



REPUBLIC OF SOUTH AFRICA

MILLENNIUM DEVELOPMENT GOALS

**Reduce child mortality
2015**



Millennium Development Goals 4: Reduce child mortality 2015 / Statistics South Africa

Published by Statistics South Africa, Private Bag X44, Pretoria 0001

Stats SA Library Cataloguing-in-Publication (CIP) Data

Millennium Development Goals 4: Reduce child mortality / Statistics South Africa, Pretoria: Statistics South Africa, 2015

32pp

ISBN: 978-0-621-43865-9

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LIST OF ACRONYMS

AIDS	Acquired Immune Deficiency Syndrome
ART	Antiretroviral Therapy
ARV	Antiretroviral
CARMMA	Campaign on Accelerated Reduction of Maternal and Child Mortality in Africa
CoMMiC	Committee on Morbidity and Mortality in Children Under 5 Years
DHIS	District Health Information System
DHS	Demographic and Health Survey
HAART	Highly Active Antiretroviral Therapy
GHS	General Household Survey
HADCC	Health Data Advisory and Coordination Committee
HIV	Human Immunodeficiency Virus
IMR	Infant Mortality Rate
LMICs	Low and middle-income countries
MDGs	Millennium Development Goals
MNCWH&N	Maternal, Neonatal, Child and Women's Health and Nutrition
MRC	Medical Research Council
NaPeMMCo	National Perinatal Morbidity and Mortality Committee
NCCEMD	National Committee on the Confidential Enquiries into Maternal Deaths
NDOH	National Department of Health
NIDS	National Indicator Dataset
NMR	Neonatal Mortality Rate
PCR test	Polymerase Chain Reaction test
PMTCT	Prevention of Mother-to-Child Transmission
PPIP	Perinatal Problem Identification Programme
RMS	Rapid Mortality Surveillance
SDSN	Sustainable Development Solutions Network
SDGs	Sustainable Development Goals
Stats SA	Statistics South Africa
TB	Tuberculosis
U5MR	Under-five Mortality Rate
WHO	World Health Organisation

EXECUTIVE SUMMARY

Introduction

The Millennium Development Goal 4 target is to reduce, by two-thirds, between 1990 and 2015, the under-five mortality rate. South Africa has made substantial progress, but not sufficient to achieve this goal. Likewise, although significant progress has been made with regard to increasing immunisation coverage, the MDG goal of achieving 95% coverage with measles vaccine in children under one year of age has not been achieved.

However, since 1990, there have been substantial reductions in child mortality and the prevalence of the leading causes of child deaths, and improvements in the quality of life and life expectancy of young children in South Africa. The child survival picture at the beginning of the 1990s was stark for the majority of children who had been systematically excluded from access to quality services by apartheid policies. About 59 out of every 1 000 children would die before their fifth birthday – the majority as a result of entirely avoidable or treatable causes (DHS, 1998). The prevalence of the leading avoidable and/or treatable causes of child deaths – diarrhoea, pneumonia and HIV – was high and coverage of essential preventative interventions such as immunisation was far from universal. More than 30% of children under the age of one year were not immunised against measles, and even fewer (66.4%) received the full suite of primary vaccinations to protect them against preventable diseases.

The picture today is very different. The majority of children in South Africa have benefited from a national drive to improve their health and well-being, which has contributed to improvements in child mortality through improved access to preventive and promotive health services.

MDG target and progress

The target for MDG 4 was to reduce by two-thirds, between 1990 and 2015, the under-five mortality rate. The indicators were:

- To reduce under-five mortality rate to 20 per 1 000 live births
- To reduce infant mortality rate to 18 per 1 000 live births
- To increase the proportion of 1-year-old children immunised against measles to 100%

The under-five mortality rate estimated from data in the country's Vital Registration System declined from 38 deaths per 1 000 live births in 1998 to 34.3 per 1 000 in 2013. Whilst this reduction has not been sufficiently robust to meet the 2015 goal to reduce the rate by two-thirds to 20 per 1 000, there has in recent years been a sharp acceleration in the reduction of child mortality. In 2005, South Africa was one of four countries whose rates were higher than the 1990 MDG baseline. This increase was driven in the main by a sharp decline in the health status of young children due to HIV and AIDS which became the largest cause of death in children under the age of five years. However, since 2007, when the under-five mortality rate peaked at 66.9 per 1 000, a substantial decrease has been achieved. A similar pattern can be seen with regard to infant mortality. Vital registration data shows an increase from 26.4 per 1 000 in 1998 to a peak of 48.1 in 2007, followed by a rapid decline to 23.6 per 1 000 in 2013. The neonatal mortality rate dropped from 13 per 1 000 live births in 2009 to 11 per 1 000 live births in 2013.

The primary causes of death in the neonatal period are preventable and include birth asphyxia, preterm birth, and infections. The leading and equally preventable causes of death among children 12 to 59 months

include malnutrition, diarrhoeal disease, lower respiratory tract infections such as pneumonia and perinatally acquired HIV infection.

The proportion of one-year-old immunised against measles increased from 68.5% in 2001 to 91.2% in 2014.

Drivers

Improvements in child survival reflect both improvements in the socio-economic conditions for children, as well as improved coverage with key child survival interventions. Improvement in access to clean water and sanitation for many households and introduction of child support grants were two key interventions that played an important role in promoting nutritional, educational and health outcomes among children.

Likewise, improved coverage of key child survival such as immunisations, breastfeeding promotion, PMTCT, anti-retroviral therapy (ART) and treatment of common childhood illnesses (such as diarrhoea and pneumonia) using the Integrated Management of Childhood Illness (IMCI) approach, has contributed

Critical factors that facilitated these improvements included:

- A Constitution and legislative framework that enshrine the rights of children;
- Introduction of policies that aimed to address child poverty and ill-health, with provision of free health services for pregnant women and children under five being of particular importance;
- Reorientation of the health system towards primary health care. In recent years this has included the process of primary health-care re-engineering which aims to take health services closer to people by ensuring specialist clinical oversight at district level, and through provision of primary health-care services at household level by community health workers;
- Establishment of Ministerial Committees that review and analyse newborn and child deaths, provide oversight and make recommendations for improving newborn and child health;
- The development and adoption of the Maternal, Neonatal, Child and Women's Health and Nutrition Strategic Plan (MNCWH&N) 2012–2016;
- Strengthened systems for surveillance and data collection, which aimed to monitor and analyse data and use the results to inform a process of on-going improvement.

Conclusion

Despite setbacks during the mid-years of the MDG process, South Africa has made progress with regard to improving child survival and child health. However, much remains to be done.

One limitation of the MDG process has been the narrow focus on child mortality, as opposed to a more holistic approach that focuses more broadly on child health, development and well-being. The Sustainable Development Goals (SDGs) aim to locate child survival as an issue that requires commitment and contribution from more sectors and stakeholders. This more holistic approach is also reflected in the South African National Development Plan, which emphasises the importance of early childhood development.

Further reductions in child mortality as required by the SDGs will require ensuring that all children access and benefit from key child survival interventions; this will require targeted efforts to reach marginalised and vulnerable children. More attention should also be placed on ensuring that preventive and promotive programmes and interventions reach all communities and households.

There is also a need to strengthen the existing surveillance strategies for monitoring child morbidity and mortality in the country, as data based on the varied sources and systems sometimes yield conflicting data. Improving the monitoring and surveillance systems would allow a more reliable comparison of South Africa with other countries and provide a rational basis for public health prevention strategies and improvement of health-care services.

1. INTRODUCTION

1.1 CHILD MORTALITY IN THE GLOBAL CONTEXT

The last two decades have seen an overall improvement in global child mortality, with deaths among children under the age of five years dropping from approximately 12 million in 1990 to about 6.3 million in 2012 (UNICEF, 2013). This improvement has occurred in all regions of the world. Sub-Saharan Africa and South Asia, the two regions with high child mortality, have achieved reductions of 39% and 47%, respectively (United Nations, 2013).

The rate of decline in under-five mortality has been rapid over the last few years, at an estimated 3.9% between 2005 and 2012, compared to 1.2% between 1990 and 1995 (UNICEF, 2013). Despite this progress, the rate of decline in child mortality is not sufficient to meet the MDG goal to reduce child mortality by two-thirds by 2015. About 65% of all countries, mainly in low and middle-income countries (LMICs), are not on track to reach the MDG 4 target (World Bank, 2015).

The burden of under-five mortality is mainly caused by four diseases, namely pneumonia, diarrhoea, malaria and AIDS, which account for more than 40% of all deaths worldwide (UNICEF, 2014). Pneumonia and diarrhoea together account for a third of all deaths of children under the age of five years. Most of these child deaths are preventable by low-cost and highly effective interventions, including immunisations, oral rehydration solution and anti-malarials (Bhuta et al., 2014). However, coverage for many of these interventions remains low in several countries.

