SECTION II

Child survival and health domain

CHAPTER 5
Monitoring child health

Haroon Saloojee

Introduction

Objectives and scope

This chapter focuses on developing indicators for monitoring illness and disease during childhood and adolescence. Although access and quality of rehabilitation services are covered, they do not constitute the primary focus of the chapter. Indicators have been classified into core and additional categories, and further subdivided into five sections:[1]

- Mortality;
- Communicable and non-communicable diseases, including HIV/AIDS;
- Nutrition and anthropometrics;
- Adolescent health;
- Health services and programmes.

The chapter seeks to stimulate understanding of and commitment to the positive use of indicators by child health professionals and the broader public health community in South Africa. The desired outcome is that the indicators will aid planning, resource targeting and assessment of policy and programme impact at all levels, particularly the health district and local ward level.

Definitions

The term 'child health' encompasses child and adolescent health. In practice, infants, young children, older children, and adolescents are distinct subgroups, with different health priorities and problems, requiring different services, and sometimes needing distinct health indicators.

Rationale

A rights-based approach to monitoring child health

The right of the child to survival, development and protection is clearly articulated in the Convention on the Rights of the Child (CRC – see Appendix 1 in this volume). The CRC was ratified by the South African government in 1995, as was the African Charter on the Rights and Welfare of the Child (in 2000) (see Appendix 3, this volume).

Article 24 of the CRC enunciates children's rights related to healthcare. These rights include that State Parties recognise the right of children to the highest attainable

standard of health and access to medical services (Article 24(1)). In particular, the state is obliged to reduce infant and child mortality; to ensure the provision of necessary healthcare to all children with an emphasis on primary healthcare; to ensure appropriate prenatal and post-natal healthcare for expectant mothers; to ensure that parents and children have access to health education; and to develop preventive healthcare (Article 24(a–f)). In addition, the state is charged with the responsibility of taking effective and appropriate measures to abolish harmful traditional practices (Article 24(3)), and to promote and encourage international co-operation to progressively achieve all of the aforementioned rights (Article 24(4)).

In addition to the CRC, the International Covenant on Economic, Cultural and Social Rights (Article 12 and General Comment No. 14 of 2000), which refers to the right to the highest attainable standard of health, guides international law with regards to children's right to healthcare.

The right to healthcare services is provided for in three sections of the South African Constitution. These provide for access to healthcare services, including reproductive health and emergency services, basic healthcare for children, and medical services for detained persons and prisoners. Children's rights are enshrined in Section 28(1)(c) of the Bill of Rights (see Appendix 2, this volume), which provides for basic healthcare services for children.

Rights obligations place a legal responsibility on the South African state to develop, finance and effectively implement programmes that provide adequate services to children. Section 27(1)(b) of the Bill of Rights provides for the state to take reasonable legislative and other measures, taking resource availability into account, to achieve the progressive realisation of the right. According to the Limburg Principles on the implementation of the International Covenant on Economic, Social and Cultural Rights (UN, 1987), progressive realisation does not imply that the state can indefinitely defer efforts for the full realisation of the right. On the contrary, State Parties are to move purposefully towards the full realisation of the right and are required to take immediate steps to provide minimum core entitlements.

Monitoring the government's programming and budgeting for children's health is important in order to hold the government accountable for fulfilling its child rights obligations, and to advocate for effective and efficient programming and budgeting that advance children's health.

Reporting on children's health status

Monitoring the health status of children is not new. The United Nations Children's Fund (UNICEF) has published its annual *The State of the World's Children* since 1979, the most recent being the 2007 report (UNICEF, 2006).

Recently, many developed countries have produced national reports such as the US Federal Interagency Forum on Child and Family Statistics' report entitled *America's Children in Brief: Key National Indicators of Well-Being* (Federal Interagency Forum on Child and Family Statistics, 2004). In the US, many states produce their own reports such as those stimulated by the Kids Count project (Annie E. Casey Foundation, 2004).

South Africa has produced various reports on the health status of children. These include two recent publications: *End Decade Report on Children – South Africa* (NPA, 2001b) and *Children in South Africa: A Report on the State of the Nation's Children* (ORC, 2001). In 2003, the premier's office in Gauteng commissioned the Human Sciences Research Council (HSRC) to produce *The State of Children in Gauteng* (Dawes, 2003).

Developing indicators of child health has become a popular activity, a commendable example being the Child Health Indicators of Life and Development (CHILD) produced by the European Union's Community Health Monitoring Programme in 2002. Childwatch International[2] has played a significant role in encouraging the development of child rights indicators in some southern countries (Nicaragua, Senegal, Thailand, Vietnam and Zimbabwe). This work has recently extended to other regions.

