6 Child health

This section includes six indicators, namely: (i) Vitamin A coverage 12–59 months; (ii) Child under 5 years diarrhoea case fatality rate; (iii) Child under 5 years pneumonia case fatality rate; (iv) Child under 5 years severe acute malnutrition case fatality rate; (v) Inpatient death under 5 years rate; and (vi) School Grade 1 screening coverage.

6.1 Vitamin A coverage 12–59 months

Duduzile F Nsibande and Nobubelo K Ngandu

Vitamin A coverage 12–59 months is defined as the proportion of children in the 12–59-month age group who receive their full quota of two doses of oral vitamin A supplementation at 4–6-month intervals each year. This indicator provides useful information on preventive child health intervention coverage and acts as a proxy indicator for access to preventive health services among 12–59-month-old children.[a,b]

Vitamin A is a micronutrient essential for normal vision, growth, development, red blood cell production and immune function.[c] Periodic vitamin A supplementation plays a vital role in protecting child health and survival in vulnerable undernourished populations.[d,e] Evidence from large, rigorously conducted community trials in South Asia and Africa have also shown that vitamin A supplementation at six-monthly intervals, and other strategies such as food fortification with vitamin A, can reduce pre-school child mortality by between 25% and 30%.[c,f,g] Vitamin A supplementation is one of the key interventions listed in the 'Protect, Prevent and Treat Strategy' for the World Health Organization (WHO) Integrated Global Action Plan for the Prevention and Control of Pneumonia and Diarrhoea (GAPPD), which aims to end preventable child deaths due to pneumonia and diarrhoea by 2025.[h]

One of the targets of Sustainable Development Goal (SDG) 3 is to end the preventable death of neonates and children under 5 years of age by 2030; in order to achieve this, SDG 3 recommends that countries aim to reduce neonatal mortality to less than 12 per 1 000 live births, and under-5 mortality to less than 25 per 1 000 live births.[i]

In developing countries, an estimated 190 million children below 5 years of age are affected by vitamin A deficiency (VAD).[j] VAD predisposes children to morbidity from respiratory diseases, visual impairment (especially night blindness/xerophthalmia), and diarrhoea and measles, which can lead to death.[k] In 2014, the WHO[l] reported that night blindness is usually observed in children between 3 and 6 years of age, and that it is the world's leading preventable cause of blindness, making it a cardinal indicator of VAD.[c]

The WHO recommends that countries with a VAD prevalence rate greater than 20% should consider this a severe public health problem requiring increased vitamin A supplement coverage.[m] Vitamin A supplementation during childhood can reduce all-cause mortality, and mortality due to diarrhoea and measles.[k] In South Africa, VAD in young children remains an important public health problem. According to the South African National Health and Nutrition Examination

a Massyn N, Day C, Dombo M, Barron P, English R, Padarath A, editors. District Health Barometer 2012/13. Durban: Health Systems Trust; October 2013. Available from: http://www.hst.org.za/publications/district-health-barometer-2012/13.

b United Nations Children's Fund (UNICEF). 2007. Vitamin A supplementation: A decade of progress. Available from http: //www.unicef.org/publications/files/Vitamin_A_Supplementation.pdf.

c Sommer A, West KP Jr., Olson JA, Ross AC. Vitamin A Deficiency: Health, Survival, and Vision. New York: Oxford University Press; 1996.

d United Nations Children's Fund (UNICEF). Pneumonia and Diarrhoea: Tackling the deadliest diseases for the world's poorest children. New York: UNICEF; 2012.

e West KP Jr., Sommer A, Palmer A, Schultink W, Habicht JP. Commentary: Vitamin A policies need rethinking. International Journal of Epidemiology. 2015; 44:292–4. doi: 10.1093/ije/dyu275.

f Fawzi WW, Chalmers TC, Herrera G, Mosteller F. Vitamin A supplementation and child mortality: A meta-analysis. JAMA. 1993; 269:898–903.

g Mayo-Wilson E, Imdad A, Herzer K, Yakoob MY, Bhutta ZA. Vitamin A supplements for preventing mortality, illness, and blindness in children aged under 5: systematic review and meta-analysis. BMJ 2011; 343:d5094.

h World Health Organization/United Nations Children's Fund. Ending preventable child deaths from pneumonia and diarrhoea by 2025. The integrated Global Action Plan for Pneumonia and Diarrhoea (GAPPD); 2013. Available from: http://www.who.int/maternal_child_adolescent/documents/global_action_plan_pneumonia_diarrhoea/en/ [Accessed 10 July 2016].

i United Nations. Transforming our world: the 2030 Agenda for Sustainable Development Goals. Available from https://sustainabledevelopment.un.org/post2015/transformingourworld [Accessed 13 July 2016].

j World Health Organization. Guideline: vitamin A supplementation in infants and children 6–59 months of age. Geneva: WHO; 2011. Available from: www.who.int/entity/nutrition/publications/micronutrients/guidelines/vas_6to59_months/en/ [Accessed 19 July 2015].

k Imdad A, Herzer K, Mayo-Wilson E, Yakoob MY, Bhutta ZA. Vitamin A supplementation for preventing morbidity and mortality in children from 6 months to 5 years of age. Cochrane Database of Systematic Reviews 2010, Issue 12. Art. No.: CD008524.

l World Health Organization. Xerophthalmia and night blindness for the assessment of clinical vitamin A deficiency in individuals and populations. Vitamin and Mineral Nutrition Information System. Geneva: WHO; 2014. Available from: WHO/NMH/NHD/EPG/14.4; http://apps. who.int/iris/bitstream/10665/133705/1/WHO_NMH_NHD_ EPG 14.4eng.pdf?ua=1 [Accessed 8 July 2016].

m World Health Organization. Serum retinol concentrations for determining the prevalence of vitamin A deficiency in populations. Vitamin and Mineral Nutrition Information System. Geneva: WHO; 2011. Available from: http://www.who.int/vmnis/indicators/retinol.pdf [Accessed 28 July 2015].

Survey (SANHANES)[n] report, 43.6% of children under 5 years of age have VAD. However, care needs to be taken when providing vitamin A supplementation[o] as there is a risk of harm if children with adequate vitamin A levels receive vitamin A supplementation.

In South Africa, the vitamin A supplementation programme was launched in 2001, and was implemented mainly in health facilities through the Expanded Programme on Immunization (EPI) and Integrated Management of Childhood Illness (IMCI) programmes in health facilities. Subsequently, in 2008 and 2009 the National Department of Health (NDoH) introduced campaigns and the national Integrated Child Health Weeks (ICHWs) which delivered an integrated package of services including vitamin A and de-worming.[p] This aimed to optimise access and coverage to children not reached by routine vitamin A supplementation. In 2011, vitamin A policy guidelines in South Africa permitted community health workers, dieticians and nutritionists to administer vitamin A during ward-based outreach services under direct or indirect supervision by a professional nurse. The 2014/15 *District Health Barometer*[q] reported that vitamin A coverage among children aged 12–59 months had remained persistently below 50% in the country since 2004/05.

Table 1 shows a remarkable success story, with vitamin A coverage more than doubling over the past 10 years, from 25.1% in 2006/07 to 57.0% in 2015/16. Overall, an increasing trend has been sustained annually, except in 2012/13 when a very small decline of 1.1 percentage points was observed due to changes in the target population estimates.[q] The biggest coverage increase took place during the past five years, from 34.6% in 2010/11 to the current 57.0% in 2015/16. A 4.8 percentage point increase was observed in the past year, raising the current vitamin A coverage rate to 52.2%. The number of provinces that reached at least 50% coverage increased from six in 2014/15 to seven in 2015/16, with coverage increasing in all these provinces. Free State (FS) was the only province with a coverage rate above 50% during the past five years, although it plateaued and did not improve much during this time.

KwaZulu-Natal (KZN) (63.8%) and the Eastern Cape (EC) (63.7%) had the highest coverage rates in 2015/16, while the Western Cape (WC) (47.3%) and Northern Cape (NC) (47.0%) had the lowest coverage rates (Figure 1).

Table 1: National and provincial vitamin A coverage 12–59 months, 2006/07–2015/16 (%)

	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16
EC	19.7	23.0	31.6	36.6	36.5	41.8	40.1	44.7	53.0	63.7
FS	36.3	36.8	41.6	38.0	39.1	57.8	59.3	54.8	58.7	58.7
GP	27.8	30.3	34.8	40.8	43.7	47.1	45.6	49.9	56.6	58.8
KZN	24.4	29.5	27.3	30.3	32.8	41.1	41.4	47.8	54.5	63.8
LP	24.7	25.1	38.3	30.6	30.3	42.9	35.8	33.8	44.4	50.0
MP	22.5	23.2	25.8	27.8	29.1	34.2	34.8	36.0	50.0	51.4
NC	31.8	28.4	32.8	27.2	26.2	31.9	34.7	38.7	45.3	47.0
NW	20.6	23.5	30.9	26.1	27.0	34.0	32.2	39.3	52.2	52.4
WC	26.5	33.6	32.0	38.2	32.3	36.3	37.8	44.4	47.4	47.3
SA	25.1	28.1	32.2	33.9	34.6	41.6	40.5	44.3	52.2	57.0

Source: DHIS.

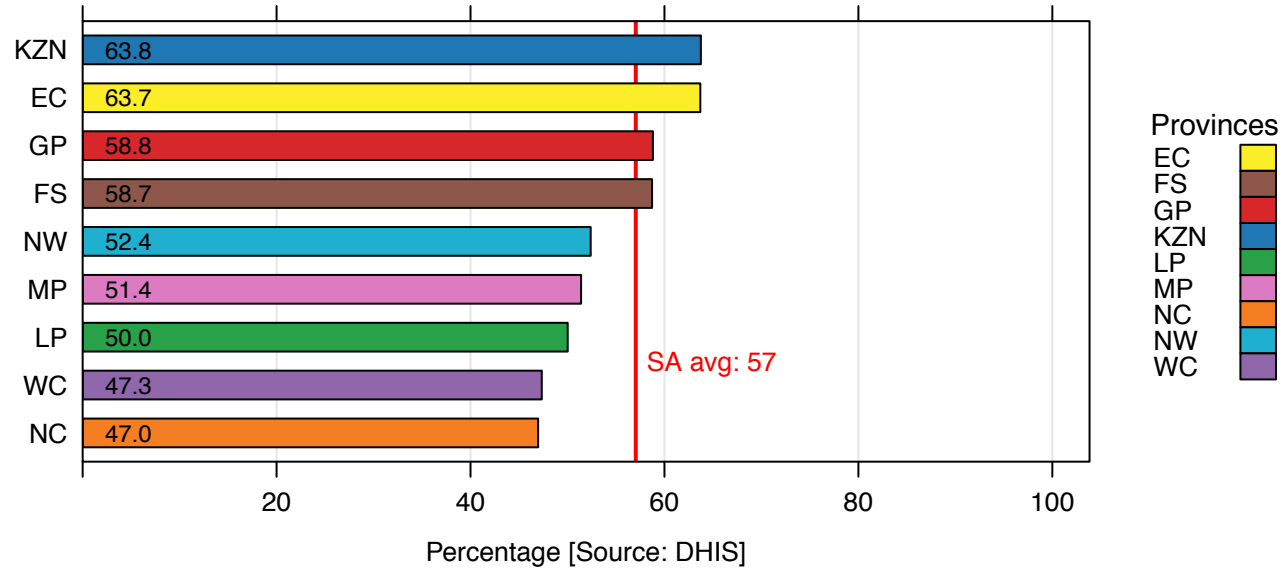
n Shisana O, Labadarios D, Rehle T, Simbayi L, Zuma K, Dhansay A, et al. & SANHANES-1 Team. South African National Health and Nutrition Examination Survey (SANHANES-1). Cape Town: HSRC Press; 2014.

o Schoeman SE, Van Stuijvenberg ME, Dhansay MA. Is prophylactic vitamin A supplementation justified in areas where liver is frequently eaten? MRC Policy Brief; February 2012.

p National Department of Health. National Vitamin A Supplementation Policy for South Africa, 2012. Available from: http://www.health.gov.za [Accessed 28 July 2015].

q Massyn N, Peer N, Padarath A, Barron P, Day C, editors. District Health Barometer 2014/15. Durban: Health Systems Trust; October 2015.

Figure 1: Vitamin A coverage 12–59 months by province, 2015/16



Map 1 highlights the distribution of high-performing and low-performing districts and sub-districts. District coverage range was very high, from 94.4% in Xhariep (FS) to 37.4% in Pixley Ka Seme (NC). Within provinces there were also wide variations in inter-district coverage rates. Examples include Xhariep (94.4%) versus Fezile Dabi (55.0%) in the Free State; Amathole (91.5%) versus N Mandela Bay (52.3%) in the Eastern Cape; and Sedibeng (71.4%) versus Tshwane (45.7%) in Gauteng Province (GP).

In 2015/16, the three districts with the highest vitamin A coverage 12–59 months were Xhariep (FS), Amathole (EC) and Uthukela (KZN), while the three with the lowest coverage were Cape Town (WC), Waterberg (Limpopo (LP)) and Pixley ka Seme (NC). In all provinces, except Mpumalanga (MP) and the Northern Cape, at least one district achieved the national average (Figure 2).

Over the last three years, Xhariep and Lejweleputswa (FS) have been among the five best-performing districts for this indicator, while Pixley ka Seme (NC) and Waterberg (LP) were the worst-performing districts in 2014/15 and 2015/16. The poorest-performing district, Pixley ka Seme, is also a National Health Insurance (NHI) district.

Map 1: Vitamin A coverage 12–59 months by sub-district, 2015/16

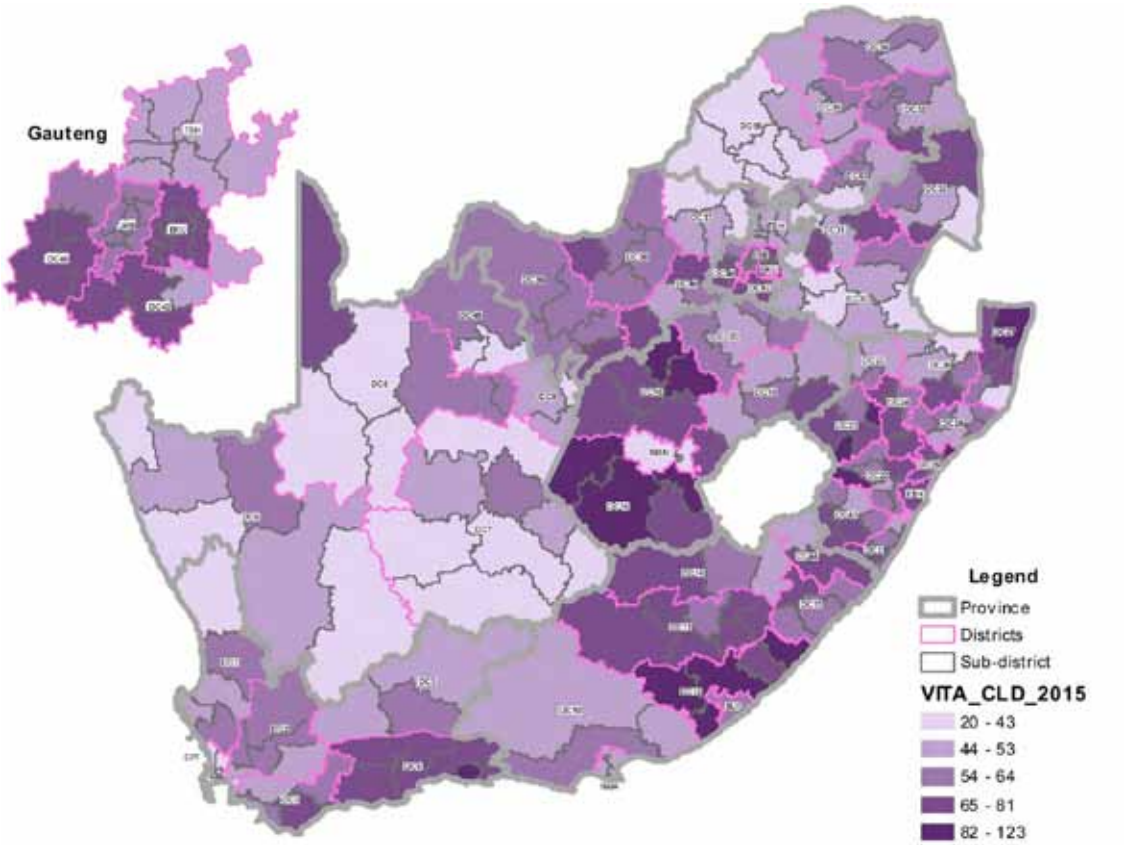


Figure 2: Vitamin A coverage 12–59 months by district, 2015/16

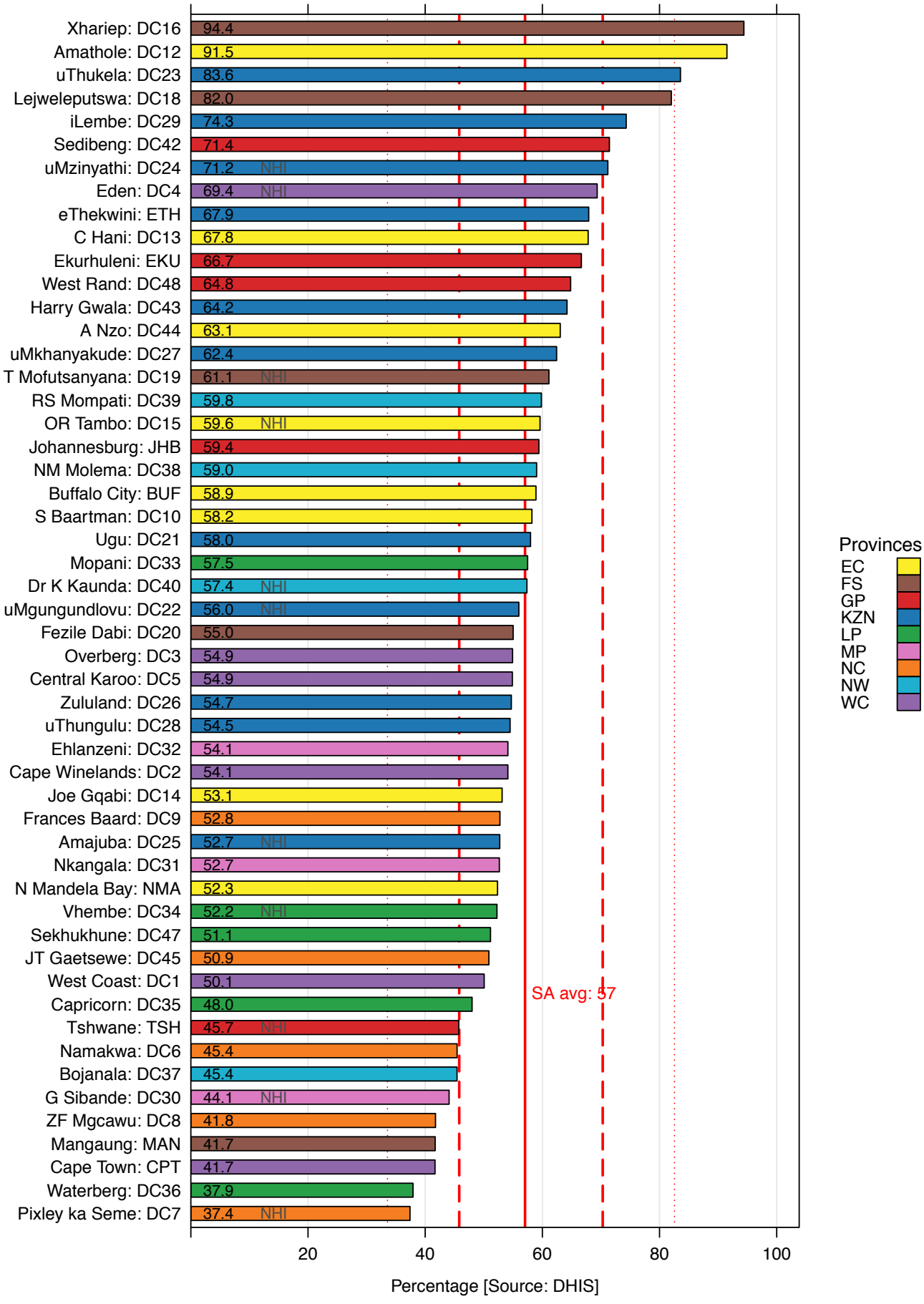


Figure 3 shows vitamin A coverage in the NHI districts. Only five of the NHI districts achieved the national average of 57.0%. uMzinyathi (KZN) achieved the highest coverage, while Pixley ka Seme (NC) had the lowest.

