutions. We first consider interventions which have been shown to be efficacious in improving child survival and identify the key factors that are common to large scale successful interventions. Finally we identify actual and potential interventions and programmes in the Western Cape, both within and outside the health sector, that could provide the basis for policies and programmes likely to impact maximally on child survival and health in this province and beyond.

### Child mortality in the Western Cape

The Western Cape has the lowest U-5MR in South Africa at 46 per 1 000 live births.(Figure ). This compares with a national U5MR of 95. <sup>v</sup>

**Figure 4: U-5MR by province**

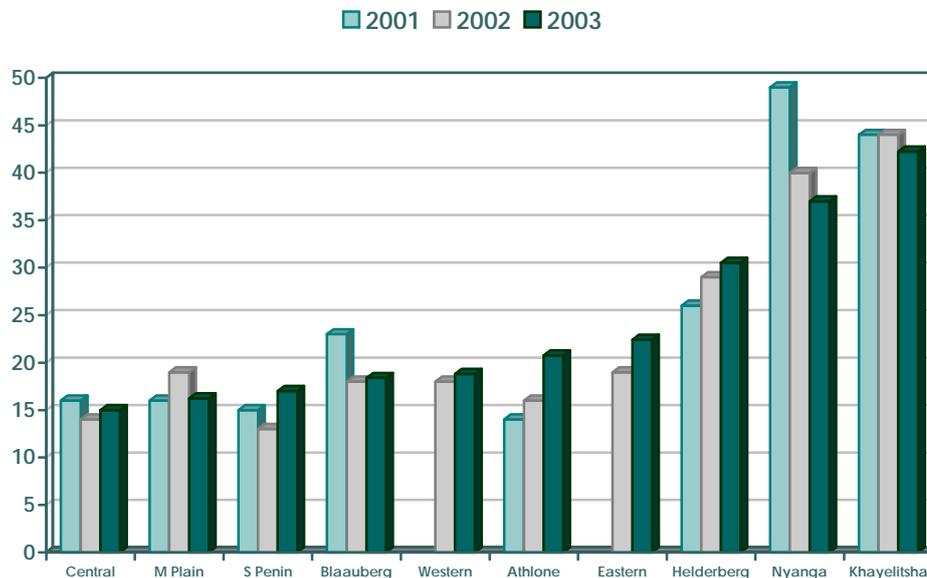
**Under-five mortality rate (U5MR) in South Africa by province for 2000**



**Source:** Bradshaw D, Nannan N, Laubscher R, Groenewald P, Joubert J, Nojilana B, Norman R, Pierfese D & Schneider M (2004) South African National Burden of Disease Study 2000-Estimates of Provincial Mortality. Cape Town: Medical Research Council of South Africa, Burden of Disease Unit

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 Accessed at: [www.childrencount.ci.org.za](http://www.childrencount.ci.org.za)

**Figure 5: Infant Mortality Rate by sub-district  
in the Cape Metropole 2001 - 2003**



Despite having the lowest under-5 mortality rate in the country, the Western Cape is among the most unequal provinces, with young child mortality varying by a factor of 3 between the worst and the best areas in 2002 (City of Cape Town, [www.capetown.gov.za/clusters/health.asp?IDPathString=1123-1374-3256&clusid=245&catparent=3256](http://www.capetown.gov.za/clusters/health.asp?IDPathString=1123-1374-3256&clusid=245&catparent=3256) [accessed 4 March 2007]).

### **Causes and trends in child mortality**

The dominant pattern of childhood mortality and morbidity remains one of nutritional deficiency (including low birth weight) and communicable disease. HIV/AIDS, diarrhoea, low birth weight, acute respiratory infections and malnutrition are the biggest killers of small children.

Over half of the deaths in young children in the Western Cape Province in 2000 were due to diseases of underdevelopment and poverty. The proportion due to HIV/AIDS was approximately 16% in infants and 38% in children between ages 1 and 5, with HIV/AIDS accounting for 20% of all under 5 deaths in the province (Ref: Bradshaw et al, SA National BoD study, Western Cape Provincial Profile, p 10) A sharp social gradient exists in both incidence and severity for all causes.

Three conditions that kill mainly children — lower respiratory tract infection, diarrhoea and low birth weight — account for 6.4% of the total premature mortality burden of the province in terms of years of life lost (YLLs). The leading causes of YLL are shown in the table below (Bradshaw, Nannan et al.). Lower respiratory tract infections were responsible for 2.4% of the premature mortality in the Western Cape in 2000, while diarrhoea and low birth weight (LBW) accounted for a further

2.3% and almost 2% respectively. LBW causes considerable morbidity at all ages from the neonatal period to adulthood.

Table 2: leading causes of premature mortality (YLLs) by sex, Western Cape, 2000

*Table WC1: Leading 20 single causes of the premature mortality burden (YLLs) by sex, Western Cape 2000*

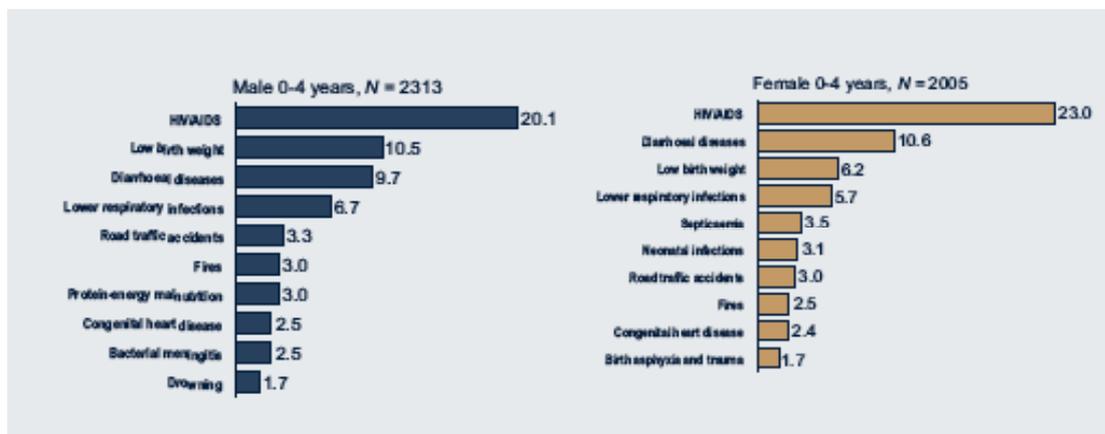
Males				Females				Persons			
Rank	Cause of death	YLLs	%	Rank	Cause of death	YLLs	%	Rank	Cause of death	YLLs	%
1	Homicide/violence	76956	18.5	1	HIV/AIDS	54893	18.8	1	HIV/AIDS	99630	14.1
2	HIV/AIDS	44737	10.8	2	Tuberculosis	22370	7.7	2	Homicide/violence	91297	12.9
3	Road traffic accidents	33963	8.2	3	Ischaemic heart disease	17576	6.0	3	Tuberculosis	55824	7.9
4	Tuberculosis	33454	8.1	4	Stroke	16970	5.8	4	Road traffic accidents	48442	6.9
5	Ischaemic heart disease	23838	5.7	5	Road traffic accidents	14480	5.0	5	Ischaemic heart disease	41414	5.9
6	Stroke	15469	3.7	6	Homicide/violence	14341	4.9	6	Stroke	32440	4.6
7	Trachea/bronchi/lung ca	12837	3.1	7	Diabetes mellitus	9480	3.2	7	Trachea/bronchi/lung ca	18835	2.7
8	Suicide	12578	3.0	8	Diarrhoeal diseases	7844	2.7	8	Lower respiratory infections	16669	2.4
9	COPD	9648	2.3	9	Breast ca	7779	2.7	9	Suicide	16504	2.3
10	Lower respiratory infections	8901	2.1	10	Lower respiratory infections	7769	2.7	10	Diarrhoeal diseases	15970	2.3
11	Diarrhoeal diseases	8125	2.0	11	Septicaemia	6285	2.2	11	Diabetes mellitus	14986	2.1
12	Low birth weight	8011	1.9	12	Trachea/bronchi/lung ca	5999	2.1	12	COPD	14906	2.1
13	Fires	7157	1.7	13	Fires	5336	1.8	13	Fires	12493	1.8
14	Diabetes mellitus	5506	1.3	14	COPD	5258	1.8	14	Low birth weight	12155	1.7
15	Epilepsy	4827	1.2	15	Cervix ca	5003	1.7	15	Septicaemia	10837	1.5
16	Septicaemia	4552	1.1	16	Hypertensive heart disease	4674	1.6	16	Hypertensive heart disease	8308	1.2
17	Asthma	3740	0.9	17	Nephritis/nephrosis	4560	1.6	17	Breast ca	7779	1.1
18	Oesophageal ca	3712	0.9	18	Low birth weight	4144	1.4	18	Nephritis/nephrosis	7713	1.1
19	Hypertensive heart disease	3634	0.9	19	Suicide	3926	1.3	19	Asthma	7275	1.0
20	Cirrhosis of liver	3562	0.9	20	Diabetes mellitus	3535	1.2	20	Epilepsy	6804	1.0
	<b>All causes</b>	<b>415 219</b>			<b>All causes</b>	<b>291 724</b>			<b>All causes</b>	<b>706 943</b>	