Experience in monitoring progress, including the selection of indicators, is more widespread in the health cluster in South Africa than in most others, except education. However, while child health indicators are plentiful, they selectively cover only some of the child population. In particular, almost all the indicators involve younger children (under-five-year olds), and there are few indicators (for any age of child) covering health services. Furthermore, there are limited indicators for areas such as disability, social security and childcare, as well as standards of living.

Health goals and objectives in South Africa are guided by a set of international goals and objectives. In 2000, South Africa joined other nations in adopting the Millennium Development Goals (MDG). The MDGs include eight goals, 18 targets and 48 indicators that all members of the UN have agreed to implement by 2015 (UNICEF, 2003c). Regrettably, based on progress made as of 2006, it is predicted that more than half of signatory countries will fail to meet that goal if they continue at their current rates. The MDGs include at least four goals directly relevant to child health (see Table 5.1).

Table 5.1 Millennium Development Goals and indicators that apply to child health

Goal	Indicator
To eradicate extreme poverty and hunger.	Prevalence of underweight children under nine years of age.
To reduce child mortality.	Under-five mortality; infant mortality; proportion of one-year-old children immunised against measles.
To improve maternal health.	Proportion of births attended by skilled health personnel.
To combat HIV/AIDS, malaria and other diseases.	HIV prevalence by age, gender, race and province, and condom prevalence rate for 15–24 year olds.

Source: UNICEF (2003c)

In 2002, South Africa further committed to creating 'a world fit for children' by adopting several international goals, strategies and actions (UNICEF, 2002). These include the following:

- Reducing infant and <5 mortality rates by one-third by 2010 and by two-thirds by 2015;
- Reducing child malnutrition among children <5 years by at least one-third by 2010 with special attention to children <2 years;
- Reducing the proportion of infants infected with HIV by 20 per cent by 2005 and by 50 per cent by 2010;
- Ensuring that the reduction of maternal and neonatal morbidity and mortality is a health sector priority;
- Reducing child injuries as a result of accidents or other causes.

In addition, South Africa subscribes to the following international targets on childhood immunisation:
- 80 per cent coverage per district for each of the following vaccinations: oral polio vaccine 3; diphtheria, tetanus and pertussis (DTP) 3; and measles 1st dose;
- <10 per cent dropout rate between first and third DTP vaccine doses;
- <10 per cent dropout rate between measles 1 and 2 doses;
- 80 per cent tetanus toxoid 2 coverage for pregnant women.

The national Department of Health (DoH) has set its own priorities and targets for the period 2004–09 (DoH, 2004). These targets are guided by international child health goals, and go beyond concerns with survival. They include:
- Reducing perinatal morbidity and mortality;
- Reducing infant and child mortality and morbidity;
- Reducing HIV infection in children;
- Improving nutritional status in under-fives;
- Preventing and controlling non-communicable chronic diseases;
- Reducing violence towards women and children.

Several directorates in the DoH – child and youth health, nutrition, HIV/AIDS and sexually transmitted infections, chronic diseases and disabilities, women's health and genetics, oral health, and mental health and substance abuse – are responsible for programmes that affect the health of children. Their role includes developing national goals, objectives, indicators and policies for monitoring the attainment of national objectives and programme implementation. Further, they are responsible for providing support to provinces and districts in their implementation and monitoring of programmes.

It is disturbing that not a single of the 14 national child health goals set by the Primary Health Care Strategy for 2000 (DoH, 1997b) was achieved by 2005. It could be argued that these goals represented ideals and were never expected to be achievable. This argument, however, makes a mockery of the notion of setting goals.

Current status of child health in South Africa

Child mortality

Child mortality rates are commonly-used indicators to assess the performance of the health system in addressing the health needs of children. They also allow for comparisons between countries, and between provinces, regions and districts within a country. The national and provincial child mortality data generated by the South

African Demographic and Health Survey (SADHS) in 1998 provide the most reliable available statistics (DoH et al., 2002). The South African infant mortality rate (IMR) as determined by the SADHS in 1998 was 45.4 per 1 000 while the under-five mortality rate (U5MR) was 59.4 per 1 000 live births (see Table 5.2 for the provincial breakdown in mortality).

Table 5.2 Infant, under-five mortality and neonatal mortality rates, South Africa, 1998

Province	IMR	U5MR	Neonatal mortality rate
Eastern Cape	61.2	80.5	24.7
Free State	53.0	72.0	9.9
Gauteng	36.3	45.3	17.8
KwaZulu-Natal	74.5	52.1	23.2
Mpumalanga	63.7	47.3	23.6
Northern Cape	55.5	41.8	20.5
Limpopo*	52.3	37.2	18.3
North West	56.0	42.0	20.0
Western Cape	8.4	30.0	4.0

Note: * formerly Northern Province
Source: DoH et al. (2002)

Table 5.3 shows updated national and provincial data on IMR based on modelling. It is estimated that the IMR nationally increased in the period 1998 to 2002. The increase is approximated to be almost 14 additional infant deaths per 1 000 live births. This was almost exclusively the consequence of increased deaths from vertically acquired HIV infections.