Figure 3: Vitamin A coverage 12–59 months by National Health Insurance district, 2015/16

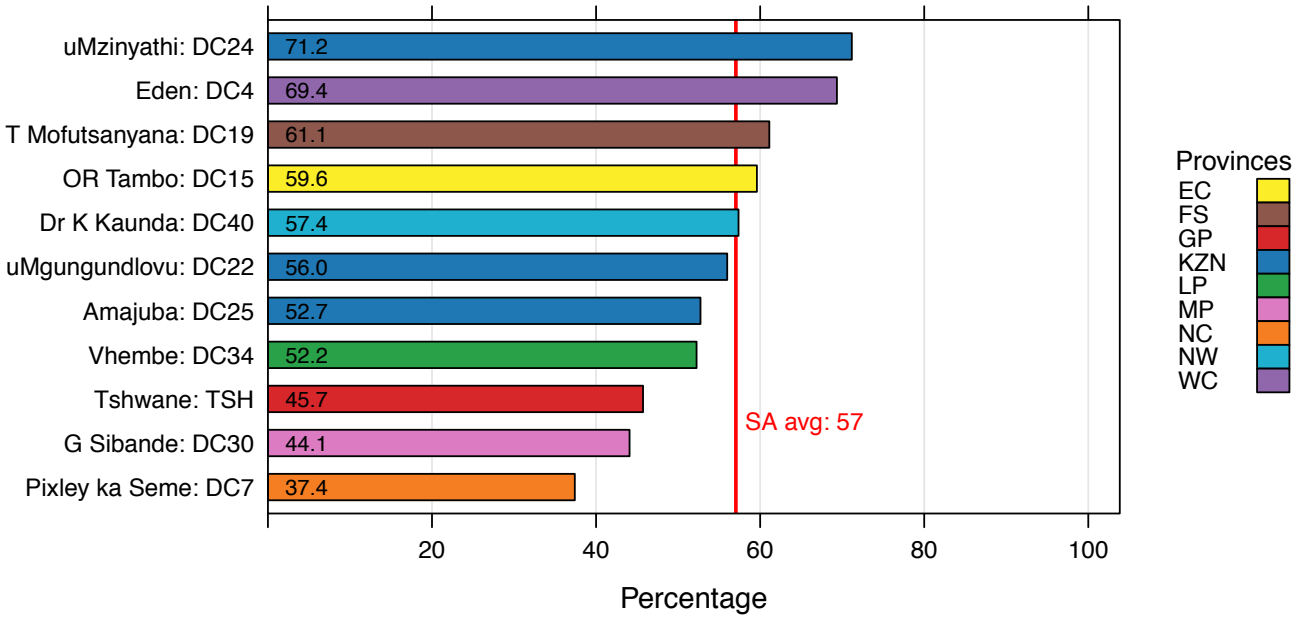
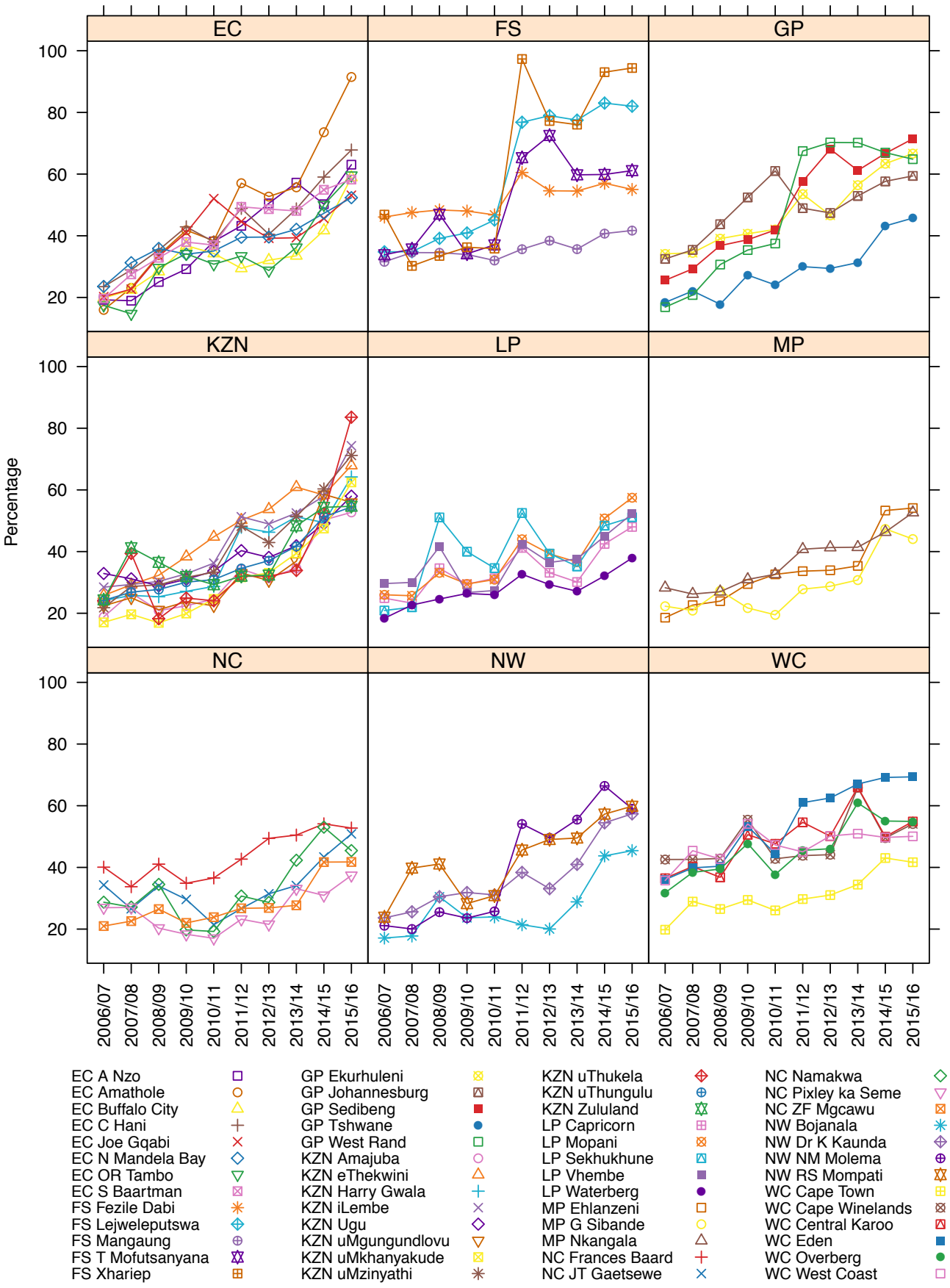


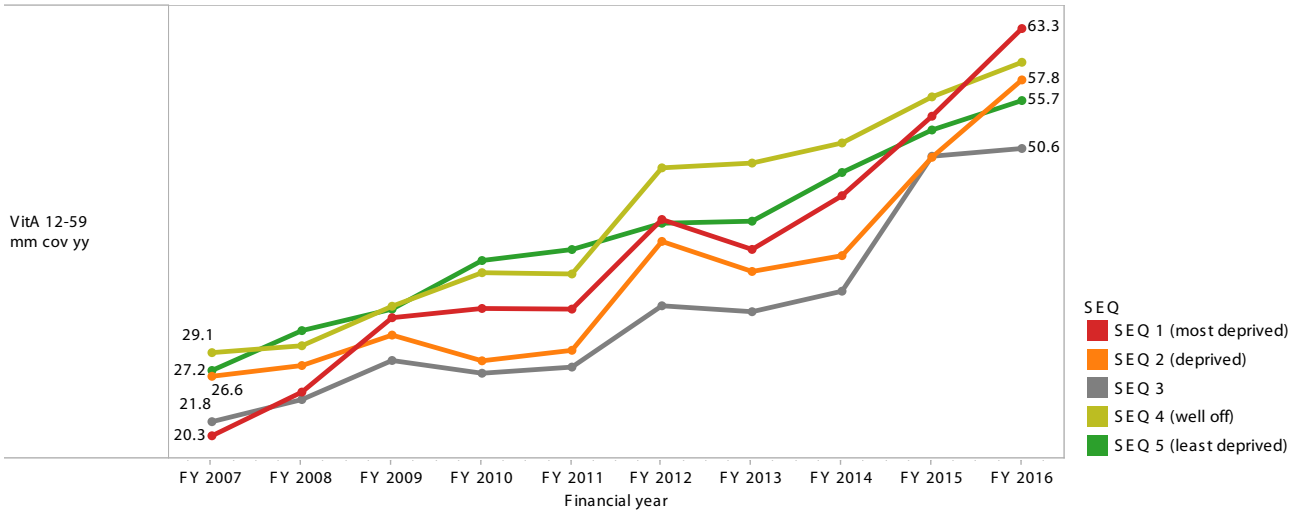
Figure 4 shows trends in district coverage over the 10-year period from 2006/07 to 2015/16. Most districts, except those in the Eastern Cape and Gauteng, progressed poorly in the first five years, without any obvious increase in vitamin A coverage. Increases in coverage became more apparent after 2012/13, with very clear upward trends for 30 districts. By 2015/16, 43 districts were showing an increase, while nine districts showed a decline for this indicator. This was similar to 2014/15. During the past two years, two districts in the Free State and two in the Western Cape showed a decline in coverage. Eastern Cape and Limpopo districts had no decline in coverage, while one district in each of the remaining five provinces experienced a drop in coverage in 2015/16.

Figure 4: Annual trends for vitamin A coverage 12–59 months



The biggest increase in vitamin A coverage took place during the period from 2013/14 to 2015/16 in all socio-economic quintiles (SEQs), with the most increase happening in the two lowest SEQs (Figure 5). By 2015/16, all SEQs had achieved coverage rates above 50%. It is difficult to interpret the trends over time as coverage rates have changed significantly. However, SEQ3 has consistently had the lowest coverage rates.

Figure 5: Trends in average district values by socio-economic quintile for vitamin A coverage 12–59 months



Key findings

- There has been sustained improvement in provincial trends for vitamin A coverage 12–59 months over the past three years.
- There are wide variations in coverage among districts in different provinces, as well as among districts within the same province. This suggests that opportunities to scale up vitamin A coverage exist but need to be enhanced through sharing of good practices between districts within each province.
- The majority of NHI districts performed below the national average.
- Substantial improvements occurred in vitamin A coverage for SEQ1 and SEQ2 over the past three years.
- These improvements could have been influenced by implementation of the 2012 National Vitamin A Supplementation Policy for South Africa[p] and the Primary Health Care Re-engineering Strategy.[r]

Recommendations

- Lessons learned, and good practices from high-performing districts, should be shared at all levels.
- Multiple approaches should be implemented to scale up coverage (such as at routine health and immunisation visits, and using community-based outreach activities), and all data should be reported in the District Health Information Software (DHIS).
- Vitamin A targets should be set and included in District Health Plans.
- Research is still needed to evaluate: (i) the impact of Ward-Based Outreach Teams on vitamin A coverage; (ii) the effect of implementing the National Vitamin A Supplementation Policy on populations with adequate dietary intake of vitamin A; and (iii) the prevalence of night blindness among children who have not received vitamin A supplementation.

r National Department of Health. Provincial Guidelines for the Implementation of the three streams of PHC Re-engineering. Pretoria: NDoH; 2011.

6.2 Child under 5 years diarrhoea case fatality rate

Vuyolwethu Magasana and Witness Chirinda

Child under 5 years diarrhoea case fatality rate (CFR) refers to the proportion of all children under 5 years admitted to hospital with diarrhoeal disease who die during admission. Case fatality rates only indicate the number of deaths that occur in facility; deaths that occur outside facilities are excluded. While CFR is a good monitoring tool, it should be applied with caution as it tends to mask substantial increases and decreases in the number of admissions and deaths. Following the Millennium Development Goal (MDG) 4 target to reduce the under-5 mortality rate by two-thirds, the Integrated Global Action Plan for the Prevention and Control of Pneumonia and Diarrhoea (GAPPD) was launched in April 2013, with the aim to reduce pneumonia deaths to fewer than 3 children per 1 000 live births and diarrhoea deaths to less than 1 per 1 000 live births by 2025.[h]

Diarrhoea is a leading cause of morbidity and mortality among children under 5 years in low- and middle-income countries, accounting for about 9% of all child under-5 deaths.[s] The risk factors for diarrhoea include HIV, poverty, undernutrition, poor hygiene, underprivileged household conditions, and poor access to appropriate care.[h,r] Due to global socio-economic inequities, these risk factors are more prevalent in under-resourced settings. As a result, children living in low- and middle-income countries are more vulnerable to diarrhoea and dehydration than their more affluent counterparts.[t] Over the past 20 years, under-5 mortality has decreased substantially; however, the overall disease burden remains unacceptably high, particularly in low- and middle-income countries.[u]

Certain known interventions and strategies are effective in the prevention and management of diarrhoeal diseases. South Africa has implemented these strategies to decrease under-5 diarrhoea mortality rates; policies have been revised and health care delivery has been improved. Examples include revision of the prevention of mother-to-child transmission of HIV (PMTCT) policy, and the breastfeeding policy to promote exclusive breastfeeding practices; introduction of vitamin A supplementation; and improved access to clean water and sanitation services.[v,w] Moreover, since 2009 South Africa has been the first country in sub-Saharan Africa to include the rotavirus vaccine (which is effective in preventing severe diarrhoea) in routine child immunisations.[x] National CFRs for diarrhoea in children under 5 have declined steadily since 2010/11 (from 7.0% in 2010/11 to 2.2% in 2015/16), and the number of deaths due to diarrhoea has more than halved in the past six years (from 2 558 in 2010/11 to 1 049 in 2015/16). There has also been an increase in the number of diarrhoea admissions since 2012/13 (Table 2).

Table 2: National diarrhoea admissions, deaths and case fatality rates in children under 5 years, 2010/11–2015/16

	Admissions (N)	Deaths (N)	Case fatality rate (%)
2010/11	36 802	2 558	7.0
2011/12	33 966	1 550	4.6
2012/13	35 692	1 526	4.3
2013/14	45 880	1 775	3.9
2014/15	45 787	1 513	3.3
2015/16	47 758	1 049	2.2

Source: DHIS.

Table 3 and Figure 6 show provincial CFRs for diarrhoea. Seven provinces reported CFRs below the national target of 3.2%. North West (NW) and the Eastern Cape remained above the national target (4.0% and 3.6% respectively). KwaZulu-Natal admitted the most children with diarrhoea, and the Eastern Cape had the most deaths for children under 5 years due to diarrhoea.

s United Nations Children's Fund. Pneumonia and diarrhoea: tackling the deadliest diseases for the world's poorest children. New York: UNICEF; 2012.

t United Nations Children's Fund. Every Child Counts: The State of the World's Children. New York: UNICEF; 2014.

u Liu L, Johnson HL, Cousens S, Perin J, Scott S, Lawn JE, et al. Global, regional, and national causes of child mortality: an updated systematic analysis for 2010 with time trends since 2000. Lancet. 2012; 379(9832):2151–61.

v Statistics South Africa. Levels and trends of morbidity and mortality among children aged under-five years in South Africa, 2006–2010. Pretoria: Statistics South Africa; 2012.

w Statistics South Africa. Water and sanitation 2002–2010: in-depth analysis of the General Household Survey data. Pretoria: Statistics South Africa; 2011.

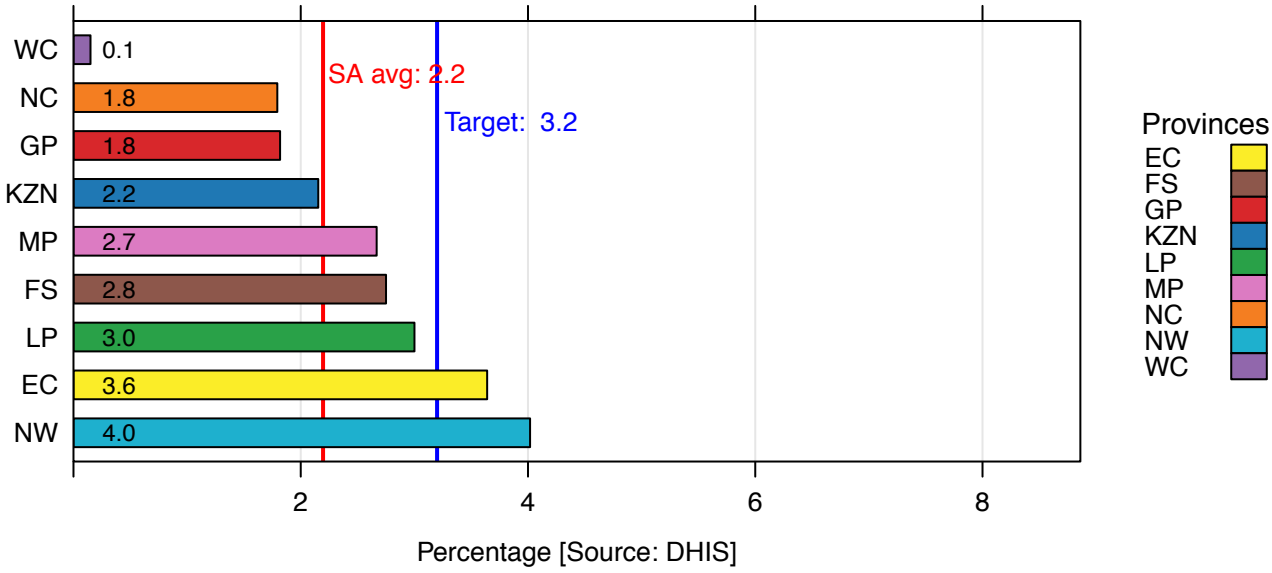
x Madhi SA, Cunliffe NA, Steele D, Witte D, Kirsten M, Louw C, et al. Effect of Human Rotavirus Vaccine on Severe Diarrhea in African Infants. N Engl J Med. 2010; 362(4):289–98.

Table 3: Diarrhoea admissions, deaths and case fatality rates in children under 5 years by province, 2015/16

	Admissions (N)	Deaths (N)	Case fatality rate (%)
Eastern Cape	7 032	256	3.6
Free State	2 254	62	2.8
Gauteng	6 435	117	1.8
KwaZulu-Natal	10 259	221	2.2
Limpopo	5 132	154	3.0
Mpumalanga	3 373	90	2.7
Northern Cape	2 174	39	1.8
North West	2 414	97	4.0
Western Cape	8 685	13	0.1
South Africa	47 758	1 049	2.2

Source: DHIS.

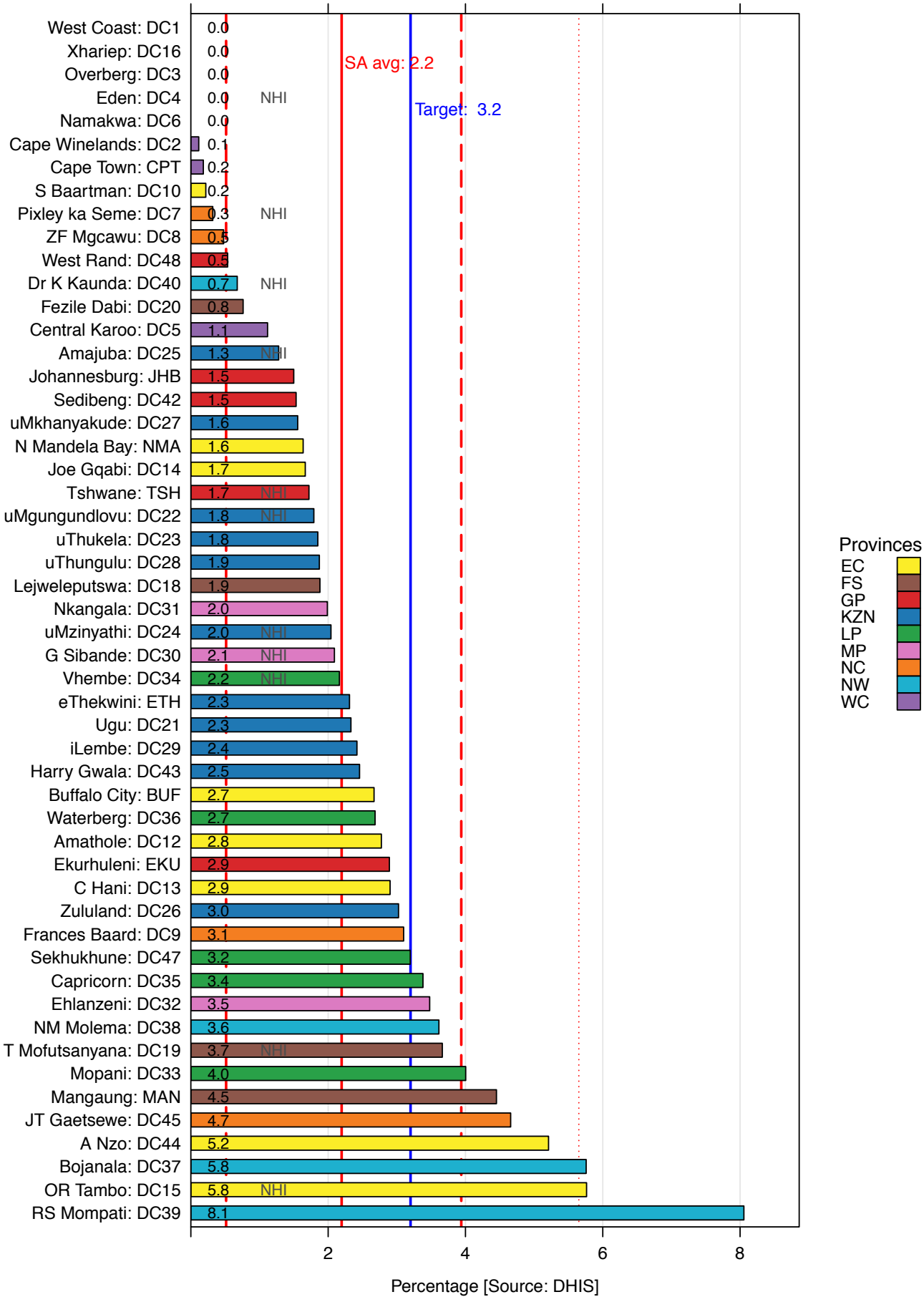
Figure 6: Child under 5 years diarrhoea case fatality rate by province, 2015/16



All provinces except North West showed declines in CFR between 2014/15 and 2015/16. North West's increased CFR (4.0% in 2015/16 compared with 3.4% in 2014/15) is of particular concern. Four provinces (Gauteng, Western Cape, Eastern Cape, and Northern Cape) reported significant increases in the number of admissions, while the other provinces reported modest declines.

