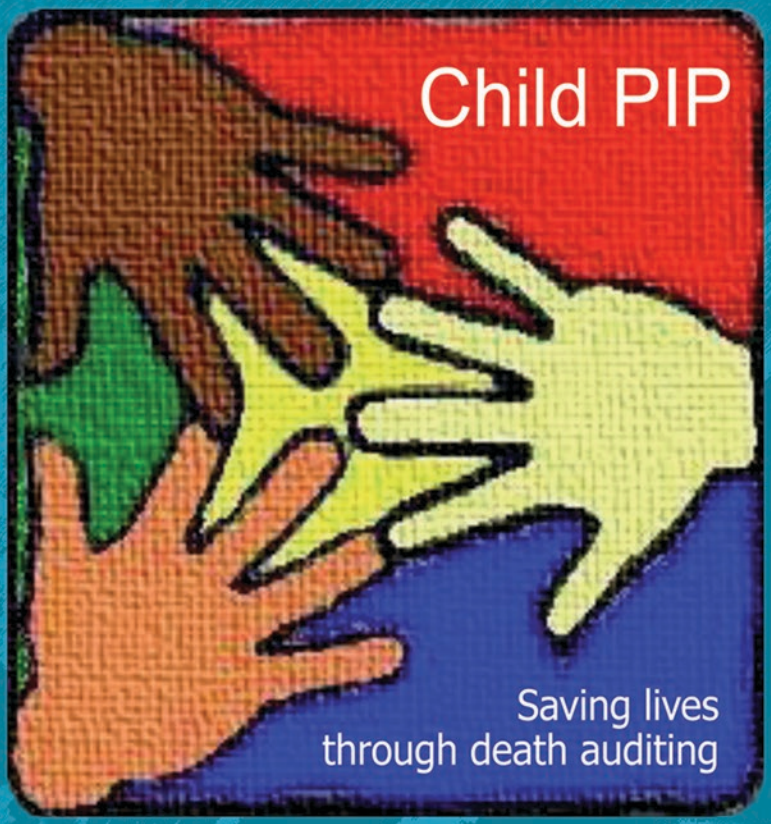
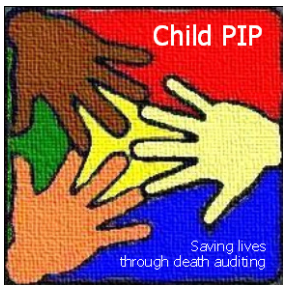


SAVING CHILDREN 2012-2013

An eighth survey of child healthcare in South Africa

Compiled by:
Cindy Stephen for the Child PIP Group
MRC Unit for Maternal and Infant Health Care Strategies

ISBN No: 978-0-620-69632-6



CHILD HEALTHCARE PROBLEM IDENTIFICATION PROGRAMME

Saving lives through death auditing

Saving Children 2012-2013

An eighth survey of child healthcare in South Africa

Compiled by CR Stephen, MRC Unit for Maternal and Infant Health Care Strategies
on behalf of Child PIP users

ISBN No: 978-0-620-69632-6
Pretoria 2016

The report can be viewed on www.childpip.co.za

Hardcopies are available from:
The MRC Unit for Maternal and Infant Health Care Strategies
Klinikala Building, Kalafong Hospital
Private Bag 667
PRETORIA, 0001
Tel/Fax: (012) 373-0825
E-mail: matinfru@up.ac.za

ISBN No: 978-0-620-69632-6

The report should be cited as follows:
Saving Children 2012-2013 An eighth survey of child healthcare in South Africa, CR Stephen, Tshepesa Press, Pretoria, 2016

The individual chapters in the report should be cited as follows:
Chapter authors. Chapter title. In Saving Children 2012-2013 An eighth survey of child healthcare in South Africa, CR Stephen, Tshepesa Press, Pretoria, 2016, pp

Child PIP Project Leaders
LJ Bamford K Harper ME Patrick CR Stephen

Foreword

Innovation is increasingly recognised as key to improving health care. Child PIP was recently requested to apply for a health innovation award. During this process, Child PIP was asked to respond to two important questions: 'What is innovative about Child PIP?' and 'Is the innovation sustainable, or how can it be made sustainable?'.

Firstly, Child PIP is innovative in that it demonstrates that committed enthusiasts at the coalface of service delivery will, if given the right tools, actively engage in quality improvement activities. Secondly, Child PIP provides a locally developed tool for mortality review, designed around the specific circumstances, needs and priorities of children in the South African health system. Thirdly, Child PIP allows individual facilities to not only manage their own data and use them for improving the quality of care, but also to contribute to the national Child PIP database which provides data that contribute to policy and programming at a national level.

What about sustainability? Child PIP is inherently sustainable because it is implemented by public sector healthcare workers for whom mortality audit is increasingly recognised as a critical (and mandatory) activity. In addition, the provincial health departments are increasingly funding Child PIP activities. By way of example, two provinces have appointed officials whose primary responsibility is to ensure that data on child audits are collected and entered into Child PIP, whilst most provincial workshops are organised and funded by provincial health departments.

Continuing to respond to new challenges in innovative ways and ensuring long-term sustainability are important organisational challenges for Child PIP. The ongoing commitment of Child PIP users, as demonstrated by this the eighth Saving Children's Report, suggests that Child PIP is well-placed to successfully negotiate these challenges and continue contributing to improving the health of children in South Africa until 2030 and beyond.

Dr Lesley Bamford
Chairperson of Child PIP
National Department of Health
South Africa

Acknowledgements

The Child PIP Group would like to thank the following, whose ongoing contributions make a difference to the quality of child healthcare in South Africa:

- All Child PIP users who reflect daily on what they do, and ask the question 'Is this the best I can do?
- National Department of Health, Child and Youth Health Directorate, for ongoing interest and support
- Provincial Maternal, Child and Women's Health units, for their enthusiastic involvement
- Mrs Cathy Bezuidenhout, for her efficient and skilled organisation
- The South African Medical Research Council for funding this project
- Perlcom cc, for expert software programming and ongoing assistance

This report is dedicated to the late Dr Louis Heyns, an exceptional and caring paediatrician and people's person, who gave so much for the children in this country - a "wonderful symbol of the South Africa we know we can be"

Table of Contents

PART ONE
THE CHILD HEALTHCARE SURVEY:
2012-2013

Chapter 1

An Overview of Child PIP National Data 2012 - 2013

Kim Harper
Head of Clinical Unit, Frere Hospital, East London
Eastern Cape

Introduction

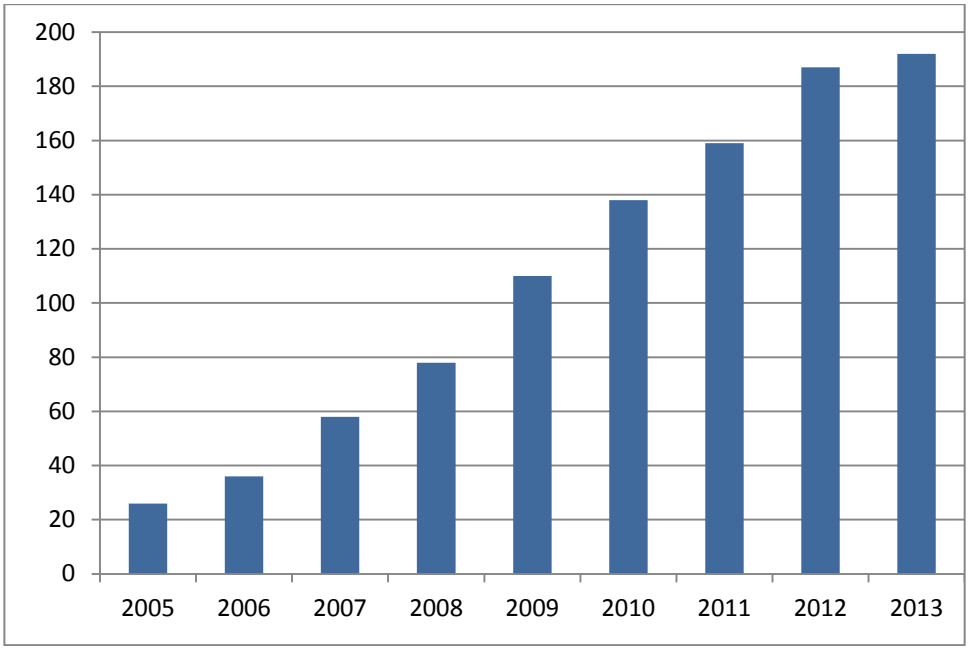
The Child Healthcare Problem Identification Programme, Child PIP, has become integrated into the health care system of South Africa as the preferred audit system for hospital child deaths and is now well embedded as a standard-of-care tool. This report seeks to present a national overview of child deaths and the specific details gleaned from Child PIP users regarding those deaths.

Contributing hospitals

For this 2012-2013 report, data from 205 hospitals, i.e. 61% of all hospitals in South Africa, were analysed and interpreted. Of the 205 hospitals, 174 hospitals submitted data for both years.

The growth in the number of institutions submitting data to the national database since 2005 is shown in Figure 1.

Figure 1. The number of facilities submitting data to the national database: 2005-2013 per year



The provincial breakdown of hospitals contributing Child PIP data in each province during 2012-2013 is shown in Table 1.

Mpumalanga shows 100% coverage of facilities, followed by the Free State, North West, the Western Cape and the Northern Cape.

Table 1. Number of facilities contributing to Child PIP per province: 2012-2013

	No. of facilities using Child PIP	*Total no. of facilities*	*% of facilities using Child PIP*
Eastern Cape	15	75	20
Free State	28	31	90
Gauteng	8	26	31
KwaZulu-Natal	37	55	67
Limpopo	19	39	49
Mpumalanga	28	28	100
North West	18	20	90
Northern Cape	14	17	82
Western Cape	38	45	84
South Africa	205	336	61

Information about the children who died

Admissions and in-hospital mortality rates

Table 2 presents a summary of the data collected by Child PIP users through the monthly tally sheets that are used to record all admissions

and deaths in participating hospitals, as well as the data collected through the individual death data capture sheets.

Table 2. Core Child PIP data: 2012–2013

Core Data	*Number*
Total admissions	435107
Total deaths	10674
In-hospital mortality rate	2.5
Audited deaths	11194
Total modifiable factors	40237
Modifiable factors per death	3.6

As the number of participating hospitals increased from 26 in 2005 to 192 in 2013, the total number of annual admissions captured increased from 24 136 to 226 258. The absolute number of deaths peaked in 2010 and has not increased since then despite substantial increases in admission numbers. This has resulted in a consistent decrease in the in-hospital mortality rate (IHMR) from 6.5 deaths per 100 admissions in 2005 to a low of 2.4 in 2012 (see Table 3). The IHMR for 2013 was 2.5. This is a significant and encouraging finding.

Table 3. Child PIP admissions, deaths and in-hospital mortality rates: 2005–2013

	Admissions	*Deaths*	*In Hospital Mortality Rate*
2005	24136	1580	6.5
2006	40665	2393	5.9
2007	64763	3356	5.2
2008	111606	5550	5.0
2009	142668	5971	4.2
2010	163915	6359	3.9
2011	191398	5625	2.9
2012	208849	5095	2.4
2013	226258	5579	2.5

Characteristics of children who died

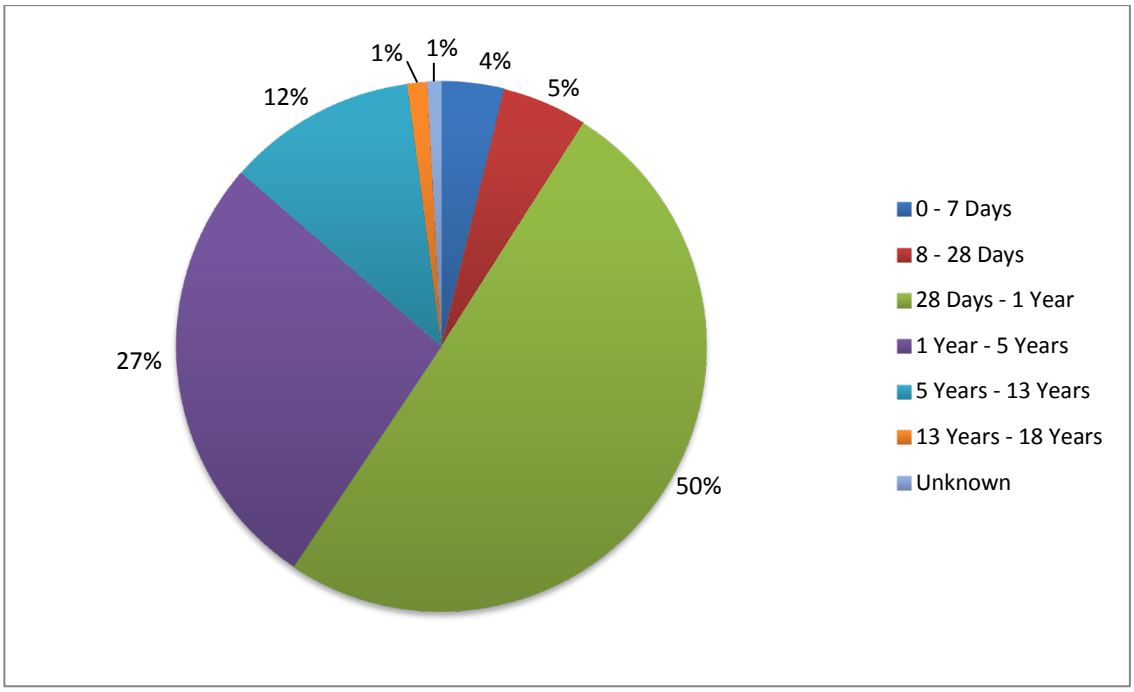
Demographics

AGE & GENDER

For 2012-2013, there were 11 194 audited deaths recorded in the national Child PIP database. Nine percent occurred in the neonatal period, while young children from 28 days to 1 year accounted for 50.4% of the deaths. Twenty-seven percent of the audited deaths were

in children between one and five years of age. Figure 2 details the age distribution of all audited deaths.

Figure 2. Age distribution of audited Child PIP deaths: 2012-2013



PATTERNS OF DEATHS

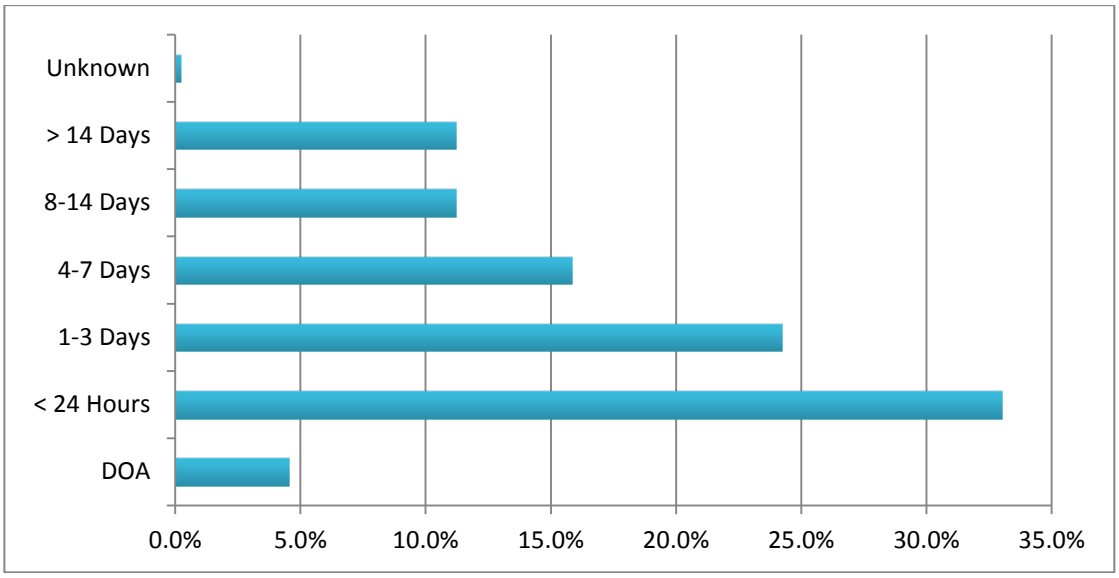
Nineteen percent of the deaths occurred in children who had been admitted previously to hospital, reflecting either a chronic illness or perhaps premature discharge due to a high bed-utilization rate.