Table 5.3 Predicted changes in South African infant mortality rates, 1998–2002

Province	1998 (1)	1998 revised (2)	2002 (3)
Eastern Cape	61.2	61.2	72.0
Free State	36.8	53.0	63.0
Gauteng	36.3	36.3	46.0
KwaZulu-Natal	52.1	52.1	68.0
Limpopo	37.2	37.2	53.0
Mpumalanga	47.3	47.3	59.0
Northern Cape	41.8	41.8	46.0
North West	36.8	42.0	56.0
Western Cape	8.4	30.0	30.0
South Africa	45.4	45.0	59.0

Sources: Bradshaw et al. (2000), DoH et al. (2002), Dorrington et al. (2002)

Concordant with the data about the rising IMR is evidence that the U5MR is also increasing in the country. The revised national estimate for 2002 was 100.0. This represents almost a doubling of the rate compared to 1998 (when the U5MR was 59.4 nationally). During the past ten years at Chris Hani Baragwanath Hospital in Soweto, deaths in admitted children (aged less than 12 years) have steadily risen from 3.9 per cent in 1992 to 11.1 per cent in 2001, despite the number of admissions remaining relatively static at 5 000–6 000 per year (Kala, 2003). Most of this increase is attributed to the increasing toll of the HIV/AIDS pandemic (Zwi et al., 1999).

The leading causes of death in children aged 0–14 years nationally, based on death notification data, are shown in Table 5.4. The top five underlying causes of death between 1997 and 2001, in order of frequency, were intestinal infection, lower respiratory tract infections, unnatural causes, HIV/AIDS and ill-defined illnesses (Stats SA, 2002). These causes were found across the nation with no specific regional variation (Stats SA, 2002). The proportion of children dying from HIV/AIDS approximately doubled during this period (Stats SA, 2002).

A Medical Research Council (MRC) team reported specifically on deaths in children *younger than five years of age* in the year 2000. HIV/AIDS was responsible for 40 per cent of all under-five deaths in that year. Low birth weight was responsible for 11 per cent of deaths. Diarrhoeal disease, lower respiratory tract infections and malnutrition, when adjusted for HIV/AIDS co-morbidity, only ranked third, fourth and fifth as causes of death, but together were responsible for 20.3 per cent of all under-five deaths in the year 2000 (Bradshaw et al., 2003).

Table 5.4 Leading underlying causes of death among children aged 0–14 years, South Africa, 1997–2001 (expressed as percentage of all deaths)

Cause	1997–2001		2001 only			
	Rank	Male (%)	Female (%)	Rank	Male (%)	Female (%)
Intestinal infection	1	15.4	16.1	2	13.7	13.7
Influenza and pneumonia	2	11.2	13.0	1	13.9	16.2
Unspecified unnatural	3	10.7	7.2	4	9.2	5.9
HIV	4	8.6	8.8	3	11.2	11.6
Ill-defined	5	7.8	8.4	5	7.5	7.7
Respiratory and cardiac (perinatal)	6	6.8	6.4	6	6.0	6.4
Malnutrition	7	6.5	6.1	7	5.4	5.2

Source: Stats SA (2002)

Communicable and non-communicable diseases

ACUTE RESPIRATORY TRACT INFECTIONS

Worldwide, respiratory infection is responsible for a greater disease burden than any other condition, as measured by disability-adjusted life years (WHO, 2002a).

Diarrhoeal disease

In the 2003 SADHS of children less than five years of age, eight per cent of mothers reported their children having diarrhoea in the previous two weeks compared to thirteen per cent in the 1998 survey (DoH et al., 2002; DoH et al., 2004). Noteworthy is that this survey was conducted during low diarrhoeal disease months. District Health Information System (DHIS) data show that a quarter of all young children (268 children per 1 000) sought treatment for diarrhoea from Primary Health Care (PHC) facilities in 2005 nationally (Saloojee & Bamford, 2006). In the 2003 SADHS just under two-thirds (63%) of children were treated with some sort of oral rehydration therapy, with about 39 per cent receiving oral rehydration solutions and a similar proportion (40%) receiving a home-made solution (DoH et al., 2004). The 1998 SADHS also showed that diarrhoea was most common in the 6–24-month age group, and was associated with rural residence, lower maternal education and being black African (DoH et al., 2002).