The district rankings are shown in Figure 7 and Map 2. Forty-one of the 52 districts reported CFRs below the national target of 3.2%. All districts in the Western Cape, Gauteng and KwaZulu-Natal achieved the national target. No deaths were reported in three Western Cape districts (Overberg, West Coast and Eden). One district in the Northern Cape (Namakwa) and Free State (Xhariep) reported one death each. Eight additional districts, namely the Cape Winelands (WC), Cape Town (WC), S Baartman (EC), Pixley ka Seme (NC), ZF Mgcawu (NC), West Rand (GP), Dr K Kaunda (NW) and Fezile Dabi (FS) reported CFRs below 1%. RS Mompati (NW) reported the highest CFR (8.1%). Case fatality rates decreased in 36 districts and increased in three districts, with RS Mompati (NW) reporting the highest increase (35%). Of the five worst-performing districts, four had improved rates compared with rates in the previous financial year; these districts were OR Tambo (EC), Mopani (LP), A Nzo (EC), and J T Gaetsewe (NC).

Figure 7: Child under 5 years diarrhoea case fatality rate by district, 2015/16



Map 2: Child under 5 years diarrhoea case fatality rate by district, 2015/16

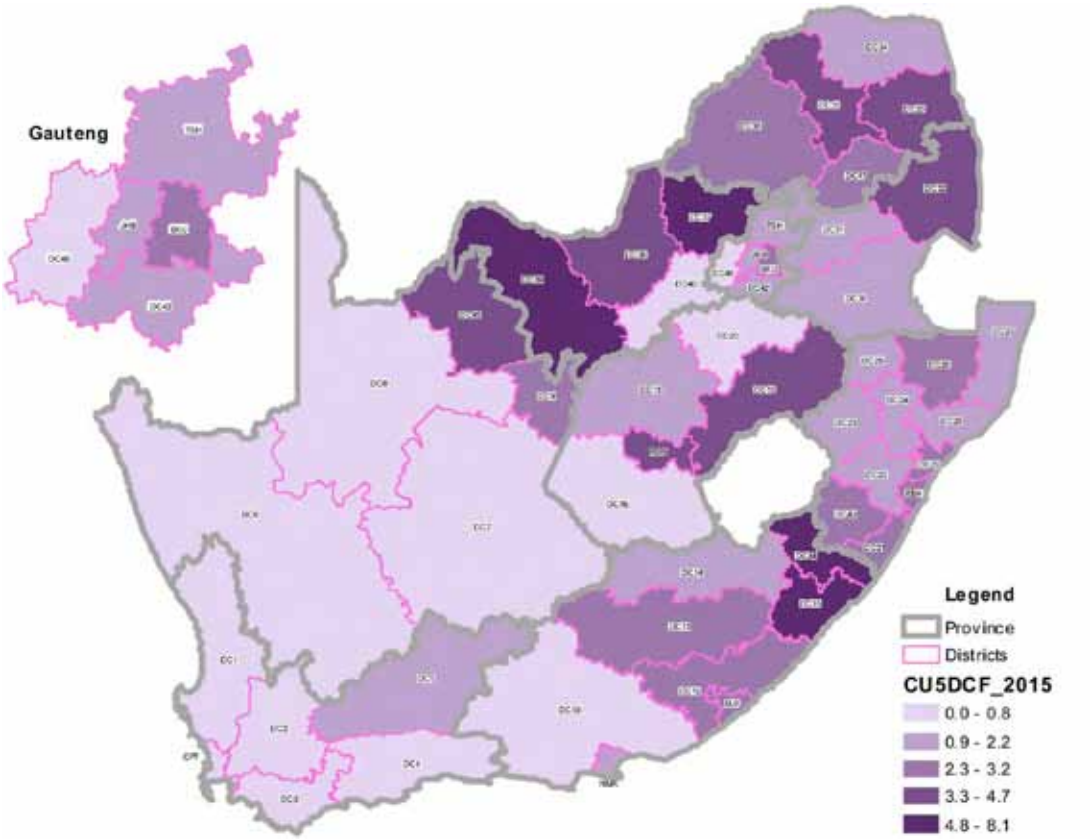


Table 4 shows districts with the highest number of deaths due to diarrhoea. These districts accounted for 31.5% of all diarrhoea deaths in children under 5 years of age in South Africa.

Table 4: Districts with the highest numbers of deaths due to diarrhoea in children under 5 years of age, 2015/16

	Deaths (N)	Case fatality rate (%)	Socio-economic quintile
OR Tambo (EC)	129	5.8	1
eThekwini (KZN)	62	2.3	5
Ehlanzeni (MP)	51	3.5	3
Mopani (LP)	45	4.0	2
Ekurhuleni (GP)	43	2.9	5
Total for 5 districts	330		
% of all deaths	31.5%		

Figure 8 shows that nine of the NHI districts reduced under-5 diarrhoea CFRs to less than the national target, but the other two districts, T Mofutsanyana (FS) and OR Tambo (EC), remained above the national target.

Figure 8: Child under 5 years diarrhoea case fatality rate by National Health Insurance district, 2015/16

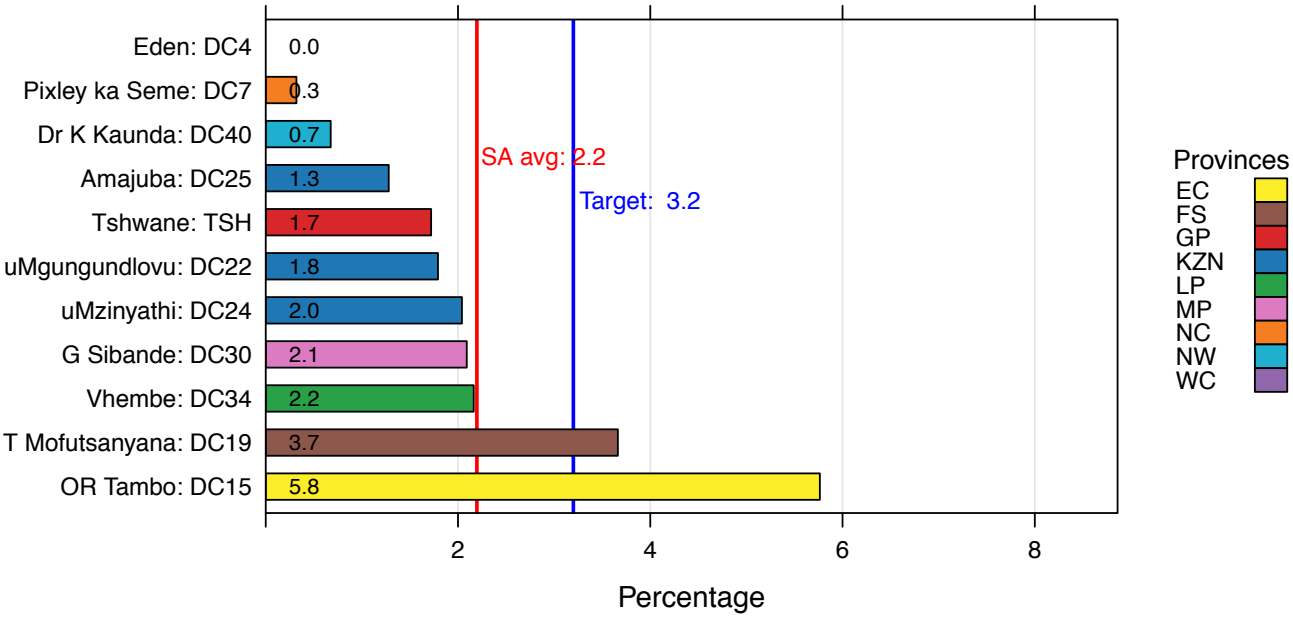
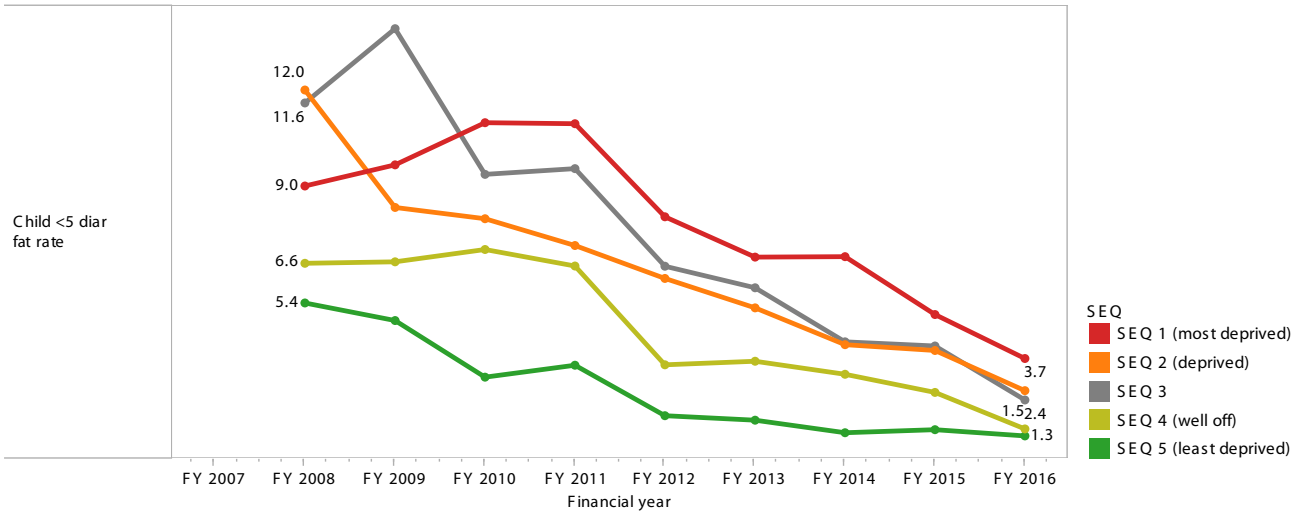


Table 5 and Figure 9 show that the lower the socio-economic quintile (SEQ), the higher the under-5 diarrhoea CFR. Districts in SEQ1 reported a CFR of 3.7% compared with 1.3% in SEQ5. Also, more than one-third (34%) of all diarrhoeal deaths occurred in districts in the lowest SEQ, namely SEQ1. However, the gap between the SEQs has decreased substantially over the last five years.

Table 5: Diarrhoea admissions, deaths and case fatality rates in children under 5 years by socio-economic quintile, 2015/16

	SEQ 1 Most-deprived	SEQ 2 Deprived	SEQ 3 Average	SEQ4 Less-deprived	SEQ 5 Least-deprived	Total
Admissions (N)	9 812	8 283	6 903	5 166	17 594	47 758
Deaths (N)	361	222	165	77	224	1 049
Case fatality rate (%)	3.7	2.7	2.4	1.5	1.3	2.2

Figure 9: Trends in average district values by socio-economic quintile for child under 5 years diarrhoea case fatality rate



Key findings

Substantial progress has been made in South Africa in the prevention of both malnutrition and mother-to-child transmission of HIV, in immunisation coverage, and in access to free healthcare facilities. However, current levels of under-5 mortality in the country are still far higher than the SDG target for South Africa, namely less than 25 deaths per 1 000 live births by 2030. The United Nations Children's Fund (UNICEF) and the WHO have stressed the importance of well-known interventions to reduce the global burden of childhood diarrhoea.[s]

Recommendations

- ✦ All healthcare workers must be able to identify and manage children with diarrhoea correctly.
- ✦ Districts with high diarrhoea CFRs should identify hospitals with the highest CFRs and implement plans to address the problem.

6.3 Child under 5 years pneumonia case fatality rate

Yages Singh and Witness Chirinda

Globally, pneumonia kills nearly 1 million children under the age of 5 years annually, causing more deaths than HIV and AIDS, diarrhoea and malaria combined. However, progress in the fight against the disease has been slow.[y]

Pneumonia is the largest single cause of child mortality outside of the neonatal period, accounting for 15% of the approximately 6.3 million global child deaths each year.[z] Pneumonia affects children and families everywhere, but is most prevalent in South Asia and sub-Saharan Africa.[aa] In January 2016, UNICEF issued a press release indicating that pneumonia kills half a million children under 5 in sub-Saharan Africa each year, and a campaign was launched to increase pneumonia interventions and adopt policy changes to strengthen treatment.[y] The burden is disproportionately high in African children, with 36 million pneumonia cases and 600 000 pneumonia-associated deaths annually.[aa]

The indicator 'child under 5 years pneumonia case fatality rate' measures the number of children who died from pneumonia as a proportion of the number of children who were admitted with pneumonia. The numerator is the total number of children who died and the denominator is the total number of children under 5 years who were admitted. An increased numerator value could mean that there is a lack of facilities or inadequate care at health facilities for children who were admitted. It could also mean that deaths were under-recorded or under-reported. On the other hand, a decreased numerator value could mean that care has improved in health facilities where children are hospitalised or that mothers referred from facilities for specialised care are now accessing health care services.

An increase in the denominator could be due to an increase in the number of severe cases of pneumonia infection, or could be due to misdiagnosis or misclassification. A decrease in the denominator shows that there are fewer cases, implying that children are generally healthier (e.g. because of better nutrition), or it may be that primary health care facilities are not diagnosing pneumonia adequately or not referring when necessary.

In South Africa, there is no single accurate, complete data system for the evaluation of child mortality.[ab] The analysis of routinely collected health systems data indicates the number of childhood pneumonia cases and may be useful in defining the burden disease in a district.[z] However, the Child Healthcare Problem Identification Programme (Child PIP), the vital registration data, Local Mortality Surveillance System (LMSS) and the Perinatal Problem Identification Programme (PPIP) also capture data on childhood diseases.[ab]

Two studies[z,ab] have shown variations in the number of pneumonia deaths recorded by the DHIS, vital registration data, Child PPIP and LMSS.

One study[ab] showed that 5% of children who died out of hospital had visited a public health care facility during the week prior to their death. Most of the children in the group were 2–3 months of age and died of pneumonia or gastroenteritis. These visits represent missed opportunities for the health system to recognise severity of illness in young babies, encourage routine follow-up, and counsel caregivers with regard to danger signs of illness.

y United Nations Children's Fund (UNICEF). Press release: Pneumonia kills half a million children under five in sub-Saharan Africa, UNICEF says it launches campaign to curb the disease. January 2016. Available from: http://www.unicef.org/media/media_89995.html [Accessed 28 July 2015].

z le Roux DM, Myer L, Nicol MP, Zar HJ. Incidence of childhood pneumonia: facility-based surveillance estimate compared to measured incidence in a South African birth cohort study. BMJ Open 2015; 5: e009111. doi:10.1136/ bmjopen-2015-009111.

aa World Health Organization. WHO fact sheet no. 331; November 2015. Available from: http://www.who.int/mediacentre/factsheets/fs331 [Accessed 28 July 2015].

ab Reid AE, Hendricks MK, Groenewald P, Bradshaw D. Where do children die and what are the causes? Under-5 deaths in the Metro West geographical service area of the Western Cape, South Africa, 2011. S Afr Med J. 2016 Mar 6;106(4):51. doi: 10.7196/SAMJ.2016.v106i4.10521.

Mortality due to childhood pneumonia is strongly linked to poverty-related factors such as undernutrition, lack of safe water and sanitation, indoor air pollution and inadequate access to health care.[ab] Thus pneumonia can be prevented by means of immunisation, adequate nutrition and by addressing environmental factors. The WHO GAPPD aims to accelerate pneumonia control with a number of interventions. The fight against pneumonia-related deaths in children relies on prevention and protection, and when infections occurs, on better treatment. Pneumonia can be treated with low-cost medication and care. Despite the decline in child deaths due to pneumonia, there is still a need for an integrative approach to tackle this important public health issue.[z] It is important to understand the incidence and severity of pneumonia in order to identify preventive interventions, plan health systems, and make projections on burden of disease.[z]

No official target was set for this indicator in 2014/15. In 2015/16, the national target for child under 5 years pneumonia case fatality rate was set at 3%. This was achieved. In the past five years there has been a substantial increase in the number of hospital admissions for children with pneumonia, as well as a year-on-year decrease in the CFR, which has more than halved from 5.8% in 2010/11 to 2.3% 2015/16, as shown in Table 6. However, the number of admissions has also increased during this time.

Table 6: National pneumonia admissions, deaths and case fatality rates in children under 5 years, 2010/11–2015/16

Years	Admissions (N)	Deaths (N)	Case fatality rate (%)
2010/2011	39 465	2 287	5.8
2011/2012	43 078	1 796	4.2
2012/2013	36 444	1 395	3.8
2013/2014	43 445	1 532	3.5
2014/2015	48 393	1 411	2.9
2015/2016	53 343	1 240	2.3

Figure 10 shows provincial data for 2015/16. The national target of 3% pneumonia CFR in children under 5 was reached by five provinces, with the lowest CFR in the Western Cape (0.3%). The Eastern Cape and Mpumalanga had the highest rate at 3.7%.

Figure 10: Child under 5 years pneumonia case fatality rate by province, 2015/16

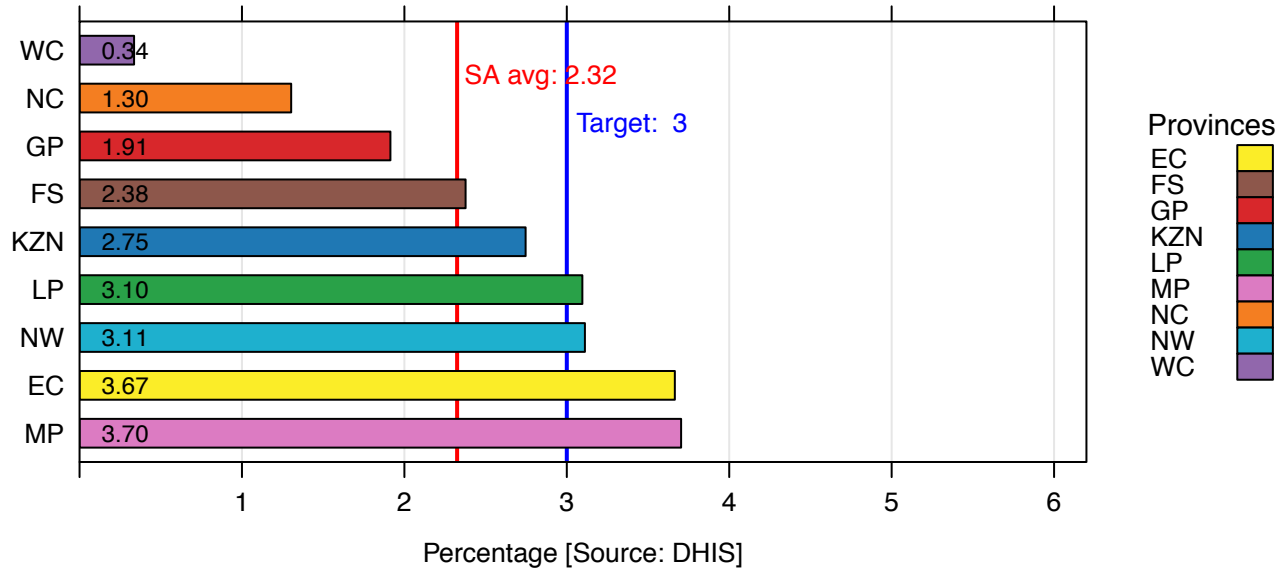


Table 7 shows that KwaZulu-Natal had the highest number of admissions and deaths during 2015/16, with a CFR of 2.8%.

Table 7: Pneumonia admissions, deaths and case fatality rates in children under 5 years by province, 2015/16

Province	Admissions (N)	Deaths (N)	Case fatality rate (%)
Northern Cape	1 323	20	1.5
Free State	2 313	55	2.4
North West	2 539	79	3.1
Mpumalanga	4 050	150	3.7
Limpopo	5 750	178	3.1
Eastern Cape	7 012	257	3.7
Gauteng	8 203	157	1.9
Western Cape	10 726	36	0.3
KwaZulu-Natal	11 215	308	2.8

Source: DHIS

Figure 11 shows the district trends for this indicator, grouped by province.