1.2 REDUCING CHILD MORTALITY IN SOUTH AFRICA

South Africa has made progress in reducing child mortality in the last decade. National child mortality rates rose steadily from 1995, peaking around 2006. In 2005, South Africa was one of only four countries in the world where the under-five mortality rate was higher than in the 1990 MDG baseline. The increase was attributed to the deterioration in child health due to HIV and AIDS, which became the largest cause of deaths in children younger than five years. However, between 2006 and 2010, South Africa reduced under-five mortality rates by approximately 40%. Progress on reducing child mortality has occurred due to several policy and programme changes that have improved coverage of child health interventions. These include increases in PMTCT, Anti-retroviral Therapy (ART) and immunisation coverage (Nannan et al., 2012; UNICEF, 2013; Dornington et al., 2014).

South Africa has developed policies, programmes and special committees in an effort to prevent childhood morbidity and mortality. The following are the key drivers of progress on child health:

1.2.1 Health legislation

The South African government continues to monitor the situation of children, and strong vision and leadership has helped to achieve the gains seen in the last few years. In 1995, South Africa ratified the United Nations Convention on the Rights of the Child (UNCRC). A national steering committee consisting of officials from the departments of Justice, Social Development, Basic Education, Safety and Security, and non-governmental organisations reporting to the Presidency on societal child interventions was set up. This

shows a high level of political commitment to the wellbeing of children in South Africa, which is also highlighted by the children-first principle enshrined in the Constitution.

The right to health is enshrined in the Constitution, and the National Health Act (Act No. 61 of 2003) provides for a number of basic health-care rights. Other legislation related to health care that help to create a conducive environment for the improvement of child health include, among others: the Nursing Act (Act No. 33 of 2005), which provides for the introduction of mandatory community service for nurses; the Medicines and Related Substances Amendment Act (Act No. 59 of 2002), which provides for transparency in the pricing of medicines; and the National Health Amendment Bill (2010), which established an independent entity to ensure that all health establishments comply with minimum standards through an independent entity.

1.2.2 Programme changes that have helped to improve newborn and child health

At programme level, the Department of Health continues to maintain strong oversight and has made several changes that have contributed to the improvement of newborn and child health.

The Perinatal Problem Identification Programme (PPIP)

In response to the high burden of neonatal deaths, the national Perinatal Problem Identification Programme (PPIP) was set up in 1999, to investigate the deaths of newborns in South Africa and to make recommendations for the improvement of perinatal care. Between January 2012 and December 2013, a total of 1 412 355 births, 32 662 stillbirths and 14 576 early neonatal deaths were recorded in the PPIP database from 588 sites (Pattinson & Rhoda, 2014). This represents a coverage of approximately 76% of all institutional births in the country. Each of the nine Saving Babies reports produced from the PPIP data contains details that have helped the Department of Health set its agenda for improving perinatal health. PPIP provides the National Department of Health with a system of monitoring and evaluating the impact of newborn interventions.

National Perinatal and Neonatal Morbidity and Mortality Committee (NaPeMMCo)

The National Perinatal and Neonatal Morbidity and Mortality Committee was established in March 2008 by the Minister of Health. The purpose of NaPeMMCo was to audit all perinatal and neonatal deaths occurring in the country and to produce annual reports. The committee was also set up to make recommendations on solutions for the reduction of perinatal and neonatal deaths.

Committee on Morbidity and Mortality in Children Under 5 Years (CoMMiC)

In 2008, the Minister of Health appointed a ministerial Committee on Morbidity and Mortality in Children Under 5 Years (CoMMiC), to review childhood deaths in South Africa. CoMMiC has an oversight function and facilitates the governance and development of appropriate standards of health care for South African children. This committee recommended that all existing child survival programmes implemented by the NDOH should be strengthened, namely the Primary Health Care Programme (PHCP), the Community Health Worker Programme (CHWP), the Integrated Nutrition Programme (INP), the Integrated Management of Child Illnesses (IMCI) Programme and the Prevention of Mother-to-Child Transmission (PMTCT) Programme.

Primary health-care reengineering

In 1994, health-care user fees for pregnant women and children under the age of 6 years were removed in order to improve equity in access to health-care services. The 10-point plan of 2009–2014 focused on

restructuring the health-care system to balance inequalities, promote prevention and strengthen management. These developments resulted in an initial increase in paediatric and antenatal clinic attendance, which has remained constant in recent years. This was followed by the Primary Health Care Reengineering Strategy in 2010 to strengthen preventative primary health care (PHC) services. This included the establishment of district-based specialist teams, strengthening school health services and the establishment of community health worker teams, which led to the establishment of the Integrated School Health Policy. In 2011, South Africa established ward-based community health worker (CHW) outreach teams (WBOTs), as part of a series of strategies of the Primary Health Care Reengineering Programme. The aim of this initiative that is already at implementation stage was to contribute towards increasing life expectancy, decreasing maternal and child mortality, combating HIV and AIDS, decreasing the burden of disease from TB, and strengthening health system effectiveness (Centre for Health Policy and Systems Research, 2014).

Campaign for Accelerated Reduction in Maternal and Child Mortality in Africa (CARMMA)

In 2012, the Campaign for Accelerated Reduction in Maternal and Child Mortality in Africa (CARMMA) was launched in South Africa. CARMMA is focused on six priority areas, namely strengthening access to comprehensive sexual and reproductive health services; promoting early antenatal care; improving access to skilled birth attendants; strengthening human resources; improving child survival by promoting interventions that are shown to be effective; and improving access to antiretroviral therapy (ART).

Maternal, Neonatal, Child and Women's Health and Nutrition (MNCWH&N) Strategic Plan 2012–2016

The Maternal, Neonatal, Child and Women's Health and Nutrition (MNCWH&N) Strategic Plan 2012–2016 aims to identify and strengthen priority interventions that would have the greatest impact on reducing maternal, neonatal and child mortality. Eight key strategies are identified for improving coverage, quality and equitable access of these interventions. These also include addressing social determinants of health, strengthening PHC interventions at district level and strengthening capacity of health systems and human resources, among others (Heath Systems Trust, 2013).

Integrated Management of Child Illnesses (IMCI)

One of the key policy changes instituted in 1994 was a shift to the Integrated Management of Child Illnesses (IMCI) approach to fostering child health. This focused on an improved training programme of primary health-care staff to identify and manage child illnesses. Sick children are assessed according to their symptoms and signs. Treatment is given if necessary, and the caregiver/parent is counselled and is advised on the follow-up of the patient (Woods, 2010).

The expanded programme on immunisation

Progress has been made in increasing the coverage of all essential vaccines in the country, with sustained high coverage rates recorded in the last decade. This has resulted in several achievements, including a reduction in neonatal tetanus; a reduction in cases and deaths due to measles; and the attainment of a polio-free status. In 2009, South Africa became the only country in sub-Saharan Africa to include the pneumococcal and rotavirus vaccines in its routine child immunisation schedule.

Prevention of mother-to-child transmission of HIV

The PMTCT programme coverage has greatly increased over the years. Coverage of the PMTCT programme, which includes early infant testing at 6 weeks, increased substantially in 2014. The indicator used to monitor PMTCT is the proportion of infants who test positive for HIV at 6 weeks in the DHIS – this is the PCR

positivity rate at six weeks. The national average for this indicator was 9% in 2010, which reduced significantly to 1.6% in 2014. In 2009, about 81% of all eligible children living with HIV and AIDS received ARV treatment (National Department of Health, 2010; Goga, Dinh & Jackson, 2012). Coverage for early infant diagnosis of HIV in newborns now stands at 88%. In accordance with the 2010 Paediatric HIV guidelines, ART initiation among children has been expanded. All HIV infected children younger than five years of age are initiated on ARVs (Mureithi, 2014).

Promotion of appropriate infant feeding

The South African government revised its breastfeeding policy to actively promote breastfeeding, especially exclusive breastfeeding for at least the first six months of life and introduction of complementary feeding thereafter. In accordance with the Tshwane Declaration endorsed by the Department of Health in 2011, HIV infected mothers are no longer offered replacement feeding in health facilities, but instead are encouraged and supported to breastfeed their infants.

Other developments

The achievement of MDG 7 has seen the improvement of water and sanitation for many households in the country, and improvement in infrastructure for the provision of clean water and good sanitation to many households. Similarly, the Child Support Grant had a positive impact on promoting nutritional, educational and health outcomes among children. These developments have contributed to the reduction in child mortality in the last few years. However, in some provinces, for example Free State, poor water quality has been reported as evidenced by the Water Quality Report: 2013 and consequently, an increase in diarrhoea and dehydration cases was observed.

1.3 NEWBORN, INFANT AND CHILD HEALTH CHALLENGES IN SOUTH AFRICA

Despite the aforementioned progress and achievements in tackling newborn and child health, challenges still remain. Many newborns and children are still affected by malnutrition, pneumonia, diarrhoea and AIDS. While the IMR and U5MR have shown improvement, there has been very little progress with the NMR. Almost 40% all under-five deaths occur in neonates, and about 20 000 babies are stillborn every year (Nannan et al., 2012; Dorrington, 2014; Health Systems Trust, 2012).

South Africa has also continued to experience problems with coverage of essential interventions to reduce child mortality, including routine vaccinations (Nkonki et al., 2011; Verguet et al., 2012). Although nationally the coverage of immunisation is high, there remains some heterogeneity at district level. The measles outbreaks between 2003 and 2005 and 2009 and 2011 demonstrate that some districts have low vaccination coverage and that the risk of infection is increased in high-density metropolitan areas.