As noted in previous Saving Children reports, the first 24 hours after admission present a particularly high-risk period for death, as shown by Figure 3. A significantly high percentage (45.0%) of deaths due to acute diarrhoea occurred within this period. Acute hypovolaemic shock from diarrhoea also accounted for the majority of children who were declared dead on arrival to a hospital.

Analysis of when the death occurred within the first 24-hour period does not reveal any specific clustering of deaths during weekdays, weeknights or weekends.

Almost 43.8% of children who died were not referred to the hospital in which they died, and it would be useful to interrogate the reason for the high rate of self-referrals to hospitals. Of those referred, clinic referrals form 29.5% whilst 5.5% were from private practitioners. Inter-hospital referrals made up 16.6%.

Figure 3. Length of hospital stay of audited Child PIP deaths: 2012-2013



Social context

In terms of caregiver, Child PIP data reports that the mother was the primary caregiver of 80.0% of children who died, while the grandmother was the caregiver in the remaining 8.7% of cases. The primary caregiver was unknown in 7.8% of child deaths.

The 2012-2013 data show that overall, 86.4% of the mothers of those children who died were alive and well. Information regarding the fathers of children who died is less available, and the well-being of almost half of them was classified as unknown.

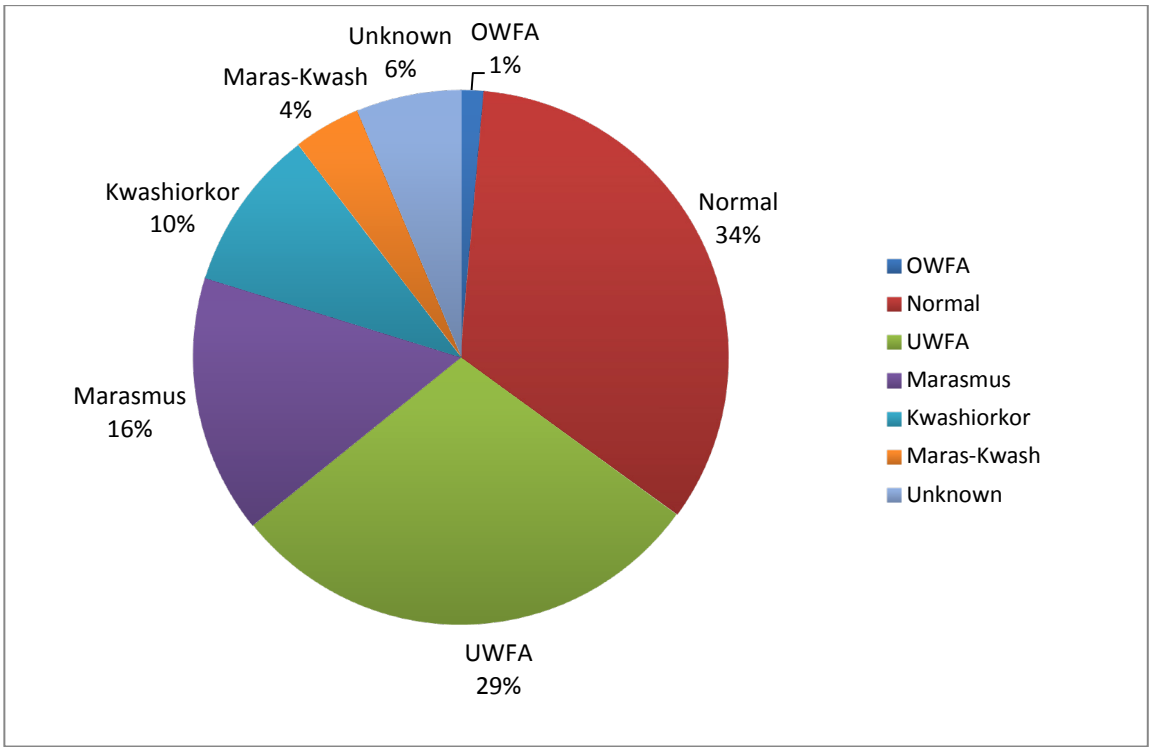
Health context

NUTRITION

Figure 4 reflects the weight categories of children who died in 2012-2013 Child PIP data. Only 35% of deaths occurred in children with normal or above-average weight. Just less than 30% of children who died had severe malnutrition. A further 29.2% were classified as being underweight-for-age.

The contribution of severe malnutrition was most prominent in children aged 1 to 5 years, being present in 42.0% of children in this age group who died, followed by infants at 29.8%.

Figure 4. Nutritional status by weight categories of audited child deaths: 2012–2013

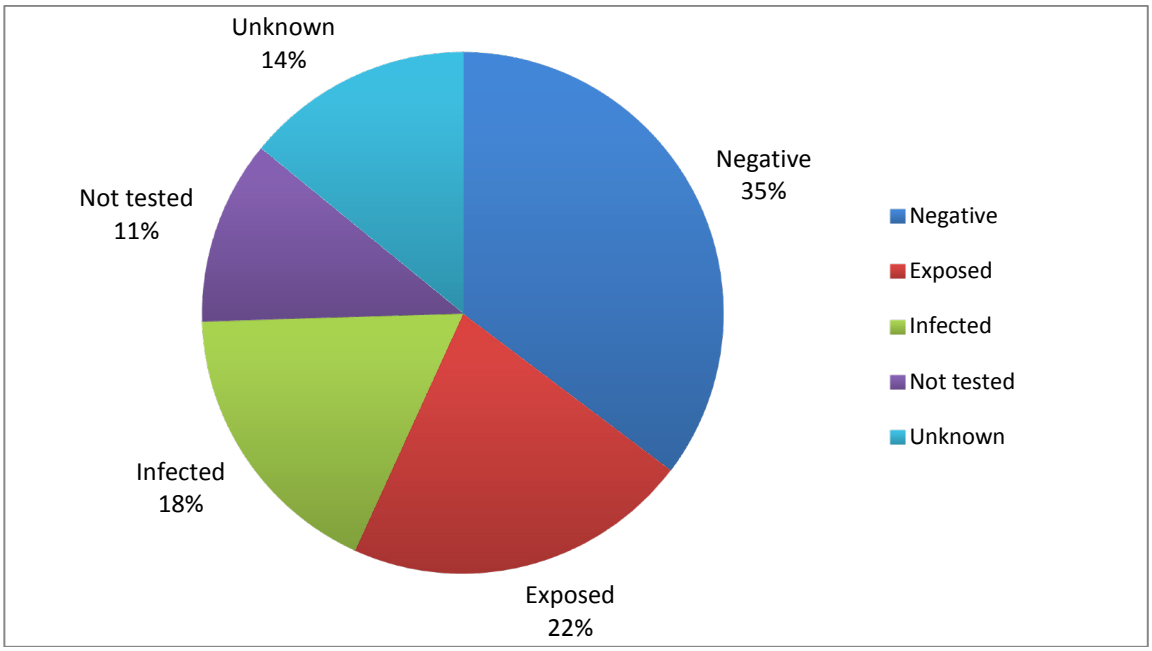


HIV&AIDS

HIV data over the years has been closely monitored and has revealed encouraging trends. Child PIP collects wide-ranging and useful key indicators of the HIV pandemic in children.

Figure 5 shows the HIV laboratory categories of the audited deaths for 2012 and 2013. It is evident that 35.3% of the children were known to be HIV negative at the time of death; 21.5% were HIV exposed, whilst 17.7% were known to be HIV infected. The HIV status of 14.1% was not known at death.

Figure 5. HIV laboratory category of the audited child deaths: 2012-2013



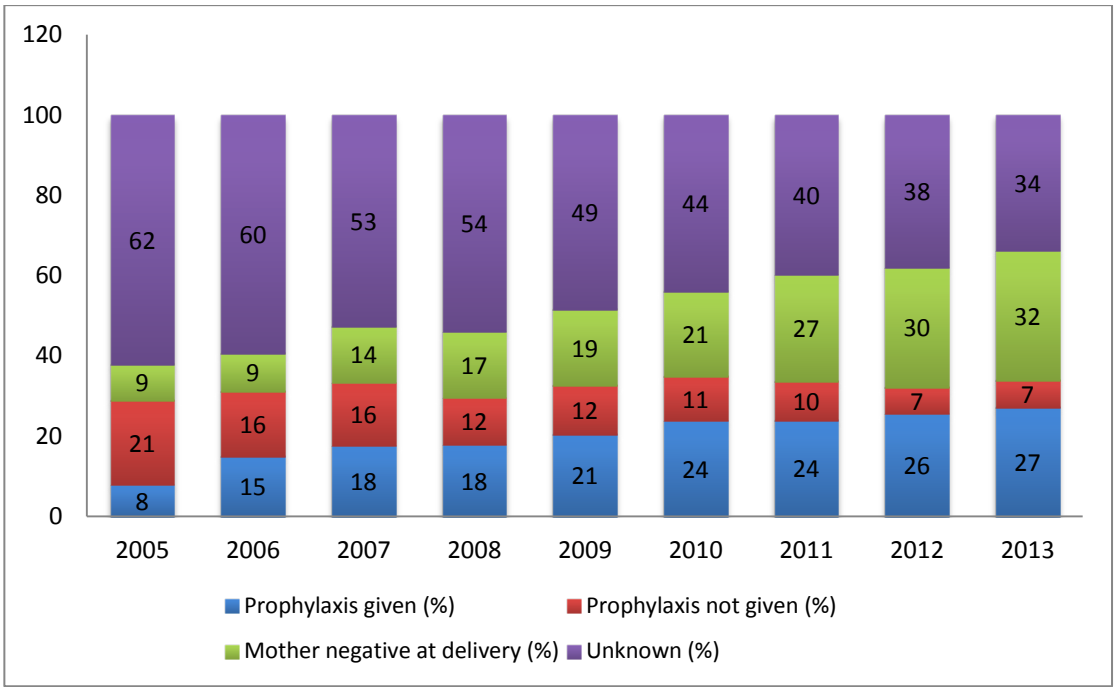
In terms of in-hospital child deaths, from 2005 up to 2013, the proportion of children whose HIV status was unknown fell from 22.4% to 13.8%. The proportion of HIV-negative children rose from 8.4% to 36.6% during this period, while the number of HIV-exposed children has remained fairly constant at approximately 22% (see Table 4 below).

Table 4. Trends in HIV laboratory category: 2005–2013

Period / %	2005	2006	2007	2008	2009	2010	2011	2012	2013
Negative	8.6	10.4	12.6	14.9	18.9	23.6	30.1	33.8	36.6
Exposed	22.3	23.3	23.8	22.6	22.4	23.1	21.6	21.2	21.8
Infected	27.2	30.8	32.7	25.6	25.5	26.6	21.2	18.5	17.0
No result	2.3	2.7	3.0	2.9	3.2	2.0	2.0	1.4	1.5
Not tested	17.2	12.9	13.9	14.3	12.8	10.8	10.3	10.6	9.4
Unknown	22.4	20	14.3	19.6	17.3	13.9	14.8	14.5	13.8

Data on uptake of prophylactic antiretroviral drugs during the perinatal period amongst children who died during the period 2005-2013 are shown in Figure 6.

Figure 6. Perinatal ARV prophylaxis trends: 2005-2013



In the 2012-2013 data, 26.3% of audited deaths were recorded as having received perinatal antiretroviral (ARV) prophylaxis. In 35.9%, deaths, no data were available regarding uptake of ARV prophylaxis for PMTCT and it was not given in 6.7% of indicated cases.

Only 10.5% of children were recorded to be on ARVs at the time of death, with 12.7% not receiving ARVs despite them being indicated. In 50.2% of children, ARVs were not indicated and in 22.8% of cases this information was not known.

Main cause of death

Child PIP has shown consistently over the years that pneumonia (19.4%), acute diarrhoea with hypovolaemic shock (17.2%) and sepsis (also 17.2%) are the greatest killers of children.

By age categories, septicaemia was the leading cause of death in the newborn period, accounting for 26.2% of these deaths. Acute respiratory infections (ARI) were the leading cause of death in children between 1 month and 1 year of age (24.7%), whilst acute diarrhoea was the most common cause of death in children between 1 and 5 years (18.6%). For older children, TB was the main cause of death.

Table 5 groups the main causes of deaths. Overall, infectious diseases rank highest. Deaths due to non-natural causes make up at least 3.5% of all deaths.

Table 5. Deaths grouped by main cause: 2012–2013

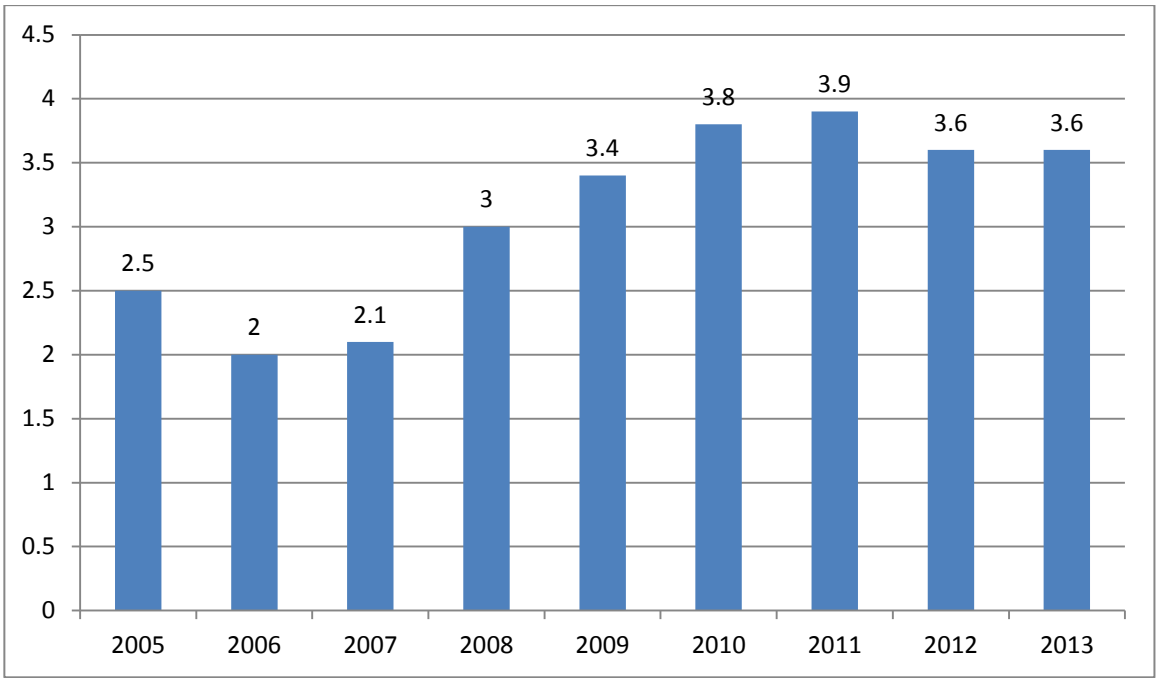
Main Cause Of Death	*Number*	*Percent*
Infections and Parasitic Diseases	5 333	47.6
Respiratory System	3 012	26.9
Circulatory System	469	4.2
Nutritional & Endocrine	408	3.6
Other diagnosis	334	3.0
Digestive System	324	2.9
Nervous System	293	2.6
Oncology, Haematology	260	2.3
Unknown	142	1.3
Genito-urinary System	135	1.2
Ill-defined /unknown cause	119	1.1
Poisonings	110	1.0
Burns	85	0.8
Inhalation / Aspiration	77	0.7
Accidents	62	0.6
Non-accidental injury, Abuse	18	0.2
Bites and stings, toxic plants	7	0.1
Homicide	6	0.1
Total	11194	100

Information about the quality of healthcare that children received

For every death recorded within Child PIP, modifiable factors (MFs) are sought. The determination of MFs is dependent on several factors such as the time available to discuss the death, the insight into the barriers and challenges of the health system, medical knowledge, etc. They do however represent an honest attempt to categorise a pathway that ultimately leads to a child's demise.