Years of Life Lost do not accurately reflect the childhood burden of disease. The age-weighting and discounting used in the calculations lead to an underestimate of the true burden.

Malnutrition accounts for more than 10% of South Africa's U-5 mortality rate. It acts synergistically with ARI and diarrhoea in causing mortality and contributes to the burden of low birth weight. It thus accounts for a significant quantum of morbidity and mortality in the province. Stunting affects around 16.5% of children under 5 in the province, while almost 5% are wasted.

Figure 6 on page 11 below shows the leading causes of U-5MR in the Western Cape

**Figure 6: the leading causes of U-5MR in the W Cape<sup>vi</sup>**



The trend in the impact of vertically acquired HIV infection on the pattern of young child mortality is unclear. On the one hand, HIV/AIDS as a cause of adult (including maternal) mortality and morbidity is increasing, and with it, the risk of vertically-acquired HIV infection in populations without access to effective PMTCT programmes. On the other hand, the large increase in coverage of the PMTCT programme in the Western Cape will have considerably reduced the risk of perinatal transmission to newborns. Two factors may alter these trends, however. Firstly, the percentage of deliveries in the Western Cape to which recent in-migration from the Eastern Cape contributes is steadily rising. Many of these mothers have not been HIV-tested antenatally and consequently have not received effective PMTCT.

Secondly, postnatal transmission of HIV through sub-optimal feeding practices ('mixed feeding') has been shown to account for a significant percentage of young child HIV infection.<sup>vii</sup> Data for this are unavailable in the Western Cape but preliminary findings suggest that a considerable percentage of Western Cape HIV-positive mothers are engaging in such mixed feeding.

### **Risk factors for child mortality**

The proximal underlying risk factors for both maternal and child undernutrition are dietary inadequacy and frequent disease (especially diarrhoea and HIV/AIDS) and, in the case of mothers, excessive physical labour. In turn, household food insecurity, inadequate child-caring practices and poor health and environmental services underlie inadequate diets and frequent illness among children. Underlying most common childhood infections and infestations are environmental risk factors that include inadequate sanitation and water supply, poor hygiene practices, and poorly ventilated, crowded and smoky living spaces.

The more distal risk factors are clustered within households affected by poverty. These include "poverty", which is in effect a lack of access to a

range of resources, whether financial, physical, educational, or organisational. The most basic, or upstream, risk factors are structural. They operate at local, national and, increasingly, at a global level. They include, but are not limited to:

- Social and labour policies – that affect employment and welfare
- Housing policy
- Environmental health policies and programmes
- Land and agricultural policies
- Micro- and macro-economic policies, including trade policy.

At a global level, trade policies and patterns (including trade in services and intellectual property rights) play an increasingly important role in shaping diets, as well as affecting food security, the nature of work, and access to basic services. Dominant and neo-Conservative macro-economic policies, which emphasise fiscal stringency above all other considerations, place a limit on the State's investment in those services most important for child health.

# Risk Factors For Specific Diseases

## 1. Risk factors for Malnutrition (See Appendix 1)

### 1.1. Immediate, proximal determinants of malnutrition

#### (a) *Inadequate dietary intake*

The mean energy intake of children in all Provinces, including the Western Cape, is below that recommended for age.<sup>viii</sup> Infections result in increased energy demand, as well as reduced intake through loss of appetite, shortness of breath, and fatigue. These matters are worse with gastro-enteritis, when the absorption of nutrients may be reduced.

#### (b) *Frequent infections and infestations*

Infectious disease particularly childhood diarrhea, HIV and intestinal helminth infestation all contribute to malnutrition, especially in children whose dietary intakes are marginal.

### 1.2. Underlying determinants of malnutrition

#### (a) *Inadequate access to food*

##### *Food poverty*

A survey carried out in October 1995 showed that households representing 43 percent of South Africans live in food poverty. Almost a quarter (23,9%) of households in the Western Cape live in food poverty<sup>ix</sup>

#### (b) *Inadequate care for women and children*

Factors that may impact adversely on the care of women and children include:

- Women's workload and time constraints;
- insufficient access to information about breastfeeding and infant feeding practices; and
- the status of women in households, families, relationships and communities, in particular their status in making autonomous decisions regarding their children
- Maternal and child-care practices. Early initiation, the degree of exclusivity, and the duration of breast-feeding are among the most important child-care practices affecting infant and young child health and nutrition. Exclusive breast-feeding in the first 4 to 6 months of life provides optimal nutrition and protection. The 1998 Demographic and Health Survey found that the median duration of breast-feeding in South Africa varies between 10 months in the Western Cape to 20 months in the Northern Province. The other provinces show a median duration of about 14-17 months. The Western Cape, therefore, has the shortest median duration of breast-feeding. Food intake also depends on *other infant and child-feeding practices*. Growth faltering frequently arises during the

weaning period. Moreover, correct micronutrient content of food is also essential for the well-being and development of the child.<sup>x</sup>

### **1.3. More distal determinants of childhood malnutrition**

#### *(a) Control over resources and socio-economic status*

Socio-economic status is a powerful determinant of the distribution of malnutrition in South Africa. Food poverty varies inversely with per capita income, rising steeply with per capita incomes below 20000 Rands per annum (Rose and Charlton <sup>xiv</sup>]).