Similarly, though national PMTCT coverage is high at 96%, coverage varies between provinces and districts. In addition, there are gaps in postnatal care, infant follow-ups as well as late registration at antenatal clinics, which hamper progress in managing prevention of mother-to-child transmissions. Some of these challenges are being addressed by the country's new National Health Insurance Strategy, which aims to strengthen PHC and improve access to quality health services for all South Africans (Department of Health, 2013).

2. TARGETS, INDICATORS AND DATA SOURCES

The datasets used for baseline and targets are based on the Demographic and Health Survey (DHS) and for the status report, data obtained from routine notification through the Vital Registration Data System has been used.

Table 1: Summary of MDG 4 indicators and data sources

Target	MDG indicators	Data sources
Reduce by two-thirds, between 1990 and 2015, the mortality rate of children under five years	Under-five mortality rate (per 1 000 live births)	Stats SA, vital registration data
	Infant mortality rate (per 1 000 live births)	Stats SA, vital registration data
	Proportion of 1-year-old children immunised against measles	Department of Health, District Health Information System. Accessed February 2015
	Immunisation coverage under one year of age	Department of Health, District Health Information System. Accessed February 2015
	Life expectancy at birth	Stats SA, Mid-year population estimates, July 2014
	Diarrhoea (with dehydration) incidence under 5 years of age (per 1 000 children)	Department of Health, District Health Information System. Accessed February 2015
	Pneumonia incidence under 5 years of age (per 1 000 children)	Department of Health, District Health Information System. Accessed February 2015
	Neonatal mortality rate (per 1 000 live births)	MRC, Rapid Mortality Surveillance Report, 2012
	Prevention of Mother-to-Child Transmission (for children) Infant 1st PCR test positive around 6 weeks rate	Department of Health, District Health Information System. Accessed February 2015

Data on the MDG indicators are taken from various sources in South Africa (Table 1). The official estimates of infant and under-five mortality are made by Statistics South Africa (Stats SA) using vital registration data. The Births and Deaths Registration Act (Act No. 51 of 1992) provides for the registration of all births and deaths, including the medical certification of the cause of death, with the Department of Home Affairs using a death notification form. The Department of Home Affairs processes the registrations of birth and death forms, which are then coded and analysed by Stats SA. While the completeness of reporting on adult deaths is high, it is not so clear in the case of child deaths. The misclassification of the causes of child deaths is also problematic, particularly for HIV-related deaths, which are often not disclosed. Birth registration, on the other hand, appears to be more than 80% complete (Nannan et al., 2012).

The estimate of the neonatal mortality rate is taken from the Rapid Mortality Surveillance (RMS) report, compiled by the Medical Research Council (MRC). The RMS uses data from the District Health Information System (DHIS) to estimate the number of neonatal deaths. DHIS data is also used for five other indicators included in this report, namely proportion of 1-year-old children immunised against measles; immunisation coverage under one year of age; diarrhoea incidence; pneumonia incidence; and PMTCT.

The DHIS comprises routine data collected by the National Department of Health (NDOH) from public health facilities. Although it provides useful information, the DHIS data is an underestimate, because it does not include data from private facilities, or population-based data. The ideal indicators for diarrhoea and pneumonia incidence, for example, would be population-based data, which is not available. The Demographic and Health Survey (DHS), which could provide population-based estimates on immunisations and PMTCT coverage, has not been conducted in South Africa since 2003.

3. STATUS AT A GLANCE

Table 2: Summary of Goal 4 indicators, current status and target achievability

Goal 4: Reduce by two-thirds, between 1990 and 2015, the mortality rate of children under five							
Indicators	1994 baseline (or nearest year)	2010 status (or nearest year)	2013 status (or nearest year) 2015	Current status (2014 or nearest year) 2015	2015 target	Target achievability	Indicator type
Under-five mortality rate (per 1 000 live births)	59 (1998)	38.7 (2011)	37.5 (2012)	34.3 (2013)	20	Not Achieved	MDG
Infant mortality rate (per 1 000 live births)	54 (1998)	26.5 (2011)	24.9 (2012)	23.6 (2013)	18	Not Achieved	MDG
Proportion of 1-year-old children immunised against measles	68.5 (2001)	84.8	87.3	91.2	>95%	Not Achieved	MDG
Immunisation coverage under one year of age	66.4 (2001)	79.9	84.1	87.0	100	Not Achieved	Domesticated
Life expectancy at birth	57.6 (2001)	60.4 (2007)	60.2	61.2	70	Not Achieved	Domesticated
Diarrhoea (with dehydration) incidence under 5 years of age (per 1 000 children)	138 (2002)	16.9	12.8	14.1	No target	N/A	Domesticated
Pneumonia incidence under 5 years of age (per 1 000 children)	21 (2003)	79.4	55.1	52.9	No target	N/A	Domesticated
Neonatal mortality rate (per 1 000 live births)		13.0	11.0	11.0	No target	N/A	Domesticated
Prevention of Mother-to-Child Transmission: Infant 1st PCR test positive around 6 weeks rate		9.0	2.1	1.6	No target	N/A	Domesticated

Included in this report are nine indicators for Goal 4: three MDG indicators – under-five mortality; infant mortality; and immunisation against measles; and six domestic indicators – immunisation coverage under one year of age; life expectancy at birth; diarrhoea incidence; pneumonia incidence; neonatal mortality rate; and PMTCT (Table 2).

4. MDG 4 TARGETS AND PROGRESS PER INDICATOR

4.1 UNDER-FIVE MORTALITY RATE

Table 3: Summary of Goal 4 indicators – Under-five mortality rate

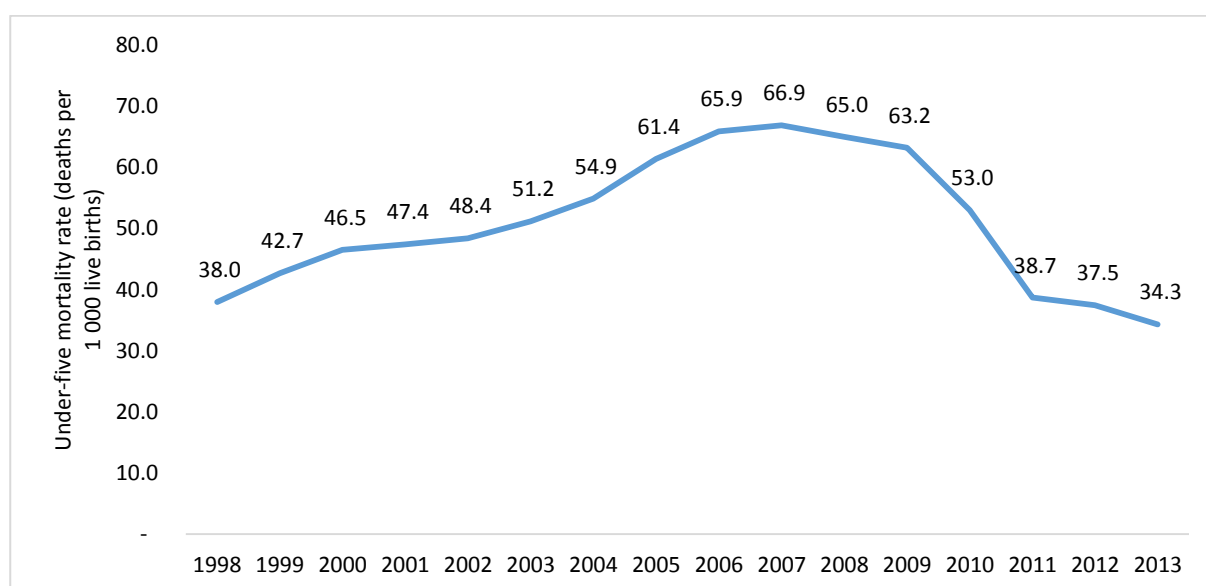
Indicator	1994 baseline (or nearest year)	2010 status (or nearest year)	2013 status (or nearest year) 2015	Current status (2014 or nearest year) 2015	2015 target	Target achievability	Indicator type
Under-five mortality rate (per 1 000 live births)	59 (1998)	38.7 (2011)	37.5 (2012)	34.3 (2013)	20	Not Achieved	MDG

The under-five mortality rate (U5MR) is expressed as the number of deaths of children under the age of five years per 1 000 live births per year. It is the probability (per 1 000) that a newborn baby will die before reaching age five, subject to age-specific mortality rates. U5MR is a key indicator of population health and development. It generally reflects the socio-economic and environmental conditions in which children live.

The latest estimate of the under-five mortality rate (U5MR) is 34.3 deaths per 1 000 live births, still above the MDG target of 20/1 000 by 2015 (DHS, 1998).

However, over the years, significant progress has been made in reducing child mortality, particularly since 2007 when U5MR was 66.9/1 000 (Figure 1). The period between 1998 and 2007 saw a steady increase in U5MR. This was the period when South Africa was struggling to contain the HIV and AIDS epidemic. After 2008, U5MR started to decline, mainly as a result of the strengthening of the PMTCT programme and inclusion of two new vaccines, namely the pneumococcus and rotavirus vaccines.