The fact that the number of modifiable factors listed per death shows an upward yearly trend suggests that greater efforts are being made to identify interventions to prevent the deaths discussed at audit meetings (see Figure 7).

Figure 7. Modifiable factors identified per audited death: 2005–2013



Modifiable factors

During 2012-2013, there were 3.6 modifiable factors recorded per audited death and the responsibility apportioned is distributed as shown in Figure 8, with the clinical personnel contributing the majority of modifiable factors (57.7%), followed by the caregiver (30.0%). The breakdown of modifiable factors by place is given in Figure 9.

Figure 8. Modifiable factors by responsible person: 2012–2013

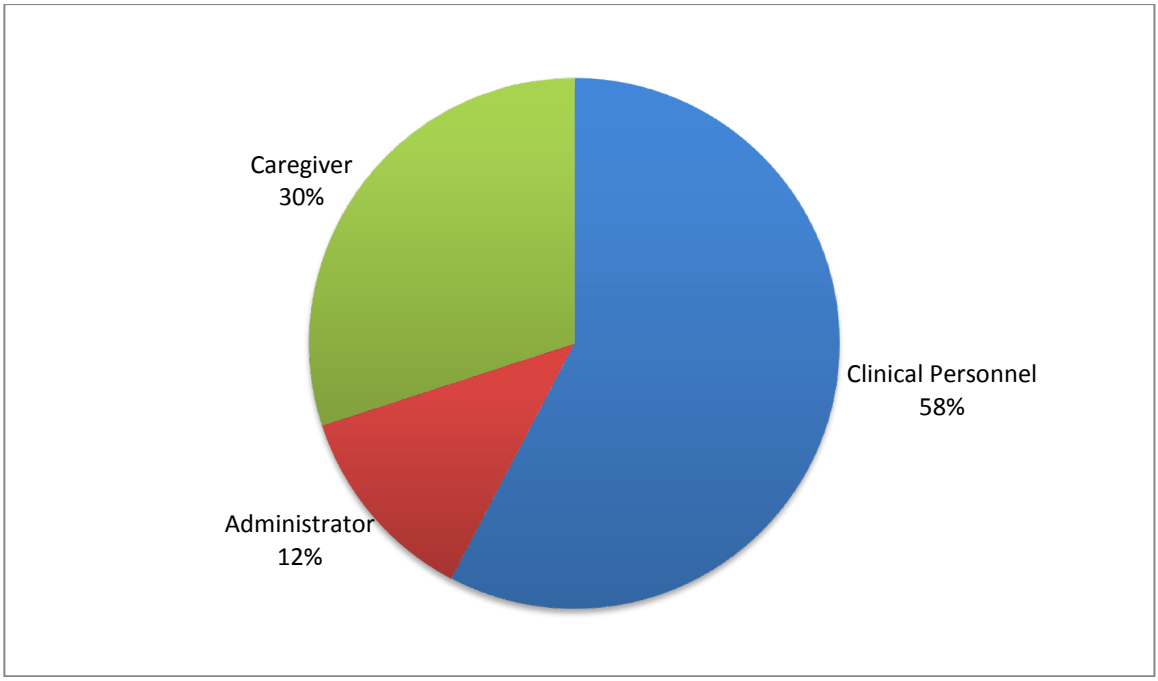
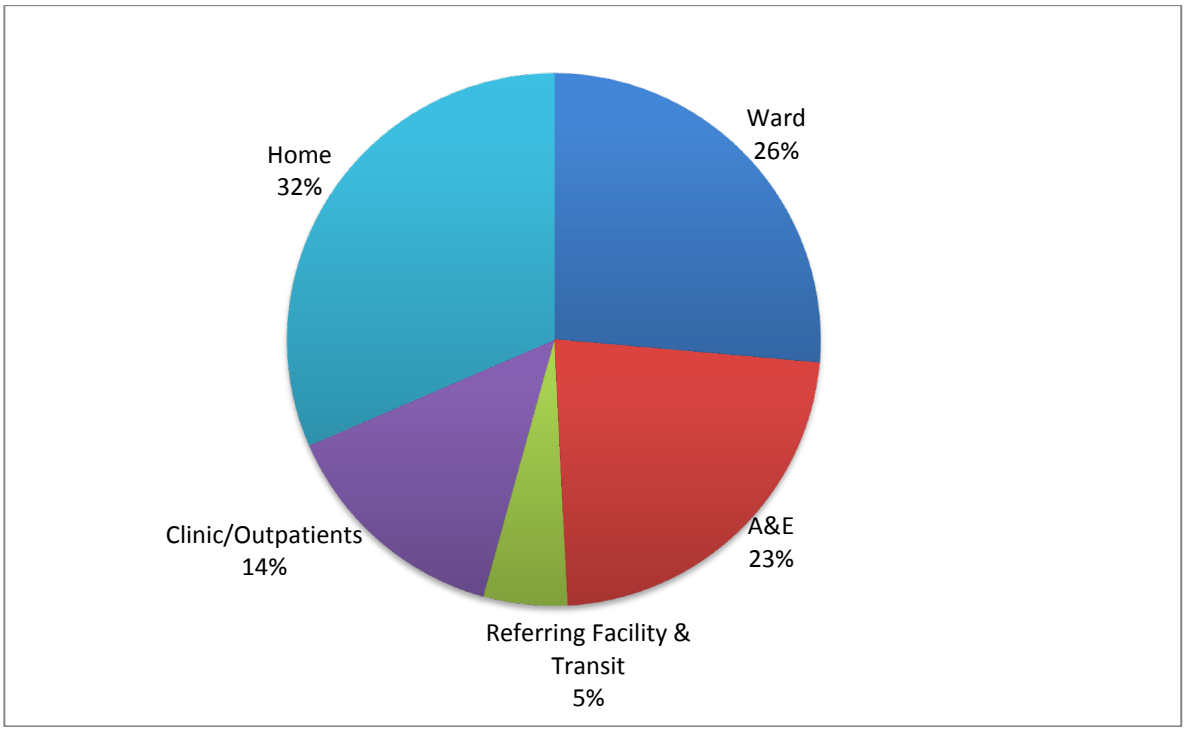


Figure 9. Modifiable factors by place: 2012–2013



The actual modifiable factors by responsible person and place of occurrence are reflected in Table 6 and Table 7 respectively.

Table 6. Common modifiable factor by responsible person: 2012–2013

Modifiable Factor: Administrator	*%*
Lack of High Care/ ICU facilities for children in own and higher level facility	15.1
Primary caregiver unemployed, or no household breadwinner	4.7
Lack of experienced doctors at A&E	4.1
Inadequate number of doctors assigned to children's ward	4.0
Inadequate number of nurses assigned to children's ward	3.8
Modifiable Factor: Clinical Personal	*%*
Inadequate notes on clinical care (assessment, management, monitoring at A&E)	3.4
Inadequate investigations (blood, x-ray, other) at A&E	3.1
Inadequate history taken at A&E	2.9
Inadequate physical examination at A&E	2.1
Blood glucose not monitored in child with danger signs at A&E	2.1
Modifiable Factor: Caregiver	*%*
Caregiver delayed seeking care	25.1
Caregiver did not recognise danger signs/severity of illness	21.0
Child not provided with adequate (quality and/or quantity) food at home	12.8
'Traditional remedy' given from traditional healer, with negative effect on child	9.8
RTHC not used or lost by caregiver	4.0

Table 7. Most common modifiable factor by place: 2012–2013

Modifiable Factor: Ward	*%*
Lack of High Care/ICU facilities for children in own and higher level facility	7.0
RTHC information not present in child's folder	3.5
Insufficient notes on clinical care in ward (assess, manage, monitor)	3.2
Inadequate investigations in ward	3.1
Inadequate response to new danger signs	3.1
Modifiable Factor: A&E	*%*
Inadequate notes on clinical care (assessment, management, monitoring at A&E	8.6
Inadequate investigations (blood, x-ray, other) at A&E	7.8
Inadequate history taken at A&E	7.4
Inadequate physical examination at A&E	5.4
Blood glucose not monitored in child with danger signs at A&E	5.4
Modifiable Factor: Referring Facility & Transit	*%*
No or delayed referral to higher level	14.7
Severity of child's condition incorrectly assessed at referring facility	14.0
Inadequate referral letter from referring facility	11.2
Inadequate notes on transit care	7.5
Emergency or priority care not provided at referring hospital	6.5
Modifiable Factor: Home	
Caregiver delayed seeking care	23.9
Caregiver did not recognise danger signs/severity of illness	19.9
Child not provided with adequate (quality and/or quantity) food at home	12.2
'Traditional remedy' given from traditional healer, with negative effect on child	9.3
RTHC not used or lost by caregiver	3.8

Conclusion

The Child PIP data from 2012-2013 consolidates and reinforces previous reports by drawing from an ever-growing base of contributing hospitals.

The main causes of death are still infectious processes, but there are fewer of them (2.5 per 100 admissions) – an encouraging trend!

The reduction in child mortality as illustrated by the Child PIP programme has been substantial. Due to the unavoidability of certain deaths, this trend will ultimately plateaux off. However, 2012 and 2013 have shown a continued trend in the right direction of fewer child deaths.

In his encouraging but realistic Foreword to *Saving Children 2009 Five Years of Data*, Professor Haroon Saloojee laid down three challenges, which this review may begin to address:

"And so, as Child PIP heads forward to a brighter future, these are three key challenges I'd like to see it surmount.

Firstly, to convince authorities and practitioners at every one of the 238 non-participating hospitals nationally, that they too should be part of the auditing system."

The evidence speaks for itself – over 200 hospitals now actively audit child deaths with the Child PIP tool. The Department of Health supports the Child PIP programme and greater national participation is surely an attainable goal in the near future.

"Secondly, the programme must extend its efforts into systematically generating evidence that child mortality audit can make a difference, and is cost effective."

Child PIP is an easily accessible and available tool (at no additional cost) for District Clinical Specialist Teams to assist with situational analyses at individual hospitals and regions. This allows teams to focus on areas deemed most in need of assistance where appropriate measures will hopefully improve the health outcomes for ill children.

"Finally, the data generated must not remain only in the domain of those of the already converted."

As the number of hospitals using the tool increases, Child PIP is increasingly seen as a valuable and reliable source of in-hospital mortality data. This has been helpful for a range of users, from the national Committee on Morbidity and Mortality in Children under 5 Years (CoMMiC) to registrars seeking to complete an MMed, and the data are being accessed to interrogate reasons for the early deaths of children in South Africa with the aim of finding practical solutions to prevent further avoidable deaths.

Child PIP data are being widely disseminated, digested and acted upon. Towards a brighter future indeed!

Chapter 2

Leading Causes of Death in Children

Dr Lesley Bamford
Child and Youth Health Directorate, National Department of Health, South Africa, and School of Health Systems and Public Health, University of Pretoria

A small number of conditions are responsible for a high proportion of deaths in children. The five leading main causes of death are shown in Table 1. Pneumonia, diarrhoeal disease, septicaemia, tuberculosis (TB) and meningitis account for 67.8% of all child deaths and 67.9% of all deaths in children under five years of age.

Table 1. Number of deaths from the five leading causes of deaths: 2012-2013

Diagnosis	*All deaths (n=11194)*		*Under-five deaths (n=9674)*	
	No.	*%*	*No.*	*%*
Pneumonia (including PCP)	2500	22.3	2310	23.9
Diarrhoeal disease	2324	20.8	2174	22.5
Septicaemia, PSBI	1925	17.2	1754	18.1
TB	511	4.6	289	3.0
Meningitis	490	4.4	326	3.4
Total for five major causes[1]	7594	67.8	6564	67.9

[1] Total for the five major causes is less than the sum of the total, as deaths from TB meningitis are counted under both TB and meningitis

Pneumonia

During 2012 and 2013, there were 2 500 deaths in which pneumonia was recorded as being the main cause of death. This represents 22.3% of all deaths. The majority of these deaths (2 168 or 87%) were due to pneumonia/acute respiratory infection, with a further 274 (11.0%) being due to suspected PCP and 58 (2.3%) being due to confirmed PCP.

Two-thirds of deaths occurred in infants between 1 month and 1 year of age, and 20.0% in children between 1 and 5 years of age. Deaths outside of these age categories were relatively uncommon with only 159 deaths (6.4% of deaths from pneumonia) occurred in children between the ages of 5 and 13 years (see Table 2).

Table 2. Age breakdown of children who died from pneumonia: 2012-2013

Diagnosis / *Age*	*Pneumonia, ARI*		*PCP (confirmed)*		*PCP (suspected)*		*All Pneumonia*	
	No.	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*
0 - 7 days	33	1.5	1	1.7	4	1.5	38	1.5
8 - 28 days	95	4.4	0	0.0	10	3.6	105	4.2
28 days - 1 year	1403	64.7	49	84.5	215	78.5	1667	66.7
1 - 5 years	467	21.5	6	10.3	27	9.9	500	20.0
5 - 13 years	142	6.5	2	3.4	15	5.5	159	6.4
13 - 18 years	16	0.7	0	0.0	1	0.4	17	0.7
Unknown	12	0.6	0	0.0	2	0.7	14	0.6
Total	2168	100.0	58	100.0	274	100.0	2500	100.0

Almost 40% of children who died from pneumonia had normal nutritional status or were overweight-for-age. Twenty-four percent of children who died were classified as being severely malnourished and a further 32.0% were classified as underweight-for-age (see Table 3).

Table 3. Nutritional status of children who died from pneumonia: 2012-2013

Diagnosis / *Nutrition*	*Pneumonia, ARI*		*PCP (confirmed)*		*PCP (suspected)*		*All Pneumonia*	
	No.	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*
OWFA	33	1.5	3	5.2	2	0.7	38	1.5
Normal	802	37.0	24	41.4	96	35.0	922	36.9
UWFA	689	31.8	20	34.5	90	32.8	799	32.0
Severe Maln.	516	23.8	7	12.1	74	27.0	597	23.9
Unknown	128	5.9	4	6.9	12	4.4	144	5.8
Total	2168	100.0	58	100.0	274	100.0	2500	100.0

The HIV status of just less than a quarter of children was not known. In 20.5% of deaths, the child was HIV-infected; as expected this was higher for children dying from PCP (53.4% in confirmed cases and 45.3% in suspected cases). An additional quarter of children HIV-exposed (see Table 4).