Though Western Cape children overall show a lower prevalence of stunting (15%), Zere & McIntyre showed that disparities in malnutrition between income groups in the Western Cape (and Gauteng) were greater than in provinces with higher rates of stunting [<sup>xi</sup>].

## **2. Risk factors for low birth weight (Appendix 2)**

### **2.1. Risk-taking behaviour and substance abuse**

#### *(a) Drinking alcohol during pregnancy*

An alcohol intake of more than two drinks per day is associated with a reduction in mean birth weight of about 200g [20](#). Binge drinking of more than five drinks per occasion is associated with an increased risk of IUGR [19](#). Binge drinking in excess of 100 ml (seven drinks) of absolute Alcohol (AA) per week (equivalent to one litre of wine or two litres of beer), as well as drinking two or more drinks per day (>30ml AA) increases the risk of Fetal Alcohol Syndrome(FAS) [42](#).

#### *(b) Smoking during pregnancy*

Maternal smoking increases the risk of a LBW offspring. Perkin [22](#) found that smoking reduces the birth weight of the affected infant by 207g. There is a 100g reduction in birth weight for every 1 microgram per litre rise in serum cotinine levels (a measure of the amount of smoking). This shows a dose-dependent effect of smoking on birth weight.

#### *(c) Illicit drugs*

A baby exposed to cocaine in utero will weigh 250g less than a baby not exposed. Cocaine also affects length with a deficit of 0.98cm at birth [29](#). Babies exposed to methamphetamine ("tik") in pregnancy are small for their age, compared to babies of the same age not exposed to tik [43](#).

### **2.2. Physical labour**

Studies in various countries indicate that physical work during pregnancy results in a reduction in birth weight, with greater reductions resulting from heavy work especially in late pregnancy.

### **2.3. Obstetrical risk factors**

#### *(a) Poor family spacing and inadequate antenatal care*

Short inter-pregnancy intervals (close family spacing) are associated with preterm delivery [[24](#)] and late booking for antenatal care is associated

with increased risk of low birth weight due to undetected infections or hypertension.

*(b) HIV infection*

Symptomatic HIV infection carries an increased rate of miscarriages, low birth weight, intrauterine fetal death and preterm delivery.

*(c) Poverty*

Poverty increases the risk of LBW or preterm offspring [17](#). The effects of poverty on pregnancy are complex and increase the risk of both preterm and IUGR offspring [41&45](#).

### **3. Risk factors for diarrhoea (Appendix 3)**

Experience throughout the world shows that breast-feeding and care-giving practices are important *immediate determinants* of diarrhoea. Primary health care strategies aimed at addressing these two immediate (proximate) determinants provide a partial solution to reducing mortality from diarrhoeal disease.

Important underlying determinants include the quality of health services (including prenatal care), and environmental services (including water supply, sanitation and hygiene, in particular hand-washing with soap). Maternal education can play an important role here.

Poor socio-economic status is the fundamental determinant of young *child mortality due to diarrhoea*.

### **4. Risk factors for ARI (Appendix 4)**

#### **4.1. Malnutrition**

Numerous studies in developing countries, particularly in South America and Asia, have shown consistent, significant and dose-response relationships between malnutrition and both incidence of, and mortality due to, ARI in children (Victora et al, 1999; Fonseca et al, 1996; Broor et al, 2001).

#### **4.2. Lack of breast-feeding**

The risk of ARI is increased by approximately 60% in children who are never breastfed, while non-breastfed children are between 2-3 times more likely to die from ALRI compared to those who are breastfed. (Broor et al, 2001; Fonseca et al, 1996; Victora et al, 1999). The protection afforded by breast-feeding against ALRIs persists well beyond the breast-feeding period (Victora et al, 1999).

#### **4.3. Low birth weight (LBW)**

Victora et al (1999) found a 2.9 times increased risk of death for children with birth weight <2,500 grams. There is also consistently increased incidence of ALRI in LBW infants with relative risks between 1.4 and 3 times, depending on the severity of LBW (Fonseca et al, 1996; Victora et al, 2004; Graham, 1990).

#### **4.4. Lack of immunisation**

Global immunisation has produced a decline in measles pneumonia and childhood pertussis. In the Western Cape Province, Corrigan (2005) found that overall vaccine coverage was 80%, 77% and 48% for vaccines due by 14 weeks, 9 months and 18 months respectively. A significant number of children are therefore not even receiving their early vaccines, while a large proportion of children are not receiving full courses of Diphtheria, Pertussis, Tetanus (DPT) and measles vaccines. Children in the Boland region were significantly less likely to have received vaccines due by both 14 weeks and 9 months compared to those in the Cape Town Metro region.

#### **4.5. Environmental tobacco smoke (ETS) and maternal prenatal smoking**

More than 150 studies have linked ETS to respiratory illness in children, with strong associations between both prenatal maternal smoking and postnatal ETS exposure and risk of ARI in children. (DiFranza et al, 2004.) In addition to the increased risk of ARI morbidity among children exposed to ETS, there is also an increased risk of hospitalisation and mortality. (DiFranza et al, 2004; Brims and Chauhan, 2005)

Infants dying from respiratory disease are 3.4 times more likely to have had mothers who smoked during pregnancy. (Malloy et al, 1988; DiFranza et al, 2004)

#### **4.6. Indoor air pollution**

Use of biomass fuels with resultant indoor air pollution is common in South Africa, with the rapid growth of informal housing being an important cause. (Sanyal and Maduna, 2000).

Use of biomass fuels would be notably higher among those in certain areas likely to have other risk factors for ARI, such as poverty (Statistics South Africa 2001). Studies in two townships in Gauteng indicated that the levels of particulate matter far exceeded standards laid down by the WHO. (Terblanche et al, 1992)

#### **4.7. Outdoor air pollution (OAP)**

Episodes of OAP in developed countries have been associated with significant increased mortality, and it has been suggested that children are particularly at risk from extreme pollution. (Romieu et al, 2002) Evidence from a number of studies supports concern that exposure to pollution, especially fine particles and ozone, increase the risk of ARI in children. Air pollutants adversely affect immune function and cause inflammatory reactions, which may increase susceptibility to bacterial infection. (Romieu et al, 2002)

#### **4.8. Crowding and the number of siblings**

While nearly 20% of Blacks in the Western Cape live in households of six people or more, 70% of Black dwellings comprise three rooms or less (Statistics South Africa, 2001; Watson, 1994).