Figure 1: Under-five mortality rate, 1998–2013



Source: Vital Registration, Stats SA

4.2 INFANT MORTALITY RATE

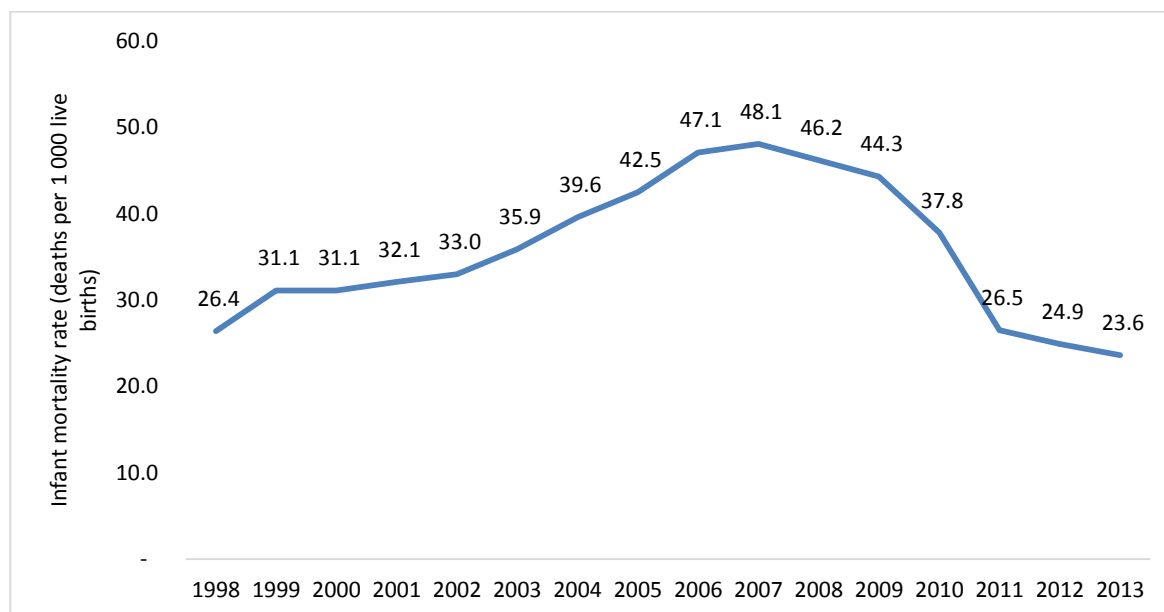
Table 4: Summary of Goal 4 indicators – Infant mortality rate

Indicator	1994 baseline (or nearest year)	2010 status (or nearest year)	2013 status (or nearest year) 2015	Current status (2014 or nearest year) 2015	2015 target	Target achievability	Indicator type
Infant mortality rate (per 1 000 live births)	54 (1998)	26.5 (2011)	24.9 (2012)	23.6 (2013)	18	Not Achieved	MDG

The infant mortality rate (IMR) is defined as the probability that a child born in a particular year will die before reaching the age of one year (expressed per thousand live births). There is no specific target for IMR in the MDGs; however, based on the reduction of two-thirds from the 1990 baseline used for U5MR, South Africa's IMR target is set to 18 deaths per 1 000 live births (Table 4). It is important to look at IMR, because deaths of children under-one-year constitute a large proportion of the under-five mortality rate.

Progress in reducing IMR has been significant in the last decade. IMR initially increased between 1998 and 2007, after which it started to rapidly decline (Figure 2). Between 2007 and 2013, IMR reduced by approximately 51%, from 48.1/1 000 in 2007 to 23.6/1 000 in 2013. Still, this is not sufficient to reach the desired target of 18/1 000 by 2015 (DHS, 1998).

Figure 2: Infant mortality rate, 1998-2013

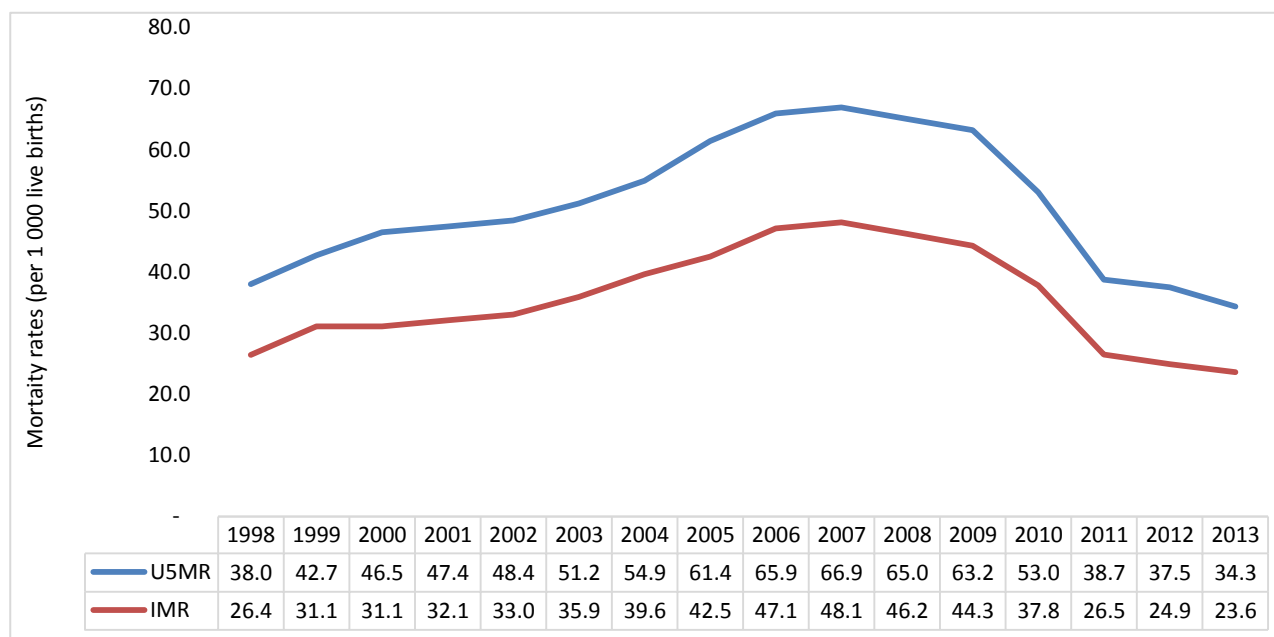


Source: Statistics South Africa

4.3 UNDER-FIVE AND INFANT MORTALITY RATES (IMR)

Figure 3 shows under-five and infant mortality rates since 1998, and the 2015 MDG target. It should be noted that data from other sources suggest somewhat different levels and trends. For example, the Demographic and Health Survey undertaken in 1998 provided an estimate of 59 deaths per 1 000 live births (compared with the 38 per 1 000 VRS estimate for the same year). Rapid Mortality Surveillance data, which has been used by the Department of Health to track under-five mortality since 2009, shows comparable levels with VRS data for the period 2009 and 2011, followed by stabilisation of the under-five mortality rate at around 40 deaths per 1 000 live births for the period 2011–2013.

Figure 3: Under-five and infant mortality rates since 1998, and the 2015 MDG target



Source: Statistics South Africa

4.4 NEONATAL MORTALITY RATE

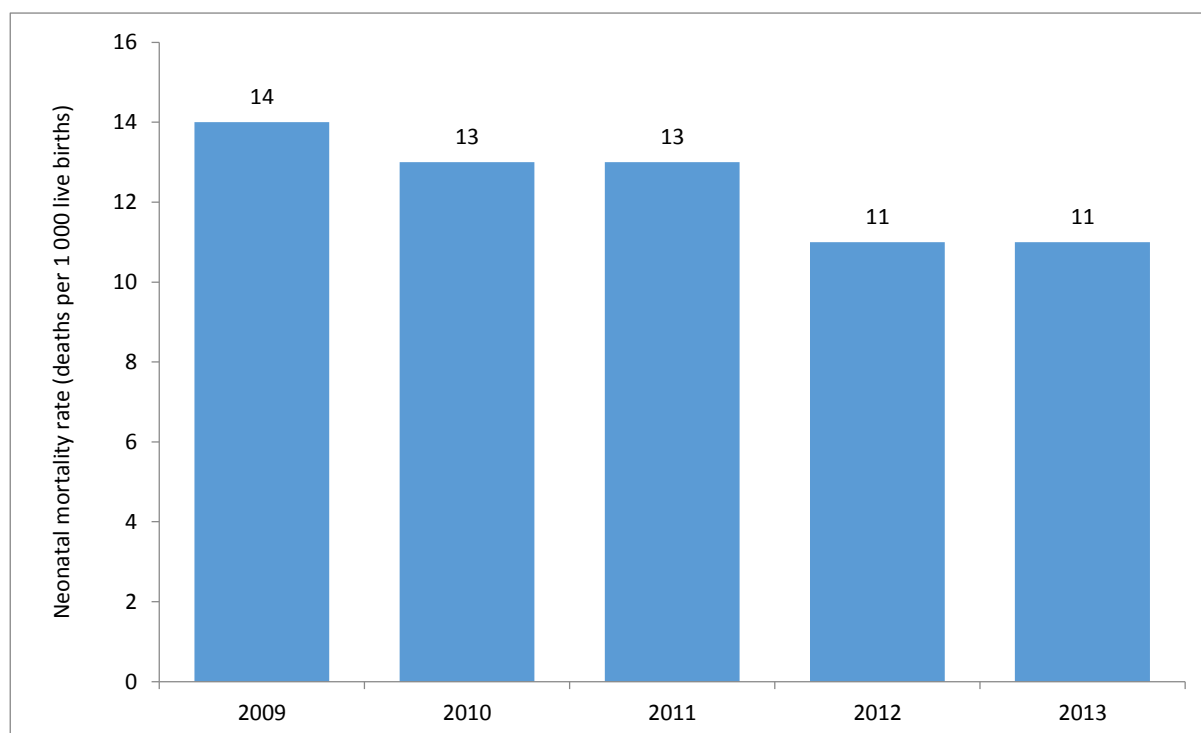
Table 5: Summary of Goal 4 indicators – Neonatal mortality rate