Figure 11: Annual trends for child under 5 years pneumonia case fatality rate

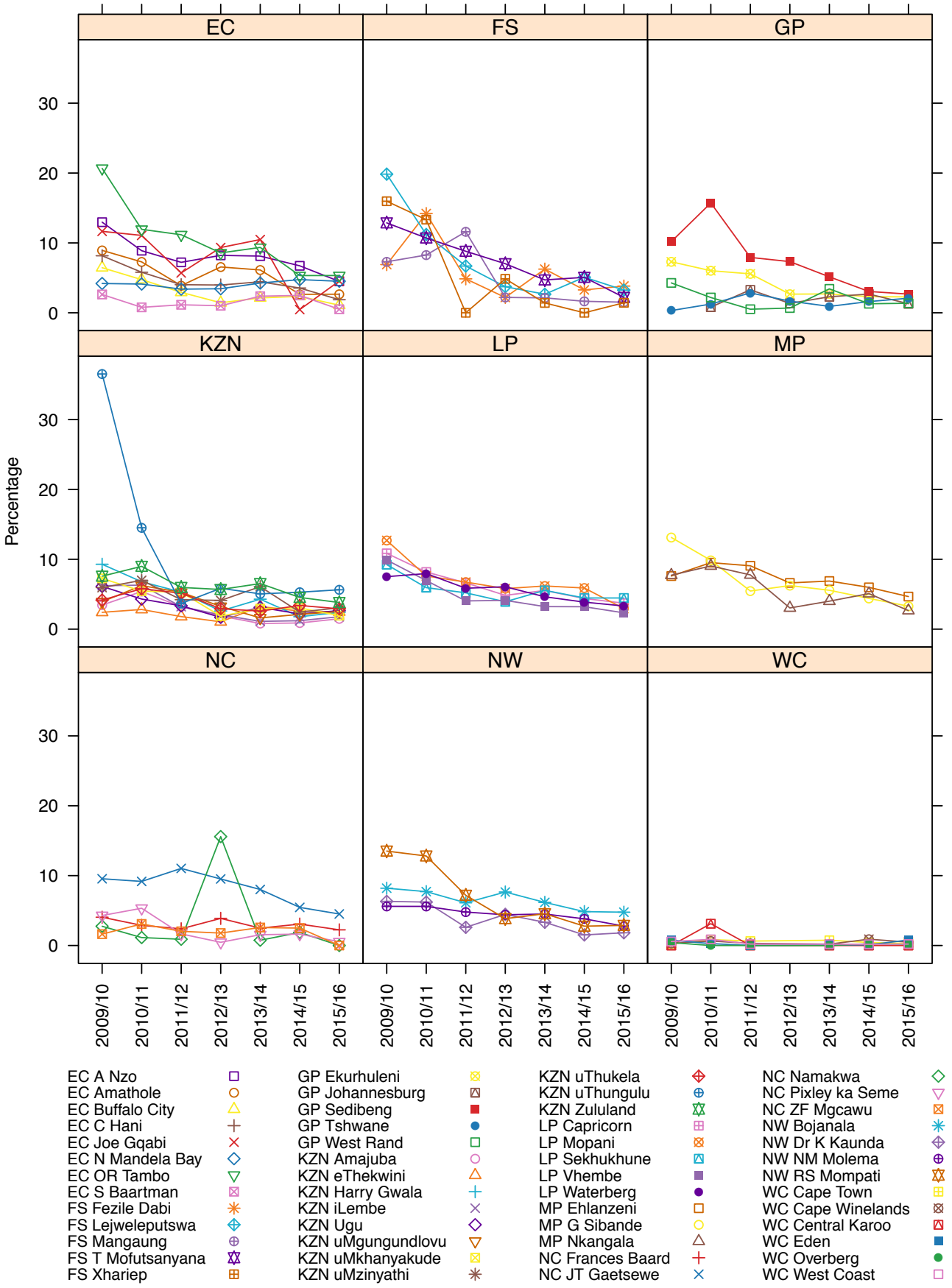
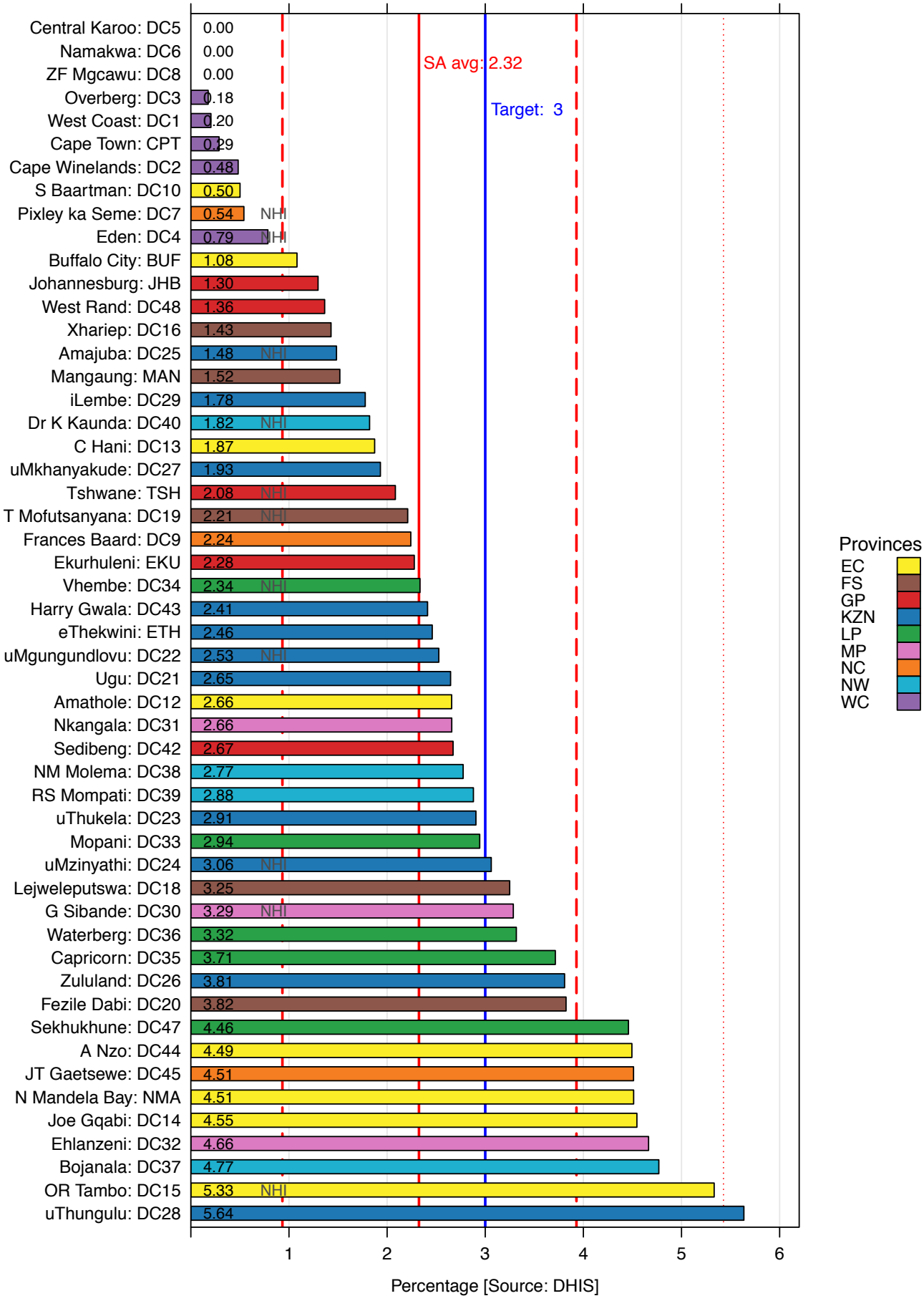
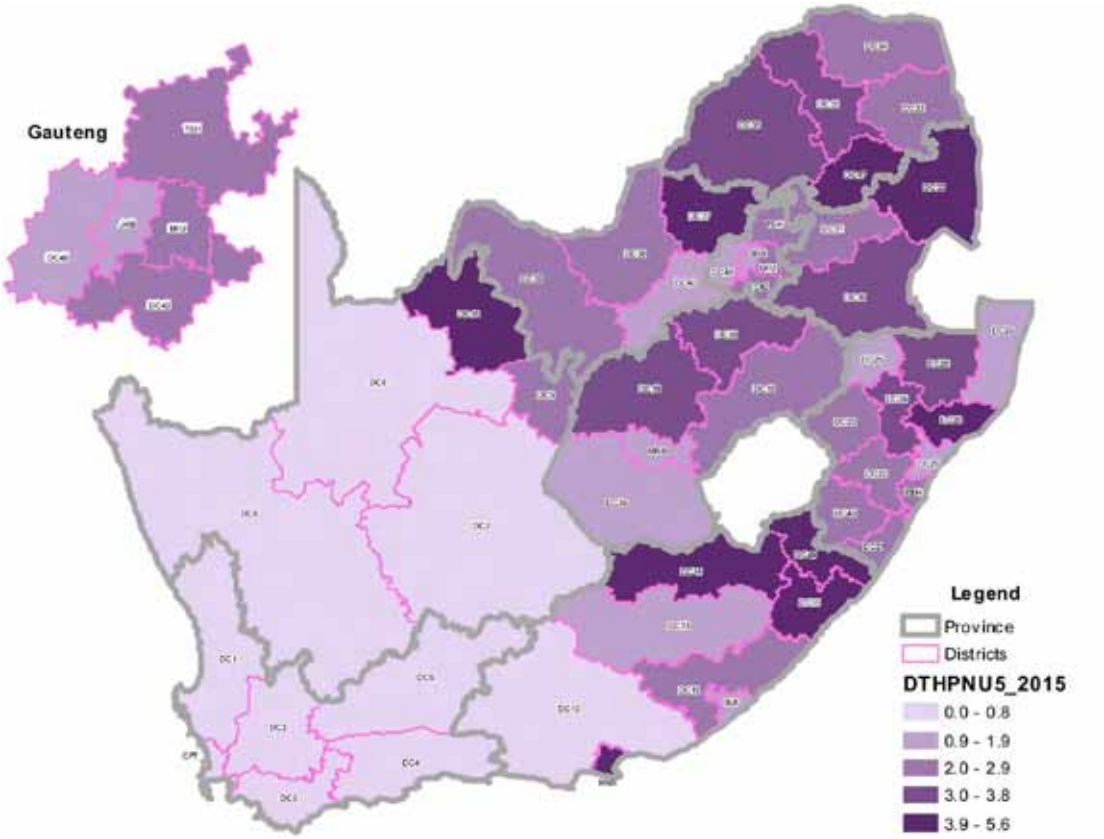


Figure 12 and Map 3 show the district CFRs. Three districts, namely Central Karoo (WC), Namakwa (NC) and ZF Mgcawu (NC) had no pneumonia deaths among children under 5 years, while another seven districts, namely Overberg, West Coast, Cape Town, Cape Winelands and Eden (all WC), S Baartman (EC), and Pixley Ka Seme (NC), all achieved CFRs under 1%. A further 26 districts achieved the national target. Nine districts did not meet the national target, with uThungulu (KZN) having a CFR of 5.6%, nearly twice the national target.

Figure 12: Child under 5 years pneumonia case fatality rate by district, 2015/16

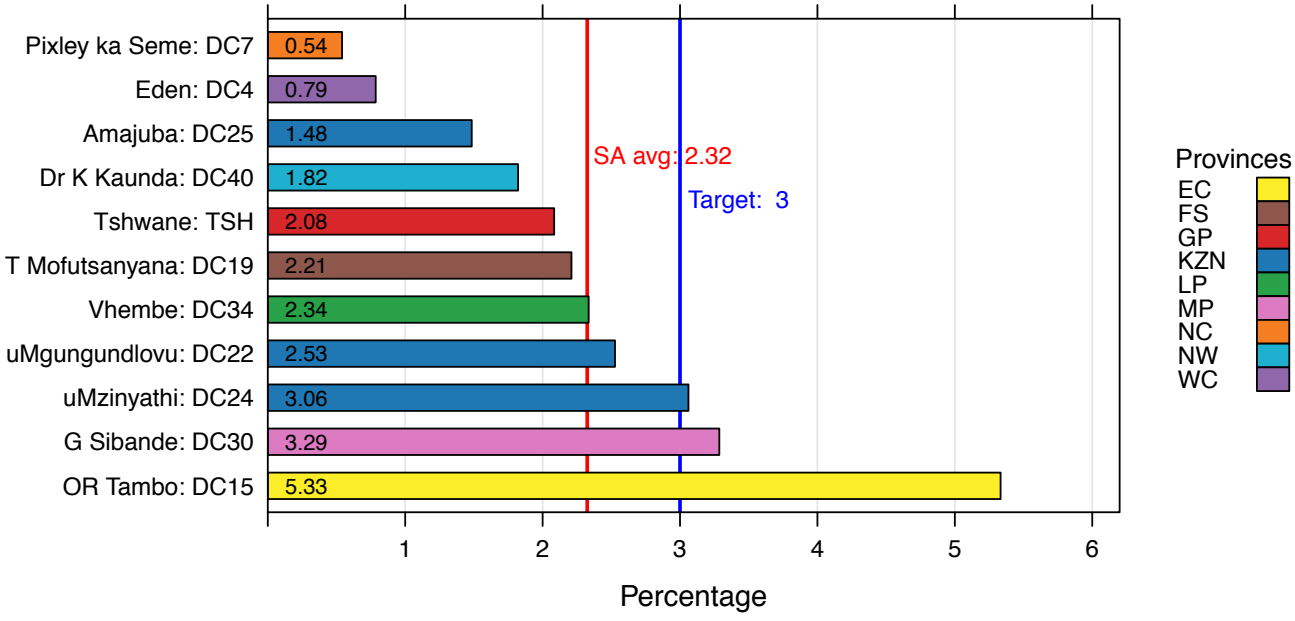


Map 3: Child under 5 years pneumonia case fatality rate by district, 2015/16



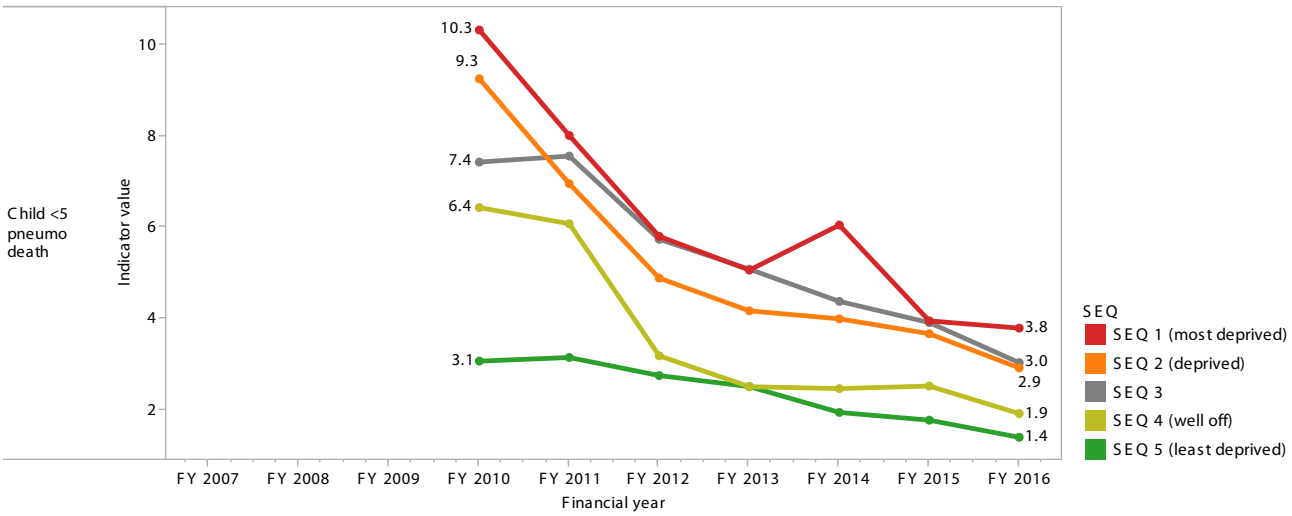
Eight of the 11 NHI districts achieved the national target of under 3% for this indicator (Figure 13). However, OR Tambo (EC) had a CFR of 5.3%, substantially above the national target rate of 3%.

Figure 13: Child under 5 years pneumonia case fatality rate by National Health Insurance district, 2015/16



The child under 5 years pneumonia CFR was highest in the most deprived socio-economic quintile (SEQ1) districts at 3.8%, followed by SEQ3 (3.0%) and SEQ2 (2.9%), and it was lowest in SEQ5 districts (1.4%) (Figure 14). Although there was an overall decline across all SEQs over the period 2010/11–2015/16, there was still a substantial gap between rates in SEQ1 and SEQ5.

Figure 14: Trends in average district values by socio-economic quintile for child under 5 years pneumonia case fatality rate



Key findings

- There has been a steady downward trend in the child under 5 years pneumonia CFR over the last five years, with the national target being achieved and surpassed. During this time there has also been an increase in the number of pneumonia admissions. This could be the result of many different factors, including greater awareness of the importance of early referral resulting in earlier and more successful treatment. Further understanding is needed at local level to determine the exact reason for the increase in admissions.
- The decrease in child under 5 years pneumonia CFR could also be attributed to an improvement in the quality of care or an increase in immunisation rates against pneumonia. Data quality has always been a challenge. This includes under-reporting of pneumonia incidence and death in children. Despite the challenge of quality data reporting by facilities, the number of children dying from pneumonia continues to decline.

Recommendations

In order to sustain the improvement on this indicator in the long term, the following recommendations are made:

- Use of the Child PIP in all hospitals in South Africa should be improved, and consistency between Child PIP and the DHIS should be ensured. This will go a long way towards improving data quality and accuracy, and thus improving health system planning.
- Heath services need to ensure that all children are fully immunised and receive other routine services. In particular, they need to ensure that the Road-to-Health booklet is consistently and adequately used at every child encounter with health services.
- Effective case management must be adopted at community and health facility levels.
- Infant feeding practices should be improved, especially exclusive breastfeeding for at least six months as this is effective in preventing pneumonia, whereafter complementary feeds should be introduced.
- Environmental factors such as indoor air pollution must be addressed.
- Good hygiene must be encouraged, especially in crowded homes.
- Pneumonia treatment should focus on ensuring that every sick child has access to the right kind of care from both community-based health services and health facilities.

6.4 Child under 5 years severe acute malnutrition case fatality rate

Lesley Bamford

The child under 5 years severe acute malnutrition (SAM) case fatality rate is calculated by dividing the number of deaths among children under 5 years where severe acute malnutrition was documented as the cause of death by the number of children under 5 years admitted with SAM. Severe acute malnutrition is defined as severe wasting (a weight-for-height below two standard deviations from the mean, or a mid-upper arm circumference (MUAC) less than 11.5 cm), or the presence of nutritional oedema.[ac]

High CFRs reflect poor case management of children with SAM. High CFRs may also be due to late identification of the condition or late presentation of children with SAM to health facilities. Conversely, a declining CFR suggests better management of children with SAM who present to health facilities, and/or earlier presentation, i.e. children are less ill at the time of presentation and therefore more likely to respond to standard treatment.

While ensuring adequate nutrition for children (especially those under 5 years of age) has always been a cornerstone of child health, a falling child mortality rate serves to focus attention even more on ensuring that all children are well-nourished, for two reasons. Firstly, further reductions in child mortality will be difficult to achieve without addressing undernutrition, and secondly, more attention is now being paid to ensuring that children reach their full potential, with adequate nutrition being critical to achievement of this goal.

The increased focus on child nutrition is reflected in the Sustainable Development Goals, which call not only for reduction in child mortality, but also for substantial reductions in both stunting (reduced height) and wasting (reduced weigh-for-height). Wasting reflects acute malnutrition, which is associated with increased mortality. Children with SAM are nine times more likely to die than well-nourished children.[ad] Stunting in children suggests that they have not received adequate nutrition to reach their full height, and by inference their full intellectual development. However, wasting and stunting are two sides of one coin and require similar responses, particularly the protection, promotion and support of optimal breastfeeding and complementary feeding practices, and provision of appropriate micronutrient interventions for mothers and children.[ae] It is therefore important to address episodes of acute malnutrition as this will reduce child mortality and contribute to a reduction in the prevalence of stunting.[af]

In response to the high mortality rate associated with SAM, the WHO has developed the Ten Steps for the Management of Severe Malnutrition which have been shown to reduce inpatient mortality associated with SAM.[ag,ah] The 10 steps have been incorporated into all national paediatric and child health guidelines, and should be implemented in all hospitals and other health care facilities.

It should be noted that although the SAM CFR provides useful information on the outcome of children with SAM, it provides little information on the contribution of SAM to mortality. Mortality review data collected through the Child PIP show that approximately 30% of children who die in South African hospitals have severe malnutrition, while a further 29.2% have evidence of less severe undernutrition. These proportions have remained relatively constant since child mortality data were first collated in 2005.[ai] The contribution of severe malnutrition is greatest in children aged 1–5 years; the condition is evident in 42% of children who die in this age group.[aj]

Table 8 shows the national child under 5 years SAM CFR. The CFR declined from 13.3% in 2011/12 to 8.9% in 2015/16. This is clearly a success story, with a one-third decrease over four years. In 2015/16, the national target for the year (10%) was achieved, but there is still much to do to get this rate closer to zero.

This decline in CFR was previously associated with an increase in the number of deaths and admissions. It is unclear whether this reflects a real increase in the number of deaths or better identification and reporting of SAM cases. However, the decline in the SAM CFR from 11.6% in 2014/15 to 8.9% in 2015/16 was associated with a decrease in both the number of SAM admissions and SAM deaths. While there is no obvious reason to suggest that the declines are due to a drop in reporting rates, it will be important to monitor these data over a number of years to ensure that the decline continues.

ac National Department of Health. 2013 National Indicator Data Set. NDoH. Pretoria. April 2013.

ad United Nations Children's Fund (UNICEF). Management of Severe Acute Malnutrition in Children: Working towards results at scale. New York: UNICEF; 2015.

ae United Nations Children's Fund (UNICEF). Committing to Child Survival: A Promise Renewed. Progress Report 2015. New York: UNICEF; 2015.

af World Health Organization. WHO Global Nutrition Targets 2025: Stunting Policy Brief. Available from: http://www.who.int/nutrition/topics/globaltargets_stunting_policybrief.pdf [Accessed 29 July 2016].

ag Khanum S, Ashworth A, Huttly SRA. Controlled trial of three approaches to the treatment of severe malnutrition. Lancet 1994; 344:1728–32.

ah Ashworth A, Chopra M, McCoy D, Sanders D, Jackson D, Karaolis N, et al. WHO guidelines for management of severe malnutrition in rural South African hospitals: effect on case fatality and the influence of operational factors. Lancet. 2004; 363(9415):1110-5.

ai Patrick ME, Stephen CR, editors. Saving Children 2005: A survey of child healthcare in South Africa. Tshepesa Press; 2016.

aj Harper K. An Overview of Child PIP National Data 2012–2013. In: Stephen CR, editor. Saving Children 2012–2013. An eighth survey of child healthcare in South Africa. Pretoria: Tshepesa Press; 2016.

Table 8: Child under 5 years severe acute malnutrition case fatality rate (national), 2011/12–2015/16

	Deaths (N)	Admissions (N)	Case fatality rate (%)
2011/12	1 605	12 094	13.3
2012/13	1 642	12 911	12.7
2013/14	1 672	14 847	11.3
2014/15	1 852	15 910	11.6
2015/16	1 380	15 537	8.9

Source: DHIS.