Tuberculosis

There is a strong relationship between HIV infection and tuberculosis (TB). This has resulted in an increasing incidence of TB (by about 20 per cent annually) and limited success of the TB control programme (DoH, 2004). The cure rate in 2004 was 54 per cent whilst the international target is 85 per cent (DoH, 2004). Of equal concern is the increasing multiple drug resistance TB rate (which was estimated to be 1.8 per cent in 2004 against a target of less than one per cent) (WHO, 2006). Official data are not disaggregated according to age and consequently do not differentiate between childhood and adult data. About 16 per cent of TB cases in Gauteng province were estimated to be paediatric (children <12 years old), based on hospital data (Edginton, 2003).

Hiv/Aids

AIDS is the leading cause of death in the country, and in 2002 it accounted for 40 per cent of all deaths. Regional differences are evident, with 52 per cent occurring in KwaZulu-Natal, and 51 per cent in Mpumalanga (Stats SA, 2002). Similarly, as discussed earlier, it accounts for 40 per cent of deaths in children younger than five years of age, and adult deaths contribute significantly to orphaning (UNAIDS et al., 2004; see also Chapter 17).

At the end of 2003, 4.7 million people – over 11.5 per cent of the population – were living with HIV/AIDS, of whom 189 000 are children (Ramkissoon et al., 2004). The national antenatal HIV positivity rate in 2005 was 30.2 per cent, which is higher than previous years (DoH, 2006a). KwaZulu-Natal had the highest rates in the country, followed by Mpumalanga and Gauteng. Nationally, HIV prevalence among teenage girls dropped from 21.0 per cent in 1998 to 15.4 per cent in 2001, and has remained constant since (DoH, 2006a). It is estimated that 96 228 babies were infected with HIV during 2003 (250 a day) by mother-to-child transmission (Ramkissoon et al., 2004).

Nutrition and anthropometrics

Stunting

Stunting is the most common form of malnutrition nationally (see Table 5.5). Stunting is defined as a low height for age when measured or compared to the normal height for that age group (Labadarios, 2000; UNICEF, 2005c). Stunting results primarily from poor feeding practices over long periods, repeated infections and poverty within households (UNICEF, 2005c). As such, the health system has little direct impact upon levels of stunting. However, it has a crucial role to play in ensuring that children's growth is monitored and that any faltering is appropriately responded to. The health system can also support families in providing optimal nutrition to infants and young children.

The World Health Organisation (WHO) has set a global target for stunting of ≤20 per cent for children over four years of age. However, the problem is greatest in children aged one to three years (UNICEF, 2005d). In response to the National Food Consumption Survey (NFCS) conducted in 1999, the national DoH has set a target of implementing regular growth monitoring and promotion for 75 per cent of all under-two year olds.

Underweight

Fewer children in the country are underweight or wasted than are stunted. However, the NFCS found little improvement in the nutritional status of young children when compared to the 1994–95 South African Vitamin A Consultative Group (SAVACG) survey (SAVACG, 1996; Labadarios, 2000). In the NFCS survey, one in ten children aged between one and nine years was underweight in the country. Malnutrition rates were higher in families with poorer housing or lower maternal education levels.

Overweight

As Table 5.5 shows, children in South Africa are not immune to the 'globesity' phenomenon with between 5 and 6 per cent of children between four and nine years of age in the country being categorised as overweight (Labadarios, 2000). There is a higher prevalence of obesity among children of better-educated mothers. A standardised analysis in 1995 of surveys from 94 countries indicated a global overweight prevalence of 3.3 per cent (6.5 per cent for southern Africa) in children aged under five years (De Onis & Blossner, 2000). Since obesity has been found to predispose individuals towards the development of diseases such as hypertension and diabetes in adult life, interventions to reduce childhood obesity in the country are worth considering.

Vitamin A

Although the prevalence of clinical signs of vitamin A deficiency is decreasing worldwide, the prevalence of marginal vitamin A deficiency in many developing countries is high, placing children at increased risk of infections and mortality. In the SAVACG study, exactly a third of children nationally had a marginal vitamin A status (SAVACG, 1996). According to WHO-accepted criteria, this prevalence of marginal vitamin A serum levels identifies the country as having a serious public health problem of vitamin A deficiency. A vitamin A supplementation programme was implemented towards the end of 2001 at all provincial and local government

Table 5.5 The anthropometric status of children aged 1–9 years, South Africa, 1999