Indicator	1994 baseline (or nearest year)	2010 status (or nearest year)	2013 status (or nearest year) 2015	Current status (2014 or nearest year) 2015	2015 target	Target achievability	Indicator type
Neonatal mortality		13	11	11	No target	N/A	Domesticated

The neonatal mortality rate is expressed as the probability of a child dying within 28 days after birth. This is a critical period in which many newborns die from mostly preventable causes. The major causes of neonatal mortality in South Africa are birth asphyxia, preterm birth and infections. The neonatal mortality rate was not included in the MDG targets, even though deaths of children under the age of one month contribute significantly to infant and child mortality.

Figure 4 shows the trend in the neonatal mortality rate between 2009 and 2013. Progress with neonatal mortality has been slow compared to the reduction in infant and under-five mortality. There was a reduction in the neonatal mortality rate of 21%, from 14/1 000 in 2009 to 11/1 000 in 2013.

Figure 4: Neonatal mortality rate, 2009–2013



Source: Rapid Mortality Surveillance, 2014

4.5 MEASLES IMMUNISATION COVERAGE OF CHILDREN UNDER THE AGE OF ONE YEAR

Table 6: Summary of Goal 4 indicators – Measles immunisation coverage of children under the age of one year

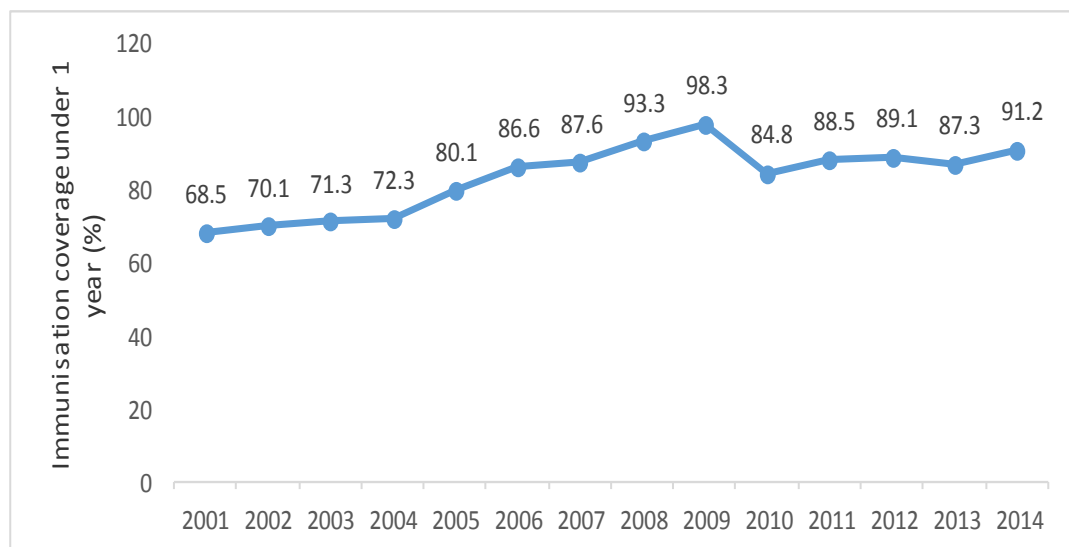
Indicators	1994 baseline (or nearest year)	2010 status (or nearest year)	2013 status (or nearest year) 2015	Current status (2014 or nearest year) 2015	2015 target	Target achievability	Indicator type
Proportion of 1-year-old children immunised against measles	68.5 (2001)	84.8	87.3	91.2	> 95	Not Achieved	MDG
Immunisation coverage under one year of age	66.4 (2001)	79.9	84.1	87	100	Not Achieved	Domesticated

South Africa monitors two indicators of immunisation coverage: the proportion of children under one year immunised against measles – an MDG indicator; and the proportion of under-one-year-old children who receive all vaccinations (tuberculosis, diphtheria, whooping cough, tetanus, polio, measles, hepatitis B, haemophilus influenza) – a domesticated indicator (Table 6).

Figure 5 shows the coverage of measles vaccination in South African of children under-one-year between 2001 and 2014. The general trend in measles vaccination coverage has been positive since 2001. At

baseline, vaccination was 68.5% in 2001 and increased to 98.3% in 2009. The estimates for 2010 to 2014 are lower than the peak of 98.3% observed in 2009. This results must, however, be interpreted with caution since the 2010–2014 estimates are adjusted based on the population obtained in the 2011 census, while those in the 2001–2009 period use figures from the 2001 population census.

Figure 5: Proportion of one-year-old children immunised against measles



Source: District Health Information System (DHIS), Department of Health

Note: 2010–2014 estimates are adjusted based on the population obtained in the 2011 census, while those in the 2001–2009 are adjusted based on the 2001 population census.

The proportion of one-year-old children immunised against measles increased across all provinces over the twelve-year period. In 2014, coverage ranged from 81.1% for Mpumalanga to 91.4% in Western Cape, and over 100% in Gauteng (Table 7). Coverage estimates above 100% occur when the numerator (children receiving vaccines) is higher than the denominator (population of one-year-olds), i.e. more children than are reported in a district or province receive immunisations.

Table 7: Provincial estimates of one-year-old children immunised against measles, 2003–2014

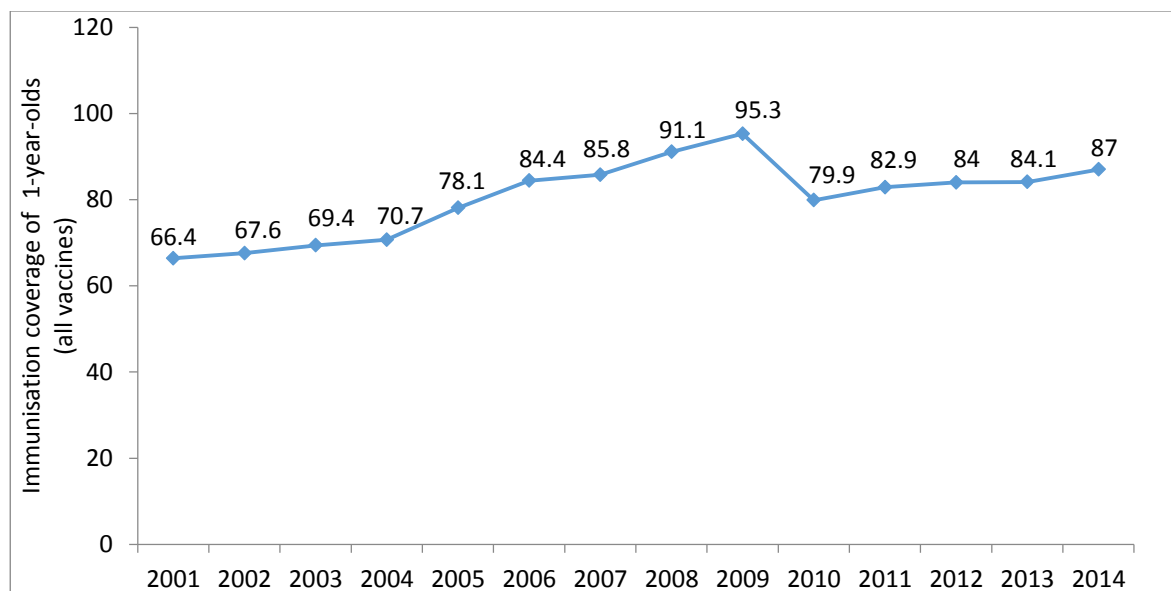
Province	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Eastern Cape	80.2	75.7	80.5	76.9	72.0	77.0	83.8	78.3	80.7	82.8	80.9	85.6
Free State	77.7	85.6	101.3	108.9	109.9	114.3	110.8	98.5	99.7	96.8	90.7	90.4
Gauteng	68.8	75.0	90.9	97.1	101.9	108.6	113.1	106.1	106.9	105.8	105.4	106.8
KwaZulu-Natal	75.2	74.4	78.3	80.1	78.4	79.6	80.7	77.2	88.9	87.7	85.5	88.9
Limpopo	84.6	83.7	88.0	94.8	85.8	89.6	92.5	81.8	83.4	82.6	78.5	90.6
Mpumalanga	65.3	68.9	76.9	79.4	79.5	80.5	82.0	72.9	72.1	76.3	77.7	81.1
Northern Cape	78.1	81.3	87.8	94.4	96.4	93.7	95.2	84.2	89.6	88.4	87.9	85.0
North West	66.0	65.8	71.2	70.4	69.3	76.4	75.9	69.9	74.2	78.8	78.4	83.6
Western Cape	75.1	76.1	79.8	86.6	89.4	91.3	95.7	89.8	88.3	91.6	89.1	91.4
National	74.3	75.5	82.9	85.8	84.5	88.1	91.2	84.8	88.5	89.1	87.3	91.2

Source: District Health Information System (DHIS), Department of Health

4.6 IMMUNISATION COVERAGE OF CHILDREN UNDER THE AGE OF ONE YEAR

The trend of the indicator of children under one year who received all vaccinations follows that of the measles immunisation coverage, with a general upward trend observed between 2001 and 2014 (Figure 6). Immunisation coverage increased from 66.4% in 2001 to 87% in 2014.