Table 4. HIV laboratory category of children who died from pneumonia: 2012-2013

Diagnosis / HIV	Pneumonia, ARI		PCP (confirmed)		PCP (suspected)		All Pneumonia	
	No.	%	No.	%	No.	%	No.	%
Negative	714	32.9	4	6.9	14	5.1	732	29.3
Exposed	541	25.0	21	36.2	99	36.1	661	26.4
Infected	357	16.5	31	53.4	124	45.3	512	20.5
No result	556	25.6	2	3.4	37	13.5	595	23.8
Total	2168	100.0	58	100.0	274	100.0	2500	100.0

A high proportion (35.6%) of children were either dead on arrival or died within 24 hours of admission and a further quarter of deaths occurred within one to three days (see Table 5).

Table 5. Length of stay (LOS) of children who died from pneumonia: 2012-2013

Diagnosis / LOS	Pneumonia, ARI		PCP (confirmed)		PCP (suspected)		All Pneumonia	
	No.	%	No.	%	No.	%	No.	%
DOA	97	4.5	0	0.0	2	0.7	99	4.0
< 24 hours	729	33.6	6	10.3	54	19.7	789	31.6
1-3 days	556	25.6	9	15.5	78	28.5	643	25.7
4-7 days	363	16.7	12	20.7	59	21.5	434	17.4
8-14 days	232	10.7	17	29.3	45	16.4	294	11.8
> 14 days	189	8.7	14	24.1	36	13.1	239	9.6
Unknown	2	0.1	0	0.0	0	0.0	2	0.1
Total	2168	100.0	58	100.0	274	100.0	2500	100.0

A total of 9 588 modifiable factors or 3.8 modifiable factors per death were identified (see Table 6). The highest number of modifiable factors were the responsibility of clinical personnel (2.3 modifiable factors per death), and the majority of modifiable factors occurred in the health system. With regard to place of occurrence, most modifiable factors occurred at home and the ward (both 1.1 modifiable factors per death).

Table 6. Modifiable factors per death for children who died from pneumonia: 2012-2013

Person	*Pneumonia, ARI*	*PCP (confirmed)*	*PCP (suspected)*	*All Pneumonia*
Caregiver	1.1	0.7	1.2	1.1
Clinical Personnel	2.3	1.5	2.1	2.3
Administrator	0.5	0.3	0.4	0.5
Total	3.9	2.6	3.6	3.8
Place	*Pneumonia, ARI*	*PCP (confirmed)*	*PCP (suspected)*	*All Pneumonia*
Home	1.1	0.8	1.3	1.1
Clinic/OPD	0.5	0.6	0.8	0.5
Referral	0.2	0.2	0.2	0.2
A & E	1	0.4	0.7	0.9
Ward	1.1	0.7	0.8	1.1
Total	3.9	2.6	3.6	3.8

Diarrhoea

During 2012 and 2013, there were 2 324 deaths in which diarrhoeal disease was recorded as being the main cause of death. This represents 20.7% of all deaths. The majority of these deaths (1 930 or 83.0% of diarrhoeal deaths) were due to acute diarrhoea with hypovolaemic shock, with a further 380 (16.4%) being due to chronic diarrhoea and 14 (0.6%) being due to dysentery.

Approximately 60% of the deaths occurred in infants between 1 month and 1 year of age, and 30.4% in children between 1 and 5 years of age. Although deaths outside of these age categories were relatively uncommon, it should be noted that 94 deaths during the newborn period and 125 deaths in children 5 to 13 years were also recorded. A high proportion of deaths in the latter age group resulted from chronic diarrhoea, and accounted for 16.1% of all deaths from chronic diarrhoea (see Table 7).

Table 7. Age breakdown of children who died from diarrhoea: 2012-2013

Diagnosis / Age	Acute diarrhoea		Chronic diarrhoea		Dysentery		All diarrhoea	
	No.	%	No.	%	No.	%	No.	%
0 - 7 days	17	0.9	2	0.5	1	7.1	20	0.9
8 - 28 days	70	3.6	3	0.8	1	7.1	74	3.2
28 days - 1 year	1196	62.0	171	45.0	6	42.9	1373	59.1
1 - 5 years	561	29.1	141	37.1	5	35.7	707	30.4
5 - 13 years	64	3.3	61	16.1	1	7.1	126	5.4
13 - 18 years	5	0.3	1	0.3	0	0.0	6	0.3
Unknown	17	0.9	1	0.3	0	0.0	18	0.8
Total	1930	100.0	380	100.0	14	100.0	2324	100.0

Almost forty percent of children who died were classified as severely malnourished; as expected this percentage was higher in children dying from chronic diarrhoea (50.8%) than from acute diarrhoea (36.9%). A further 28.5% of children who died were underweight-for-age (see Table 8).

Table 8. Nutritional status of children who died from diarrhoea: 2012-2013

Diagnosis / Nutrition	Acute diarrhoea		Chronic diarrhoea		Dysentery		All diarrhoea	
	No.	%	No.	%	No.	%	No.	%
OWFA	22	1.1	7	1.8	1	7.1	30	1.3
Normal	538	27.9	48	12.6	1	7.1	587	25.3
UWFA	551	28.5	112	29.5	0	0.0	663	28.5
Severe Maln.	713	36.9	193	50.8	10	71.4	916	39.4
Unknown	106	5.5	20	5.3	2	14.3	128	5.5
Total	1930	100.0	380	100.0	14	100.0	2324	100.0

The HIV status of almost one third of children was not known. In 17.7% of deaths, the child was known to be HIV-infected; this was higher for children dying from chronic diarrhoea (36.3%) than from acute diarrhoea (14.1%). Approximately one-quarter of children were known to be HIV-exposed (see Table 9).

Table 9. HIV laboratory category of children who died from diarrhoea: 2012-2013

Diagnosis / HIV Lab	Acute diarrhoea		Chronic diarrhoea		Dysentery		All diarrhoea	
	No.	%	No.	%	No.	%	No.	%
Negative	571	29.6	72	18.9	3	21.4	646	27.8
Exposed	524	27.2	89	23.4	6	42.9	619	26.6
Infected	273	14.1	138	36.3	0	0.0	411	17.7
No result	562	29.1	81	21.3	5	35.7	648	27.9
Total	1930	100.0	380	100.0	14	100.0	2324	100.0

A high proportion (49.8%) of children who died from acute diarrhoea, were either dead on arrival or died within 24 hours of admission, and a further quarter of deaths occurred within 1- 3 days (see Table 10).

Table 10. Length of stay of children who died from diarrhoea: 2012-2013

Diagnosis / *LOS*	*Acute diarrhoea*		*Chronic diarrhoea*		*Dysentery*		*All diarrhoea*	
	No.	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*
DOA	94	4.9	9	2.4	1	7.1	104	4.5
< 24 hours	868	45.0	98	25.8	5	35.7	971	41.8
1-3 days	482	25.0	89	23.4	4	28.6	575	24.7
4-7 days	270	14.0	82	21.6	1	7.1	353	15.2
8-14 days	150	7.8	52	13.7	2	14.3	204	8.8
> 14 days	64	3.3	50	13.2	1	7.1	115	4.9
Unknown	2	0.1	0	0.0	0	0.0	2	0.1
Total	1930	100.0	380	100.0	14	100.0	2324	100.0

A total of 1 1873 modifiable factors or an average of 5.1 modifiable factors per death were identified (see Table 11). Slightly more (6.2 per death) were identified in children who died from chronic diarrhoea when compared with those dying from acute diarrhoea and dysentery (both 4.9 factors per death). The highest number of modifiable factors were the responsibility of clinical personnel, and the majority of modifiable factors occurred in the health system (3.5 per death). Most health system modifiable factors occurred in A&E and the ward.

Table 11. Modifiable factors per death for children who died from diarrhoea: 2012-2013

Person	*Acute diarrhoea*	*Chronic diarrhoea*	*Dysentery*	*All diarrhoea*
Caregiver	1.5	1.7	0.9	1.5
Clinical Pers.	2.9	3.7	3.3	3.1
Administrator	0.5	0.7	0.7	0.5
Total	4.9	6.2	4.9	5.1
Place	*Acute diarrhoea*	*Chronic diarrhoea*	*Dysentery*	*All diarrhoea*
Home	1.5	1.9	1.6	1.6
Clinic/OPD	0.7	1.2	0.8	0.8
Referral	0.2	0.1	0.2	0.2
A & E	1.3	1.6	1.3	1.3
Ward	1.2	1.4	1.2	1.2
Total	4.9	6.2	4.9	5.1

The most commonly occurring modifiable factors amongst children who died from diarrhoea are shown in Table 12.

Table 12. Most common modifiable factors in children who died from diarrhoea: 2012-2013

Acute diarrhoea		Chronic diarrhoea		Dysentery		All diarrhoea	
MF	**No.**	**MF**	**No.**	**MF**	**No.**	**MF**	**No.**
Caregiver delayed seeking care	760	Caregiver delayed seeking care	141	Caregiver delayed seeking care	4	Caregiver delayed seeking care	905
Caregiver did not recognise danger signs/severity of illness	638	Caregiver did not recognise danger signs/severity of illness	128	Caregiver did not recognise danger signs/severity of illness	3	Caregiver did not recognise danger signs/severity of illness	769
Child not provided with adequate (quality and/or quantity) food at home	390	Child not provided with adequate (quality and/or quantity) food at home	110	Child not provided with adequate (quality and/or quantity) food at home	2	Child not provided with adequate (quality and/or quantity) food at home	502
'Traditional remedy' given from traditional healer, with negative effect on child	337	Inadequate notes on clinical care (assessment, management, monitoring at A&E	59	Child`s growth problem (severe malnutrition, not growing well) inadequately identified or classified	2	'Traditional remedy' given from traditional healer, with negative effect on child	389
Inadequate notes on clinical care (assessment, management, monitoring at A&E	207	'Traditional remedy' given from traditional healer, with negative effect on child	52	Inadequate investigations (blood, x-ray, other) at A&E	2	Inadequate notes on clinical care (assessment, management, monitoring at A&E	267
Inadequate investigations (blood, x-ray, other) at A&E	167	Inadequate history taken at A&E	49	Inadequate rehydration plan at A&E	2	Inadequate history taken at A&E	215
Inadequate history taken at A&E	166	Child`s growth problem (severe malnutrition, not growing well) inadequately identified or classified	42	Not classified as critically ill despite presence of danger signs at A&E	2	Inadequate investigations (blood, x-ray, other) at A&E	198

Septicaemia

During 2012 and 2013, there were 1 925 deaths in which septicaemia or Possible Serious Bacterial Infection was recorded as being the main cause of death. This represents 17.3% of all deaths.

The age breakdown for the children who died from septicaemia is shown in Table 13. More than half of these deaths occurred in children aged between 28 days and 1 year, with further quarter occurring in children between 1 and 5 years of age Newborns accounted for 13.8% of the deaths.

Table 13. Age breakdown of children who died from septicaemia: 2012-2013

Age	*Septicaemia*	
	No.	*%*
0 - 7 days	85	4.4
8 - 28 days	180	9.4
28 days - 1 year	995	51.7
1 - 5 years	494	25.7
5 - 13 years	141	7.3
13 - 18 years	16	0.8
Unknown	14	0.7
Total	1925	100.0

More than forty percent of children who died were classified as being severely malnourished, with a further quarter being underweight-for-age (see Table 14).

Table 14. Nutritional status of children who died from septicaemia: 2012-2013

Nutrition	*Septicaemia*	
	No.	*%*
OWFA	1.2	1.2
Normal	27.4	27.4
UWFA	24.5	24.5
Severe Malnutrition	42.8	42.8
Unknown	4.1	4.1
Total	100.0	100.0

The HIV status of one-fifth of children was not known. The child was known to be HIV-infected in 17.8% of cases and HIV-exposed in 23.0% of cases (see Table 15).

Table 15. HIV laboratory category of children who died from septicaemia: 2012-2013

HIV Lab	*Septicaemia*	
	No.	*%*
Negative	741	38.5
Exposed	442	23.0
Infected	342	17.8
No result	400	20.8
Total	1925	100.0

One-third of children who died from septicaemia were either dead on arrival or died within 24 hours of admission, and a further quarter of deaths occurred within 1- 3 days (see Table 16).

Table 16. Length of stay of children who died from septicaemia: 2012-2013

Length of Stay	*Septicaemia*	
	No.	*No.*
DOA	59	3.1
< 24 hours	582	30.2
1-3 days	468	24.3
4-7 days	311	16.2
8-14 days	243	12.6
> 14 days	261	13.6
Unknown	1	0.1
Total	1925	100.0

A total of 7 530 modifiable factors were identified. The number of modifiable factors per death is shown in Table 17. An average of 3.9 modifiable factors per death was identified. The highest number of modifiable factors (2.2 per death) were the responsibility of clinical personnel. Whilst 1.3 modifiable factors per death occurred at home, the majority of modifiable factors occurred in the health system (2.6 factors per death). Most modifiable factors occurred in the ward and A & E (1.1 and 0.8 modifiable factors per death respectively).

Table 17. Modifiable factors per death for children who died from septicaemia: 2012-2013

Person	*Modifiable factors per death*
Caregiver	1.2
Clinical Personnel	2.2
Administrator	0.5
Total	3.9
Place	*Modifiable factors per death*
Home	1.3
Clinic/OPD	0.6
Referral	0.2
A & E	0.8
Ward	1.1
Total	3.9

The most commonly occurring modifiable factors are shown in Table 18.

Table 18. Most common modifiable factors in children who died from septicaemia: 2012-2013

Modifiable factor	*No.*
Caregiver delayed seeking care	571
Caregiver did not recognise danger signs/severity of illness	485
Child not provided with adequate (quality and/or quantity) food at home	379
'Traditional remedy' given from traditional healer, with negative effect on child	201
Lack of High Care and/or ICU facilities for children in own and higher level facility	171
Inadequate investigations (blood, x-ray, other) at A&E	145
Insufficient notes on home circumstances or child`s health history	103
Inadequate notes on clinical care (assessment, management, monitoring at A&E	103
Child`s growth problem (severe malnutrition, not growing well) inadequately identified or classified	100
Inadequate history taken at A&E	99

Tuberculosis

During 2012 and 2013, there were 511 deaths in which tuberculosis (TB) was recorded as being the main cause of death. This represents 4.5% of all deaths. The majority of these deaths (51.9%) were due to pulmonary tuberculosis (PTB), with a further 30.5% being due to TB meningitis and 17.6% being due to miliary or other extra-pulmonary tuberculosis (EPTB).

The age breakdown for the children who died is shown in Table 19. Approximately 40% of deaths occurred in children between 5 and 13 years of age with a further third occurring in children aged one to five years.

Table 19. Age breakdown of children who died from TB: 2012-2013

Diagnosis / Age	Pulmonary TB		Miliary or EPTB		TB Meningitis		All TB	
	No.	%	No.	%	No.	%	No.	%
0 - 7 days	2	0.8	1	1.1	0	0.0	3	0.6
8 - 28 days	0	0.0	2	2.2	0	0.0	2	0.4
28 days - 1 year	71	26.8	14	15.6	28	17.9	113	22.1
1 - 5 years	91	34.3	25	27.8	55	35.3	171	33.5
5 - 13 years	89	33.6	44	48.9	68	43.6	201	39.3
13 - 18 years	10	3.8	4	4.4	2	1.3	16	3.1
Unknown	2	0.8	0	0.0	3	1.9	5	1.0
Total	265	100.0	90	100.0	156	100.0	511	100.0

Thirty percent of children were classified as being underweight-for-age and a further 31.3% were severely malnourished. Children who died from TB meningitis had relatively better nutritional status when compared with children who died from PTB and miliary or EPTB.