Provincial figures are shown in Table 9 and Figure 15. The number of deaths due to SAM and the CFRs fell in all provinces, although CFRs remained high in a number of provinces, namely Mpumalanga (12.5%), North West (12.3%), Limpopo (11.6%) and the Eastern Cape (10.1%). The number of admissions declined modestly in most provinces, with the exception of Gauteng and the Western Cape where the number of admissions increased. As highlighted above, it is not clear whether increases in the number of admissions in these provinces indicates a real increase in the number of children admitted with SAM, or whether it indicates better identification and reporting. The achievement of the Western Cape in getting their CFR below 1% has clearly set the gold standard for other provinces to achieve.

Table 9: Child under 5 years severe acute malnutrition case fatality rate by province, 2013/14–2015/16

	2013/14			2014/15			2015/16		
	Deaths (N)	Admissions (N)	Case fatality rate (%)	Deaths (N)	Admissions (N)	Case fatality rate (%)	Deaths (N)	Admissions (N)	Case fatality rate (%)
Eastern Cape	356	2 534	14.0	339	2 867	11.8	284	2 819	10.1
Free State	132	1 111	11.9	148	1 212	12.2	91	1 118	8.1
Gauteng	82	1 350	6.1	126	1 350	9.3	113	1 512	7.5
KwaZulu-Natal	337	3 463	9.7	405	3 880	10.4	281	3 664	7.7
Limpopo	288	1 880	15.3	291	1 950	14.9	222	1 919	11.6
Mpumalanga	144	1 126	12.8	233	1 219	19.1	146	1 169	12.5
Northern Cape	68	576	11.8	67	617	10.9	49	589	8.3
North West	251	2 173	11.6	225	1 829	12.3	183	1 493	12.3
Western Cape	14	634	2.2	18	986	1.8	11	1 254	0.9
South Africa	1 672	14 847	11.3	1 852	15 910	11.6	1 380	15 537	8.9

Source: DHIS.

Figure 15: Child under 5 years severe acute malnutrition case fatality rate by province, 2015/16

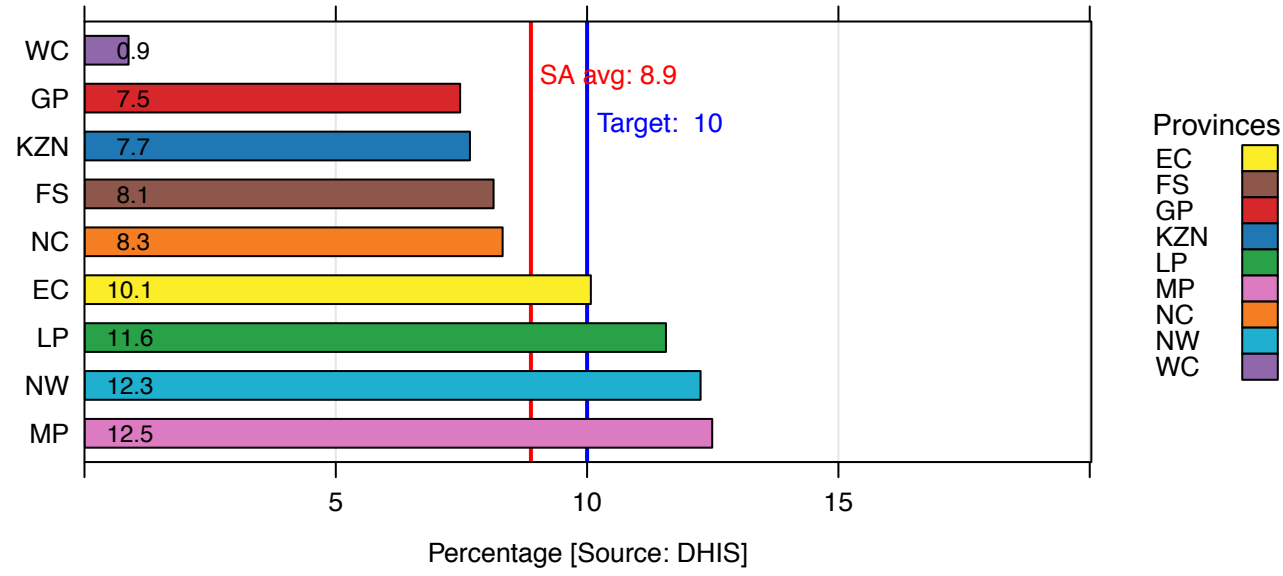
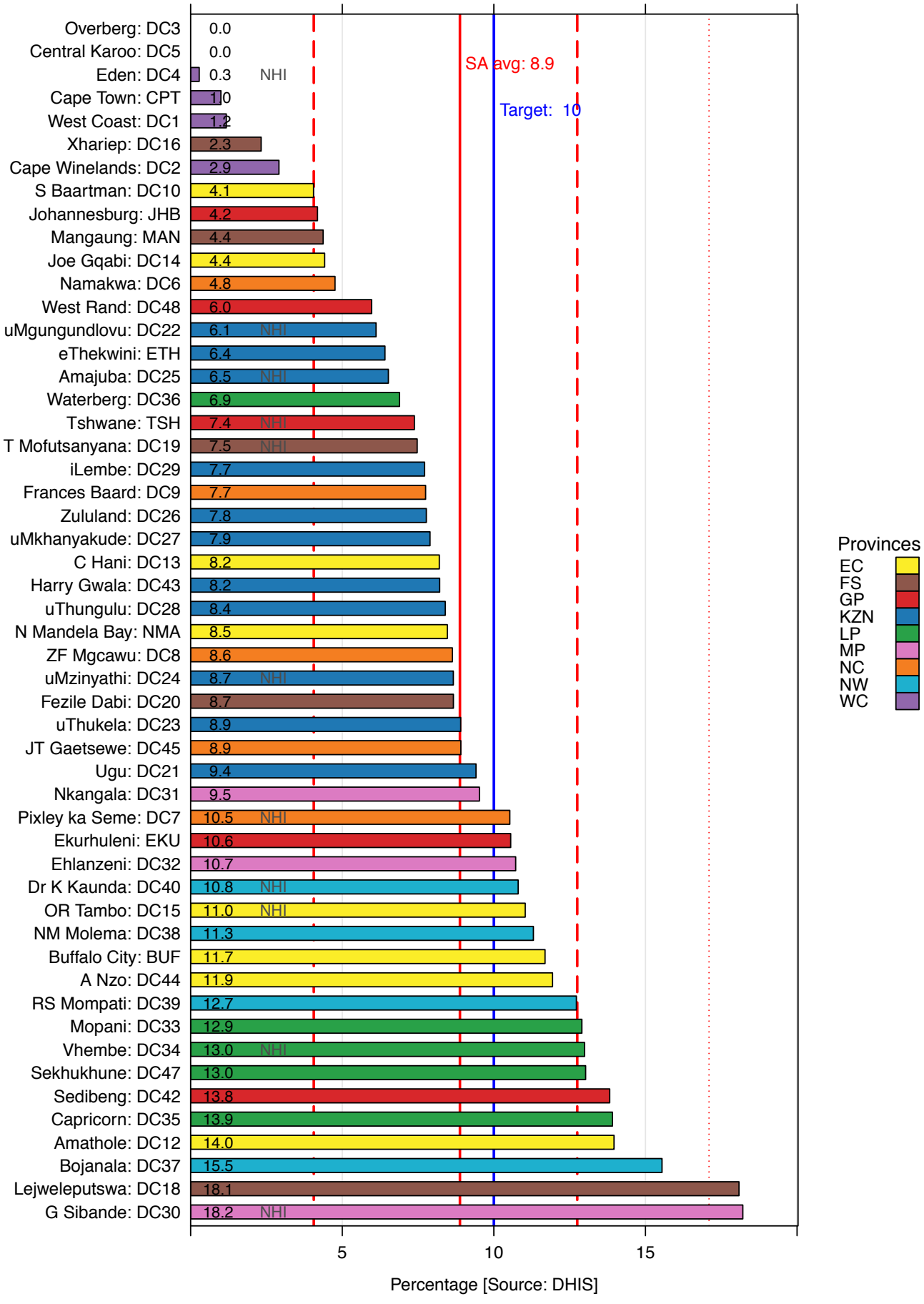


Figure 16 shows the child under 5 years SAM CFRs for each district during 2015/16. Thirty-four districts achieved a SAM CFR below 10%, which is in line with the national target, including all districts in the Western Cape and KwaZulu-Natal. Two districts, Overberg and Central Karoo (both WC) reported no SAM deaths in children under 5 years of age during this time. All four districts in North West reported CFRs above 10%, while three districts reported rates above 15%, namely G Sibande (MP) (18.2%), Lejweleputswa (FS) (18.1%) and Bojanala (NW) (15.5%).

In 2015/16, the highest number of SAM deaths was reported in OR Tambo (EC) (128 deaths compared with 119 in 2014/15, which was also the highest number for that year). Six other districts reported 50 or more SAM deaths in children under 5 years of age. These were: Vhembe (LP) (79 deaths), Ehlanzeni (MP) (67 deaths), NM Molema (NW) (65 deaths), G Sibande (MP) (57 deaths), eThekwini (KZN) (53 deaths) and RS Mompati (NW) (50 deaths). Deaths in these seven districts accounted for 36% of all deaths reported.

Of the 50 districts that reported under-5 SAM deaths in 2015/16, 39 had a lower CRF than in 2014/15. Seven districts halved their rates. These were Xhariep (FS) (from 9.3% to 2.3%), Namakwa (NC) (from 14.3% to 4.8%), Cape Winelands (WC) (from 8.4% to 2.9%), Zululand (KZN) (from 20.3% to 7.8%), Joe Gqabi (EC) (from 11.3% to 4.4%), Fezile Dabi (FS) (from 20.5% to 8.7%) and uThungulu (KZN) (from 16.9% to 8.4%).

Figure 16: Child under 5 years severe acute malnutrition case fatality rate by district, 2015/16



Eleven districts reported higher CFRs in 2015/16 than 2014/15. Although the increases were generally small, three districts reported increases of more than 20%, namely Capricorn (LP) (from 9.4% to 13.9%), Buffalo City (EC) (from 9.5% to 11.7%) and Sedibeng (GP) (from 11.3% to 13.8%).

Figure 17 shows SAM CFRs in the NHI districts, with rates ranging from 0.3% in Eden (WC) to 18.2% in G Sibande (MP). Overall, CFRs were higher in NHI districts than non-NHI districts (9.6% versus 8.6%) (Table 10). Six of the 11 NHI districts achieved the national target of 10% or lower, while three of the seven districts that reported 50 or more deaths were NHI pilot districts (OR Tambo (EC), G Sibande (MP) and Vhembe (LP)).

Figure 17: Child under 5 years severe acute malnutrition case fatality rate by National Health Insurance district, 2015/16

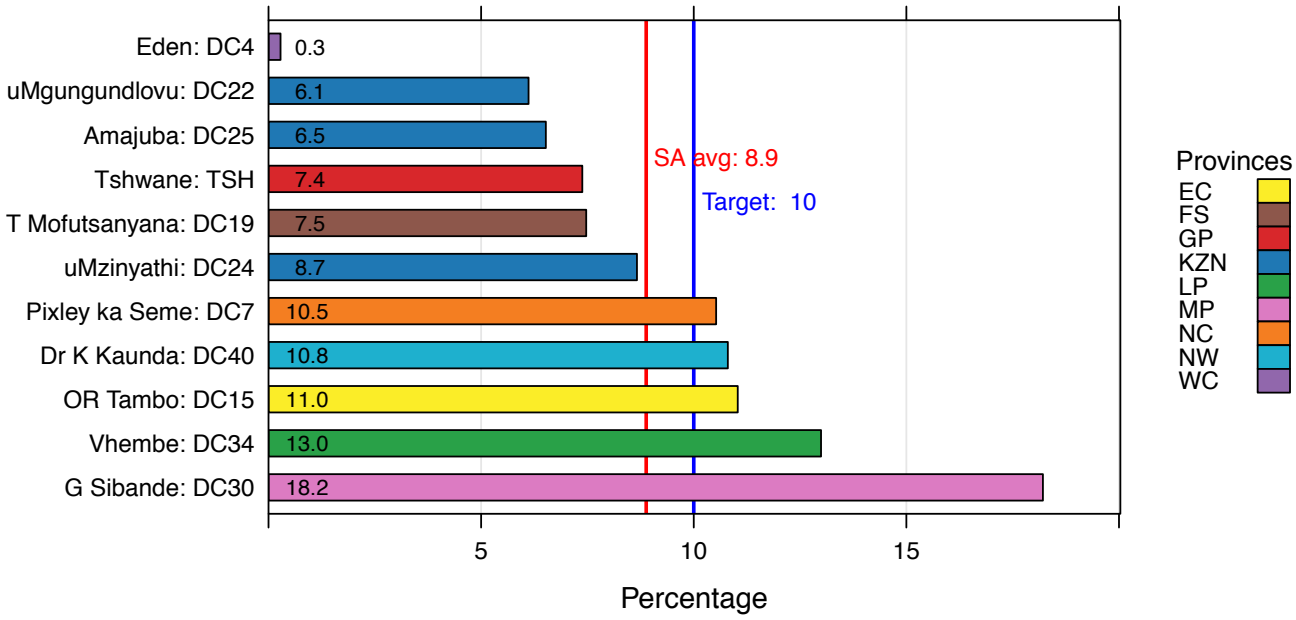


Table 10: Child under 5 years severe acute malnutrition case fatality rate – National Health Insurance (NHI) districts versus non-NHI districts, 2013/14–2015/16

	2013/14			2014/15			2015/16		
	Deaths (N)	Admissions (N)	CFR (%)	Deaths (N)	Admissions (N)	CFR (%)	Deaths (N)	Admissions (N)	CFR (%)
NHI	449	3 472	12.9	486	4 119	11.8	410	4 259	9.6
Non-NHI	1 223	11 375	10.8	1 366	11 791	11.6	970	11 278	8.6
South Africa	1 672	14 847	11.3	1 852	15 910	11.6	1 380	15 537	8.9

Source: DHIS.

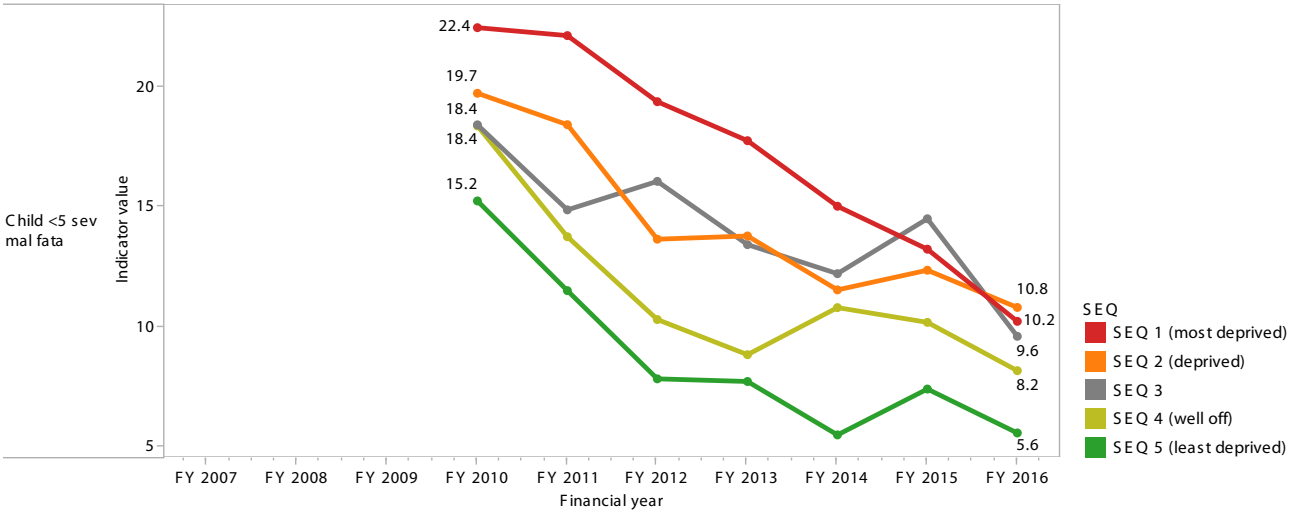
Table 11 shows SAM CFRs across the socio-economic quintiles. A clear gradient is apparent, with the highest rates being experienced in the lower two socio-economic quintiles. The SAM CFR in districts in SEQ1 was almost double that in districts in SEQ5, and although all CFRs are falling, the gap between the worst and best rates has remained large (Figure 18).

Table 11: Child under 5 years severe acute malnutrition case fatality rate by socio-economic quintile, 2013/14–2015/16

	2013/14			2014/15			2015/16		
	Deaths (N)	Admissions (N)	Case fatality rate (%)	Deaths (N)	Admissions (N)	Case fatality rate (%)	Deaths (N)	Admissions (N)	Case fatality rate (%)
SEQ1	522	3 479	15.0	512	3 874	13.2	406	3 976	10.2
SEQ2	443	3 845	11.5	456	3 695	12.3	347	3 216	10.8
SEQ3	352	2 886	12.2	429	2 962	14.5	268	2 795	9.6
SEQ4	205	1 901	10.8	210	2 065	10.2	158	1 937	8.2
SEQ5	150	2 736	5.5	245	3 314	7.4	201	3 613	5.6
South Africa	1 672	14 847	11.3	1 852	15 910	11.6	1 380	15 537	8.9

Source: DHIS.

Figure 18: Trends in average district values by socio-economic quintile for child under 5 years severe acute malnutrition case fatality rate



Far lower CFRs were reported in metro municipalities than non-metro municipalities (5.9% versus 9.7%). This difference also appears to be declining over time (Table 12).

Table 12: Child under 5 years severe acute malnutrition case fatality rate by metro (A) and non-metro (C) municipalities, 2013/14–2015/16

	2013/14			2014/15			2015/16		
	Deaths (N)	Admissions (N)	CFR (%)	Deaths (N)	Admissions (N)	CFR (%)	Deaths (N)	Admissions (N)	CFR (%)
A	150	2 357	6.4	232	3 084	7.5	207	3 492	5.9
C	1522	12 490	12.2	1 620	12 826	12.6	1 173	12 045	9.7
South Africa	1 672	14 847	11.3	1 852	15 910	11.6	1 380	15 537	8.9

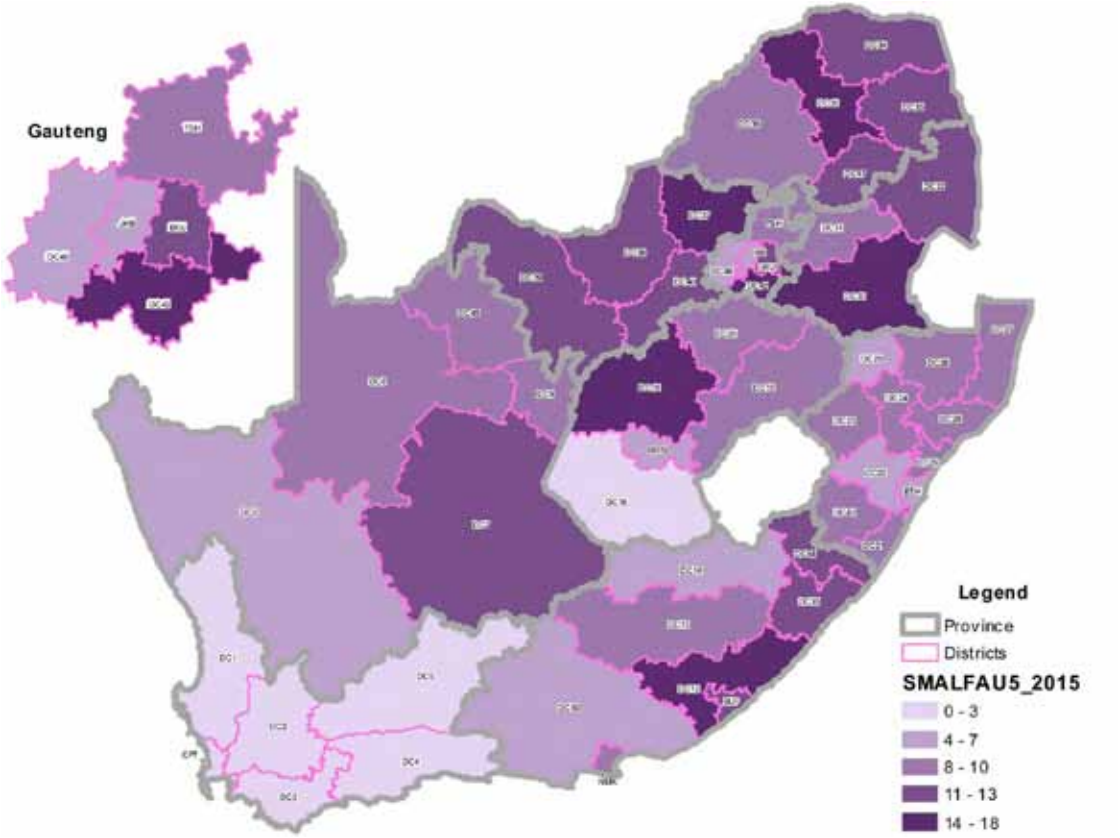
Source: DHIS.

Ten sub-districts reported CFRs greater than 20% (Table 13 and Map 4). Some of these very high CFRs were due to small actual numbers of deaths.