Anthropometric parameter	1–9 years	1–3 years	4–6 years	7–9 years
Stunting	21.6	25.5	20.7	13.0
(% height for age ≤ 2SDs)	20.0–23.2•	23.0–27.9	18.2–23.3	9.8–16.1
Underweight	10.3	12.4	8.8	7.7
(% weight for age ≤ 2SDs)	9.1–11.4	10.5–14.2	7.0–10.6	5.2–10.2
Wasting	3.7	4.0	3.4	3.4
(% weight for height ≤ 2SDs)	3.0–4.4	2.9–5.1	2.2–4.5	1.7–5.1
Severe stunting	6.5	8.2	5.4	4.3
(% height for age ≤ 3SDs)	5.6–7.5	6.6–9.7	4.0–6.9	2.4–6.2
Marasmus	1.4	2.2	0.8	0.7
(% weight for age ≤ 3SDs)	1.0–1.9	1.3–3.0	0.3–1.4	0.0–1.4
Severe wasting	0.8	0.8	0.9	0.7
(% weight for height ≤ 3SDs)	0.5–1.2	0.3–1.4	0.3–1.5	0.0–1.4
Overweight	6.0	6.6	5.2	6.1
(% weight for height > + 2SDs)	5.1–6.9	5.2–8.0	3.8–6.6	3.9–8.4

Notes: • Confidence interval; SD = standard deviation
Source: NFCS (modified) (Labadarios, 2000)

health facilities for children under the age of five years. At present, there are no data on the uptake or success of the programme.

Iron status

The SAVACG (1996) survey found the prevalence of anaemia in children less than six years of age living in South Africa to be 21.4 per cent. The prevalence of moderate (6.8%) and severe (0.2%) anaemia was much lower. Iron depletion or deficiency was present in 9.8 per cent of children, and iron deficiency anaemia in 5.0 per cent of children nationally (SAVACG, 1996). These findings indicate that iron deficiency anaemia per se is not a serious problem in South Africa, except in 6–23-month-old children.

Iodine

Iodine deficiency disorders (IDD) result in illnesses such as cognitive and psycho-motor impairment, and intellectual impairment (UNICEF, 2005d). The IDD Survey 2000 found that over 10 per cent of schools nationally had pupils with low median iodine concentrations, indicating a degree of dietary iodine deficiency (SAIMR, 2000). A national survey of iodine content showed that only 62 per cent of households adequately use iodised salt, considerably short of the international goal of 90 per cent (Joose et al., 2002).

Low birth weight rate

The low birth weight (LBW) rate is considered an indicator of the socio-economic status and health of the community in general. In developed countries, it is around 6 per cent, whereas rates of 16 per cent are average for developing countries (UNICEF, 2005c). The national LBW rate is estimated to be between 13.8 per cent

and 19.2 per cent (Pattinson, 2003b). The LBW rate in Gauteng was 19.2 per cent in 2001–02 (Pattinson, 2002). This relatively high LBW rate is congruent with the urban–rural differential noted in national data on this indicator (rural areas have fewer LBW babies).

Breastfeeding

Although the majority of mothers initiate exclusive breastfeeding in South Africa, only 10.4 per cent exclusively breastfeed during the first three months of life, and this drops to 1.2 per cent by six months of age (DoH et al., 2002). Almost 50 per cent of women surveyed nationally introduced commercial infant formula milk by bottle during the first three months of life (DoH et al., 2002).

Adolescent health

Termination of pregnancy services

The Choice on Termination of Pregnancy Act (No. 92 of 1996) continues to benefit women who choose to exercise this right. The demand for this service is declining, which is an indication of fewer women having unplanned and unwanted pregnancies. Buchmann et al. (2002) conducted a study in Soweto to determine the proportion of pregnancies that ended in termination of pregnancy (TOP), with special reference to maternal age, and to measure trends from 1999 to 2001. The TOP rate for teenagers decreased from 22.3 per cent to 16.3 per cent but was higher than that for older women (15.2 per cent in 1999 and 13.2 per cent in 2001) (Buchmann et al., 2002). When further disaggregated by age, findings show that TOP rates for teenagers aged 13–16 years decreased from 28.0 per cent to 23.0 per cent, and rates for older teenagers declined significantly from 21.0 per cent to 14.9 per cent (Buchmann et al., 2002).

Health programmes

Perinatal care

The perinatal mortality rate (PNMR) is probably the most sensitive indicator of obstetric care in the country. The South African PNMR is estimated to be 40/1 000 (Pattinson, 2003a, 2003b). There is evidence that 80–85 per cent of births occur under supervision of skilled health workers in health facilities (Pattinson, 2003a, 2003b). However, recent reports suggest that in some provinces supervised deliveries may occur much less frequently than this, particularly in under-served rural areas (Pattinson, 2003a, 2003b). The mean PNMR (2000–02) from the Perinatal Problem Identification Programme (PPIP) programme in 73 sentinel sites was 34 per 1 000 births. Disparities existed between metropolitan (36.2), town (38.6) and rural (26.7) hospitals. Population-based estimates of perinatal mortality are lacking. Facility-based estimates from hospitals participating in the PPIP may either underestimate or overestimate the PNMR in South Africa. Since population-based estimates are very difficult to obtain, improvement in the quality and completeness of facility-based data offers the best prospect for true measures of perinatal mortality in South African populations.