Figure 6: Proportion of under-one-year-old children who received all primary vaccinations



Source: District Health Information System (DHIS), Department of Health

Note: 2010–2014 estimates are adjusted based on the population obtained in the 2011 census, while those in the 2001–2009 are adjusted based on the 2001 population census.

There were major variations in provincial estimates of under-one-year-old children who received all primary vaccinations during the twelve-year period. In 2014, the estimates ranged from 76.2% for Mpumalanga to 105.1% for Gauteng (Table 8). All provinces except Limpopo experienced an increase in immunisation coverage between 2003 and 2014.

Table 8: Provincial estimates of under-one-year-old children who received all primary vaccinations, 2003–2014

Province	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Eastern Cape	75.2	73.1	75.5	73.0	69.3	72.3	78.3	70.4	69.4	73.6	72.1	77.9
Free State	76.2	84.2	100.0	107.8	108.8	113.1	109.4	94.3	96.7	96.0	88.8	88.0
Gauteng	68.0	74.2	90.0	95.9	100.7	107.5	109.8	104.2	107.2	102.7	107.7	105.1
KwaZulu-Natal	73.4	71.7	76.6	78.5	76.4	76.9	78.2	72.8	86.1	86.6	86.1	88.0
Limpopo	83.5	82.7	87.2	93.5	84.2	88.1	89.0	78.2	74.6	72.2	68.8	80.0
Mpumalanga	64.3	67.4	75.2	77.2	76.7	76.4	74.1	60.6	56.8	65.8	70.9	76.2
Northern Cape	76.0	80.1	86.5	92.7	94.1	91.9	91.4	81.9	87.3	87.5	85.9	83.8
North West	62.1	64.5	69.0	68.7	68.2	76.3	73.6	64.8	66.8	72.5	73.1	78.9
Western Cape	73.8	75.1	78.6	85.7	87.3	87.8	92.9	86.8	84.7	88.6	86.1	87.9
National	72.3	73.9	81.0	84.0	82.6	85.6	87.5	79.9	82.9	84.0	84.1	87.0

Source: District Health Information System (DHIS), Department of Health

4.7 MEASLES OUTBREAK 2009–2010

South Africa experienced a major measles outbreak in 2009 and 2010. A total of more than 18 000 confirmed cases were reported to the National Institute of Communicable Diseases. The reasons for the outbreaks could have been inadequate vaccination coverage and failure to maintain the cold chain. In response to the outbreak, measles immunisation campaigns were initiated throughout the country to curb the spread of the outbreak (Le Roux, Le Roux, Nuttall & Eley, 2012).

4.8 LIFE EXPECTANCY AT BIRTH

Table 9: Summary of Goal 4 indicators – Life expectancy at birth

Indicator	1994 baseline (or nearest year)	2010 status (or nearest year)	2013 status (or nearest year) 2015	Current status (2014 or nearest year) 2015 (RMS)	2015 target	Target achievability	Indicator type
Life expectancy at birth	57.6 (2001)	60.4 (2007)	60.2	62.2	70	Not achieved	Domesticated

Life expectancy at birth is the number of years that a person is expected to live after birth. There has been a steady increase in life expectancy at birth in South Africa, mainly owing to the reduction in AIDS mortality in infants and young children.

Life expectancy at birth increased from 53.4 years in 2002 to 62.2 years in 2013 (MRC, 2013). The life expectancy for females (65.1 years) is higher than that of their male counterparts (59.4 years) (see Table 10) (Stats SA & MRC, 2013). The general trend in the last decade has been positive, with an average annual addition of about 1 year to the life expectancy at birth.

Table 10: Trends in life expectancy at birth for males and females in South Africa

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	RMS 2013
Male	51.1	50.5	50.2	50.2	51.0	52.7	53.8	55.1	56.1	56.6	57.3	58.2	59.1	59.4
Female	55.7	54.8	54.1	53.9	54.8	56.6	58.1	59.4	60.3	60.6	61.3	62.1	63.1	65.1
Total	53.4	52.7	52.2	52.1	53.0	54.7	56.0	57.3	58.2	58.7	59.3	60.2	61.2	62.2

Source: Stats SA, Mid-year population estimates, July 2014; Rapid mortality surveillance report 2013 (RMS 2013)

4.9 DIARRHOEA WITH DEHYDRATION INCIDENCE FOR CHILDREN UNDER THE AGE OF FIVE YEARS (PER 1 000)

Table 11: Summary of Goal 4 indicators – Diarrhoea with dehydration incidence for children under the age of five years

Indicator	1994 baseline (or nearest year)	2010 status (or nearest year)	2013 status (or nearest year) 2015	Current status (2014 or nearest year) 2015	2015 target	Target achievability	Indicator type
Diarrhoea (with dehydration) incidence under 5 year of age (per 1 000 children)	138 (2002)	16.9	12.8	14.1	No target	N/A	Domesticated

Diarrhoea is a major cause of mortality among children, accounting for approximately 20% of under-five deaths in South Africa. The in-facility diarrhoea with dehydration incidence is used as the domestic MDG indicator for under-five diarrhoea. This indicator captures mostly the severe cases of diarrhoea that end up in facilities, and most probably underestimates the population incidence of diarrhoea, as many more cases are likely to occur and cause death outside the facility.

The national estimate for diarrhoea with dehydration incidence was estimated at 14.1/1 000 in 2014, down by 16.6% from 16.9/1 000 in 2010 (Table 12). The diarrhoea incidence was at its lowest in the five-year period at 11.4%, but has since seen an upward trend. Three provinces reduced the diarrhoea incidence in the last five years: Gauteng (41%), KwaZulu-Natal (48%) and Western Cape (23%). The rest of the provinces experienced increases in the incidence, with the highest percentage increase of 159% observed in Free State. Improved access to tapped water might be partly responsible for the decline in diarrhoea morbidity in those areas (Madhi, Bamford & Ngcobo, 2014), while the increase in some provinces could be attributed to poor water quality as evidenced by the Water Quality Report of 2013.

Table 12: Trends in diarrhoea with dehydration incidence for under-5-year-old children (per 1 000 population), 2010–2014

Province	2010	2011	2012	2013	2014
Eastern Cape	13.4	11.5	10.2	13.0	16.4
Free State	9.9	8.5	9.0	18.3	25.8
Gauteng	13.5	13.6	10.0	8.5	7.9
KwaZulu-Natal	27.6	21.5	15.2	14.2	14.2
Limpopo	13.1	14.5	11.2	13.4	14.6
Mpumalanga	10.7	8.1	7.3	10.9	14.9
North West	11.7	9.9	6.2	11.6	14.0
Northern Cape	12.8	11.5	11.6	16.3	14.2
Western Cape	21.5	16.0	16.1	15.9	16.5
National	16.9	14.4	11.4	12.8	14.1

Source: District Health Information System (DHIS), Department of Health

4.10 PNEUMONIA INCIDENCE

Table 13: Summary of Goal 4 indicators – Pneumonia incidence

Indicator	1994 baseline (or nearest year)	2010 status (or nearest year)	2013 status (or nearest year) 2015	Current status (2014 or nearest year) 2015	2015 target	Target achievability	Indicator type
Pneumonia incidence under 5 years of age (per 1 000 children)	21 (2003)	79.4	55.1	52.9	No Target	N/A	Domesticated

An indicator on pneumonia incidence has been added to the domesticated MDG reporting for South Africa (Table 13), data on which is obtained from public health facilities.

Table 14 shows the trend in pneumonia incidence in the five-year period, 2010–2014. The national average for this indicator was 79.4 per 1 000 in 2010, and by 2014 had reduced to 52.9/1 000, constituting a reduction of more than 30%. There were major variations in provincial estimates in 2014, with the lowest incidence observed in Mpumalanga (16.2/1 000) and the highest in Free State (94/1 000). All provinces except Western Cape experienced a reduction in incidence in the five-year period.