Table 20. Nutritional status of children who died from TB: 2012-2013

Diagnosis / Nutrition	Pulmonary TB		Miliary or EPTB		TB Meningitis		All TB	
	No.	%	No.	%	No.	%	No.	%
OWFA	3	3.3	6	2.3	6	3.8	15	2.9
Normal	10	11.1	46	17.4	62	39.7	118	23.1
UWFA	33	36.7	75	28.3	47	30.1	155	30.3
Severe Maln.	42	46.7	118	44.5	0	0.0	160	31.3
Unknown	2	2.2	20	7.5	8	5.1	30	5.9
Total	90	100.0	265	100.0	156	100.0	511	100.0

The HIV status of almost one fifth of children was not known. In 17.2% of deaths, the child was known to be HIV-infected and a further 18.2% of children were known to be HIV-exposed (see Table 21).

Table 21. HIV laboratory category of children who died from TB: 2012-2013

Diagnosis / HIV Lab	Pulmonary TB		Miliary or EPTB		TB Meningitis		All TB	
	No.	%	No.	%	No.	%	No.	%
Negative	2	2.2	6	2.3	1	0.6	9	1.8
Exposed	9	10.0	54	20.4	30	19.2	93	18.2
Infected	16	17.8	39	14.7	33	21.2	88	17.2
No result	13	14.4	51	19.2	36	23.1	100	19.6
Total	12	13.3	47	17.7	29	18.6	88	17.2

Almost one fifth of children who died from TB were either dead on arrival or died within 24 hours of admission. Just over a quarter died more than 14 days after admission (see Table 22).

Table 22. Length of stay of children who died from TB: 2012-2013

Diagnosis / LOS	Pulmonary TB		Miliary or EPTB		TB Meningitis		All TB	
	No.	%	No.	%	No.	%	No.	%
DOA	2	2.2	6	2.3	1	0.6	9	1.8
< 24 hours	9	10.0	54	20.4	30	19.2	93	18.2
1-3 days	16	17.8	39	14.7	33	21.2	88	17.2
4-7 days	13	14.4	51	19.2	36	23.1	100	19.6
8-14 days	12	13.3	47	17.7	29	18.6	88	17.2
> 14 days	38	42.2	68	25.7	27	17.3	133	26.0
Unknown	0	0.0	0	0.0	0	0.0	0	0.0
Total	90	100.0	265	100.0	156	100.0	511	100.0

A total of 1 712 modifiable factors were identified. The number of modifiable factors per death is shown in Table 23. An average of 3.4 modifiable factors per death was identified with slightly more (4.0 per death) being identified in children who died from miliary or extra-pulmonary TB when compared with pulmonary TB and TB meningitis (3.2 and 2.4 modifiable factors per death respectively). Clinical personnel were responsible for the most modifiable factors (1.9 per death). Although 1.2 modifiable factors per death occurred at home, the majority of modifiable factors occurred within the health system with the ward and Clinic/OPD accounting for the highest number of modifiable factors.

Table 23. Modifiable factors per death for children who died from TB: 2012-2013

Person	*Pulmonary TB*	*Miliary or EPTB*	*TB Meningitis*	*All TB*
Caregiver	1.0	1.3	0.8	1.1
Clinical Personnel	1.8	2.3	1.3	1.9
Administrator	0.4	0.3	0.3	0.3
Total	3.2	4.0	2.4	3.4
Place	*Pulmonary TB*	*Miliary or EPTB*	*TB Meningitis*	*All TB*
Home	1.2	1.4	1	1.2
Clinic/OPD	0.6	0.8	0.3	0.6
Referral	0.2	0.1	0.3	0.2
A & E	0.5	0.7	0.3	0.5
Ward	0.8	0.9	0.5	0.8
Total	3.4	4.0	2.4	3.4

The most commonly occurring modifiable factors are shown in Table 24.

Table 24. Most common modifiable factors in children who died from TB: 2012-2013

Pulmonary TB		*Miliary or EPTB*		*TB Meningitis*	
Modifiable factor	*No.*	*Modifiable factor*	*No.*	*Modifiable factor*	*No.*
Caregiver delayed seeking care	85	Caregiver delayed seeking care	19	Caregiver delayed seeking care	35
Caregiver did not recognise danger signs/severity of illness	63	Child not provided with adequate (quality and/or quantity) food at home	15	Caregiver did not recognise danger signs/severity of illness	19
Child not provided with adequate (quality and/or quantity) food at home	56	Caregiver did not recognise danger signs/severity of illness	13	RTHC not used or lost by caregiver	14
RTHC not used or lost by caregiver	23	No TB contact tracing or treatment at home	8	Child not provided with adequate (quality and/or quantity) food at home	11
Inadequate notes on clinical care (assessment, management, monitoring at A&E	22	Delayed referral for severe malnutrition, weight loss, or growth faltering from clinic/OPD	7	'Traditional remedy' given from traditional healer, with negative effect on child	10
Inadequate assessment for HIV (IMCI not used) at clinic/OPD	21	Caregiver took child to clinic infrequently	6	No or delayed referral to higher level	10
Inadequate history taken at A&E	17	Not referred for ART from clinic/OPD, though indicated	6	Severity of child`s condition incorrectly assessed at referring facility	8

Meningitis

During 2012 and 2013, there were 490 deaths in which meningitis was recorded as being the main cause of death. This represents 4.4 % of all deaths. The majority of these deaths (286 or 58.4%) were due to bacterial meningitis, with a further 156 (31.8%) being due to TB meningitis and 48 (9.8%) being due to viral meningitis.

Approximately a quarter of the deaths occurred in infants between 1 month and 1 year of age, whilst 34.5% occurred in children between 1 and 5 years of age and 30.6% in children aged between 5 and 13 years (see Table 25).

Table 25. Age breakdown of children who died from meningitis: 2012-2013

Diagnosis / Age	Bacterial		Viral		TB meningitis		All meningitis	
	No.	%	No.	%	No.	%	No.	%
0 - 7 days	9	3.1	0	0.0	0	0.0	9	1.8
8 - 28 days	17	5.9	0	0.0	0	0.0	17	3.5
28 days - 1 year	91	31.8	12	25.0	28	17.9	131	26.7
1 - 5 years	94	32.9	20	41.7	55	35.3	169	34.5
5 - 13 years	67	23.4	15	31.3	68	43.6	150	30.6
13 - 18 years	6	2.1	1	2.1	2	1.3	9	1.8
Unknown	2	0.7	0	0.0	3	1.9	5	1.0
Total	286	100.0	48	100.0	156	100.0	490	100.0

Overall, more than half of children who died were classified as having normal nutritional status (or being overweight for age). One-quarter of children were underweight-for-age and 16.1% were severely malnourished. As would be expected, a higher proportion of children who died from TB meningitis were underweight-for-age (30.1%) and severely malnourished (21.2%) (see Table 26).

Table 26. Nutritional status of children who died from meningitis: 2012-2013

Diagnosis / Nutrition	Bacterial		Viral		TB meningitis		All meningitis	
	No.	%	No.	%	No.	%	No.	%
OWFA	4	1.4	0	0.0	6	3.8	10	2.0
Normal	152	53.1	31	64.6	62	39.7	245	50.0
UWFA	58	20.3	14	29.2	47	30.1	119	24.3
Severe Maln.	46	16.1	0	0.0	33	21.2	79	16.1
Unknown	26	9.1	3	6.3	8	5.1	37	7.6
Total	286	100.0	48	100.0	156	100.0	490	100.0

The HIV laboratory status of children who died from meningitis is shown in Table 27. The HIV status of almost one fifth of children was not known. In 24.7% of deaths, the child was known to be HIV-infected; this was slightly higher for children dying from TB meningitis (27.6%) and viral meningitis (27.1%). Fifteen percent of the children were known to be HIV-exposed.

Table 27. HIV laboratory category of children who died from meningitis: 2012-2013

Diagnosis / HIV Lab	Bacterial		Viral		TB meningitis		All meningitis	
	No.	%	No.	%	No.	%	No.	%
Negative	107	37.4	23	47.9	67	42.9	197	40.2
Exposed	52	18.2	5	10.4	17	10.9	74	15.1
Infected	65	22.7	13	27.1	43	27.6	121	24.7
No result	62	21.7	7	14.6	29	18.6	98	20.0
Total	286	100.0	48	100.0	156	100.0	490	100.0

Approximately one-third of children died before arrival or within the first 24 hours of admission. Almost one-quarter of deaths occurred after more than one week of admission (see Table 28).

Table 28. Length of stay of children who died from meningitis: 2012-2013

Diagnosis / LOS	Bacterial		Viral		TB meningitis		All meningitis	
	No.	%	No.	%	No.	%	No.	%
DOA	9	3.1	1	2.1	1	0.6	11	2.2
< 24 hours	106	37.1	7	14.6	30	19.2	143	29.2
1-3 days	68	23.8	18	37.5	33	21.2	119	24.3
4-7 days	52	18.2	7	14.6	36	23.1	95	19.4
8-14 days	26	9.1	10	20.8	29	18.6	65	13.3
> 14 days	25	8.7	5	10.4	27	17.3	57	11.6
Unknown	0	0.0	0	0.0	0	0.0	0	0.0
Total	286	100.0	48	100.0	156	100.0	490	100.0

A total of 1 408 modifiable factors were identified. The number of modifiable factors per death is shown in Table 29. An average of 2.9 modifiable factors per death was identified with slightly more (3.5 per death) being identified in children who died from viral meningitis when compared with those dying from bacterial meningitis (3.0 per death) and TB meningitis (2.4 per death). Clinical personnel were responsible for the most number of modifiable factors (1.6 per death). Although 0.9 modifiable factors occurred at home, the majority of modifiable factors occurred within the health system. Most modifiable factors occurred in A & E (0.6 per death) and the ward (0.7 per death).

Table 29. Modifiable factors per death for children who died from meningitis: 2012-2013

Person	*Bacterial*	*Viral*	*TB meningitis*	*All meningitis*
Caregiver	0.9	1.1	0.8	0.9
Clinical Personnel	1.7	1.9	1.3	1.6
Administrator	0.4	0.6	0.3	0.4
Total	3.0	3.5	2.4	2.9
Place	*Bacterial*	*Viral*	*TB meningitis*	*All meningitis*
Home	0.9	0.9	1.0	0.9
Clinic/OPD	0.4	0.5	0.3	0.4
Referral	0.2	0.3	0.3	0.2
A & E	0.8	0.8	0.3	0.6
Ward	0.7	1	0.5	0.7
Total	3.0	3.5	2.4	2.9

The most common modifiable factors are shown in Table 30.

Table 30. Most common modifiable factors in children who died from meningitis: 2012-2013

Bacterial meningitis		*Viral meningitis*		*TB meningitis*	
Modifiable factor	*No.*	*Modifiable factor*	*No.*	*Modifiable factor*	*No.*
Caregiver delayed seeking care	68	Caregiver did not recognise danger signs/severity of illness	10	Caregiver delayed seeking care	35
Caregiver did not recognise danger signs/severity of illness	64	Caregiver delayed seeking care	9	Caregiver did not recognise danger signs/severity of illness	19
'Traditional remedy' given from traditional healer, with negative effect on child	27	'Traditional remedy' given from traditional healer, with negative effect on child	6	RTHC not used or lost by caregiver	14
Inadequate notes on clinical care (assessment, management, monitoring at A&E	17	Lack of High Care and/or ICU facilities for children in own and higher level facility	6	Child not provided with adequate (quality and/or quantity) food at home	11
Child not provided with adequate (quality and/or quantity) food at home	16	RTHC not used or lost by caregiver	5	'Traditional remedy' given from traditional healer, with negative effect on child	10
Inadequate investigations (blood, x-ray, other) at A&E	16	Caregiver unaware of child`s health history	4	No or delayed referral to higher level	10
Inadequate assessment for HIV (IMCI not used) at clinic/OPD	16			Severity of child`s condition incorrectly assessed at referring facility	8

HIV Infection

Almost two thousand deaths occurred in children who were known to be HIV-infected, whilst a further 2 405 children (21.5%) were known to be HIV-exposed (with unknown HIV status). The HIV status of a quarter of children (2 859) was unknown, whilst 35.3% of children who died were known to be HIV-negative.

The leading causes of death in HIV-infected and HIV-exposed children are shown in Table 31. Pneumonia was the leading cause of death in both HIV-infected and HIV-exposed children, and together with acute diarrhoea and septicaemia, accounted for a high proportion of deaths (49.0% and 62.7% respectively).

Table 31. Leading causes of death in children who were HIV-infected and HIV-exposed: 2012-2013

HIV-infected	*No.*	*%*	*HIV-exposed*	*No.*	*%*
Pneumonia, ARI	357	18.0	Pneumonia, ARI	541	22.5
Septicaemia, possible serious bacterial infection	342	17.2	Acute diarrhoea, hypovolaemic shock	524	21.8
Acute diarrhoea, hypovolaemic shock	273	13.8	Septicaemia, possible serious bacterial infection	442	18.4
Chronic diarrhoea	138	7.0	Other Respiratory System	124	5.2
TB: Pulmonary	138	7.0	PCP (suspected)	99	4.1
PCP (suspected)	124	6.3	Chronic diarrhoea	89	3.7
Meningitis: bacterial	65	3.3	Other diagnosis	80	3.3
TB: Miliary, other extra-pulmonary	54	2.7	Other endocrine, nutritional or metabolic	76	3.2
Other endocrine, nutritional or metabolic	53	2.7	Meningitis: bacterial	52	2.2
Other diagnosis	43	2.2	TB: Pulmonary	43	1.8
Total (top 10 causes)	1587	80.0	**Total (top 10 causes)**	2070	86.1
Total (all HIV deaths)	1984	100.0	**Total (all HIV deaths)**	2405	100.0

The HIV status and age breakdown for the children who died is shown in Table 32.

Table 32. HIV status of children who died by age category: 2012-2013

HIV Lab / Age	Infected		Exposed		No result		Negative		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
0 - 7 days	13	0.7	127	5.3	7	4.4	119	3.0	428	3.8
8 - 28 days	12	0.6	254	10.6	9	5.6	157	4.0	581	5.2
28 days - 1 yr	743	37.4	1565	65.1	88	55.0	1971	49.9	5642	50.4
1 - 5 years	642	32.4	399	16.6	39	24.4	1179	29.9	3023	27.0
5 - 13 years	511	25.8	49	2.0	15	9.4	438	11.1	1297	11.6
13 - 18 years	44	2.2	0	0.0	1	0.6	54	1.4	129	1.2
Unknown	19	1.0	11	0.5	1	0.6	28	0.7	94	0.8
Total	1984	100.0	2405	100.0	160	100.0	3946	100.0	11194	100.0

Information on the nutritional and HIV status of children who died is shown in Table 33. Over one-third of HIV-infected or HIV-exposed children who died were classified as being severely malnourished. As would be expected this percentage was higher (46.7%) in HIV-infected children than in HIV-exposed children (28.2%). A further 32.1% of HIV-infected or HIV-exposed children who died were classified as being underweight-for-age.