In a case-control study in Sao Paulo, Cardoso et al (2004), found crowding ( $\geq 4$  people sharing the child's bedroom) to be associated with 2.5 fold increased risk of ALRI. Other studies from developing and developed countries have found similar effects both for crowding and number of siblings. (Fonseca et al, 1996a; Brims et al, 2005; Ozcirpici et al, 2004; Howden-Chapman, 2004; Graham 1990)

#### **4.9. Sanitation**

Cardoso et al. (2004) found children with respiratory illness to come from houses with poorer sanitation than controls, while in developed countries promotion of hand washing has been associated with reduced incidence of respiratory illness (Luby et al, 2005). Even in urban areas in South Africa, 20% of people use inadequate sanitation facilities, while in rural areas this figure is as high as 35%. (UNICEF, 2007)

#### **4.10. Housing quality**

There is consistent evidence that damp and humid conditions are associated with ARI in children (Howden-Chapman 2004; Rylander and Megevand, 2000) while Ozcirpici et al (2004) found a composite poor housing status score was associated with an increased incidence of ARI.

#### **4.11. Socio-economic status (SES) (including poverty and lack of education)**

Poverty and low SES are associated with so many other independent risk factors for ARIs, such as:

- overcrowding;
- poor sanitation;
- poorer access to medical care;
- poorer immunization coverage;
- malnutrition;
- poor housing; and
- low birth weight LBW and SFU

that it is difficult to tease out the effect of low SES *per se*.

Nevertheless, the underlying influence that low SES has on many of the known risk factors for ARI, makes it an important factor to consider, particularly when seeking interventions to reduce ARI incidence and mortality.

O'Dempsey et al (1996) in the Gambia found children of mothers with a personal source of income to be at lower risk of ALRI. This highlights the dilemma faced by mothers who while enhancing their children's health by increasing their income through working, may paradoxically place their children at risk by the required shortening duration of breast-feeding and placing children in daycare centers from a young age.

## **5. Vertical transmission and inadequate case management of HIV (Appendix 5)**

### **5.1. Immediate risk factors**

THE IMMEDIATE RISK FACTORS for vertical transmission of HIV include the under-utilisation of Family Planning Services, late or no booking for antenatal care, and poor uptake of HIV testing.

ILL-CONSIDERED AND UNSAFE INFANT FEEDING POLICY leading to a high prevalence of mixed breast- and bottle-feeding contributes to vertical transmission.

SUB-OPTIMAL CHOICE OF ARV REGIMENS increase vertical transmission

LATE INFANT PCR TESTING is an obstacle to effective case management of affected children.

MATERNAL DEATH contributes to increased child mortality and morbidity in both HIV-infected and uninfected children.

### **5.2. Underlying risk factors**

POOR CONTROL OF THE HETEROSEXUAL EPIDEMIC

POOR MATERNAL AND BREAD-WINNER HEALTH and level of education, maternal financial dependency, stigma, lack of disclosure and poor family support are important underlying risk factors for vertical HIV transmission.

POOR HOUSING in crowded peri-urban settlements with poor sanitation, distant unsafe water and energy utilization.

UNEMPLOYMENT, access to transport, food insecurity and land tenure problems, further underpin the determinants of PMTCT failure.

LOCAL AND PROVINCIAL GOVERNMENT CAPACITY limitations further compromise service, transport infrastructure, social grants and housing delivery.

GENDER INEQUALITY, fear of stigmatisation and discrimination compromise

## ***PMTCT***

Lack of a seamless PMTCT programme interface with the Eastern Cape and constant population movement between the provinces results in population instability, which compromises programme continuity and delivery from early pregnancy to maternal and paediatric follow-up care.

HEALTH CARE SYSTEM FACTORS such as limited capacity, logistics and infrastructure deficiencies, crowded facilities, resource and budget constraints, are likely to be important underlying determinants of poor PMTCT service implementation.

Suboptimal data capture compromises analysis of the program's success. In addition, encrypted documentation of HIV status in an attempt to maintain confidentiality in busy clinical areas result in health care worker confusion and lost opportunities for intervention

At a more **basic level** these factors have their roots in the legacy from the previous government's policy of forced removals and separate development.<sup>4</sup>

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<sup>4</sup> Msokoli Qotole Early African Urbanisation in Cape Town: Windermere in the 1940s and 1950s African Studies, 60, 1, 2001

## Technical interventions focused on child survival

### Global evidence and experience

The list below summarises the key interventions to improve child survival and their current coverage in those countries where most child deaths occur.<sup>5</sup> Based on results from these intervention trials, the authors estimate that achieving full coverage of all these basic interventions would prevent more than six million deaths per year (63 per cent of total mortality in low-income countries). They conclude that the challenge is not primarily one of a lack of science or knowledge about interventions, but a lack of implementation of known efficacious interventions, especially among the poorest.

### Coverage estimates for child survival interventions for the 42 countries with 90 per cent of worldwide child deaths in 2000

#### *Preventive interventions*

Breastfeeding (6–11 months) 90% (42–100)  
Measles vaccine 68% (39–99)  
Vitamin A 55% (11–99)  
Clean delivery (skilled attendant at birth) 54% (6–89)  
Tetanus toxoid 49% (13–90)  
Water, sanitation, hygiene 47% (8–98)  
Exclusive breastfeeding (up to 6 months) 39% (1–84)  
Newborn temperature management 20%  
Antibiotics for premature rupture of membranes 10%  
Antenatal steroids 5%  
Nevirapine and replacement feeding 5%  
Zinc 0%

#### *Treatment interventions*

Vitamin A 55% (11–99)  
Antibiotics for pneumonia 40%  
Oral rehydration therapy 20% (4–50)  
Antibiotics for sepsis 10%  
Newborn resuscitation 3%  
Zinc 0%

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<sup>5</sup> Jones, G., Steketee, R. W., Black, R. E., Bhutta, Z. A., Morris, S. S. and Bellagio Child Health Group 2003, "How many child deaths can we prevent this year?" *The Lancet*, 362:65–71

### **The problem of inequity**

Many of these global interventions are also suggested in the Recommendations section below and they are also the most important technical interventions to reduce U-5MR in the Western Cape. Their current coverage is neither universal nor equitable. For example, analysis of the 1996 census data (Cape Town Equity Gauge, unpublished) reveals that the provision of basic services is inequitable across Cape Town, with a high proportion of households in Khayelitsha and Nyanga living in informal housing and not having adequate access to water and sanitation. Inequities in health service financing and delivery have also been documented for the Metro Region and need to be addressed (Cape Town Equity Gauge, unpublished).

The problem of inequity is not confined to the Western Cape. Based on experience in Brazil and elsewhere, Victora et al (2000) has suggested that new medical technologies provided by the public sector are also preferentially taken up by higher socio-economic status households. A study of over 40 countries reports that even those interventions generally thought to be especially "pro-poor", such as oral re-hydration therapy and immunisation, tend to attain better coverage among better-off groups than among disadvantaged ones (Gwatkin, 2001). The failure of health services to reach the poor in developing countries, despite their higher disease burden, is not just a matter of the better-off using their higher incomes to purchase care from the private sector. Poor people also benefit less from government subsidies to the health sector.

Victora et al (2003) suggest that the poor face a number of obstacles:

- less knowledge;
- greater distances to services;
- greater out-of-pocket costs because of a lack of insurance; and
- more disorganised and poorer quality services with shortages of drugs and supplies.