Table 14: Trends in pneumonia incidence for under-5-year-old children (per 1 000 population), 2010–2014

Province	2010	2011	2012	2013	2014
Eastern Cape	57.1	54.5	51.5	44.7	37.5
Free State	119.0	111.1	96.6	84.3	94.0
Gauteng	56.1	56.0	49.0	38.2	36.0
KwaZulu-Natal	140.1	143.7	116.4	96.3	88.8
Limpopo	49.6	49.2	37.9	35.4	33.9
Mpumalanga	38.6	37.2	26.1	20.6	16.2
North West	77.5	69.9	42.8	28.3	21.2
Northern Cape	103.1	92.7	81.9	72.3	51.3
Western Cape	65.5	68.9	61.4	64.9	85.5
National	79.4	78.7	64.9	55.1	52.9

Source: District Health Information System (DHIS), Department of Health

4.11 PREVENTION OF MOTHER-TO-CHILD TRANSMISSION OF HIV: INFANT 1ST PCR TEST POSITIVE AROUND 6 WEEKS RATE

Table 15: Summary of Goal 4 indicators – Prevention of mother-to-child transmission of HIV

Indicator	1994 baseline (or nearest year)	2010 status (or nearest year)	2013 status (or nearest year) 2015	Current status (2014 or nearest year) 2015	2015 target	Target achievability	Indicator type
Prevention of mother-to-child transmission (for children): Infant 1st PCR test positive around 6 weeks rate		9	2.1	1.6	No target	N/A	Domesticated

About 30% of children born in South Africa are believed to be exposed to HIV. Early infant diagnosis (EID) of HIV is essential, because it makes early treatment possible, which could lead to improvement in the survival of HIV-exposed children. The standard guideline for HIV testing in infancy in South Africa is a diagnostic polymerase chain reaction (PCR) test given at six weeks of age. Testing at six weeks is recommended because it has been shown that PCR tests done at this age successfully identify infections in children (Sherman, 2015).

The indicator used to monitor PMTCT is the proportion of infants who test positive for HIV at 6 weeks in the DHIS – this is the PCR positivity rate at six weeks. The national average for this indicator was 9% in 2010, which reduced significantly to 1.6% in 2014, translating to 7.4 percentage points reduction over the five-year period (Table 16). Provincial estimates reflect some variations in 2014; Limpopo recorded the highest rate at 2.4%, while KwaZulu-Natal and North West recorded the lowest rates – both at 1.4%.

Table 16: Trends in infant 1st PCR test positive around 6 weeks rate, 2010–2014

Province	2010	2011	2012	2013	2014
Eastern Cape	7.5	4.7	3.1	2.3	1.8
Free State	6.8	3.6	2.5	3.1	1.7
Gauteng	7.7	4.3	2.7	2.2	1.5
KwaZulu-Natal	8.2	4.1	2.6	1.8	1.4
Limpopo	25.6	5.6	2.4	2.5	2.4
Mpumalanga	10.1	4.9	3.2	2.4	1.8
North West	7.7	4.4	2.7	2.5	1.4
Northern Cape	7.6	5.5	3.2	3.2	1.9
Western Cape	3	2	1.6	1.8	1.5
National	9	4.3	2.7	2.1	1.6

Source: District Health Information System (DHIS), Department of Health

5. TOWARDS SUSTAINABLE DEVELOPMENT GOALS (SDGS)

Related Sustainable Development Goal (SDG):

Goal 3: Ensure healthy lives and promote well-being for all at all ages

Related cross-cutting goals:

Goal 1: End poverty in all its forms everywhere

Goal 2: End hunger, achieve food security and improved nutrition, and promote sustainable agriculture

Goal 6: Ensure availability and sustainable management of water and sanitation for all

Table 17: Relationship between MDG indicators and SDGs

Millennium Development Goal (MDG) indicators	Sustainable Development Goal 3 (SDG 3) indicators and cross-cutting goals
Under-five mortality rate (per 1 000 live births)	<p>By 2030, end preventable deaths of newborns and children under 5 years of age</p> <p>Neonatal, infant, and under-five mortality rates</p> <p>By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than \$1.25 a day (Goal 1)</p> <p>By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions (Goal 1)</p> <p>Implement nationally appropriate social protections systems and measures for all, including floors, and by 2030 achieve substantial coverage of the poor and vulnerable (Goal 1)</p> <p>By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations including infants, to safe, nutritious and sufficient food all year round (Goal 2)</p> <p>By 2030, end all forms of malnutrition, including achieving by 2015 the internationally agreed targets on stunting and wasting in children under five years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women (Goal 2)</p>
Infant mortality rate(per 1 000 live births)	<p>Percentage children born with low birth weight</p> <p>By 2030, end preventable deaths of newborns and children under 5 years of age</p> <p>Neonatal, infant, and under-five mortality rates</p> <p>Percentage of exclusive breastfeeding for the first 6 months of life</p> <p>Incidence, prevalence and death rates associated with TB</p> <p>By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than \$1.25 a day (Goal 1)</p> <p>By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions (Goal 1)</p> <p>Implement nationally appropriate social protections systems and measures for all, including floors, and by 2030 achieve substantial</p>

Millennium Development Goal (MDG) indicators	Sustainable Development Goal 3 (SDG 3) indicators and cross-cutting goals
	<p>coverage of the poor and vulnerable (Goal 1)</p> <p>By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations including infants, to safe, nutritious and sufficient food all year round (Goal 2)</p> <p>By 2030, end all forms of malnutrition, including achieving by 2015 the internationally agreed targets on stunting and wasting in children under five years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women (Goal 2)</p>
Proportion of 1-year-old children immunised against measles	Percentage of 1-year-old children immunised against measles

Table 18: Relationship between Domesticated indicators and SDGs

Domesticated indicators	Sustainable Development Goal 3 (SDG3) indicators and cross-cutting goals
Immunisation coverage under one year of age	<p>By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases</p> <p>Support research and development of vaccines and medicines for the communicable and non-communicable diseases that primarily affect developing countries, provide access to affordable essential medicines and vaccines in accordance with the Doha Declaration which affirms the right of developing countries to use, to the full, the provisions in the TRIPS agreement regarding flexibilities to protect public health and, in particular, provide access to medicines for all</p>
Life expectancy at birth	Healthy life expectancy at birth
Diarrhoea (with dehydration) incidence under 5 years of age(per 1 000 children)	<p>By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases</p> <p>Incidence, prevalence, and death rates associated with TB</p> <p>Incidence rate of diarrheal disease in children under five years</p> <p>Percentage of children under 5 with fever who are treated with appropriate anti-malarial drugs</p> <p>By 2030, achieve universal and equitable access to safe water and affordable drinking water (Goal 6)</p> <p>By 2030, achieve access to adequate and equitable sanitation and hygiene for all, and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations (Goal 6)</p> <p>By 2030, improve water quality by reducing pollution, eliminating dumping and minimising release of hazardous chemicals and materials, halving the proportion of untreated wastewater, and increasing recycling and safe reuse by x% globally (Goal 6)</p>
Pneumonia incidence under 5 years of age (per 1 000 children)	No related SDG indicator found
Neonatal mortality	By 2030, end preventable deaths of newborns and children under 5 years of age Neonatal, infant, and under-five mortality rates
Prevention of Mother to Child Transmission (for children) Infant 1st PCR test positive around 6 weeks rate	<p>By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases, HIV incidence, treatment rate, and mortality</p> <p>HIV prevalence, treatment rates, and mortality</p>

The Sustainable Development Goals aim to locate child survival as an issue that requires commitment and contribution from more sectors and stakeholders. This more holistic approach is also reflected in the South African National Development Plan, which emphasises the importance of early childhood development.

South Africa has a well-established civil registration and vital statistics system. However, not all deaths are registered and the quality of the cause of death information is often inadequate. It is also commended for its proactive policies and programmes to curb challenges related to child mortality. However, without a reliable child morbidity and mortality surveillance system, some of the contributions of these policies and programmes might not be realised. It has been demonstrated that the routine sources of the maternal mortality ratio, namely the vital registration and the confidential enquiry into maternal deaths, provide values that are different from the estimates from surveys and the census. It is therefore generally recognised that South Africa needs to strengthen its systems for monitoring child morbidity and mortality, in order to track progress made by the implementation of new policies, programmes and interventions through a reliable child morbidity and mortality surveillance system. Evidence shows that childbirths and child mortality surveillance suffers from under-reporting, e.g. childbirths and deaths (particularly those that occur outside health facilities) might not be reported and there is no system in place to track such births and deaths. The under-reporting of births and deaths renders the South African system inadequate for monitoring child morbidity and mortality. For the purpose of monitoring the SDGs indicators, it is paramount that the current childbirth and morbidity and mortality surveillance system in the country be improved to enable it to register all births that occur in the country, and to provide child morbidity and mortality rates that can be accessible at any point in time.

6. RECOMMENDATIONS AND CONCLUSION

South Africa has made substantial progress, but has not met its MDG 4 targets, including its domesticated indicators targeting country-specific child survival challenges and concerns. The rate of progress was hampered by an initial upswing in the child mortality rate in the first decade of the MDG period, mainly due to HIV and AIDS, which became the leading causes of death among children under the age of five years. However, the balance was restored as the country's political will and legislative, administrative and financial resources were mobilised and harnessed to address the leading causes of child mortality – notably HIV infection as a result of mother-to-child transmission of the virus.