Table 33. Nutritional and HIV status of children who died: 2012-2013

HIV Lab / Nutrition	Infected		Exposed		No result		Negative		Total	
	No.	%	No.	%	No.	No.	No.	%	No.	%
OWFA	21	1.1	32	1.3	36	1.3	66	1.7	155	1.4
Normal	345	17.4	801	33.3	1036	36.2	1582	40.1	3764	33.6
UWFA	598	30.1	812	33.8	724	25.3	1130	28.6	3264	29.2
Severe Maln.	927	46.7	679	28.2	656	22.9	1046	26.5	3308	29.6
Unknown	93	4.7	81	3.4	407	14.2	122	3.1	703	6.3
Total	1984	100.0	2405	100.0	2859	100.0	3946	100.0	11194	100.0

Information on the length of stay and HIV status of children who died is shown in Table 34.

Table 34. Length of stay by HIV laboratory category: 2012-2013

HIV Lab / Nutrition	Infected		Exposed		No result		Negative		Total	
	No.	%	No.	%	No.	No.	No.	%	No.	%
DOA	42	2.1	91	3.8	234	8.2	133	3.4	500	4.5
< 24 hours	428	21.6	857	35.6	1218	42.6	1196	30.3	3699	33.0
1-3 days	406	20.5	656	27.3	683	23.9	959	24.3	2704	24.2
4-7 days	344	17.3	391	16.3	363	12.7	666	16.9	1764	15.8
8-14 days	422	21.3	170	7.1	159	5.6	506	12.8	1257	11.2
> 14 days	341	17.2	240	10.0	187	6.5	483	12.2	1251	11.2
Unknown	1	0.1	0	0.0	15	0.5	3	0.1	19	0.2
Total	1984	100.0	2405	100.0	2859	100.0	3946	100.0	11194	100.0

A total of 7 888 and 9 933 modifiable factors were identified amongst children who were HIV-infected and HIV-exposed respectively; this corresponds to 4.0 factors per death in HIV-infected children and 4.1 factors per death in HIV-exposed children (Table 35).

Table 35. Modifiable factors per death for children who died who were HIV-infected or HIV-exposed: 2012-2013

Person	*HIV-Infected*	*HIV-Exposed*
Caregiver	1.3	1.2
Clinical Personnel	2.2	2.4
Administrator	0.4	0.5
Total	4.0	4.1
Place	*HIV-Infected*	*HIV-Exposed*
Home	1.4	1.3
Clinic/OPD	0.8	0.6
Referral	0.1	0.2
A & E	0.7	1.0
Ward	1.0	1.0
Total	4.0	4.1

The most commonly occurring modifiable factors are shown in Table 36.

Table 36. Most commonly occurring modifiable factors in children who were HIV-infected or HIV-exposed: 2012-2013

HIV-infected (n=7888)		*HIV-exposed (n=9933)*	
Caregiver delayed seeking care	648	Caregiver delayed seeking care	711
Caregiver did not recognise danger signs/severity of illness	506	Caregiver did not recognise danger signs/severity of illness	656
Child not provided with adequate (quality and/or quantity) food at home	363	Child not provided with adequate (quality and/or quantity) food at home	366
Inadequate assessment for HIV (IMCI not used) at clinic/OPD	148	'Traditional remedy' given from healer, with negative effect on child	302
Not referred for ART from clinic/OPD, though indicated	137	Inadequate notes on clinical care (assessment, management, monitoring at A&E	231
'Traditional remedy' given from traditional healer, with negative effect on child	136	Inadequate assessment for HIV (IMCI not used) at clinic/OPD	224
Other caregiver modifiable factor at home/in community (COMMENT)	125	Inadequate investigations (blood, x-ray, other) at A&E	208

Severe Malnutrition

During 2012 and 2013, 3 308 deaths in children with severe malnutrition were recorded. This represented 29.6% of all child deaths. An additional 3 264 children who died were underweight-for-age, whilst the nutritional status of 703 children (6.3% of deaths) was not known.

Septicaemia (24.9%), acute diarrhoea (21.6%) and pneumonia (15.6%) were the leading causes of death (see Table 37).

Table 37. Leading causes of death in children with severe malnutrition: 2012-2013

Severe Malnutrition (n=3308)	*No.*	*%*
Septicaemia, possible serious bacterial infection	823	24.9
Acute diarrhoea, hypovolaemic shock	713	21.6
Pneumonia, ARI	516	15.6
Chronic diarrhoea	193	5.8
Other endocrine, nutritional or metabolic	193	5.8
Pulmonary TB	118	3.6
Other diagnosis (specify)	83	2.5
PCP (suspected or confirmed)	81	2.4
Hospital-acquired infection	46	1.4
Meningitis: bacterial	46	1.4
Total (top 10 causes)	2812	85.0

The nutritional status of children who died by age category is shown in Table 38.

Table 38. Nutritional status by age category of children who died: 2012-2013

Nutrition / *Age*	*Severe maln.*		*UWFA*		*Normal*		*OWFA*		*Unknown*	
	No.	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*
0 - 7 days	50	1.5	406	12.4	471	12.5	12	7.7	70	10.0
8 - 28 days	1681	50.8	1724	52.8	1924	51.1	71	45.8	242	34.4
28 days - 1 year	1269	38.4	697	21.4	847	22.5	40	25.8	170	24.2
1 - 5 years	263	8.0	376	11.5	463	12.3	26	16.8	169	24.0
5 - 13 years	21	0.6	42	1.3	40	1.1	4	2.6	22	3.1
13 - 18 years	24	0.7	19	0.6	19	0.5	2	1.3	30	4.3
Total	3308	100.0	3264	100.0	3764	100.0	155	100.0	703	100.0

The nutritional and HIV laboratory status of children who died is shown in Table 39. Almost half of all children with severe malnutrition were HIV-infected and a further 28.2% were HIV-exposed. A high

proportion of children who were underweight-for-age were also HIV-infected or exposed (30.1% and 33.8% respectively).

Table 39. Nutritional status by HIV laboratory category of children who died: 2012-2013

Nutrition / HIV Lab	Severe maln.		UWFA		Normal		OWFA		Unknown	
	No.	%	No.	%	No.	%	No.	%	No.	%
Negative	1046	26.5	1130	28.6	1582	40.1	66	1.7	122	3.1
Exposed	679	28.2	812	33.8	801	33.3	32	1.3	81	3.4
Infected	927	46.7	598	30.1	345	17.4	21	1.1	93	4.7
Unknown	656	22.9	724	25.3	1036	36.2	36	1.3	407	14.2
Total	3308	29.6	3264	29.2	3764	33.6	155	1.4	703	6.3

A relatively high proportion of children who died from severe malnutrition (28.0%) were admitted for a week or more before they died (see Table 39).

Table 40. Length of stay of children with severe malnutrition: 2012-2013

Nutrition / LOS	Severe maln.		UWFA		Normal		OWFA		Unknown	
	No.	%	No.	%	No.	%	No.	%	No.	%
DOA	77	2.3	117	3.6	196	5.2	12	7.7	98	13.9
< 24 hours	815	24.6	1021	31.3	1478	39.3	52	33.5	333	47.4
1-3 days	844	25.5	772	23.7	933	24.8	39	25.2	116	16.5
4-7 days	644	19.5	531	16.3	515	13.7	21	13.5	53	7.5
8-14 days	424	12.8	457	14.0	320	8.5	10	6.5	46	6.5
> 14 days	502	15.2	366	11.2	320	8.5	20	12.9	43	6.1
Unknown	2	0.1	0	0.0	2	0.1	1	0.6	14	2.0
Total	3308	100.0	3264	100.0	3764	100.0	155	100.0	703	100

A total of 15 823 modifiable factors were identified amongst the children who died from severe malnutrition. The number of modifiable factors per death are shown in Table 41. An average of 4.8 modifiable factors per death with severe malnutrition was identified. The highest number of modifiable factors were the responsibility of clinical personnel, and the majority of modifiable factors occurred in the health system. Most modifiable factors occurred in clinics/OPD (0.9 factors per death) and the ward (1.2 factors per death).

Table 41. Modifiable factors per death for children by nutritional status: 2012-2013

Person	*Severe maln.*	*UWFA*	*Normal*	*OWFA*	*Unknown*
Caregiver	1.6	0.9	0.8	0.6	0.8
Clinical Pers.	2.7	1.8	1.9	1.5	1.7
Administrator	0.5	0.4	0.4	0.4	0.3
Total	4.8	3.2	3.1	2.5	2.7
Place	*Severe maln.*	*UWFA*	*Normal*	*OWFA*	*Unknown*
Home	1.7	1.0	0.8	0.7	0.8
Clinic/OPD	0.9	0.4	0.3	0.4	0.2
Referral	0.2	0.2	0.2	0.2	0.2
A & E	0.8	0.7	0.9	0.5	0.9
Ward	1.2	0.9	0.9	0.8	0.7
Total	4.8	3.2	3.1	2.5	2.7

The most commonly occurring modifiable factors associated with deaths in children with severe malnutrition are shown in Table 42.

Table 42. Most commonly occurring modifiable factors in children with severe malnutrition: 2012-13

Modifiable factor (n=15823)	*No.*
Caregiver delayed seeking care	1209
Child not provided with adequate (quality and/or quantity) food at home	1193
Caregiver did not recognise danger signs/severity of illness	1024
'Traditional remedy' given from traditional healer, with negative effect on child	363
Delayed referral for severe malnutrition, weight loss, or growth faltering from clinic/OPD	356
Danger signs missed due to inadequate monitoring in ward	324
Lack of High Care and/or ICU facilities for children in own and higher level facility	234
Child`s growth problem (severe malnutrition, not growing well) inadequately identified or classified	221
Inadequate notes on clinical care (assessment, management, monitoring at A&E	211
Insufficient notes on home circumstances or child`s health history	210

PART TWO
PROVINCIAL DATA

Chapter 3

Eastern Cape: 2012 - 2013

Baseline data

Eastern Cape	*2012*	*2013*
No. of Sites	11	14
Total admissions	11465	11485
Total deaths	226	381
In-hospital mortality rate (%)	2.0	3.3
Audited deaths	202	284
Total modifiable factors	757	1126
Modifiable factor rate (per death)	3.7	4.0

Information about children who died

Demographics

	2012		*2013*	
Age	*No.*	*%*	*No.*	*%*
0-28 days	12	6.0	20	7.1
28 days-1 year	117	57.9	155	54.6
1-5 years	45	22.3	65	22.9
5-13 years	25	12.4	39	13.7
13-18 years	2	1.0	2	0.7
Unknown	1	0.5	3	1.1
Total	202	100	284	100

Social context

	2012		*2013*	
Mother's wellbeing	*No.*	*%*	*No.*	*%*
Alive and well	173	85.6	240	84.5
Dead	10	5.0	10	3.5
Sick	11	5.4	19	6.7
Unknown	8	4.0	15	5.3
Total	202	100	284	100

Health context

NUTRITION

	2012		2013	
Nutritional category	***No.***	***%***	***No.***	***%***
Overweight for Age (OWFA)	4	2.0	6	2.1
Normal	73	36.1	107	37.7
Underweight for Age (UWFA)	57	28.2	74	26.1
Severe Malnutrition	62	30.7	78	27.5
Unknown	6	3.0	19	6.7
Total	202	100	284	100

HIV&AIDS

	2012		2013	
Laboratory category	***No.***	***%***	***No.***	***%***
Negative	67	33.2	127	44.7
Exposed	34	16.8	52	18.3
Infected	45	22.3	40	14.1
Unknown	56	27.7	65	22.9
Total	202	100	284	100
Clinical HIV staging	***No.***	***%***	***No.***	***%***
Stage I	2	1.0	1	0.4
Stage II	1	0.5	3	1.1
Stage III	9	4.5	18	6.3
Stage IV	28	13.9	25	8.8
Not staged (± indicated)	123	60.9	181	63.7
Unknown	39	19.3	56	19.7
Total	202	100	284	100

PMTCT

	2012		2013	
Perinatal ARV	***No.***	***%***	***No.***	***%***
Prophylaxis given	56	27.7	65	22.9
Prophylaxis not given	11	5.4	13	4.6
Mother negative	74	36.6	102	35.9
Unknown	61	30.2	104	36.6
Total	202	100	284	100

FEEDING PRACTICE

	2012		2013	
Feeding practice	***No.***	***%***	***No.***	***%***
Exclusive breast	37	18.3	56	19.7
No breast, ever	43	21.3	44	15.5
Mixed	55	27.2	68	23.9
Unknown	67	33.2	116	40.8
Total	202	100	284	100

PCP PROPHYLAXIS

	2012		2013	
Cotrimoxazole prophylaxis	*No.*	*%*	*No.*	*%*
Current	44	21.8	36	12.7
Ever	5	2.5	7	2.5
Never (but indicated)	16	7.9	25	8.8
Never (not indicated)	106	52.5	151	53.2
Unknown	31	15.3	65	22.9
Total	202	100	284	100

ART (CHILD DEATHS)

	2012		2013	
ART – child deaths	*No.*	*%*	*No.*	*%*
Current	27	13.4	35	12.3
Ever	5	2.5	4	1.4
Never (but indicated)	24	11.9	25	8.8
Never (not indicated)	130	64.4	176	62
Unknown	16	7.9	44	15.5
Total	202	100	284	100

In-hospital mortality rates

	Admissions		Deaths		IHMR (%)	
All admissions	*2012*	*2013*	*2012*	*2013*	*2012*	*2013*
0-28 days	383	450	13	26	3.4	5.8
28 days-1 year	3227	3450	118	188	3.7	5.4
1-5 years	5060	4775	64	102	1.3	2.1
5-13 years	2435	2497	27	53	1.1	2.1
13-18 years	308	288	3	12	1.0	4.2
Unknown	52	25	1	0	1.9	0
Total (all)	11465	11485	226	381	2.0	3.3
Under-5						
Nutritional status						
≥ 3rd centile	6324	6143	61	113	1.0	1.8
< 3rd centile	1414	1142	53	58	3.7	5.1
Severe malnutrition	458	648	45	89	9.8	13.7
Unknown	474	742	36	56	7.6	7.5
Illness						
ARI	3099	2998	52	75	1.7	2.5
Acute diarrhoea	1664	1848	49	86	2.9	4.7
Other	3907	3829	94	155	2.4	4.0
Total (under 5)	8670	8675	195	316	2.2	3.6

Causes of child deaths

2012			2013		
Top 5	All (No.)	% of deaths	*Top 5*	All (No.)	% of deaths
Pneumonia (incl PCP)	87	43.1	Septicaemia	99	34.9
Septicaemia	64	31.7	Pneumonia (incl PCP)	86	30.3
Diarrhoea (all)	52	25.7	Diarrhoea (all)	83	29.2
Other	38	18.8	Other	37	13.0
TB (all)	22	10.9	TB (all)	31	10.9

Information about quality of child healthcare

Records

	2012		*2013*	
Records	*No.*	*%*	*No.*	*%*
Folder not available	1	0.5	7	2.5
Folder incomplete/inadequate	40	19.8	88	31.0
Folder available: OK	161	79.7	179	63.0
Unknown	0	0.0	10	3.5
Total	202	100	284	100

Modifiable factors

	2012		*2013*	
MFs: Where?	*No.*	*%*	*No.*	*%*
Ward	197	26.0	290	25.8
Admission & emergency care	68	9.0	86	7.6
Referring facility & transit	212	28.0	361	32.1
Clinic/OPD	140	18.5	230	20.4
Home	140	18.5	159	14.1
Total	968	100	754	100
MFs: Who?	*No.*	*Rate/death*	*No.*	*Rate/death*
Clinical personnel	376	1.9	577	2.0
Administrator	174	0.9	319	1.1
Caregiver	207	1.0	230	0.8
Total	757	3.7	1126	4.0