Table 13: Sub-districts with child under 5 years severe acute malnutrition case fatality rates greater than 20%, 2015/16

Sub-district	District	Deaths (N)	Case fatality rate (%)
Siyathemba Local Municipality	Pixley ka Seme	1	33.3
Moqhaka Local Municipality	Fezile Dabi	11	32.4
Mkhondo Local Municipality	G Sibande	14	28.6
Lesedi Local Municipality	Sedibeng	3	27.3
Moses Kotane Local Municipality	Bojanala	14	24.6
Aganang Local Municipality	Capricorn	4	23.5
Tswelopele Local Municipality	Lejweleputswa	3	23.1
Matjhabeng Local Municipality	Lejweleputswa	31	22.1
Ephraim Mogale Local Municipality	Sekhukhune	6	20.0
Emthanjeni Local Municipality	Pixley ka Seme	2	20.0

Map 4: Child under 5 years severe acute malnutrition case fatality rate by district, 2015/16



Key findings

- The decline in the child under 5 years SAM CFR and associated number of deaths is encouraging. However, the number of SAM deaths remains unacceptably high for a middle-income country such as South Africa, with the majority of deaths occurring among children in more disadvantaged districts.
- It should be noted that a number of problems have persisted with regard to correct identification and reporting of admissions and deaths among children with SAM. These include:
  - Cases of SAM may not be recognised and reported, which affects both the number of admissions and number of deaths. Children with more subtle signs of SAM are only identified through routine measurement and assessment. Failure to identify such children will result in a lower number of admissions, but may result in falsely high CFRs being reported.
  - Even when a child has been identified as having SAM, methods for deciding whether the death resulted from SAM or another cause are not standardised. As indicated above, diarrhoea and pneumonia are important causes of death in children with SAM. When a child with SAM and pneumonia dies, the child may be recorded as 'death due to pneumonia', 'death due to SAM', or as both.
  - Although reporting through the DHIS has improved substantially, under-reporting remains a challenge, with some facilities (especially large hospitals) continuing to report implausibly low numbers of admissions and deaths from common childhood illnesses like diarrhoea, pneumonia and SAM.
  - While it is important to monitor the SAM CFR, tracking the absolute number of deaths is also important as it provides an indication of the contribution of SAM to overall child mortality. As noted above, Child PIP provides data on the proportion of children admitted with SAM, as well as the proportion of children that die who have SAM. This provides a better picture of the contribution of malnutrition to child mortality.

Recommendations

Efforts to reduce the number of children who die from SAM will require the following:

- Primary prevention through improved infant feeding practices, especially improved exclusive breastfeeding for the first six months of life, as well as ongoing breastfeeding with the introduction of appropriate complementary feeds after six months of age.
- Early identification and intervention in the case of growth faltering and moderate-acute malnutrition through improved use of the Road-to-Health booklet as one of the basic steps to be used at each and every encounter with a child.
- Early identification of children with SAM. This requires routine assessment of MUAC, which can be done at community level by Ward-based Outreach Teams or as part of growth monitoring at primary health care facilities. It should be noted that this may result in more children being identified with SAM, but appropriate early management will result in fewer deaths
- Early identification and correct management of children with SAM should be implemented using the WHO Ten Steps for the Management of Severe Malnutrition. Availability of equipment and nutritional supplements should be monitored in all health facilities on a regular basis.
- Attention should also be paid to ensuring complete and accurate reporting of data on admissions and deaths due to SAM from all health facilities. Harmonisation of data from different sources (especially routine DHIS data and mortality review data from Child PIP) should also be encouraged. Child PIP should also be extended to cover all hospitals in South Africa.

6.5 Inpatient death under 5 years rate

Lesley Bamford

The inpatient death under 5 years rate is calculated by dividing the number of inpatient deaths in children under 5 years of age by the number of separations (discharges, transfers out and deaths) in children under 5 years of age. Expressed as a percentage, it reflects the proportion of children who die during admission to a facility. It should be noted that the DHIS collects the number of child deaths in four age categories, namely 0–7 days, 8–28 days, 29 days up to 1 year, and 1–5 years. These four data elements are then summed to give the total number of deaths in children under 5 years of age. In contrast, separations in children under 5 years of age are collected as one data element; thus it is not possible to calculate the inpatient death rate for different age categories.

It should also be noted that completeness of reporting by hospitals has improved substantially in recent years; thus an apparent increase in the number of admissions and deaths may represent better reporting rather than a real increase in admissions. In addition, many hospitals have historically not formally admitted newborns even when they were ill and cared for in a neonatal unit. This results in a falsely elevated inpatient death rate, as neonatal deaths contribute to the numerator, but newborns are not counted in the denominator. This problem is being addressed, but it is currently unclear as to whether all hospitals are now formally admitting newborns.

Finally it should be noted that deaths are recorded against the facility (and therefore district) where the death occurs, and not where the child resides, or where s/he was admitted to hospital. It would therefore be expected that districts with referral hospitals would have a higher number of deaths and a higher inpatient death under 5 year rate.

Reduced child mortality is an important outcome for the health sector and society as a whole, and an important goal in global and national commitments that aim to address poverty, inequality and underdevelopment. The Sustainable Development Goals call for an end to preventable deaths in newborns and children; they set the target of achieving a neonatal mortality rate of less than 12 per 1 000 and an infant mortality rate of less than 25 per 1 000 live births in all countries by 2030, while the National Development Plan requires that under-5 mortality be reduced to below 30 per 1 000 live births and infant mortality to below 20 per 1 000 live births by 2030.[ak]

Child mortality rates fell rapidly between 2010 and 2011, but have stagnated in recent years. The rates reported through Rapid Mortality Surveillance[al] are shown in Table 14.

ak National Planning Commission. National Development Plan 2030. Our future – make it work: Executive Summary. Pretoria: National Planning Commission; August 2012.

al Dorrington RE, Bradshaw D, Laubscher R, Nannan N. Rapid Mortality Surveillance Report 2014. Cape Town: South African Medical Research Council; 2015.

Table 14: National child mortality rates, 2010–2014 (per 1 000 live births)

	2010	2011	2012	2013	2014
Neonatal mortality rate	14	13	11	11	11
Infant mortality rate	35	28	27	29	28
Under-5 mortality rate	52	40	41	41	39

Source: Rapid Mortality Surveillance data[al]

While it is important to monitor both the number of child deaths and the inpatient death under 5 year rate, it should be remembered that a high proportion of child deaths occur outside of health facilities. For example, in 2011, 45.5% of child deaths that were registered occurred in health facilities. As would be expected, this figure was higher during the neonatal period, with 67.5% of deaths occurring in health facilities. Only 37.1% of deaths in the post-neonatal period (1 month–1 year) occurred in health facilities, while 35.6% of deaths in children 1–4 years of age occurred in health facilities.[am]

The national inpatient death under 5 year rate was 4.7% in 2015/16, compared with 5.7% in 2014/15 and 5.5% in 2013/14 (Table 15). The actual number of deaths increased from 19 904 in 2013/14 to 20 915 in 2014/15, but then declined to 18 345 in 2015/16. Deaths in the neonatal period remained relatively constant, but deaths outside of the neonatal period decreased by 24%, with values of 8 628 in 2014/15 and 6 549 in 2015/16. The number of separations continued to increase, from 362 684 in 2013/14 to 368 637 in 2014/15 and 386 372 in 2015/16. This increase is probably at least partly due to neonatal separations being included, and therefore does not necessarily mean that more children were admitted to hospital during this period.

As this indicator was not included in the NDoH's Annual Performance Plan, a formal target for 2015/16 was not in place. However, the National Child, Youth and School Health Chief Directorate aimed to achieve a level below 5.1%, which represented a 10% reduction of the rate achieved in the previous financial year.

Table 15: Inpatient deaths by age category, separations and rate in children under 5 years, 2013/14–2015/16

	Deaths					Separations (N)	Rate (%)
	0–28 days (N)	29 days–1 year (N)	1–5 years (N)	29 days–5 years (N)	All (N)		
2013/14	11 620	4 757	3 527	8 284	19 904	362 684	5.5
2014/15	12 287	5 032	3 596	8 628	20 915	368 637	5.7
2015/16	11 796	3 794	2 755	6 549	18 345	386 372	4.7

Source: DHIS.

Provincial figures are shown in Table 16 and Figure 19. Rates were lower in all provinces in 2015/16 than those reported in the previous two financial years. All provinces reported fewer deaths in 2015/16 than in 2014/15, and the majority reported fewer deaths than in 2013/14 when, as discussed above, under-reporting was likely to have been a problem.

The number of admissions showed inconsistent trends, suggesting that attention still needs to be paid to ensuring consistent and standardised reporting of admissions. The Western Cape reported a substantial increase in the number of admissions in 2015/16, following an already high per capita number of admissions in 2013/14 and 2014/15. The highest number of deaths were reported in KwaZulu-Natal (N = 4 063), Gauteng (N = 3 624) and the Eastern Cape (N = 2 899).

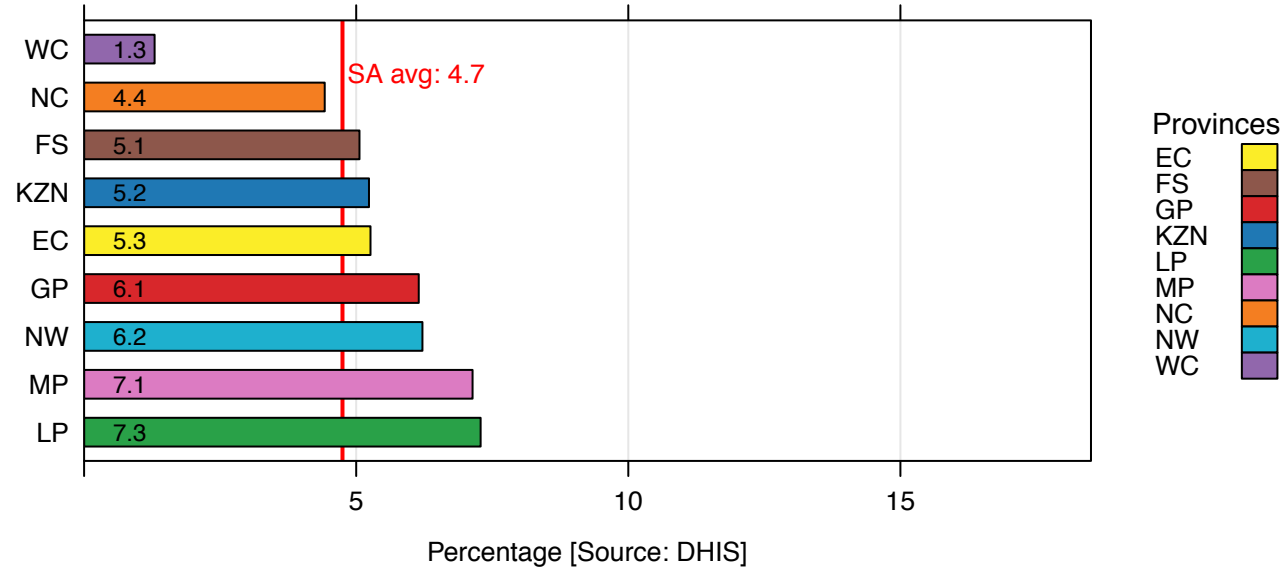
Table 16: Inpatient deaths and inpatient death rate in children under 5 years by province, 2013/14–2015/16

	2013/14			2014/15			2015/16		
	Deaths (N)	Admissions (N)	Rate (%)	Deaths (N)	Admissions (N)	Rate (%)	Deaths (N)	Admissions (N)	Rate (%)
Eastern Cape	3 585	57 122	6.3	3 615	58 397	6.2	2 899	55 085	5.3
Free State	1 182	16 427	7.2	977	19 113	5.1	913	18 043	5.1
Gauteng	3 012	48 420	6.2	3 730	47 518	7.8	3 624	58 933	6.1
KwaZulu-Natal	4 670	81 522	5.7	4 851	82 760	5.9	4 063	77 614	5.2
Limpopo	2 913	32 825	8.9	2 856	35 063	8.1	2 655	36 438	7.3
Mpumalanga	1 562	20 029	7.8	1 640	19 845	8.3	1 413	19 795	7.1
Northern Cape	790	10 222	7.7	803	10 681	7.5	508	11 489	4.4
North West	1 053	16 029	6.6	1 165	15 083	7.7	1 084	17 435	6.2
Western Cape	1 137	80 088	1.4	1 278	80 177	1.6	1 186	91 540	1.3
South Africa	19 904	362 684	5.5	20 915	368 637	5.7	18 345	386 372	4.7

Source: DHIS.

am National Department of Health. 2nd Triennial Report of the Committee on Morbidity and Mortality in Children Under 5 Years (CoMMiC): Triennium 2011–2013. Pretoria: NDoH; 2015.

Figure 19: Inpatient death under 5 years rate by province, 2015/16



At national level, neonatal deaths accounted for 64.3% of under-5 deaths; deaths in infants (29 days–1 year) accounted for an additional 20% of deaths; and deaths in children aged 1–5 years accounted for the remaining 15% of deaths. The proportion of neonatal deaths was highest in Gauteng (72.2%) and the Western Cape (70.3%), and lowest in Mpumalanga (56.1%) and the Eastern Cape (58.6%) (Table 17).

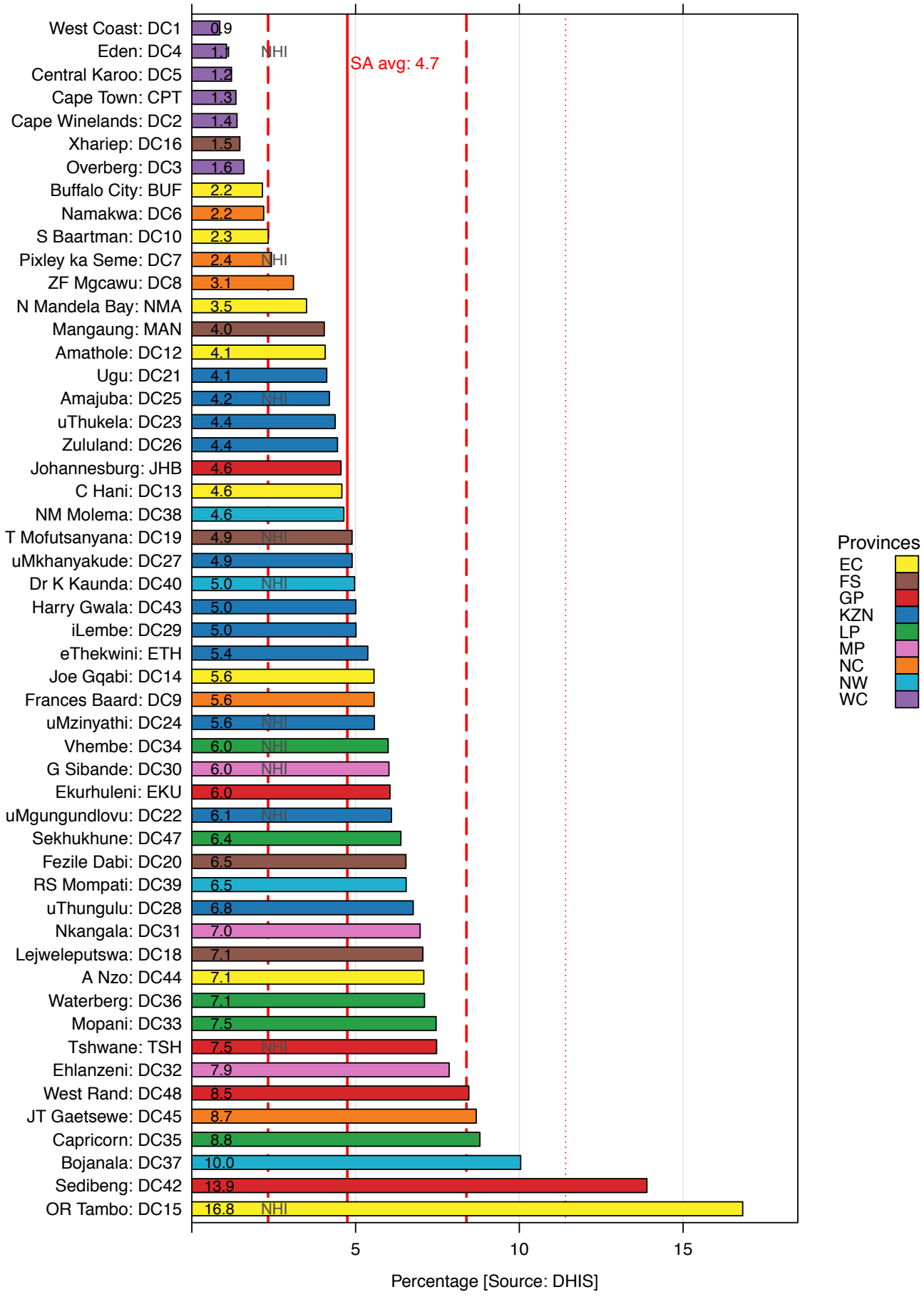
Table 17: Inpatient deaths under 5 years by age category and province, 2015/16

	0–28 days		29 days–1 year		1–5 years		29 days–5 years		All
	N	%	N	%	N	%	N	%	N
Eastern Cape	1 698	58.6	709	24.5	492	17.0	1 201	41.4	2 899
Free State	596	65.3	182	19.9	135	14.8	317	34.7	913
Gauteng	2 616	72.2	579	16.0	429	11.8	1 008	27.8	3 624
KwaZulu-Natal	2 529	62.2	900	22.2	634	15.6	1 534	37.8	4 063
Limpopo	1 718	64.7	486	18.3	451	17.0	937	35.3	2 655
Mpumalanga	793	56.1	375	26.5	245	17.3	620	43.9	1 413
Northern Cape	666	68.1	241	17.1	177	14.8	418	31.9	508
North West	346	61.4	87	22.2	75	16.3	162	38.6	1 084
Western Cape	834	70.3	235	19.8	117	9.9	352	29.7	1 186
South Africa	11 796	64.3	3 794	20.7	2 755	15.0	6 549	35.7	18 345

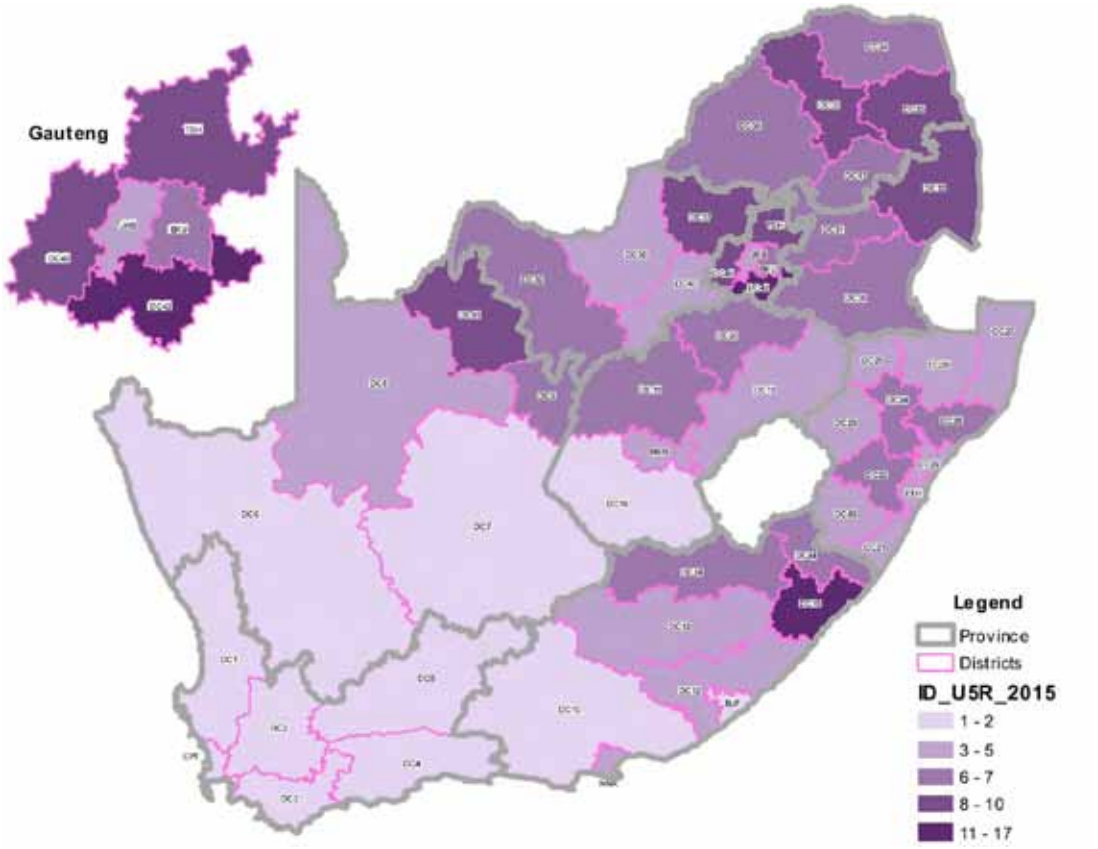
Source: DHIS.

Figure 20 and Map 5 show the inpatient death under 5 year rate by district. Rates ranged from 0.9% in West Coast (WC) to 16.8% in OR Tambo (EC). Twenty-seven districts achieved the target, namely a rate below 5.1%, with 25 districts reporting levels of 5.1% or more. All districts in the Western Cape reported rates in line with this target, while no districts in Limpopo and Mpumalanga achieved a rate below the target.

Figure 20: Inpatient death under 5 years rate by district, 2015/16



Map 5: Inpatient death under 5 years rate by district, 2015/16



The inpatient death rate increased in nine districts and declined in the remaining 43. The increases were generally small, with only two districts reporting increases of 25% or more. These were Mangaung (FS) (from 3.0% to 4.0%) and Sedibeng (GP) (from 11.0% to 13.9%). Three districts reported improvements of more than 40%, namely Frances Baard (NC) (from 10.8% to 5.6%), NM Molema (NW) (from 8.6% to 4.6%) and Tshwane (GP) (from 13.4% to 7.5%).

Table 18 shows the 10 districts with the highest number of deaths. These districts accounted for 51% of all deaths in children under 5 years, which is not surprising given their large under-5 populations. The districts include the five largest metros.