Though significant gains have been made with child morbidity and mortality in the last few years, South Africa has met only one of its MDG 4 targets by 2015. Improvements in the coverage of several interventions (including immunisations and PMTCT) have seen a reduction in the elimination of measles cases and deaths, diarrhoea with dehydration and pneumonia, and an overall increase in life expectancy at birth. However, child mortality rates remain high, and more needs to be done in order to ensure that South Africa attains its child health goals in the next few years.

Major efforts have been made in improving facility-based interventions to improve child health, and a similar push should be made for population-based activities. It has been shown that there are significant numbers of deaths that occur outside the health system. Though lacking in representativeness and thus not to be generalised, several studies done in specific communities have highlighted the problems faced by different populations in the country (Nkonki et al., 2011).

Coverage of community or population-based interventions that have shown to be effective in reducing child mortality, such as breastfeeding promotion, access to water and sanitation and hand-washing with soap, should also be improved. This will require intensified community and home-based education and health promotion campaigns. Scaling up these interventions will also require a multi-sectoral approach, with closer collaboration between the departments of Health and Water and Sanitation, as well as Local Government.

Neonatal mortality contributes significantly to the under-five mortality rate, and efforts to reduce child survival must include a focus on the newborn period. Attention should be focused on scaling up of the high-impact interventions recommended by the National Perinatal Mortality and Morbidity Committee (NaPeMMCo). Attention to the major causes of perinatal deaths, namely prematurity, asphyxia and infection, is crucial and can yield significant results. It is therefore paramount that the recommendations by NaPeMMCo (Table 18) be implemented in order to reduce perinatal mortality in South Africa.

There is need to strengthen the existing surveillance strategies for monitoring child morbidity and mortality in the country, as data based on the varied sources and systems sometimes yields conflicting data, which might not accurately reflect child mortality rates in South Africa. Improving child mortality surveillance systems would allow a more reliable comparison of South Africa with other countries and provide a rational basis for public health prevention strategies and improvement of health-care services.

There is an on-going need for an equity-focused approach to solving the child health problem in South Africa. While national recommendations help to guide the agenda for improving child health and are necessary to gain traction, there is need to realise that districts are not homogenous and they have unique sets of challenges. Thus, district-specific solutions must be generated in order to fit the unique challenges

that are faced by the various districts. However, this is difficult to do in the absence of district-based health profiles and burden of disease estimates.

Efforts should thus be made to strengthen the coverage of population-based interventions, and to implement adequate systems to monitor the health of all children in the country.

Further reductions in child mortality as required by the SDGs will require ensuring that all children access and benefit from key child survival interventions; this will require targeted efforts to reach marginalised and vulnerable children.

Table 19: High-impact interventions to reduce neonatal mortality suggested by NaPeMMCo

RECOMMENDATIONS	INTERVENTIONS
Reduce deaths due to asphyxia	<ol style="list-style-type: none"> 1. Ensure that labour is monitored appropriately by a skilled birth attendant (ESMOE) 2. Ensure all birth attendants are skilled at a minimum in neonatal bag and mask ventilation (HBB+ESMOE) 3. Ensure that the partogram is used to monitor labour and the foetus and mother are monitored according to the prescribed norms ensuring proper data interpretation
Reduce deaths due to prematurity	<ol style="list-style-type: none"> 1. Ensure that corticosteroids are given to every woman in preterm labour 2. Ensure antibiotics are given with preterm premature rupture of membranes 3. Ensure the appropriate hospitals are skilled in the use of nasal continuous positive airway pressure 4. Ensure that all mothers of immature infants have easy access to Kangaroo Mother Care
Reduce deaths due to infection	<ol style="list-style-type: none"> 1. Promote breastfeeding (especially exclusive breastfeeding) 2. Ensure strict adherence to basic hygiene in labour wards and nurseries 3. Ensure that presumptive antibiotic therapy for at-risk newborns is available 4. Ensure clean cord care 5. Ensure case management of neonatal sepsis, meningitis and pneumonia

The key recommendations for the improvement of newborn and child health are summarised in the reports of the ministerial committees on maternal, newborn and child mortality (NCCEMD, NAPEMCO, COMMIC).

Recommendations from the inter-ministerial committees on maternal, perinatal and child mortality in South Africa

The NCCEMD made 10 key recommendations in its Saving Mothers Report, for actions on the three major causes of maternal mortality: non-pregnancy related infections, obstetric haemorrhage, and hypertension. The committee summarised its recommendations in 5 key points called the 5Hs:

- 1) Reducing deaths due to HIV/AIDS, through community mobilisation and ensuring facilities are able to screen for and initiate early treatment of HIV;
- 2) Reducing deaths due to haemorrhage by promoting preventive interventions and practising active management of the third stage of labour;
- 3) Reducing deaths due to hypertension through provision of calcium supplementation, early detection, referral and timely delivery;
- 4) Training of health workers involved in maternity care on Essential Steps in the Management of Obstetric Emergencies (ESMOE), particularly using emergency obstetric simulation training (EOST);
- 5) Health system strengthening to ensure 24-hour access to functioning emergency obstetric care – provision of dedicated inter-facility transport, development of maternity waiting homes and standardised referral criteria, among others.

NaPeMMCo has identified 8 high-impact interventions for 2013–2015 that could have a significant effect on the three main causes of neonatal deaths. These strategies include neonatal resuscitation; immediate assessment and stimulation; exclusive breastfeeding; immediate thermal care; clean birthing areas; hand-washing with soap; Kangaroo Mother Care; and full facility care. Suggested actions include effective monitoring of labour, provision of corticosteroids to every woman, and strict adherence to basic hygiene in labour wards.

CoMMiC recommended improving clinical care, placing emphasis on interventions at community and primary health-care levels. CoMMiC has made specific recommendations for neonatal care, including readmitting sick newborns back into the nursery instead of children's wards. CoMMiC has also recommended increased emphasis on interventions at community and primary health-care levels, including an effective system for postnatal care. Improvement of health information systems, in order to support the notification and registration of deaths, will improve both planning as well as recognition of the magnitude of the current situation.

6.1 RECOGNISING DISTRICT HETEROGENEITY

One consistent theme across the recommendations that have been made by several stakeholders is the need for an equity-focused approach to solving the child health problem in South Africa. Understanding that there is no "one size fits all" solution to child health problems in the various districts and provinces is key to reducing child mortality. The data consistently shows that the distribution of child mortality varies across districts. Children are more likely to die in the Eastern Cape than in the Western Cape. However, while national recommendations help to guide the agenda for improving child health and are necessary to gain traction, there is a need to realise that districts are not homogenous and they have unique sets of challenges. Thus, district-specific solutions must be generated in order to fit the unique challenges that are faced by the various districts. However, this is difficult to do in the absence of district-based health profiles and burden of disease estimates. The government should therefore invest in the generation of population-based burden of disease estimates at district level.

6.2 RECOMMENDATIONS FOR POLICY AND ACTION

Regarding the policy developments that have been put in place to improve maternal and child health, there are specific actions that need to be undertaken, and these are detailed below.

- **HIV/AIDS and TB**

Stock outs of ARVs are serious problem that has the potential to reverse previous achievements if not adequately addressed. Management ought to be strengthened in order to ensure accurate forecasting and timely ordering of drugs. Government initiatives to improve communication between suppliers, depots and facilities must be scaled up.

- **Immunisation**

There is a need to strengthen existing programmes to maintain EPI achievements and to accurately capture coverage levels to determine which districts ought to be prioritised, based on low coverage levels and high population density.

- **Breastfeeding**

Actively encouraging women to breastfeed exclusively will demand substantial commitment. The culture of mixed feeding in South Africa ought to be addressed through appropriate educational campaigns, and workplace policies that support breastfeeding need to be implemented.

- **Strengthen child morbidity and mortality surveillance system**

Data on child mortality and morbidity is based on varied sources of information and systems that sometimes yield conflicting data which might not accurately reflect the health status of children and the mortality rates in South Africa. The current surveillance system needs to be strengthened to monitor morbidity and mortality and produce accurate data necessary to inform the design of interventions and also improve the comparison of South Africa with other countries. The improved surveillance system should link the birth and death notification data files to estimate infant and neonatal mortality rates annually, and link birth files with deaths of women of reproductive age to identify deaths occurring during the ensuing 12 months after a live birth. It should also be able to track down all births and deaths that occurred outside the health facilities and ensure that they are registered and causes of death established.

6.3 CONCLUSION

South Africa has made progress with regard to MDG 4. Although evidence shows that South Africa has reached only one of its targets for MDG 4, improvements in child health and reduction in child mortality cannot be ignored. The recommendations by NaPeMMCo, NCEMD and COMMIC, if implemented as suggested, will bring great improvements in neonatal and child health and reduce neonatal and child deaths significantly. The existing surveillance strategies for monitoring child morbidity and mortality in the country need to be strengthened, as data based on the varied sources and systems sometimes yield conflicting data that might not accurately reflect child mortality rates in South Africa. Improving child morbidity and mortality surveillance systems would allow a more reliable comparison of South Africa with other countries and provide a rational basis for public health prevention strategies and improvement of health-care services.

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