Prevention of mother-to-child transmission programme

The prevention of mother-to-child transmission (PMTCT) programme, which started in 2001, is now available in more than 3 064 public hospitals and community health centres throughout the country (DoH, 2006b). Services offered by the programme include voluntary counselling and testing for HIV; advice on infant feeding, including the use of milk formula; and continuous counselling, education and support for 18 to 24 months for mothers. Data from the national PMTCT programme indicate that the HIV transmission rate among the 55 per cent of children participating, and who were followed to 12 months of age, was 18 per cent, pointing to an approximate 28 per cent reduction in mother-to-child transmission of HIV (Doherty et al., 2003).

Immunisation

The Expanded Programme on Immunisation aims to decrease childhood morbidity and mortality from vaccine-preventable diseases. It has various programmatic dimensions, which include vaccine procurement and distribution, cold chain management, daily immunisation services at maternal and child health clinics, and surveillance (immunisation coverage; vaccine adverse events; incidence rates of acute flaccid paralysis, measles and neonatal tetanus).

Surveillance and management systems have been strengthened, resulting in the country being certified polio-free in October 2006 (DoH, 2006c). The goal of the SA-EPI was to attain 90 per cent immunisation coverage in the first year of life for all vaccines by 2005. Current DHIS data suggest that this target was achieved nationally in 2005, despite four of the nine provinces failing to attain the target (Saloojee & Bamford, 2006). This is significantly higher than the 63 per cent found by the SADHS in 1998.

Immunisation campaigns on measles and polio have generally been successful. For example, in the 1990s, 'measles remained endemic and epidemics continued to occur periodically, but the case fatality ratio decreased sharply at the beginning of the decade' (DoH Statistical Notes, 2005, pp. 1–2).

Baby-friendly hospitals

The Baby-Friendly Hospital Initiative launched in 1991 by UNICEF and WHO aims to improve breastfeeding practices at birthing centres. A maternity facility can be designated 'baby-friendly' once it has implemented ten specific steps to support successful breastfeeding. There are over 15 000 'baby-friendly' hospitals and clinics globally. There has been a doubling of such facilities in South Africa since 2003 with 178 centres certified as 'baby friendly' by September 2005. This represents 37 per cent of all birthing centres in the country (Saloojee & Bamford, 2006).

Kangaroo Mother Care

The Kangaroo Mother Care initiative is rapidly gaining popularity. This programme, focusing on preterm and LBW babies, aims to prevent the separation of mother and baby in the first few weeks after birth, and thereby improve infant outcomes (UNICEF, 2005d). The mother swaddles her baby directly to her chest for most of the day and night, providing warmth, nutrition and comfort, and the benefits for the

baby include fewer infections, better weight gain and earlier discharge from hospital (UNICEF, 2005d).

Integrated Management of Childhood Illness

The Integrated Management of Childhood Illness (IMCI) strategy developed by the WHO has been adopted by 109 countries, including South Africa. It targets major childhood illnesses and demands an integrated approach in their management. The national DoH sought to have at least one IMCI-trained staff member at all clinics in the country by the end of 2003. By 2006, over three-quarters (76%) of PHC facilities nationally were capable of implementing IMCI, whilst one-half (48%) of PHC facilities have achieved the WHO and DoH target of having 60 per cent of professional nurses working at the facility trained in IMCI (Saloojee & Bamford, 2006). It is clear that a further major commitment from the DoH regarding training and support for the initiative is required if it is to be successfully implemented.

Integrated Nutrition Programme

Given the relatively high levels of wasting and stunting found in the NFCS in 1999, a series of strategies to improve nutrition were implemented by the national DoH. These include fortifying maize meal and wheat, promoting exclusive breastfeeding, and implementing food-based dietary guidelines. The Integrated Nutrition Programme (INP) involves nutrition education, micro-nutrition supplementation, promoting community-based growth monitoring, strengthening nutrition interventions at facilities and community levels, poverty relief, and development of community gardens. Special attention is focused on children under two years of age and on pregnant and breastfeeding women. More effort has been directed at implementing the INP in recent years. Despite this, there is scant evidence of its success. While district data are kept on the numbers of children exclusively breastfed, those receiving breast milk substitutes, and those provided with food supplements at PHC clinics, these have neither been assimilated nor published. Anecdotal evidence indicates that food supplementation is available in very few districts around the country, with even better-resourced metropolitan areas such as Johannesburg failing to provide this service.