Table 18: Districts with the highest number of inpatient deaths under 5 years, 2015/16

District	Deaths (N)	Population under 5 years (N)	Inpatient death rate (%)
eThekwini (KZN)	1 414	1 251 573	5.4
OR Tambo (EC)	1 244	705 781	16.8
Johannesburg (GP)	1 123	1 546 316	4.6
Tshwane (GP)	1 047	1 031 174	7.5
Capricorn (LP)	989	593 246	8.8
Ekurhuleni (GP)	944	985 074	6.0
Cape Town (WC)	781	1 343 191	1.3
Ehlanzeni (MP)	752	838 649	7.9
Vhembe (LP)	543	627 273	6.0
uThungulu (KZN)	530	481 379	6.8
	9 367		

Table 19 compares deaths in NHI and non-NHI districts. The inpatient death rate was higher in NHI than non-NHI districts (6.4% versus 4.4%).

Table 19: Inpatient deaths and inpatient death rates in children under 5 years by National Health Insurance (NHI) and non-NHI district, 2015/16

	2013/14			2014/15			2015/16		
	Deaths (N)	Admissions (N)	Case fatality rate (%)	Deaths (N)	Admissions (N)	Case fatality rate (%)	Deaths (N)	Admissions (N)	Case fatality rate (%)
NHI	4 534	58 430	7.8	4 874	62 678	7.8	4 531	70 404	6.4
Non-NHI	15 370	304 254	5.1	16 041	305 959	5.2	13 814	315 968	4.4
South Africa	19 904	362 684	5.5	20 915	368 637	5.7	18 345	386 372	4.7

Source: DHIS.

Table 20 shows inpatient deaths and inpatient death rates in children under 5 years across the socio-economic quintiles. A clear gradient is apparent, with the highest rates being experienced in the lower socio-economic quintiles.

Table 20: Inpatient deaths and inpatient death rates in children under 5 years by socio-economic quintile, 2013/14–2014/15

	2013			2014			2015		
	Deaths (N)	Admissions (N)	Rate (%)	Deaths (N)	Admissions (N)	Rate (%)	Deaths (N)	Admissions (N)	Rate (%)
SEQ1	4 133	47 657	8.7	4 318	48 323	8.9	3 463	49 411	7.0
SEQ2	4 061	55 308	7.3	3 964	56 189	7.1	3 620	58 877	6.1
SEQ3	2 975	41 582	7.2	2 916	41 925	7.0	2 752	44 951	6.1
SEQ4	2 670	49 563	5.4	2 505	49 732	5.0	1 859	49 227	3.8
SEQ5	6 065	168 574	3.6	7 212	172 468	4.2	6 651	183 906	3.6
South Africa	19 904	362 684	5.5	20 915	368 637	5.7	18 345	386 372	4.7

Source: DHIS.

Far lower inpatient death rates were reported in metro municipalities than non-metro municipalities (5.9% versus 9.7%) (Table 21). However, this difference appears to be declining over time.

Table 21: Inpatient deaths and inpatient death rates in children under 5 years by metro (A) and non-metro (C) municipalities, 2013/14–2015/16

	2013/14			2014/15			2015/16		
	Deaths (N)	Admissions (N)	Case fatality rate (%)	Deaths (N)	Admissions (N)	Case fatality rate (%)	Deaths (N)	Admissions (N)	Case fatality rate (%)
A	6 074	164 551	3.7	7 077	169 036	4.2	6 414	175 126	3.7
C	13 830	198 133	7.0	13 838	199 601	6.9	11 931	211 246	5.6
South Africa	19 904	362 684	5.5	20 915	368 637	5.7	18 345	386 372	4.7

Source: DHIS.

Key findings

- The inpatient under 5 years death rate declined in 2015/16 compared with previous years. As noted above, this decline reflected a decrease in the number of deaths, but an increase in the number of admissions recorded. The reason for the latter could be because more admissions occurred or because there was improved recording. A decline in the inpatient rate was noted in all provinces and in the majority of districts.
- The decline in number of deaths is promising, but difficult to interpret. The number of neonatal deaths remained relatively constant, while 24% fewer deaths were reported in the post-neonatal period. However, a high proportion of deaths in the post-neonatal group occurred outside of health facilities. While the decline is sizeable enough to suggest that it may reflect an overall decline in child deaths (in and out of facilities), it would be premature to conclude before data from other sources (for example Rapid Mortality Surveillance and Statistics SA) are available for 2015.
- The increased number of admissions is also difficult to interpret. It is most likely to represent improved reporting, with a higher proportion of neonatal admissions being captured correctly. However, it may represent a real increase in the number of admissions, which would in turn reflect better access to health facilities.

- Patterns of inequality are still present, with inpatient death rates being higher in rural (non-metro) municipalities and in districts in the lower socio-economic quintiles. National Health Insurance districts reported higher inpatient under-5 death rates than non-NHI districts.

Recommendations

- Ongoing efforts are required to ensure complete and accurate reporting from all facilities. Child mortality audits are an important tool not only for collecting data on child deaths, but in identifying and addressing modifiable factors. Efforts to harmonise data collected through the DHIS and the Child Healthcare Problem Identification Programme will reduce duplication and improve the quality of data. Although the data suggest that many more hospitals are counting neonatal admissions in the denominator for this indicator, attention should be paid to ensuring that this is done by all hospitals.
- The majority of child deaths are due to a small number of conditions that are largely preventable and treatable. All hospitals should review all child deaths on a regular basis in order to identify and address modifiable and avoidable factors. This is one of the main functions of the District Clinical Specialist Teams (DCSTs). National and provincial programmes should work with DCSTs to identify areas with avoidable factors and intervene to address them. This is especially important in districts that report high inpatient death rates, or that have a high number of child deaths compared with their under-5 population.
- Although improved care in health facilities will undoubtedly translate into fewer child deaths, further substantial reductions in child mortality will require that social determinants of health be addressed. Community interventions, especially deployment of ward-based outreach teams (WBOTs) can play an important role, and more attention should be paid to ensuring that WBOTs are providing a standardised package of quality child health services.

6.6 School Grade 1 screening coverage

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School Grade 1 screening coverage measures the proportion of Grade 1 learners who have been screened by school health teams as part of the Integrated School Health Programme[an] (ISHP). Coverage is calculated by dividing the number of Grade 1 learners screened by the total number of Grade 1 learners. Data are entered for each school. Thus data on screening coverage are available for each school, and at sub-district, district and provincials levels.

Strengthening of school health services represents one of the three strands of primary health care re-engineering; thus extending school health coverage represents an important health sector outcome. School Grade 1 screening coverage and School Grade 8 screening coverage are the two school health indicators included in the national and provincial Departments of Health Annual Performance Plans.[ao] As such they are used to monitor performance of the ISHP at district, provincial and national levels.

The 2015/16 target was for 25% of Grade 1 learners to be reached. It should be noted that up until 2013/14, screening coverage targets included only SEQ1 and SEQ2 schools. In the past two financial years (2014/15 and 2015/16), coverage targets included learners attending all public schools (SEQ 1–5 and special schools). However, school health teams are still expected to prioritise learners in SEQ1 and SEQ2 schools.

A recent global review of school health services highlighted the fact that school health is being increasingly recognised for its contribution to the health and education status of children. School health is seen as an important vehicle for achieving a number of objectives, namely helping children to enter school at the right age by addressing health barriers to school entry; helping children to stay in school until completion; reducing absenteeism due to health reasons; and contributing to educational performance by minimising health barriers to learning.[ap]

In South Africa, strengthening of school health services aims to bring quality health services closer to users. The Integrated School Health Policy launched by the Departments of Basic Education and Health in 2012 aims to:[an]

- Improve collaboration between key role-players, namely the departments of Health, Basic Education and Social Development.
- Provide a more comprehensive package of services.
- Provide services to learners in all educational phases.
- Place more emphasis on provision of health services (as opposed to screening and referral).

an Departments of Basic Education and Health. The Integrated School Health Policy. Pretoria: National Department of Health; 2012.

ao National Department of Health. Annual Performance Plan 2016/17–2018/19. Pretoria: NDoH; 2016.

ap Bundy D. Rethinking School Health: A Key Component of Education for All. Washington, DC: World Bank; 2011.

- ✦ Ensure that learners assessed as requiring additional services receive these services.
- ✦ Provide school health services to all learners (starting in SEQ1 and SEQ2 schools).

While monitoring of screening coverage is a useful tool to measure the performance of the ISHP, it should be remembered that "school health is a complex programme. It addresses multiple health needs of school-aged children across an age-span of 12 years and encompasses many different kinds of health interventions. Its successful implementation is dependent on the integral collaboration of multiple sectors, and manifold levels and components of the health system – a feat that requires skilful management and leadership."[aq]

The 2014/15 *District Health Barometer*[ar] included four recommendations to improve School Grade 1 screening coverage. These are shown in Box 1. In presenting the data in this section, particular attention will be paid to identifying progress on these recommendations.

Box 1: Recommendations on school Grade 1 screening coverage from the 2014/15 *District Health Barometer*

◊ All school health teams should set realistic coverage targets (based on the national norm of 2 000 targeted learners per school health team). District management teams should then ensure that the teams are provided with the necessary resources and have support to reach the targeted learners.

◊ School health teams should work more closely with Ward-Based Outreach Teams (WBOTs). Successful models that facilitate the reach of the school health programme through collaboration with WBOTs should be identified and shared with other districts. The role of educators should also be explored.

◊ Monitoring of school health data should focus on ensuring completeness of reporting. More attention should be paid to using data to measure and improve efficiency through linking coverage to inputs (i.e. the number of school health teams in a district or sub-district).

◊ Coverage should also be disaggregated by school quintile in order to monitor whether school health services are reaching learners in the most disadvantaged schools.

Data on school health services coverage have been available through the DHIS since 2013/14. National school Grade 1 screening coverage (Table 22) increased from 17.2% in 2013/14, to 23.2% in 2014/15, and to 28.9% in 2015/16. During 2015/16, 339 474 Grade 1 learners were screened and the national target was achieved, viz. to screen 25% of Grade 1 learners during 2015/16.

Table 22: National school Grade 1 screening coverage, 2013/14–2014/15

	Number of Grade 1 learners screened	Total number of Grade 1 learners	Screening coverage (%)
2013/14	201 824	1 175 390	17.2
2014/15	272 343	1 175 390	23.2
2015/16	339 474	1 175 256	28.9

Source: DHIS.

It should be noted that a number of challenges have persisted with regard to ensuring that the correct denominator is used when calculating this indicator. Ideally the number of learners per grade per school should be used. However, accurate, validated figures are not always available timeously. It should also be noted that because learner numbers are provided by calendar year, the denominator changes over the course of one financial year. While the DHIS accommodates this through the use of annualised figures, the resulting complexity acts as a further barrier to analysis and use of data for managing health services at local level.

Provincial screening rates are shown below in Table 23 and Figure 21. During 2015/16 coverage improved in all provinces, but improvements were more pronounced in provinces that were already achieving relatively high coverage, resulting in further widening of the gap between provinces with high coverage and those with low coverage. The provinces with the highest coverage in 2014/15, namely North West (38.2%) and the Western Cape (36.6%) improved coverage in 2015/16 to 53.0% and 52.1% respectively. In contrast, the provinces with the lowest coverage in 2014/15, namely the Northern Cape (11.3%) and Mpumalanga (12.4%), showed only modest improvements to 12.9% and 13.3% respectively in 2015/16.

aq Shung King M, Orgill M, Slemming W. School Health in South Africa: reflections on the past and prospects for the future. In: Padarath A, English R, editors. South African Health Review 2013/14. Durban: Health Systems Trust; 2014.

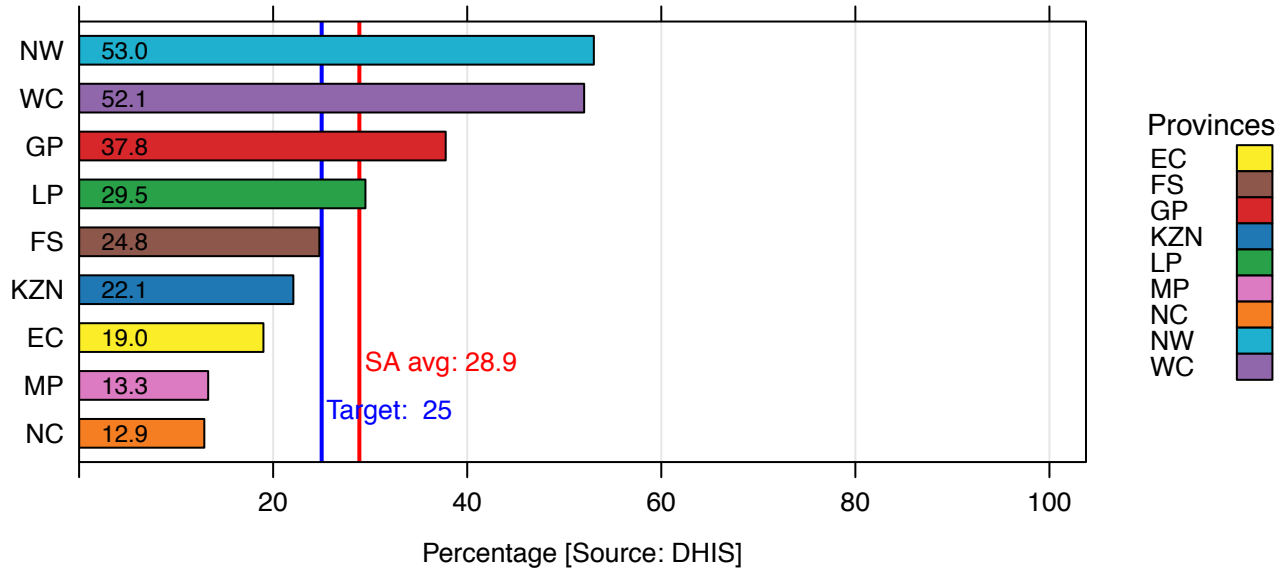
ar Massyn N, Peer N, Padarath A, Barron P, Day C, editors. District Health Barometer 2014/15. Durban: Health Systems Trust; October 2015.

Table 23: School Grade 1 screening coverage by province, 2013/14–2015/16

	2013/14			2014/15			2015/16		
	Number screened	Total number	Coverage (%)	Number screened	Total number	Coverage (%)	Number screened	Total number	Coverage (%)
Eastern Cape	33 735	197 378	17.1	26 531	197 378	13.4	37 431	197 039	19.0
Free State	13 953	66 292	21.0	16 176	66 292	24.4	16 413	66 292	24.8
Gauteng	63 033	191 563	32.9	59 553	191 563	31.1	72 376	191 563	37.8
KwaZulu-Natal	25 135	268 438	9.4	55 529	268 438	20.7	59 218	268 182	22.1
Limpopo	31 981	145 069	22.0	32 158	145 069	22.2	42 808	145 069	29.5
Mpumalanga	14 694	98 753	14.9	12 243	98 753	12.4	13 157	98 909	13.3
Northern Cape	3 914	28 248	13.9	3 194	28 248	11.3	3 645	28 248	12.9
North West	15 379	76 005	20.2	29 064	76 005	38.2	40 319	76 005	53.0
Western Cape	0	103 644	0.0	37 895	103 644	36.6	54 107	103 949	52.1
South Africa	201 824	1 175 390	17.2	272 343	1 175 390	23.2	339 474	1 175 256	28.9

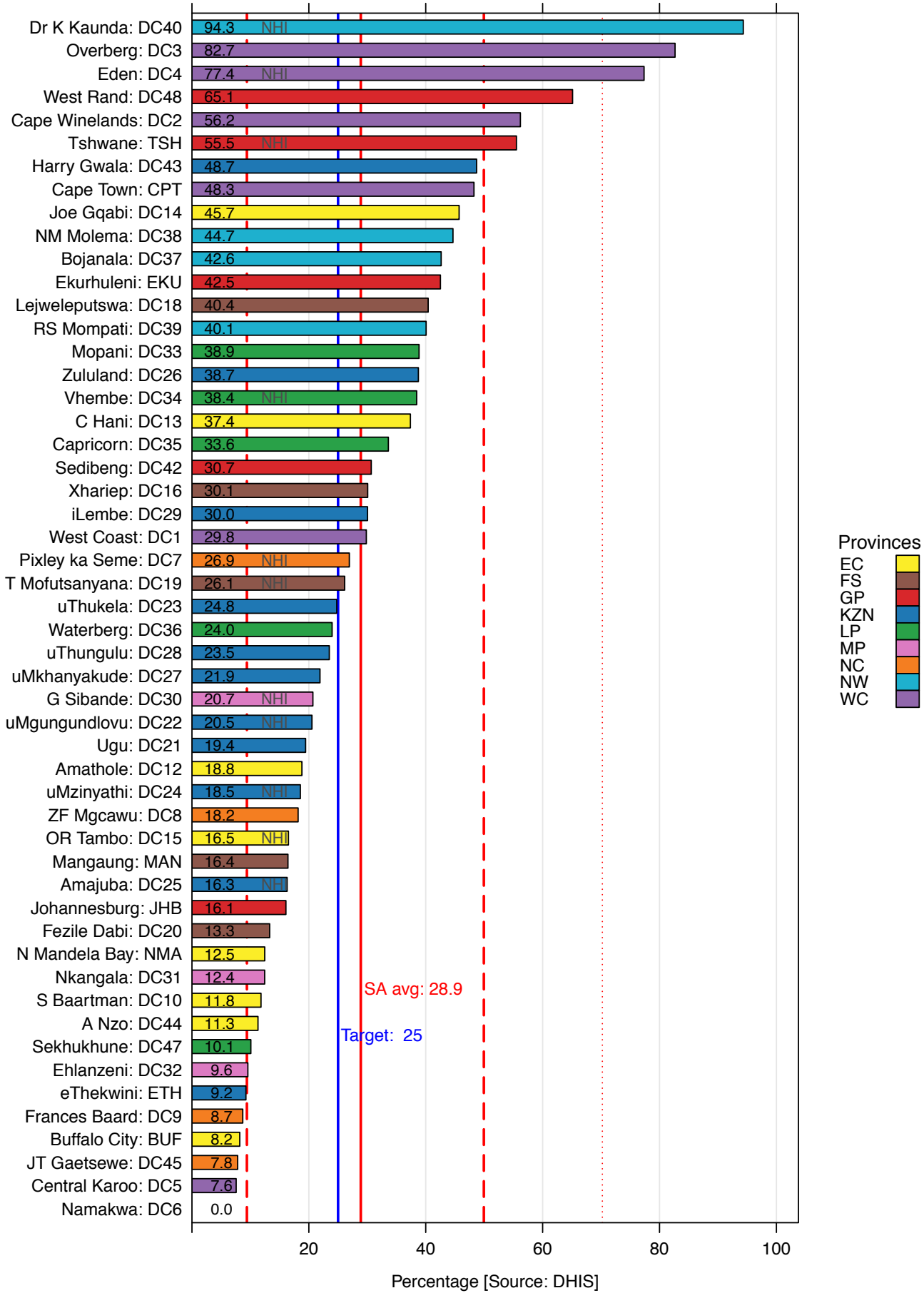
Source: DHIS.

Figure 21: School Grade 1 screening coverage by province, 2015/16

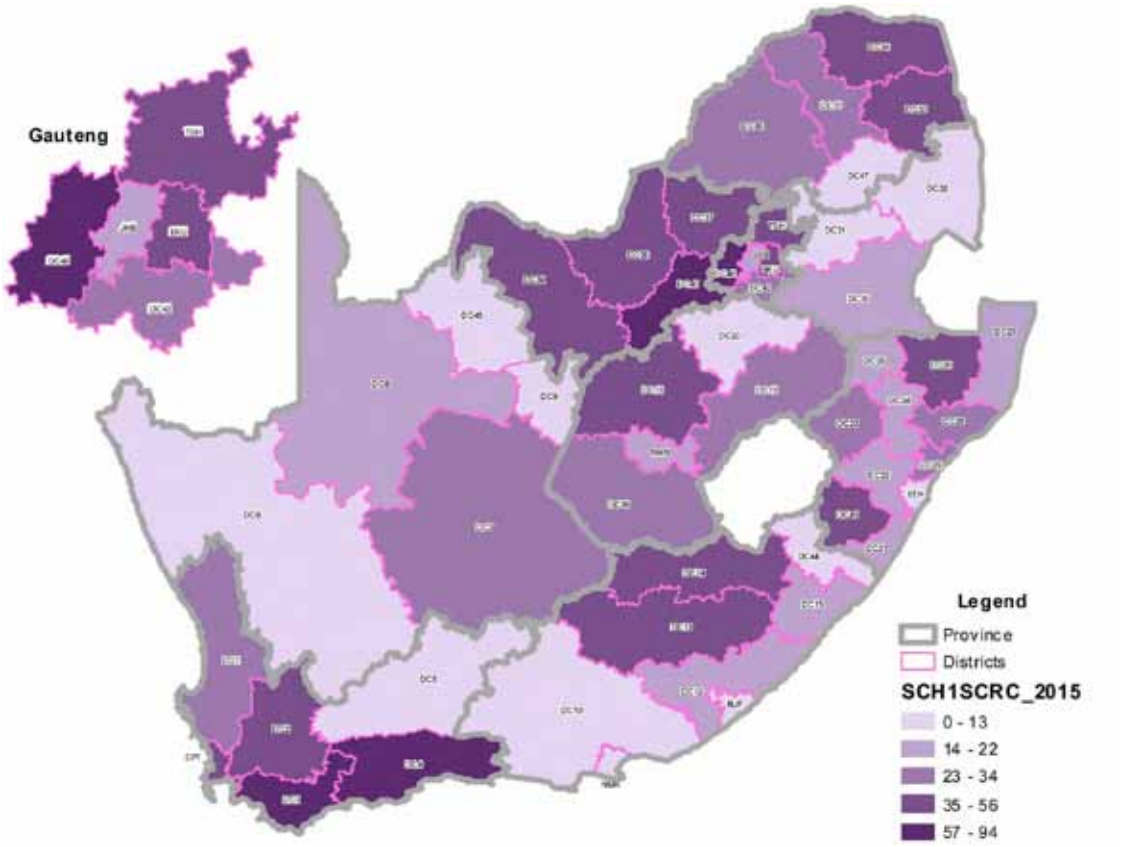


District coverage (shown in Figure 22 and Map 6) ranged from 94.3% in Dr K Kaunda (NW) to 0% in Namakwa (NC). Twenty-five districts achieved coverage above the national target of 25%. This included all four districts in North West, five of the six districts in the Western Cape, and four of Gauteng's five districts. In contrast, six out of eight Eastern Cape districts and none of the three districts in Mpumalanga reached the target of 25%.