They then suggest a number of possible interventions that could specifically improve the health of poor children, as shown in Table 3 below. They cover a range of options: from education and knowledge to water and sanitation.

Table 3: Review of potential approaches for improving equity in child health

Approach	Examples
Improve knowledge and change behaviour in poor mothers	<ul style="list-style-type: none"> <li>• Improvements in female education in general</li> <li>• Nutrition counselling (Brazil)</li> <li>• Social marketing of soap (Central America)</li> <li>• Community based growth promotion (Indonesia, Tanzania)</li> </ul>
Improving access to water and sanitation for the poor	<ul style="list-style-type: none"> <li>• Social investment in water and sanitation (Sri Lanka)</li> <li>• Social investment funds (Bolivia)</li> </ul>
Empowering poor women	<ul style="list-style-type: none"> <li>• Micro-credit (Bangladesh, Ghana)</li> </ul>
Making health care affordable to poor households	<ul style="list-style-type: none"> <li>• Cash transfers to poor families linked to use of preventive services (Mexico, Honduras, Nicaragua)</li> <li>• Subsidised health care for reaching the poorest populations (Sri Lanka, Costa Rica, Malaysia)</li> <li>• Bias to poor people in specific child health interventions (Bangladesh, India)</li> <li>• School health insurance programme (Egypt)</li> </ul>
Making health facilities more accessible to poor households	<ul style="list-style-type: none"> <li>• Road improvements to facilitate access (Vietnam)</li> <li>• Use of outreach facilities (Benin, Guinea)</li> <li>• Deployment of health teams in poor municipalities (Brazil)</li> <li>• Extend services through community health workers and non-governmental organisations (Bangladesh, Thailand)</li> <li>• Partnership with, and some subsidisation of non-governmental organisations in underserved areas (Bolivia, Uganda)</li> </ul>

Approach	Examples
Enhancing human and other resources in facilities serving poor people	<ul style="list-style-type: none"> <li>• Use of community organisations and volunteer health workers (Thailand)</li> <li>• Building housing for rural staff and providing other incentives to practise in rural areas (Uganda)</li> </ul>
Improving the user-friendliness of providers and facilities serving the poor	<ul style="list-style-type: none"> <li>• Using providers who speak the language of poor indigenous groups and understand their culture and customs</li> </ul>
<ul style="list-style-type: none"> <li>• Making budget allocations more relevant to the burden of disease experienced by the poor</li> </ul>	<ul style="list-style-type: none"> <li>• Allocation of resources at district level according to burden of disease (Tanzania)</li> <li>• Making simple interventions against major causes of child mortality a priority (Brazil)</li> </ul>

(Source: Adapted from Victora et al. 2003)

The table shows that the key measures that need to be implemented to promote equity in child health can be grouped into the following categories:

- Improving knowledge and change behaviour in poor mothers;
- improving access to water, sanitation and housing for poor people;
- empowering poor women, including economically;
- making health care affordable to poor households;
- making health facilities and basic health care more accessible to poor households;
- enhancing human and other resources in facilities serving poor people;
- improving the user-friendliness of providers and facilities serving the poor; and
- making budget allocations more relevant to the burden of disease experienced by the poor.

# Comprehensive interventions to address childhood disease

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## International experience

Since the threat to childhood from poverty results from many factors, the response has to be all-embracing.<sup>xii</sup> There are several examples of successful, comprehensive programmes around the world, all of which are relevant to present-day South Africa, particularly since these are all found in contemporary, low- or middle-income countries. A few, selected, large-scale (national or state-wide) programmes are described below.

### Mexico

*Progres-a-Oportunidades*, now known as Oportunidades, the principal anti-poverty programme of the Mexican government, has helped more than five million poor families break out of poverty since its creation in 1997 by former Mexican Deputy Minister of Finance, Santiago Levy. With its comprehensive focus on human capital through nutrition, health, education and evaluation, the programme is being considered for replication in other countries and cities seeking effective ways to help end the cycle of poverty.<sup>xiii xiv</sup>

Oportunidades provides monetary educational grants to participating families for each child under 22 years of age who is enrolled in school between the third grade of primary and the third grade of high school. Cash transfers are also linked to regular health clinic visits.

*Key aspects of the programme that are central to its success.*<sup>xv</sup>

Firstly, *it is large and growing in scale*, and strong Government commitment ensures sustainability. It operates in more than 70,000 localities, and its financial allocation represents almost half (46,5%) of Mexico's annual anti-poverty budget. In addition, only 6% of its budget goes to operating costs.

Secondly, *it targets poor and marginalised communities*. Ninety-six percent of its localities are in marginalised rural areas. In urban areas, it focuses on cities of under one million inhabitants with significant levels of marginalisation.

Thirdly, it has a *strong gender focus* and has made the improvement of the condition of women a priority. About 98% of heads of households that get cash benefits are women. It also has a strategic focus on youth. The monetary value of scholarships increases as learners enter higher grades where school dropout rates are higher.

Finally, it has an effective *review mechanism* with clear indicators for regular evaluation of programme management, results and impact. Results have been excellent. A recent randomised effectiveness study showed that Progres-a was associated with better growth in height among

the poorest and younger infants. Age- and length-adjusted height was greater by 1.1 cm (26.4 cm in the intervention group as against 25.3 cm in the cross-over intervention group) among infants younger than six months at baseline and who lived in the poorest households. After one year, mean hemoglobin values were higher in the intervention group (11.12 g/dL; 95% confidence interval [CI], 10.9-11.3 g/dL) than in the cross-over intervention group (10.75 g/dL; 95% CI, 10.5-11.0 g/dL) who had not yet received the benefits of the intervention ( $P = .01$ ).

There were no differences in hemoglobin levels between the two groups at Year 2 after both groups were receiving the intervention. The age-adjusted rate of anemia (hemoglobin level <11 g/dL) in 1999 was higher in the cross-over intervention group than in the intervention group (54.9% vs 44.3%;  $P = .03$ ), whereas in 2000 the difference was not significant (23.0% vs 25.8%, respectively;  $P = .40$ ).<sup>xvi</sup>

In rural areas covered by the scheme, there has been a 57 per cent rise in visits to health clinics and a 12% reduction in under-5 morbidity. School attendance and completion have also been boosted. For example, an 85 per cent increase in first-year upper secondary school attendance in rural areas (79 per cent for girls and 90 per cent for boys).

### Madagascar

The Madagascar Family Health Programme, a comprehensive child-survival programme, aims to mobilise communities and link them with quality services for reproductive and child health. The program addressed routine childhood immunisation;

- a package “essential nutrition actions” (ENA);
- reproductive health (RH) including family planning (FP) and adolescent RH;
- sexually transmitted infections (STIs); and
- prevention and case management of sick children using Integrated Management of Childhood Illnesses (IMCI) as a framework. of

The technical interventions were implemented through programme components that cut across the intervention areas:

- A scale strategy;
- A community mobilisation approach;
- Health systems strengthening; and
- Information, Education & Communication (IEC).