Child health data sources

Available data

Data on children in South Africa are available from a number of sources. These are summarised in Table 5.6. Existing administrative systems run by government departments are a major potential source of data. While these databases are potentially very useful sources of information on children, they present a number of challenges, including data accuracy and quality problems. Some of the opportunities and constraints in using administrative data for the purposes of child outcome monitoring are noted in Chapter 2 in this volume.

Description of data sources

The last few years have seen the development and refinement of national and provincial minimum indicator/data sets (also called essential data sets [EDSs]) to

Table 5.6 South African child health-related data sources

Data source	Responsibility	Data collection frequency	Indicator(s)	Example(s) of available data
Census	Statistics South Africa (Stats SA)	10 years	Vital statistics	Water and sanitation accessibility
Census Replacement Survey (CRS)	Stats SA	3 years	Vital statistics	Water and sanitation accessibility
General Household Survey (GHS)	Stats SA	Annual	Information on a variety of subjects including education, health, labour market, births, access to services and quality of life	Medical aid coverage; Health worker consultations
Hospital data	Hospital	Ongoing	Morbidity; Mortality	Malnutrition rates; Accidents and injuries; HIV deaths
Primary healthcare (Minimal data set)	DoH	Ongoing	Morbidity data	Diarrhoeal disease; Respiratory infections
Food Consumption Survey	Stats SA	Periodic	Food consumption and nutrient intake of children aged 1–9 years	Anthropometric status; Dietary intake of various micronutrients
Birth and death registration	Stats SA	Ongoing	Mortality rates; Cause-specific mortality	IMR; U5MR
PPIP (maternal)	MRC unit	Ongoing	Cause-specific mortality	Stillbirths due to syphilis
PPIP (child)	MRC unit	Ongoing	Cause-specific mortality	Gastroenteritis deaths
National and provincial health department records	DoH	Ongoing	Various	Baby-friendly hospitals; IMCI training
Notification data	DoH	Ongoing	Mortality; Morbidity	Polio, measles, TB incidence
Antenatal survey	DoH	Annual	HIV seroprevalence	HIV seroprevalence
HSRC HIV seroprevalence study	HSRC	Periodic	HIV seroprevalence	HIV seroprevalence
Demographic surveillance sites	Agincourt; Hlabisa	Ongoing	Mortality; Cause-specific mortality	U5MR; Cause-specific mortality

→

Data source	Responsibility	Data collection frequency	Indicator(s)	Example(s) of available data
→ National Health Care Management Information System	DoH	Ongoing	Information systems related to healthcare services, primarily for surveillance and management	Hospital beds; Patient record; Patient billing
Birth to Twenty	Wits/MRC	Ongoing	Various	Outcome of LBW infants
International surveys	Various	Ongoing	Various	World fertility survey

enable the calculation of key indicators. The DHIS is being implemented in all provinces using the provincial EDS. All nine provinces have developed their own EDS for both PHC facilities and hospitals. This EDS for PHC contains 20 compulsory and 18 optional items. More than 98 per cent of PHC facilities report data monthly (DoH, 2004).

Notification data depend on a passive surveillance system that requires the co-operation of health professionals in both the private and public sectors. HIV seroprevalence data are obtained from sentinel sites around the country. Both of these data sources are managed by the DoH. Additional data can be obtained from the SADHS. More recent data sources include the annual Confidential Enquiries into Maternal Deaths.

Statutory agencies such as Stats SA conduct periodic surveys that gather important information on children, their families and their household circumstances. These include the Census, the GHS, the NFCS and the SADHS. The adoption of the GHS and the CRS offers opportunities for data collection from a large sample of children across the country, particularly regarding their socio-economic well-being.

Demographic surveillance sites in Limpopo province (Agincourt) and KwaZulu-Natal (Hlabisa) allow for the collection of population-based data on a regular basis, which allows for the investigation of fertility and mortality trends, for example. The use of follow-up of a birth cohort (as is the case with the Wits/MRC Birth to Twenty project)[3] also enables the description of both cross-sectional and temporal trends.

The PPIP was developed by the Maternal and Infant Health Care Strategies Research Unit of the MRC. It is a simple, user-friendly computer-based programme that, once simple perinatal data are entered, calculates various perinatal care indices, analyses the medical conditions that led to the perinatal deaths, and describes any avoidable factors, missed opportunities and sub-standard care that may have led to the deaths. It aims to estimate a national perinatal mortality rate and to identify the causes of perinatal mortality. Its location within sentinel facilities limits the extrapolation of these estimates, causes and factors to all parts

of South Africa. It is, however, the most reliable source for national and provincial perinatal and neonatal mortality data.