Chapter 4

Free State: 2012 - 2013

Baseline data

Free State	*2012*	*2013*
No. of Sites	28	28
Total admissions	20003	23157
Total deaths	725	668
In-hospital mortality rate (%)	3.6	2.9
Audited deaths	585	681
Total modifiable factors	1954	2086
Modifiable factor rate (per death)	3.3	3.1

Information about children who died

Demographics

	2012		*2013*	
Age	*No.*	*%*	*No.*	*%*
0-28 days	30	5.1	26	3.8
28 days-1 year	322	55.0	364	53.5
1-5 years	152	26.0	213	31.3
5-13 years	74	12.6	61	9.0
13-18 years	6	1.0	16	2.3
Unknown	1	0.2	1	0.1
Total	585	100	681	100

Social context

	2012		*2013*	
Mother's wellbeing	*No.*	*%*	*No.*	*%*
Alive and well	491	83.9	557	81.8
Dead	25	4.3	27	4.0
Sick	30	5.1	32	4.7
Unknown	39	6.7	65	9.5
Total	585	100	681	100

Health context

NUTRITION

	2012		2013	
Nutritional category	*No.*	*%*	*No.*	*%*
Overweight for Age (OWFA)	9	1.5	4	0.6
Normal	164	28.0	199	29.2
Underweight for Age (UWFA)	179	30.6	182	26.7
Severe Malnutrition	183	31.3	239	35.2
Unknown	50	8.5	57	8.4
Total	585	100	681	100

HIV&AIDS

	2012		2013	
Laboratory category	*No.*	*%*	*No.*	*%*
Negative	126	21.5	156	22.9
Exposed	121	20.7	158	23.2
Infected	120	20.5	96	14.1
Unknown	218	37.3	271	39.8
Total	585	100	681	100
Clinical HIV staging	*No.*	*%*	*No.*	*%*
Stage I	5	0.9	3	0.4
Stage II	3	0.5	5	0.7
Stage III	24	4.1	14	2.1
Stage IV	54	9.2	52	7.6
Not staged (± indicated)	334	57.1	369	54.2
Unknown	165	28.2	238	34.9
Total	585	100	681	100

PMTCT

	2012		2013	
Perinatal ARV	*No.*	*%*	*No.*	*%*
Prophylaxis given	164	28.0	173	25.4
Prophylaxis not given	17	2.9	31	4.6
Mother negative	161	27.5	180	26.4
Unknown	243	41.5	297	43.6
Total	585	100	681	100

FEEDING PRACTICE

	2012		2013	
Feeding practice	*No.*	*%*	*No.*	*%*
Exclusive breast	158	27.0	197	28.9
No breast, ever	118	20.2	98	14.4
Mixed	117	20.0	124	18.2
Unknown	192	32.8	262	38.5
Total	585	100	681	100

PCP PROPHYLAXIS

	2012		2013	
Cotrimoxazole prophylaxis	*No.*	*%*	*No.*	*%*
Current	111	19.0	75	11.0
Ever	20	3.4	30	4.4
Never (but indicated)	41	7.0	47	6.9
Never (not indicated)	252	43.1	260	38.2
Unknown	161	27.5	269	39.5
Total	585	100	681	100

ART (CHILD DEATHS)

	2012		2013	
ART – child deaths	*No.*	*%*	*No.*	*%*
Current	63	10.8	73	10.7
Ever	26	4.4	25	3.7
Never (but indicated)	63	10.8	51	7.5
Never (not indicated)	282	48.2	300	44.1
Unknown	151	25.8	232	34.1
Total	585	100	681	100

In-hospital mortality rates

	Admissions		*Deaths*		*IHMR (%)*	
All admissions	*2012*	*2013*	*2012*	*2013*	*2012*	*2013*
0-28 days	1396	1182	53	25	3.8	2.1
28 days-1 year	5607	6352	380	340	6.8	5.4
1-5 years	7680	9178	184	215	2.4	2.3
5-13 years	4796	5556	93	67	1.9	1.2
13-18 years	441	746	15	21	3.4	2.8
Unknown	83	143	0	0	0	0
Total (all)	20003	23157	725	668	3.6	2.9
Under-5						
Nutritional status	7217	9238	108	127	1.5	1.4
≥ 3rd centile	1694	2236	127	136	7.5	6.1
< 3rd centile	1324	1554	206	213	15.6	13.7
Severe malnutrition	4448	3684	176	104	4	2.8
Unknown	14683	16712	617	580	4.2	3.5
Illness						
ARI	3808	4254	178	172	4.7	4
Acute diarrhoea	2673	2957	175	188	6.5	6.4
Other	8202	9501	264	220	3.2	2.3
Total (under 5)	14683	16712	617	580	4.2	3.5

Causes of child deaths

2012			2013		
Top 5	*All (No.)*	*% of deaths*	*Top 5*	*All (No.)*	*% of deaths*
Pneumonia (incl PCP)	278	47.5	Diarrhoea (all)	250	36.7
Diarrhoea (all)	193	33.0	Pneumonia (incl PCP)	240	35.2
Other	165	28.2	Other	133	19.5
Septicaemia	84	14.4	Septicaemia	123	18.1
Anaemia	78	13.3	Other Resp.	54	7.9

Information about quality of child healthcare

Records

	2012		*2013*	
Records	*No.*	*%*	*No.*	*%*
Folder not available	28	4.8	72	10.6
Folder incomplete/inadequate	164	28.0	158	23.2
Folder available: OK	392	67.0	451	66.2
Unknown	1	0.2	0	0.0
Total	585	100	681	100

Modifiable factors

	2012		*2013*	
MFs: Where?	*No.*	*%*	*No.*	*%*
Ward	505	25.8	517	24.8
Admission & emergency care	363	18.6	338	16.2
Referring facility & transit	184	9.4	210	10.1
Clinic/OPD	184	9.4	213	10.2
Home	718	36.7	808	38.7
Total	1954	100	2086	100
MFs: Who?	*No.*	*Rate/death*	*No.*	*Rate/death*
Clinical personnel	1091	1.9	1013	1.5
Administrator	215	0.4	296	0.4
Caregiver	648	1.1	777	1.1
Total	1954	3.3	2086	3.1

Chapter 5

Gauteng: 2012 - 2013

Baseline data

Gauteng	*2012*	*2013*
No. of Sites	8	4
Total admissions	12715	11580
Total deaths	331	308
In-hospital mortality rate (%)	2.6	2.7
Audited deaths	506	556
Total modifiable factors	786	824
Modifiable factor rate (per death)	1.6	1.5

Information about children who died

Demographics

	2012		*2013*	
Age	*No.*	*%*	*No.*	*%*
0-28 days	90	17.8	84	15.1
28 days-1 year	218	43.1	248	44.6
1-5 years	115	22.7	130	23.4
5-13 years	61	12.1	71	12.8
13-18 years	14	2.8	18	3.2
Unknown	8	1.6	5	0.9
Total	506	100	556	100

Social context

	2012		*2013*	
Mother's wellbeing	*No.*	*%*	*No.*	*%*
Alive and well	445	87.9	495	89.0
Dead	22	4.3	12	2.2
Sick	10	2.0	12	2.2
Unknown	29	5.7	37	6.7
Total	506	100	556	100

Health context

NUTRITION

	2012		2013	
Nutritional category	***No.***	***%***	***No.***	***%***
Overweight for Age (OWFA)	9	1.8	19	3.4
Normal	210	41.5	206	37.1
Underweight for Age (UWFA)	172	34.0	187	33.6
Severe Malnutrition	103	20.3	122	21.9
Unknown	12	2.4	22	4.0
Total	506	100	556	100

HIV&AIDS

	2012		2013	
Laboratory category	***No.***	***%***	***No.***	***%***
Negative	231	45.7	260	46.8
Exposed	85	16.8	80	14.4
Infected	92	18.2	87	15.6
Unknown	98	19.4	129	23.2
Total	506	100	556	100
Clinical HIV staging	***No.***	***%***	***No.***	***%***
Stage I	7	1.4	2	0.4
Stage II	6	1.2	0	0
Stage III	13	2.6	11	2.0
Stage IV	71	14.0	74	13.3
Not staged (± indicated)	324	64.0	394	70.9
Unknown	85	16.8	75	13.5
Total	506	100	556	100

PMTCT

	2012		2013	
Perinatal ARV	***No.***	***%***	***No.***	***%***
Prophylaxis given	94	18.6	118	21.2
Prophylaxis not given	61	12.1	52	9.4
Mother negative	182	36.0	236	42.4
Unknown	169	33.4	150	27.0
Total	506	100	556	100

FEEDING PRACTICE

	2012		2013	
Feeding practice	***No.***	***%***	***No.***	***%***
Exclusive breast	112	22.1	184	33.1
No breast, ever	73	14.4	81	14.6
Mixed	113	22.3	93	16.7
Unknown	208	41.1	198	35.6
Total	506	100	556	100

PCP PROPHYLAXIS

	2012		2013	
Cotrimoxazole prophylaxis	*No.*	*%*	*No.*	*%*
Current	54	10.7	63	11.3
Ever	13	2.6	28	5.0
Never (but indicated)	33	6.5	43	7.7
Never (not indicated)	263	52.0	310	55.8
Unknown	143	28.3	112	20.1
Total	506	100	556	100

ART (CHILD DEATHS)

	2012		2013	
ART – child deaths	*No.*	*%*	*No.*	*%*
Current	56	11.1	50	9.0
Ever	5	1.0	28	5.0
Never (but indicated)	44	8.7	42	7.6
Never (not indicated)	304	60.1	347	62.4
Unknown	97	19.2	89	16.0
Total	506	100	556	100

In-hospital mortality rates

	Admissions		*Deaths*		*IHMR (%)*	
All admissions	*2012*	*2013*	*2012*	*2013*	*2012*	*2013*
0-28 days	2238	1357	80	45	3.6	3.3
28 days-1 year	3750	3844	132	138	3.5	3.6
1-5 years	3868	3674	66	60	1.7	1.6
5-13 years	2354	1924	49	40	2.1	2.1
13-18 years	442	456	3	18	0.7	3.9
Unknown	63	325	1	7	1.6	2.2
Total (all)	12715	11580	331	308	2.6	2.7
Under-5						
Nutritional status						
≥ 3rd centile	6777	5637	102	81	1.5	1.4
< 3rd centile	1451	1462	54	65	3.7	4.4
Severe malnutrition	623	740	60	58	9.6	7.8
Unknown	1005	1036	62	39	6.2	3.8
Illness						
ARI	3226	3174	76	95	2.4	3
Acute diarrhoea	1841	1631	62	42	3.4	2.6
Other	4789	4070	140	106	2.9	2.6
Total (under 5)	9856	8875	278	243	2.8	2.7

Causes of child deaths

2012			*2013*		
Top 5	*All (No.)*	*% of deaths*	*Top 5*	*All (No.)*	*% of deaths*
Septicaemia	167	33.0	Septicaemia	173	31.1
Pneumonia (incl PCP)	28	5.5	Pneumonia (incl PCP)	152	27.3
Diarrhoea (all)	23	4.5	Diarrhoea (all)	66	11.9
Other	37	7.3	Other Resp.	49	8.8
Meningitis	36	7.1	Other	46	8.3

Information about quality of child healthcare

Records

	2012		*2013*	
Records	*No.*	*%*	*No.*	*%*
Folder not available	67	13.2	76	13.7
Folder incomplete/inadequate	49	9.7	55	9.9
Folder available: OK	386	76.3	423	76.1
Unknown	4	0.8	2	0.4
Total	506	100	556	100

Modifiable factors

	2012		*2013*	
MFs: Where?	*No.*	*%*	*No.*	*%*
Ward	181	23.0	204	24.8
Admission & emergency care	54	6.9	47	5.7
Referring facility & transit	96	12.2	86	10.4
Clinic/OPD	134	17.0	143	17.4
Home	321	40.8	344	41.7
Total	786	100	824	100
MFs: Who?	*No.*	*Rate/death*	*No.*	*Rate/death*
Clinical personnel	350	0.7	396	0.7
Administrator	127	0.3	113	0.2
Caregiver	309	0.6	315	0.6
Total	786	1.6	824	1.5

Chapter 6

KwaZulu-Natal: 2012 - 2013

Baseline data

KwaZulu-Natal	*2012*	*2013*
No. of Sites	31	34
Total admissions	33945	43868
Total deaths	1228	1560
In-hospital mortality rate (%)	3.6	3.6
Audited deaths	1384	1563
Total modifiable factors	4172	4814
Modifiable factor rate (per death)	3.0	3.1

Information about children who died

Demographics

	2012		*2013*	
Age	*No.*	*%*	*No.*	*%*
0-28 days	89	6.4	86	5.5
28 days-1 year	741	53.5	849	54.3
1-5 years	342	24.7	421	26.9
5-13 years	175	12.6	171	10.9
13-18 years	9	0.7	14	0.9
Unknown	28	2.0	22	1.4
Total	1384	100	1563	100

Social context

	2012		*2013*	
Mother's wellbeing	*No.*	*%*	*No.*	*%*
Alive and well	1194	86.3	1386	88.7
Dead	59	4.3	62	4.0
Sick	55	4.0	57	3.6
Unknown	76	5.5	58	3.7
Total	1384	100	1563	100

Health context

NUTRITION

	2012		2013	
Nutritional category	*No.*	*%*	*No.*	*%*
Overweight for Age (OWFA)	18	1.3	13	0.8
Normal	494	35.7	572	36.6
Underweight for Age (UWFA)	404	29.2	451	28.9
Severe Malnutrition	389	28.1	438	28.1
Unknown	79	5.7	89	5.7
Total	1384	100	1563	100

HIV&AIDS

	2012		2013	
Laboratory category	*No.*	*%*	*No.*	*%*
Negative	478	34.5	639	40.9
Exposed	301	21.7	354	22.6
Infected	310	22.4	321	20.5
Unknown	295	21.3	249	15.9
Total	1384	100	1563	100
Clinical HIV staging	*No.*	*%*	*No.*	*%*
Stage I	37	2.7	75	4.8
Stage II	14	1.0	35	2.2
Stage III	105	7.6	120	7.7
Stage IV	296	21.4	245	15.7
Not staged (± indicated)	687	49.6	832	53.3
Unknown	245	17.7	256	16.4
Total	1384	100	1563	100

PMTCT

	2012		2013	
Perinatal ARV	*No.*	*%*	*No.*	*%*
Prophylaxis given	412	29.8	518	33.1
Prophylaxis not given	101	7.3	129	8.3
Mother negative	408	29.5	514	32.9
Unknown	463	33.5	402	25.7
Total	1384	100	1563	100

FEEDING PRACTICE

	2012		2013	
Feeding practice	*No.*	*%*	*No.*	*%*
Exclusive breast	437	31.6	573	36.7
No breast, ever	321	23.2	350	22.4
Mixed	241	17.4	259	16.6
Unknown	385	27.8	381	24.4
Total	1384	100	1563	100

PCP PROPHYLAXIS

	2012		2013	
Cotrimoxazole prophylaxis	*No.*	*%*	*No.*	*%*
Current	269	19.4	261	16.7
Ever	49	3.5	53	3.4
Never (but indicated)	143	10.3	167	10.7
Never (not indicated)	604	43.6	756	48.4
Unknown	319	23.0	326	20.9
Total	1384	100	1563	100

ART (CHILD DEATHS)