*Key elements that may have contributed to its success*

A consistent pattern of substantial commitments to *community mobilization and systems strengthening*. The programme was an integral part of national strategies for immunisation, nutrition, reproductive health, and the care of sick children. This appears to have helped maintain the direction of the programme long enough to see improved outcomes.

Actions at the community level were supported in tandem by *improved management and quality of services*, including attention to supplies, better skills and performance by health providers, and systematic use of data. Existing community networks were tapped for volunteers to reach families.

*Effective communication* was used. Personal contacts were reinforced with the same messages being heard through numerous other communication channels such as radio, press, and television. Community volunteers were actively linked with health providers.

The *core content of all interventions was simplified* for rapid expansion; and interventions were sequentially introduced in manageable clusters to assure that families received a package of services.

An *effective review process* was established. Ongoing evidence of progress, or the lack of such evidence, helped tailor program components to achieving results, and helped maintain a focus on the most effective approaches.

Partnerships and "champions" played strategic roles in bringing about changes in policies and processes, and increased the pool of available resources.<sup>xvii</sup>

### **Brazil**<sup>xviii</sup>

The state of Ceará is in the poor north-eastern area of Brazil. Early in the 1980s the infant mortality rate was more than 100 per 1,000 and malnutrition was very common. In 1986 the new state government requested UNICEF support to help improve child health, and a statewide survey of child health and nutrition was commissioned. Based on the results of this survey, new health policies were implemented, including the GOBI strategy of growth monitoring, oral rehydration, breastfeeding promotion, immunisation, and vitamin-A supplementation

Since lack of access to healthcare facilities was a major problem, a large new programme for community health workers was established and another programme for traditional birth attendants was expanded

Responsibility for health services was decentralised to rural municipalities – the ones with the worst health indicators. A social mobilisation campaign for child health was implemented, which included the use of the media and small radio stations to broadcast educational messages. Similar surveys were repeated in 1990 and 1994, and after each one the results were incorporated into health policy. This process was sustained by four consecutive state governors who all give high priority to improving child health

All these public health interventions resulted in considerable advances in the population coverage of child health interventions. By 1994 the use of oral rehydration solution had increased to more than 50 per cent in children with diarrhoea; nearly all children had a growth chart and half had been weighed within the previous three months; immunisation coverage was 90 per cent or higher; and median breastfeeding duration –

a difficult indicator to improve – had apparently increased from 4.0 to 6.9 months

Disease frequency and mortality outcome indicators for the whole population also showed considerable improvement between 1987 and 1994. The prevalence of low weight-for-age (below -2 z scores of the National Center for Health Statistics) fell from 12.7 per cent to 9.2 per cent; low height-for-age from 27.4 per cent to 17.7 per cent; and reported episodes of diarrhoea in children in the previous two weeks from 26.1 per cent to 13.6 per cent. Infant mortality rates improved from 63 per 1,000 live births in 1987 to 39 per 1,000 in 1994 – a 37 per cent reduction

The proportion of child deaths due to diarrhoea – a priority for the health programme – fell from 48 per cent to 29 per cent; whereas perinatal causes of infant deaths increased from 7 per cent to 21 per cent and respiratory infections from 10 per cent to 25 per cent. Deaths due to other causes, including infections other than diarrhoea and respiratory infections, fell from 35 per cent to 25 per cent (Victora et al, 2000)

### **Social welfare interventions in South Africa/Western Cape**

Below we briefly describe two selected social interventions that have been shown to have a positive impact on child health and welfare.

#### **The impact of old-age pensions**

Over a quarter of Black South African children under 5 years old live with a pension recipient. Duflo studied the effects on the expansion of the Old Age Pension programme in the early 1990s on child health. She examined the question of whether it led to an improvement in child nutritional status, and whether this is affected by the gender of the recipient. Her estimates suggest that pensions received by women had a large impact on the anthropometric status of girls (it improved their weight-for-height by 1.19 standard deviations, and their height-for-age by 1.16 standard deviations), but had little effect on boys. She found no similar effect for pensions received by men.

Her findings show that an increase in income can improve child health. Direct transfers of income to poor households can contribute to an increase in human capital. They also suggest that households may not function as a unitary entity, and that the efficiency of public transfer programs may depend on the gender of the recipient, providing a further rationale for prioritizing women in interventions.

#### **The Child Support Grant (CSG)**

The South African Child Support Grant transfers cash to families unconditionally, unlike the Oportunidades programme in Mexico, which makes grants conditional upon school and clinic attendance. In light of research that has cast doubt on whether nutrition responds at all to income increases among poor families, Agüero, Carter and Woolard used the continuous treatment method of Hirano and Imbens (2004) to estimate the impact of the CSG, an unconditional cash transfer, on child

nutrition as measured by child height-for-age<sup>xix</sup>. They found that "large dosages of CSG treatment" early in life significantly boosted child height. They also quantified the gains in height-for-age (z -scores) in terms of adult wages. They then use these monetary figures to calculate private to CSG payments. Drawing on literature that examines the impact of adult height on wages, they estimate that these height gains in turn suggest large adult earnings increases for treated children and a discounted rate of return on CSG payments of between a 160% and 230%.

## Recommendations

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Since the major causes of young child mortality are highly interlinked, most interventions would be expected to result in improved outcomes for more than one disease. These recommendations broadly follow the logic of the conceptual frameworks for malnutrition, addressing proximal risk factors before going on to more distal upstream determinants.

Maternal education is an effective intervention to address all causes, but since levels of female education in the Western Cape are generally high the potential for further intervention in this area would be limited unless such an intervention is explicitly targeted to areas where average educational status is low.

A range of interventions aimed at improving immunity on the one hand, and reducing exposure to harmful pathogens and unsafe environmental conditions on the other, would substantially reduce the burden of diarrhoea and respiratory infections. The most important interventions common to both diarrhoea and ARI as well as to undernutrition are thus dealt with under these two broad headings. Following these, specific interventions targeting low birth weight and paediatric HIV infection are covered, as well as the more basic interventions addressing poverty and other upstream determinants of all the major causes of childhood diseases and death.

This summary of interventions concludes with a review of key components of successful broad based multifaceted programmes.

### Interventions to improve immunity

#### Promote and support breast-feeding

PROMOTE BREAST FEEDING. Promotion of exclusive breast-feeding up to six months at least, with support of continued breast feeding up to at least 12 months. This would be expected to have far-reaching benefits in addressing the burden of childhood disease.

Advocate for legislated maternity leave and breast-feeding time for working women, especially those working in the domestic and agricultural sectors. Advocate for preferential deployment of pregnant women to do less physically demanding work.

Promotion of breast-feeding will involve media and education, and support and incentives for mothers who choose to breastfeed that are equivalent in value to those provided to formula feeding mothers. There is accumulating evidence of the effectiveness of breastfeeding counsellors/supporters: the W Cape Government should consider training and employing such cadres.

Mixed feeding should be actively and publicly discouraged in view of the compelling evidence that it is the worst option in terms of vertical HIV transmission. Mothers who choose not to breast-feed should be supported.

The background paper on the burden of paediatric HIV by Kroon and Eley provides a detailed discussion on the controversies and difficulties regarding safe feeding policies. It is essential to develop a well-considered feeding policy for the Western Cape.