LIMITATIONS OF PRESENT DATA SOURCES

Key limitations include the absence of procedures by which to measure the selected indicators, a lack of reliable information systems and electronic databases, the shortcomings of traditional outcome measures, and limited skills in evaluation and research amongst those tasked with implementing the system.

It is important to note that although the registration of deaths has improved considerably since 1994, particularly since the introduction of a new death notification form in 1998, data on causes of death for South Africa and the analysis thereof are compromised by:
- Under-reporting of deaths, particularly in the rural areas of South Africa;
- The absence of identity documents in the age group 0–18 years, which accounts for under-reporting when using the population register;
- Inadequate reporting on underlying causes of death and contributing factors, despite the improved death certificate; and
- Misreporting of deaths.

The International Classification of Diseases – Tenth Edition, or ICD-10, has been adopted as a standard for disease coding in both the public and private health sectors, but its implementation is a challenge. As noted, birth and death registration has improved with the introduction of the revised first page of the birth and deaths form.

Household surveys in general are limited by their conceptualisation and implementation strategies, including survey and sampling design, sample size, questionnaire design, the implementation of fieldwork, data-capture processes and editing. The extent of some errors, for example sampling errors, can be estimated, while others cannot – for example, non-sampling errors that occur during fieldwork, and the interpretation of the meaning of questions by respondents.

Implementation of the National Health Care Management Information System has been uneven, with provinces only applying the system in selected hospitals. One consequence of this is that the system is unable to track patients who use public health facilities in various provinces (DoH, 2004).

These data sources together offer considerable potential for improving understanding of the relationship between child outcomes and the broader environment. At present, their potential cannot be realised because information from these various sources is not integrated at a single, centralised point that allows easy access by a variety of stakeholders and decision-makers. Moreover, there are no mechanisms in place for checking the reliability and validity of the various data collection methods in use for documenting particular changes in child and adolescent outcomes.

Recommended indicators for monitoring child health in South Africa

Rationale for indicator selection

There have been significant shifts in thinking around monitoring child outcomes (Dolev & Habib, 1997). While it is important to develop indicators beyond survival (i.e. well-being rather than disease), in the interests of feasibility, the focus of this chapter has been on traditional health status measures (or 'survival' indicators). However, it is noted that health status measures alone are not sufficient to describe all phenomena pertaining to health and development (well-being), because many address negative aspects such as mortality and morbidity, which measure damage already suffered by a generation of children.

The categorisation of indicators as core or additional in the tables in Part 2 of this volume was based on whether the indicator:

- Is linked to an existing routine data collection system (computerised or other automated systems, especially national or provincial data sets, hospital administrative systems, disease registers, etc.), negating or minimising the need for extra data collection resources;
- Is based on substantial research connecting it to child well-being;
- Has the ability to be measured regularly so that it can be updated and show trends over time;
- Measures large segments of the population, rather than one particular group;
- Allows for affordable and cost-effective data collection;
- Has the potential to be effective in influencing areas such as policy development or service delivery;
- Is associated with current evidence of such effectiveness.

Further, indicators which satisfied the intrinsic characteristics of indicators described by the CHILD project were selected (European Union Community Health Monitoring Programme, 2002).

The policy goals listed for each indicator represent the target set by the national DoH in various documents, including *Health Goals, Objectives, and Indicators (2001–2005)* (DoH, 2001a), and a subsequent update (DoH, 2003a; DoH Stratplan, 2006).

Conclusion

There is a relative lack of good quality routine data to monitor child health status and track the progress of child health programmes in South Africa. This makes it difficult to fully assess the effectiveness of current programmes attempting to improve child health and wellness status. Further, there are major data gaps. Thus, for example, no reliable data exist on morbidity in children from TB, chronic diseases or accidents and injuries.

This chapter has attempted to present a proposal for the development of child health indicators as one component of a child rights and well-being monitoring system for South Africa. The suggested indicators in Part 2 represent a compromise, a balance

between the desired and the possible, in the nature, number and scope of indicators selected.

A summary of South African data on child health indicators is given in Appendix 6 at the end of this volume.

NOTES

See Chapter 2 and Part 2 in this volume for an explanation of the five indicator types used for indicator design.

1   Although specific health-related phenomena, for example, injury, disability and mental health are referred to in this chapter, they are not the focus here, and are covered in more detail in chapters 6, 7 and 10 in this volume.

2   Childwatch International, <http://www.childwatch.uio.no>.

3   Wits/MRC Birth to Twenty project, <http://www.wits.ac.za/birthto20/>.