Figure 22: School Grade 1 screening coverage by district, 2015/16



Map 6: School Grade 1 screening coverage by district, 2015/16



In 2015/16, school Grade 1 screening coverage increased in 38 districts and decreased in 13 districts compared with rates reported in 2014/15. No school health services were provided in Namakwa in both years. Five districts more than doubled coverage, namely: A Nzo (EC) (from 3.2% to 11.3%); Mopani (LP) (from 17.5% to 38.9%); uMkhanyakude (KZN) (from 10.7% to 21.9%); Dr K Kaunda (NW) (from 46.7% to 94.3%); and Cape Town (WC) (from 24.0% to 48.3%).

As noted above, coverage declined in 13 districts. The decreases were generally modest, but substantial declines were noted in a number of districts, especially the Central Karoo (WC) where coverage dropped from 113.8% to 7.6% and eThekwini (KZN) where coverage dropped from 21.2% to 9.2%. Less dramatic but nevertheless substantial declines were also reported in Frances Baard (NC) (from 14.3% to 8.7%) and Amajuba (KZN) (from 25.2% to 16.3%).

The wide interprovincial variation in coverage was mirrored by intra-provincial variation. Table 24 shows provincial coverage and the districts with the highest and lowest coverage in each province. It is not immediately apparent why districts within the same province and with similar demographic and resource profiles displayed such variation in coverage, e.g. Lejweleputswa and Fezile Dabi in the Free State, Overberg and Central Karoo in the Western Cape and Mopani and Sekhukhune in Limpopo.

Table 24: Districts with highest and lowest school Grade 1 screening coverage, by province, 2015/16

Provincial coverage (%)		Highest district coverage (%)		Lowest district coverage (%)	
Eastern Cape	19.0	Joe Gqabi	45.7	Buffalo City	8.2
Free State	24.8	Lejweleputswa	40.4	Fezile Dabi	13.3
Gauteng	37.8	West Rand	65.1	Johannesburg	16.1
KwaZulu-Natal	22.1	Harry Gwala	48.7	eThekwini	9.2
Limpopo	29.5	Mopani	38.9	Sekhukhune	10.1
Mpumalanga	13.3	G Sibande	20.7	Ehlanzeni	9.6
Northern Cape	12.9	Pixley ka Seme	26.9	Namakwa	0
North West	53.0	Dr K Kaunda	94.3	RS Mompati	40.1
Western Cape	52.1	Overberg	82.7	Central Karoo	7.6

Source: DHIS.

No school health services were provided in Namakwa's six sub-districts as well as in an additional 12 sub-districts (Table 25).

Table 25: Sub-districts where no Grade 1s were screened, 2015/16

District	Sub-districts
uMgungundlovu (KZN)	Mpofana LM
Ehlanzeni (MP)	Bushbuckridge LM
G Sibande (MP)	Emakhazeni LM, Steve Tshwete LM
Frances Baard (NC)	Magareng LM, Phokwane LM
Pixley ka Seme (NC)	Kareeberg LM, Siyathemba LM, Umsobomvu LM
ZF Mgcawu (NC)	Kgatelopele LM, Mier LM, Tsantsabane LM
Namakwa (NC)	Hantam LM, Kamiesberg LM, Karoo Hoogland LM, Khâi-Ma LM, Nama Khoi LM, Richtersveld LM

Source: DHIS.

Coverage in NHI pilot districts also showed wide variation (Table 26 and Figure 23). Coverage was higher in NHI districts than in non-NHI districts (35.3% versus 27.1%); however, this was chiefly due to high coverage in a few districts, namely Dr K Kaunda (NW) (94.3%), Eden (WC) (77.4%) and Tshwane (GP) (55.5%). Seven NHI pilot sites reported coverage below the national average, with five of these districts failing to reach the national target of 25%, namely Amajuba (KZN) (16.3%), OR Tambo (EC) (16.5%), uMzinyathi (KZN) (18.5%), uMgungundlovu (KZN) (20.5%) and G Sibande (MP) (20.7%).

Table 26: School Grade 1 screening coverage by National Health Insurance district, 2013/14–2015/16

	2013/14		2014/15		2015/16	
	Number screened	Coverage (%)	Number screened	Coverage (%)	Number screened	Coverage (%)
NHI	58 487	22.4	64 686	24.8	92 122	35.3
Non-NHI	143 337	15.7	207 657	22.7	247 352	27.1
South Africa	201 824	17.2	272 343	23.2	339 474	28.9

Source: DHIS.

Figure 23: School Grade 1 screening coverage by National Health Insurance district, 2015/16

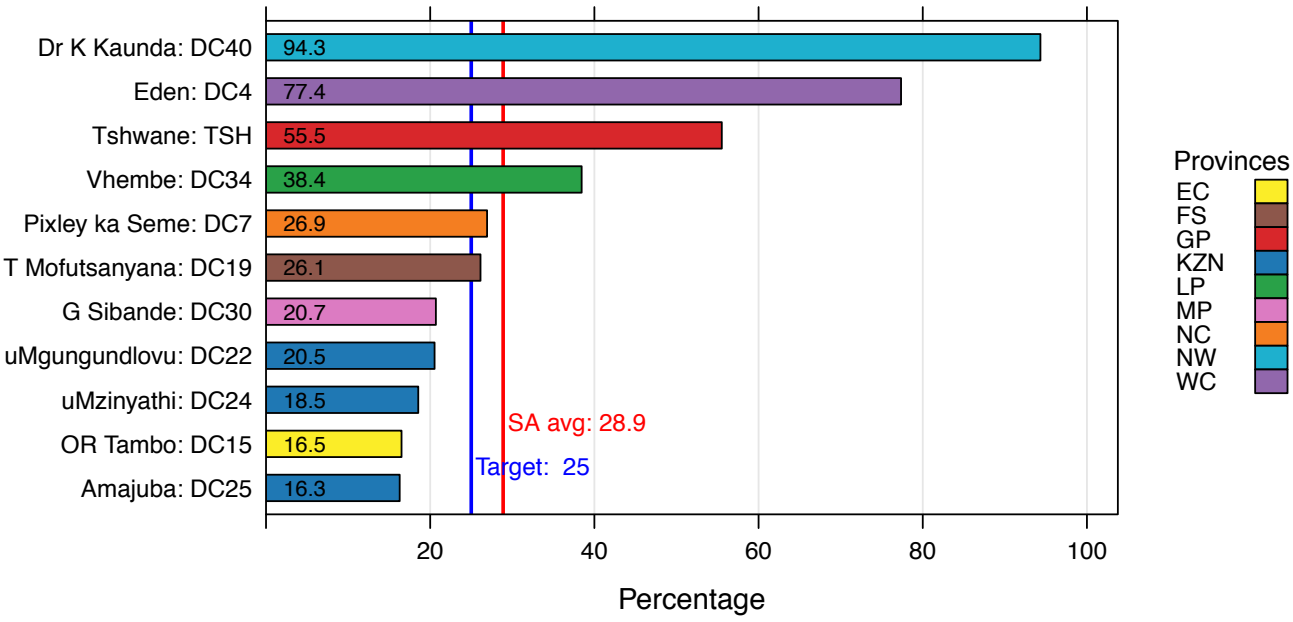


Table 27 shows coverage in metro and non-metro municipalities. Coverage was slightly higher in metros than non-metros (29.5% versus 28.6%). However, wide variation was again apparent, with three metros contributing disproportionately to the relatively good performance of the metros; these were Tshwane (GP) (55.5%), Cape Town (WC) (48.3%) and Ekurhuleni (GP) (42.5%). The remaining five metros did not achieve the national target and were among the 16 districts with lowest coverage; these metros were Buffalo City (EC) (8.2%), eThekwini (KZN) (9.2%), N Mandela Bay (EC) (12.5%), Johannesburg (GP) (16.1%) and Mangaung (FS) (16.4%).

Table 27: School Grade 1 coverage by metro (A) and non-metro (C) municipalities, 2013/14–2015/16

	2013/14		2014/15		2015/16	
	Number screened	Coverage (%)	Number screened	Coverage (%)	Number screened	Coverage (%)
A	58 206	16.7	85 372	24.5	102 673	29.5
C	143 618	17.4	186 971	22.6	236 801	28.6
South Africa	201 824	17.2	272 343	23.2	339 474	28.9

Source: DHIS.

Tables 28, 29 and 30 show data on Grade 1 screening coverage by school quintile; these data reveal the extent to which the most disadvantaged learners are receiving services. Although the greatest number of learners were from SEQ1 schools, coverage among this group of learners was below both the national average and the coverage for learners from SEQ 2–4 schools.

In reviewing these data, it should be noted that the quintile classification is based on the classification provided by the National Department of Basic Education. The classification of some schools is disputed and may in certain instances be adjusted at district level.

Table 28: National Grade 1 screening coverage by school quintile, 2015/16

	Total number of learners	Proportion of total learners (%)	Coverage (%)
Quintile 1	87 246	25.7	28.6
Quintile 2	83 439	24.6	30.7
Quintile 3	86 869	25.6	28.9
Quintile 4	49 050	14.4	30.6
Quintile 5	25 454	7.5	21.2
Quintile unknown	7 416	2.2	-
South Africa	339 474	100.0	28.9

Source: DHIS.

Table 29 shows coverage by school quintile at provincial level. Coverage among learners in SEQ1 schools ranged from 9.5% in the Northern Cape to 70.2% in the Western Cape, while coverage among learners in SEQ2 schools ranged from 14.2% in Mpumalanga to 58.3% in the Western Cape. More than three-quarters of all learners screened (75.9%) were in SEQ 1–3, indicating that school health teams were prioritising learners from disadvantaged backgrounds. However, in North West, Limpopo and the Western Cape, SEQ 2–4 schools had higher averages than the provincial average, meaning that prioritisation had not generally taken place in these provinces.

Table 30 shows coverage by school quintile at district level. Only 11 districts reported coverage of 50% or more among SEQ1 learners and 10 districts reported coverage of 50% or more among SEQ2 learners. The majority of the 25 454 SEQ5 learners who were screened were from metros.

Table 29: Provincial Grade 1 screening coverage by school quintile, 2015/16

	Quintile 1		Quintile 2		Quintile 3		Quintile 4		Quintile 5		Quintile unknown	All	
	No. of learners	Rate (%)	No. of learners	Rate (%)	No. of learners	Rate (%)	No. of learners	Rate (%)	No. of learners	Rate (%)	No. of learners	No. of learners	Rate (%)
Eastern Cape	10 990	15.6	9 256	23.7	15 217	20.2	651	14.5	396	5.3	921	37 431	19.0
Free State	7 499	35.5	7 241	44.0	1 391	8.3	141	2.6	0	0.0	141	16 413	24.8
Gauteng	11 799	46.2	9 571	35.1	23 690	45.6	15 237	33.2	10 081	26.9	1 998	72 376	37.8
KwaZulu-Natal	17 621	28.0	19 983	29.6	12 907	19.2	5 495	12.7	2 688	10.2	524	59 218	22.1
Limpopo	11 800	24.8	12 340	30.1	12 405	34.7	3 751	46.3	520	14.5	1 992	42 808	29.5
Mpumalanga	5 871	16.4	6 069	14.2	379	5.1	502	7.1	0	0.0	336	13 157	13.3
Northern Cape	624	9.5	1 652	22.0	689	11.1	510	10.3	145	4.9	25	3 645	12.9
North West	12 569	53.2	8 311	54.5	11 142	46.5	7 070	61.9	593	42.7	634	40 319	53.0
Western Cape	8 473	70.4	9 016	58.3	9 049	55.5	15 693	52.8	11 031	36.7	845	54 107	52.1
South Africa	87 246	28.6	83 439	30.7	86 869	28.9	49 050	30.6	25 454	21.2	7 416	33 9474	28.9

Source: DHIS.

Table 30: District Grade 1 screening coverage by school quintile, 2015/16

	Quintile 1		Quintile 2		Quintile 3		Quintile 4		Quintile 5		Quintile unknown	All	
	No. of learners	Rate (%)	No. of learners	Rate (%)	No. of learners	Rate (%)	No. of learners	Rate (%)	No. of learners	Rate (%)	No. of learners	No. of learners	Rate (%)
Eastern Cape													
A Nzo	1 755	9.2	795	9.5	463	15.9	-	-	-	-	437	3 450	11.3
Amathole	1 626	16.7	1 720	21.0	1 898	19.4	63	18.7	-	-		5 307	18.8
Buffalo City			46	3.3	1 262	10.9	-	-	-	-	46	1 354	8.2
C Hani	2 543	26.9	2 494	39.9	4 488	45.6	129	34.8	-	-	184	9 838	37.4
Joe Gqabi	702	24.9	1 184	38.4	2 861	61.3	179	84.0	67	79.8	44	5 037	45.7
NM Bay	17	100.0	225	138.0	2 255	11.8	140	14.7	329	8.5	58	3 024	12.5
OR Tambo	4 347	14.9	2 363	23.0	1 188	13.7	109	10.5	-	-	152	8 159	16.5
S Baartman	-	-	429	34.4	802	9.3	31	9.8	-	-		1 262	11.8
Free State													
Fezile Dabi	767	37.0	701	20.4	66	1.5	-	-	-	-	-	1534	13.3
Lejweleputswa	2 379	53.4	3 249	70.2	123	4.6	11	2.5	-	-	-	5 762	40.4
Mangaung	854	32.0	1 572	43.1	275	6.3	63	2.0	-	-	-	2 764	16.4
T Mofutsanyana	2 937	28.5	1 235	39.0	720	16.4	24	2.5	-	-	141	5 057	26.1
Xhariep	562	34.8	484	30.7	207	23.2	43	20.0	-	-	-	1 296	30.1
Gauteng													
Johannesburg	1 126	17.7	1 118	8.8	2 606	18.9	2 718	15.8	1 735	15.5	687	9 990	16.1
Tshwane	5 789	54.0	4 041	63.8	7 374	80.4	4 141	52.8	4 114	35.5	410	25 869	55.5
Ekurhuleni	1 263	38.1	1 854	48.9	8 414	47.6	5 561	37.0	4 093	38.5	901	22 086	42.5
Sedibeng	1 246	37.5	824	36.9	2 148	33.9	693	31.7	139	6.0	-	5 050	30.7
West Rand	2 375	128.3	1 734	78.6	3 148	63.1	2 124	58.6	-	-	-	9 381	65.1
KwaZulu-Natal													
Amajuba	116	17.2	562	23.2	965	20.2	284	9.4	-	-	-	1 927	16.3
eThekwini			919	25.9	2 516	13.1	968	4.0	1 553	9.3		5 956	9.2
Harry Gwala	2 237	42.1	3 516	48.3	597	58.3	549	50.9	41	25.6	346	7 286	48.7
iLembe	1 685	34.2	1 597	33.0	1 183	25.6	425	20.8	137	43.5		5 027	30.0
Ugu	718	17.5	1 782	19.5	695	16.8	271	16.7	442	32.5	57	3 965	19.4
uMgungundlovu	638	37.2	1 571	41.6	1 736	17.8	501	13.4	115	3.5	25	4 586	20.5
Umkhanyakude	2 698	24.1	2 196	20.9	373	19.4	52	8.1	-	-	-	5 319	21.9
Umzinyathi	1 711	14.9	934	22.3	173	11.3	639	37.5	63	22.2	40	3 560	18.5
Uthukela	1 540	33.9	2 086	41.2	197	14.8	-	-	160	23.7	-	4 983	24.8
Uthungulu	1 429	18.7	2 028	24.2	1 798	26.6	1142	42.7	149	6.5	-	6 546	23.5
Zululand	4 849	44.3	2 792	33.7	1 674	31.2	664	67.8	28	8.8	56	10 063	38.7
Limpopo													
Capricorn	1 354	20.7	4 733	35.1	2 319	32.0	1 364	49.4	417	36.8	307	10 494	33.6
Mopani	5 899	41.3	1 098	20.8	2 832	38.8	1 393	57.0	94	14.3	353	11 669	38.9
Sekhukhune	2 151	10.2	340	15.5	83	5.4	-	-	-	-	736	3 310	10.1
Vhembe	1 476	46.1	4 544	36.5	6 453	36.1	581	42.0	-	-	539	13 593	38.4
Waterberg	920	36.0	1 625	21.4	718	41.3	413	27.2	9	0.7	57	3742	24.0
Mpumalanga													
Ehlanzeni	2 122	11.0	1 766	9.4	118	8.2	298	8.4	-	-	-	4 304	9.6
G Sibande	2 898	23.2	2 343	22.8		-	74	6.1	-	-	66	5381	20.7
Nkangala	851	22.0	1 960	14.4	261	4.4	130	5.5	-	-	270	3472	12.4
Northern Cape													
Frances Baard	139	8.4	220	9.5	412	14.4		-	-	-	-	771	8.7
JT Gaetsewe	181	4.8	182	16.2	155	9.3		-	-	-	25	543	7.8
Namakwa	-	-	-	-	-	-	-	-	-	-	-	-	-
Pixley ka Seme	153	28.1	927	38.7	-	-	327	30.2	-	-	-	1 407	26.9
ZF Mgcawu	151	27.3	323	23.6	122	20.5	183	10.2	145	18.8	-	924	18.2
North West													
Bojanala Platinum	4 242	69.7	1 705	53.3	2 608	21.6	2 542	49.1	53	10.8	388	11 538	42.6
Dr K Kaunda	2 300	79.9	2 093	99.9	5 110	97.6	3 959	92.2	540	122.7	246	14 248	94.3
RS Mompati	1 679	34.7	1 385	36.7	1596	48.2	403	55.6	-	-	-	5 063	40.1
NM Molema	4 348	44.2	3 128	50.6	1828	54.7	166	13.6	-	-	-	9 470	44.7
Western Cape													
Cape Winelands	3735	71.7	2039	74.6	559	36.7	941	40.7	982	34.1	12	8 268	56.2
Central Karoo	82	19.2	34	15.3	-	-	-	-	-	-	-	116	7.6
Cape Town	867	124.4	4 187	50.2	5 409	56.3	12 439	56.1	8 421	34.5	307	31 630	48.3
Eden	1767	66.2	2064	76.0	1555	71.8	1452	78.9	1074	77.6	423	8 335	77.4
Overberg	794	79.0	291	33.8	1 396	82.6	594	111.7	521	136.0	103	3 699	82.7
West Coast	1 228	60.5	401	68.0	130	23.7	267	9.5	33	3.6		2 059	29.8

Source: DHIS.

Key findings

- School Grade 1 screening coverage has continued to increase. However, as noted in the 2014/15 *District Health Barometer*, it is unlikely that the number of school health teams will increase substantially, and further increases in coverage will depend on better utilisation of existing school health teams and collaboration with other role-players including WBOT members and educators.
- Educators were directly involved in provision of school health services for the first time during the De-worming Campaign, which took place in conjunction with the first round of the HPV immunisation campaign in February 2016. All Grade 1–7 learners in school quintiles 1–3 were targeted to receive de-worming medication (mebendazole), with the medication being administered by educators. Although challenges were experienced in some areas, a substantial number of learners were reached. The campaign will be repeated in future years, and provides an important opportunity to strengthen collaboration between educators and school health teams.
- However, the data also reveal a number of worrying trends. The increasing disparity in screening rates across the provinces is of concern, including the low coverage in two provinces (Northern Cape and Mpumalanga). Screening rates in provinces where the majority of learners are in quintile 1 and 2 schools (KwaZulu-Natal, Eastern Cape and Limpopo) also remained modest, with only Limpopo reaching the coverage target of 25%.
- Further causes for concern are the wide intra-provincial variation, the drop in coverage in a number of districts, and failure to prioritise the most disadvantaged learners adequately. As noted above, providing school health services is a complex task that requires adequate leadership, as well as optimal allocation and efficient use of human and other resources. Anecdotal evidence suggests that low screening coverage reflects poor leadership and management, as well as inadequate resource allocation and inefficient use of resources. More attention needs to be paid to identifying and addressing barriers to achieving adequate coverage in provinces and districts with low screening coverage.
- The need to disaggregate data according to quintiles and to use these data for management purposes must be reiterated.

Recommendations

- Strengthening of school health services remains a health system priority, and provinces and districts need to ensure that the reach of the school health programme continues to increase. Reasons for progress being stalled need to be identified and remedial action must be taken. In order to increase coverage substantially, some districts will require additional investment (primarily additional school health teams), while other districts could improve coverage through more rational and efficient planning and scheduling.
- However, better planning and monitoring of school health services is required at all levels, and provinces need to play a greater role in ensuring that school health services are being provided in all sub-districts and that adequate screening rates are being achieved. In particular, provinces and districts need to ensure that they are reaching the most disadvantaged learners (those in quintile 1 and 2 schools). This needs to be monitored on a regular basis at national, provincial and district levels.
- Different models of providing school health services should be considered, particularly in sparsely populated areas such as districts like Namakwa and Central Karoo, which reported the lowest coverage during 2015/16. In these areas it is more practical for learners to be seen by PHC nurses (either in their schools or at the local facility). This model is already used in a number of sparsely populated areas and has the potential to improve coverage significantly without the need for additional resources.
- The importance of collaborating with other role-players remains critical. This includes working with WBOTs and with a variety of other partners. As noted above, the de-worming campaign provides a platform to foster closer collaboration between school health teams and educators.