### **Nutrition programmes**

SUPPORT AND STRENGTHEN THE INTEGRATED NUTRITION PROGRAMME in the province. Improved child nutrition will result in less malnutrition and reduce the burden of ARI, diarrhoea, LBW and HIV infection, with a significant impact on U5MR. Improved maternal nutrition would be expected to lessen the burden of LBW.

SUPPORT COMMUNITY-BASED AND DRIVEN NUTRITION PROGRAMMES. Such programmes can be effective in reducing the prevalence of malnutrition. There is good evidence internationally and locally that effective communication strategies and fine community coverage with CHWs or similar personnel are essential components of such programmes. People who do not understand the linkages between the project and the nutritional status of their children or who do not have the support of their partners are less likely to participate. In addition it is clear that interaction and involvement of key stakeholders drawn from local structures is essential for sustainability<sup>xx</sup>.

MICRONUTRIENT SUPPLEMENTATION INCLUDING ZINC. Zinc supplementation should be routine for malnourished children. Daily prophylactic elemental zinc, 10 mg to infants and 20 mg to older children may substantially reduce the incidence of pneumonia, particularly in malnourished children. The provincial Vitamin A supplementation programme should be expanded and improved. Food-based approaches to dietary diversification (food gardens, inclusion of nutrient-rich vegetables and fruits among zero-rated VAT items should be considered).

REVIEW THE PRIMARY SCHOOL NUTRITION PROGRAMME to incorporate foods that are either cultivable or cheaply available through normal retail outlets. Include a nutritional education component in the PSNP. Liaise with relevant other sectors eg agriculture, trade, to optimize longer-term impact of PSNP.

GROWTH MONITORING should be emphasized, with appropriate local action or referral to the health sector.

IMPROVE COMPLEMENTARY FEEDING in terms of composition, frequency and hygiene, including fortification and/or supplementation with key micronutrients

### **Immunisation coverage**

REINVIGORATE THE EXPANDED PROGRAM OF IMMUNIZATION (EPI), aiming for sustained universal coverage. Here the employment of Community Health Workers should be seriously considered, perhaps as part of the Expanded Programme of Public Works. Serious consideration should be given to

adding pneumococcal conjugate vaccine – such a decision should follow an open and transparent priority setting process. It should be informed by careful evaluation of cost and expected benefit within the context of available resources and other priorities, and, open to debate and challenge by stakeholders.

## **Interventions to reduce exposure to infection and harmful environments**

PREVENTION OF MOTHER-TO CHILD TRANSMISSION OF HIV PROGRAMME (PMTCT). While the PMTCT Programme is successfully established and protecting many Western Cape children from vertically acquired HIV infection, it could be improved by a number of interventions. These include

- improved reproductive planning and early pregnancy determination for HIV positive women
- measures to increase the acceptance of HIV testing
- optimisation of ARV protocols to reduce transmission
- the establishment and implementation of a safe feeding policy.

Regarding the latter, much greater attention needs to be paid to the feeding component of PMTCT programmes. Evidence is accumulating (Goodstart project) of extensive mixed feeding occurring in all provinces, including the W Cape. Support for exclusive feeding (breast or formula) needs to be provided by community-based counsellors/supporters

There is also concern about persistent vertical HIV transmission in the case of mothers from other provinces who come to the Western Cape for obstetric care.<sup>xxi</sup> We are not aware of any initiatives to investigate the causes and implications of this phenomenon for child care in general and PMTCT in particular. We strongly recommend an investigation into this.

SMOKING CONTROL PROGRAMMES. Develop family and care giver smoking control programmes. These aim to reduce exposure to environmental tobacco smoke (ETS). 'Best practice' smoking control programmes<sup>xxii</sup> have a strong community component and include

Preventing the initiation of tobacco use among young people.

Promoting cessation among young people and adults.

Eliminating nonsmokers' exposure to ETS.

Identifying and eliminating the disparities related to tobacco use and its effects among different population groups.

The Centers for Disease Control and Prevention has produced a brief and excellent document outlining the evidence for, and elements of, such campaigns<sup>xxv</sup>.

## ESTABLISH INTERVENTIONS TO REDUCE INDOOR AND OUTDOOR AIR POLLUTION

The specific interventions recommended in order of cost effectiveness are:

- Education on "top down" ignition of fires

- Stove maintenance and replacement
- Housing insulation
- Electrification to improve energy efficiency through housing improvements. A South African example of such an approach is the Gauteng and Mpumalanga project "*Basa njengo magogo*" (light a fire like a grandmother).

REDUCE EXPOSURE TO GASTROINTESTINAL PATHOGENS. This includes improved sanitation and increasing the basic allocation of free water (presently 25 litres per person per day), as well as hygiene education and soap provision, Improve the promotion of ORT using home-based ingredients, supported by appropriately trained Community Health Workers.

HANDWASHING AND PROVISION OF SOAP may potentially significantly reduce ARI and diarrhoea incidence

## **Interventions targeting LBW**

### **Immediate level:**

#### **1. STRENGTHEN AND DEVELOP REPRODUCTIVE AND SEXUAL HEALTH SERVICES**

- Family planning -pregnancy planning, contraception, pre-pregnancy nutrition.
- Early pregnancy diagnosis service - access to local good quality early basic antenatal care and PMTCT.
- Develop good (IMCI type) case management guidelines for LBW. ("Integrated management of neonatal illness" - IMNI)
- Develop rapid response patient transport service to allow PT delivery in secondary and tertiary level hospitals.

2. ANTENATAL CARE, OBSTETRIC CARE AND CASE MANAGEMENT GUIDELINES, including family planning and regular antenatal care will prevent unwanted pregnancies, reduce closely spaced births, reduce teen pregnancies and detect causes of low birth weight. These need to be improved in both coverage and quality. Good obstetric care and case management guidelines are equally important for good outcomes.

Food supplementation during pregnancy: A pregnant woman should have access to adequate nutrition before during and after delivery in order to maintain a good nutritional status.

### **Underlying level**

SUBSTANCE ABUSE CONTROL PROGRAM (smoking, alcohol and other substances especially "tik"). Reduce smoking during pregnancy and exposure to environmental tobacco smoke (as well as smoke from burning fossil fuels).

### **Basic level**

Addressing poverty, inequality and their underlying determinants through social and labour policies that create employment and improve welfare.

Here improved coverage of old age pensions and the Child Support Grant are key

Address inequalities in access to land, and those micro- and macro-economic policies, including trade policy, that are impacting negatively on employment, incomes and diets.

Make public transport more accessible and affordable through subsidised transport to ante natal care (

Creative pro-poor economic interventions for indigent pregnant women (whatever these may be)

Address issues related to population movement between EC and WC.

## **Interventions targeting paediatric HIV**

### **Immediate level**

- **Strengthen and develop reproductive and sexual health services**
- **Family planning** -pregnancy planning, contraception,
- **early pregnancy diagnosis service** - access to local good quality early basic antenatal care and pmtct.
- **Integrate PMTCT** into overall mother and child health strategy i.e develop and strengthen links (communication and referral channels) between sexual and reproductive health service and child health and nutrition services.
- **Develop and promote case management guidelines for all HIV exposed infants** [including early case detection (4-6wk PCR), early protection against infection (bactrim and INH), early initiation of HAART, secondary and tertiary support for primary level program.
- **Safe feeding and better growth and nutrition monitoring**
  - See the background paper on Paediatric HIV.
  - Robust promotion of background exclusive breast feeding as the norm in the general population. Link BFHI to the development of Community Based EBF programs ("CBEBF") – note that BFHI is already being linked Better Births Initiative (BBI) Under the auspices of Nutrition Dept, promote robust development of feeding counseling curriculum, increase capacity to train feeding counselors (prioritise selection of trainees from high risk communities) and deployment in their own communities. Upskill them and expand their brief to include growth and nutrition monitoring especially for high risk children like LBW and those exposed to HIV. Develop *individualized feeding choice assistance tool [IFCAT]* to assist PMTCT counsellors to advise patients which feeding choice is

safest for them. (also explore pasteurized EBM and Donor EBM options)

### **Underlying level**

- Parental survival programs (including linking parents into local HIV management programs)
- Community based employment, food and income generation projects
- Maternal Education: Maternal education is an effective intervention but since levels of female education in the Western Cape are generally high the potential for further intervention in this area would be limited unless such an intervention is explicitly targeted to areas where average educational status is low.

### **Basic level**

- Addressing poverty, inequality and their underlying determinants through social and labour policies that create employment and improve welfare. Here improved coverage of old age pensions and the Child Support Grant are key
- Address inequalities in access to land, and those micro- and macro-economic policies, including trade policy, that are impacting negatively on employment, incomes and diets.
- Make public transport more accessible and affordable through subsidised transport to ante natal care (
- Creative pro-poor economic interventions for indigent pregnant women (whatever these may be)
- Address issues related to population movement between EC and WC.
- Address issues of poverty, inequity, poor access to health care and population movement between WC and EC.

### **Conclusions**

Poor child health and nutrition impose significant and long-term economic and human development costs – especially on the poorest communities, further entrenching their status. Improving child health and nutrition is not only a moral imperative, but a rational long-term investment.

The greatest burden of childhood death and disease is concentrated among the poor and the rate of improvement in these groups in the Western Cape is minimal, with both the country and the province being extremely unlikely to attain MDG4. Moreover, the gap in health outcomes between richer and poorer groups is growing.

The dominant causes of mortality and morbidity remain nutritional deficiencies and infectious diseases, with HIV/AIDS contributing significantly.

The above, proximal causes of childhood illness and death are underlain by such distal factors as low and declining real incomes, poor female

education, unhealthy environments (housing, water, sanitation) and inadequate access to quality health services. These are manifestations of growing inequalities in the distribution of economic and social resources between rich and poor.

The past few decades have seen impressive advances in our understanding and technical ability to prevent, treat and mitigate the effects of many childhood illnesses. Key examples are immunisation, treatment of diarrhoeal dehydration and prevention of mother-to-child transmission of HIV infection. The challenge, increasingly, is to implement successfully these efficacious interventions, especially among the poorest, and to adopt social policies that improve equity in child health.

Despite a widening gap between rich and poor, in terms of health outcomes and access to services, there are examples of successful large scale child health and nutrition programmes. Most of these examples demonstrate the successful implementation of a comprehensive primary health care approach where interventions have addressed simultaneously both the immediate (proximal) and the underlying (distal) factors impacting on child survival and health. In a few low-income countries broad-based approaches have resulted in significant and often sustained improvements in child and maternal health. In all of these examples – as well as in the past experience of now-industrialised rich countries – such improvements have been secured through a combination of social policies and efficacious public health interventions. In all cases a favourable political context facilitated such comprehensive and equity-oriented approaches. Such contextual factors are crucial in ensuring both investment in social services but also in providing an infrastructure and community mobilisation within which effective technologies and interventions may be most successfully and widely promoted. Participatory programme design and implementation seem to be fundamental features of many successful programmes which, in addition, need to attend to such key factors as coverage, targeting, intensity and resource mobilisation.

The dearth of examples of large-scale successful comprehensive child health programmes can be largely attributed to the dominance over the past two decades of conservative macro-economic policies. This situation can also be attributed to an accompanying narrowing of the primary health care approach, whereby some technical interventions have been preserved and promoted, while interventions to address broader social determinants (as well as participatory processes) have been denigrated or abandoned. Such 'selective', technicist approaches have been vigorously promoted as 'packages of care', which are sometimes unthinkingly abstracted from the systems and processes needed to implement and sustain them.

Public health systems, especially in poor countries and including South Africa, have been considerably weakened in the past decades by a combination of conservative macro-economic policies and health policies that constitute 'health sector reform'. Chronic underfunding of health (and social) services has led to a serious weakening of the 'delivery'

infrastructure, and especially of the human resource component. Health personnel capacity has been severely undermined as a result of the above fiscal crisis and the impact of HIV/AIDS. In addition, active recruitment of personnel by those rich countries experiencing a health workforce shortage has further depleted this resource and seriously aggravated the dysfunctionality of health systems.

The current HIV/AIDS pandemic and the new initiatives launched to address it, could potentially aggravate the crisis in child health and healthcare by diverting attention and resources away from the other – more common – health problems, and from their more fundamental, social determinants. There is also a strong possibility that new ‘vertical’ programmes and structures will be created, further delaying the long-term imperative of creating strong and sustainable ‘horizontal’ health systems. The time is long overdue for energetically translating policies into actions.

The main actions should centre around the development of well-managed and comprehensive programmes involving the health sector, other sectors and communities. The process needs to be structured into well-functioning district systems which require, in most countries, to be considerably strengthened, particularly at the household, community and primary levels. Here comprehensive health centres and their personnel should be a focus of effort, and investment in and the reinstatement of community health workers and other community workers (eg treatment and breastfeeding counsellors) should be seriously considered.

The successful development of decentralised health systems will require targeted investment in infrastructure, personnel and management, and information systems. A key primary step is capacity development of district personnel through training and guided health systems research. Such human resource development must be practice-based and problem-oriented and draw upon, and simultaneously reorientate, educational institutions and professional bodies.

Clearly, the implementation and sustenance of comprehensive primary health care requires inputs and skills that demand resources, expertise and experience not sufficiently present in the health sectors of the Western Cape. Here partnerships with non-governmental organisations with expertise in various aspects of community development is crucial.

The engagement of communities in health development needs to be pursued with much more commitment and focus. The identification of well-functioning organs of civil society, whether or not they presently are active in the health sector, needs to be urgently pursued.

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## References

**There are 3 referencing styles present in this Overview of the Burden of Childhood Diseases.**

**1: Numerical references are to be found in Appendix 2 (Low Birth Weight) and Appendix 5 (HIV/AIDS)**

**2: Alphabetised refernces are to be found in Appendix 3 (Diarrhoeal Diseases and Appendix 4 (Acute Respiratory Disorders)**

**3: Superscripted Roman numerals follow in the section below.**

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