ART – child deaths	*No.*	*%*	*No.*	*%*
Current	170	12.3	225	14.4
Ever	41	3.0	40	2.6
Never (but indicated)	201	14.5	190	12.2
Never (not indicated)	733	53.0	899	57.5
Unknown	239	17.3	209	13.4
Total	1384	100	1563	100

In-hospital mortality rates

	Admissions		*Deaths*		*IHMR (%)*	
All admissions	*2012*	*2013*	*2012*	*2013*	*2012*	*2013*
0-28 days	1894	2418	63	80	3.3	3.3
28 days-1 year	11502	14915	670	826	5.8	5.5
1-5 years	13170	17396	309	445	2.3	2.6
5-13 years	6780	8617	162	196	2.4	2.3
13-18 years	422	428	19	13	4.5	3.0
Unknown	177	94	5	0	2.8	0
Total (all)	33945	43868	1228	1560	3.6	3.6
Under-5						
Nutritional status						
≥ 3rd centile	19925	25094	389	482	2	1.9
< 3rd centile	3584	3411	272	244	7.6	7.2
Severe malnutrition	1983	3146	311	500	15.7	15.9
Unknown	1074	3078	70	125	6.5	4.1
Illness						
ARI	8047	9814	301	329	3.7	3.4
Acute diarrhoea	6463	9385	251	401	3.9	4.3
Other	12056	15530	490	621	4.1	4.0
Total (under 5)	26566	34729	1042	1351	3.9	3.9

Causes of child deaths

2012			*2013*		
Top 5	*All (No.)*	*% of deaths*	*Top 5*	*All (No.)*	*% of deaths*
Pneumonia (incl PCP)	432	31.2	Diarrhoea (all)	529	33.8
Diarrhoea (all)	420	30.3	Pneumonia (incl PCP)	466	29.8
Septicaemia	340	24.6	Septicaemia	420	26.9
TB (all)	171	12.4	Other	179	11.5
Other	150	10.8	TB (all)	165	10.6

Information about quality of child healthcare

Records

	2012		*2013*	
Records	*No.*	*%*	*No.*	*%*
Folder not available	84	6.1	85	5.4
Folder incomplete/inadequate	268	19.4	289	18.5
Folder available: OK	1003	72.5	1148	73.4
Unknown	29	2.1	41	2.6
Total	1384	100	1563	100

Modifiable factors

	2012		*2013*	
MFs: Where?	*No.*	*%*	*No.*	*%*
Ward	905	21.7	1362	28.3
Admission & emergency care	812	19.5	1100	22.9
Referring facility & transit	272	6.5	203	4.2
Clinic/OPD	604	14.5	493	10.2
Home	1579	37.8	1656	34.4
Total	4172	100	4814	100
MFs: Who?	*No.*	*Rate/death*	*No.*	*Rate/death*
Clinical personnel	2137	0.5	2781	0.6
Administrator	529	0.1	524	0.1
Caregiver	1506	0.4	1509	0.3
Total	4172	1.0	4814	1.0

Chapter 7

Limpopo: 2012 - 2013

Baseline data

Limpopo	*2012*	*2013*
No. of Sites	13	17
Total admissions	8087	8157
Total deaths	241	226
In-hospital mortality rate (%)	3.0	2.8
Audited deaths	263	255
Total modifiable factors	934	1067
Modifiable factor rate (per death)	3.6	4.2

Information about children who died

Demographics

	2012		*2013*	
Age	*No.*	*%*	*No.*	*%*
0-28 days	16	6.1	6	2.4
28 days-1 year	122	46.4	140	54.9
1-5 years	83	31.6	88	34.5
5-13 years	39	14.8	20	7.8
13-18 years	0	0	1	0.4
Unknown	3	1.1	0	0
Total	263	100	255	100

Social context

	2012		*2013*	
Mother's wellbeing	*No.*	*%*	*No.*	*%*
Alive and well	238	90.5	223	87.5
Dead	7	2.7	9	3.5
Sick	9	3.4	14	5.5
Unknown	9	3.4	9	3.5
Total	263	100	255	100

Health context

NUTRITION

	2012		2013	
Nutritional category	*No.*	*%*	*No.*	*%*
Overweight for Age (OWFA)	5	1.9	0	0
Normal	56	21.3	54	21.2
Underweight for Age (UWFA)	68	25.9	76	29.8
Severe Malnutrition	110	41.8	101	39.6
Unknown	24	9.1	24	9.4
Total	263	100	255	100

HIV&AIDS

	2012		2013	
Laboratory category	*No.*	*%*	*No.*	*%*
Negative	78	29.7	75	29.4
Exposed	41	15.6	65	25.5
Infected	43	16.3	41	16.1
Unknown	101	38.4	74	29.0
Total	263	100	255	100
Clinical HIV staging	*No.*	*%*	*No.*	*%*
Stage I	3	1.1	2	0.8
Stage II	0	0	1	0.4
Stage III	8	3.0	10	3.9
Stage IV	19	7.2	27	10.6
Not staged (± indicated)	163	61.9	140	54.9
Unknown	70	26.6	75	29.4
Total	263	100	255	100

PMTCT

	2012		2013	
Perinatal ARV	*No.*	*%*	*No.*	*%*
Prophylaxis given	42	16.0	65	25.5
Prophylaxis not given	22	8.4	11	4.3
Mother negative	89	33.8	62	24.3
Unknown	110	41.8	117	45.9
Total	263	100	255	100

FEEDING PRACTICE

	2012		2013	
Feeding practice	*No.*	*%*	*No.*	*%*
Exclusive breast	63	24.0	64	25.1
No breast, ever	21	8.0	20	7.8
Mixed	81	30.8	69	27.1
Unknown	98	37.3	102	40.0
Total	263	100	255	100

PCP PROPHYLAXIS

	2012		2013	
Cotrimoxazole prophylaxis	*No.*	*%*	*No.*	*%*
Current	35	13.3	43	16.9
Ever	18	6.8	8	3.1
Never (but indicated)	15	5.7	20	7.8
Never (not indicated)	124	47.1	85	33.3
Unknown	71	27.0	99	38.8
Total	263	100	255	100

ART (CHILD DEATHS)

	2012		2013	
ART – child deaths	*No.*	*%*	*No.*	*%*
Current	20	7.6	22	8.6
Ever	18	6.8	3	1.2
Never (but indicated)	13	4.9	28	11.0
Never (not indicated)	151	57.4	115	45.1
Unknown	61	23.2	87	34.1
Total	263	100	255	100

In-hospital mortality rates

	Admissions		*Deaths*		*IHMR (%)*	
All admissions	*2012*	*2013*	*2012*	*2013*	*2012*	*2013*
0-28 days	164	91	13	3	7.9	3.3
28 days-1 year	2212	2186	117	121	5.3	5.5
1-5 years	3570	3863	74	76	2.1	2.0
5-13 years	2100	1864	37	23	1.8	1.2
13-18 years	7	72	0	1	0	1.4
Unknown	34	81	0	2	0	2.5
Total (all)	8087	8157	241	226	3.0	2.8
Under-5						
Nutritional status						
≥ 3rd centile	2780	4155	32	26	1.2	0.6
< 3rd centile	609	727	44	35	7.2	4.8
Severe malnutrition	419	509	56	73	13.4	14.3
Unknown	2138	749	72	66	3.4	8.8
Illness						
ARI	1668	1964	52	47	3.1	2.4
Acute diarrhoea	1347	1039	40	43	3.0	4.1
Other	2931	3137	112	110	3.8	3.5
Total (under 5)	5946	6140	204	200	3.4	3.3

Causes of child deaths

2012			*2013*		
Top 5	*All (No.)*	*% of deaths*	*Top 5*	*All (No.)*	*% of deaths*
Diarrhoea (all)	96	36.5	Pneumonia (incl PCP)	93	36.5
Pneumonia (incl PCP)	89	33.8	Diarrhoea (all)	77	30.2
Other	45	17.1	Septicaemia	32	12.5
Septicaemia	35	13.3	Other	30	11.8
TB (all)	19	7.2	TB (all)	26	10.2

Information about quality of child healthcare

Records

	2012		*2013*	
Records	*No.*	*%*	*No.*	*%*
Folder not available	19	7.2	32	12.5
Folder incomplete/inadequate	66	25.1	69	27.1
Folder available: OK	167	63.5	147	57.6
Unknown	11	4.2	7	2.7
Total	263	100	255	100

Modifiable factors

	2012		*2013*	
MFs: Where?	*No.*	*%*	*No.*	*%*
Ward	373	39.9	325	30.5
Admission & emergency care	141	15.1	202	18.9
Referring facility & transit	22	2.4	52	4.9
Clinic/OPD	84	9.0	135	12.7
Home	314	33.6	353	33.1
Total	934	100	1067	100
MFs: Who?	*No.*	*Rate/death*	*No.*	*Rate/death*
Clinical personnel	384	1.5	479	1.9
Administrator	223	0.8	226	0.9
Caregiver	327	1.2	362	1.4
Total	934	3.6	1067	4.2

Chapter 8

Mpumalanga: 2012 - 2013

Baseline data

Mpumalanga	*2012*	*2013*
No. of Sites	28	28
Total admissions	25518	26449
Total deaths	1159	1033
In-hospital mortality rate (%)	4.5	3.9
Audited deaths	1167	1060
Total modifiable factors	7961	6545
Modifiable factor rate (per death)	6.8	6.2

Information about children who died

Demographics

	2012		*2013*	
Age	*No.*	*%*	*No.*	*%*
0-28 days	202	17.3	146	13.8
28 days-1 year	537	46.0	529	49.9
1-5 years	292	25.0	251	23.7
5-13 years	134	11.5	132	12.5
13-18 years	2	0.2	2	0.2
Unknown	0	0	0	0
Total	1167	100	1060	100

Social context

	2012		*2013*	
Mother's wellbeing	*No.*	*%*	*No.*	*%*
Alive and well	1025	87.8	972	91.7
Dead	44	3.8	31	2.9
Sick	46	3.9	30	2.8
Unknown	52	4.5	27	2.5
Total	1167	100	1060	100

Health context

NUTRITION

	2012		2013	
Nutritional category	*No.*	*%*	*No.*	*%*
Overweight for Age (OWFA)	4	0.3	2	0.2
Normal	399	34.2	352	33.2
Underweight for Age (UWFA)	355	30.4	339	32.0
Severe Malnutrition	342	29.3	304	28.7
Unknown	67	5.7	63	5.9
Total	1167	100	1060	100

HIV&AIDS

	2012		2013	
Laboratory category	*No.*	*%*	*No.*	*%*
Negative	332	28.4	363	34.2
Exposed	350	30.0	296	27.9
Infected	210	18.0	199	18.8
Unknown	275	23.6	202	19.1
Total	1167	100	1060	100
Clinical HIV staging	*No.*	*%*	*No.*	*%*
Stage I	12	1.0	2	0.2
Stage II	12	1.0	6	0.6
Stage III	60	5.1	70	6.6
Stage IV	160	13.7	150	14.2
Not staged (± indicated)	652	55.9	624	58.9
Unknown	271	23.2	208	19.6
Total	1167	100	1060	100

PMTCT

	2012		2013	
Perinatal ARV	*No.*	*%*	*No.*	*%*
Prophylaxis given	347	29.7	340	32.1
Prophylaxis not given	75	6.4	64	6.0
Mother negative	261	22.4	291	27.5
Unknown	484	41.5	365	34.4
Total	1167	100	1060	100

FEEDING PRACTICE

	2012		2013	
Feeding practice	*No.*	*%*	*No.*	*%*
Exclusive breast	255	21.9	286	27.0
No breast, ever	234	20.1	218	20.6
Mixed	266	22.8	267	25.2
Unknown	412	35.3	289	27.3
Total	1167	100	1060	100

PCP PROPHYLAXIS

	2012		2013	
Cotrimoxazole prophylaxis	*No.*	*%*	*No.*	*%*
Current	190	16.3	163	15.4
Ever	62	5.3	61	5.8
Never (but indicated)	170	14.6	168	15.8
Never (not indicated)	445	38.1	456	43.0
Unknown	300	25.7	212	20.0
Total	1167	100	1060	100

ART (CHILD DEATHS)

	2012		2013	
ART – child deaths	*No.*	*%*	*No.*	*%*
Current	102	8.7	100	9.4
Ever	88	7.5	101	9.5
Never (but indicated)	284	24.3	238	22.5
Never (not indicated)	402	34.4	427	40.3
Unknown	291	24.9	194	18.3
Total	1167	100	1060	100

In-hospital mortality rates

	Admissions		Deaths		IHMR (%)	
All admissions	*2012*	*2013*	*2012*	*2013*	*2012*	*2013*
0-28 days	2394	2356	207	146	8.6	6.2
28 days-1 year	6824	7654	521	512	7.6	6.7
1-5 years	9827	9964	290	244	3.0	2.4
5-13 years	6417	6342	141	130	2.2	2.0
13-18 years	7	9	0	1	0	11.1
Unknown	49	124	0	0	0	0
Total (all)	25518	26449	1159	1033	4.5	3.9
Under-5						
Nutritional status						
≥ 3rd centile	12608	13226	364	305	2.9	2.3
< 3rd centile	2972	3400	302	290	10.2	8.5
Severe malnutrition	1446	1478	304	255	21.0	17.3
Unknown	2019	1870	48	52	2.4	2.8
Illness						
ARI	5034	5622	346	282	6.9	5.0
Acute diarrhoea	3992	4340	272	300	6.8	6.9
Other	10019	10012	400	320	4.0	3.2
Total (under 5)	19045	19974	1018	902	5.3	4.5

Causes of child deaths

2012			2013		
Top 5	*All (No.)*	*% of deaths*	*Top 5*	*All (No.)*	*% of deaths*
Pneumonia (incl PCP)	488	41.8	Pneumonia (incl PCP)	437	41.2
Diarrhoea (all)	403	34.5	Diarrhoea (all)	396	37.4
Septicaemia	236	20.2	Septicaemia	219	20.7
Poisoning	155	13.3	Poisoning	134	12.6
Other Resp.	93	8.0	TB (all)	87	8.2

Information about quality of child healthcare

Records

	2012		*2013*	
Records	*No.*	*%*	*No.*	*%*
Folder not available	71	6.1	64	6.0
Folder incomplete/inadequate	689	59.0	578	54.5
Folder available: OK	407	34.9	415	39.2
Unknown	0	0.0	3	0.3
Total	1167	100	1060	100

Modifiable factors

	2012		*2013*	
MFs: Where?	*No.*	*%*	*No.*	*%*
Ward	2110	26.5	1615	24.7
Admission & emergency care	2345	29.5	1977	30.2
Referring facility & transit	120	1.5	114	1.7
Clinic/OPD	1341	16.8	998	15.2
Home	2045	25.7	1841	28.1
Total	7961	100	6545	100
MFs: Who?	*No.*	*Rate/death*	*No.*	*Rate/death*
Clinical personnel	5105	4.4	4183	3.9
Administrator	831	0.7	564	0.5
Caregiver	2025	1.7	1798	1.7
Total	7961	6.8	6545	6.2

Chapter 9

North West: 2012 - 2013

Baseline data

North West	*2012*	*2013*
No. of Sites	18	18
Total admissions	14524	17591
Total deaths	580	748
In-hospital mortality rate (%)	4.0	4.3
Audited deaths	561	728
Total modifiable factors	1690	3040
Modifiable factor rate (per death)	3.0	4.2

Information about children who died

Demographics

	2012		*2013*	
Age	*No.*	*%*	*No.*	*%*
0-28 days	29	5.2	37	5.1
28 days-1 year	292	52.0	391	53.7
1-5 years	153	27.3	236	32.4
5-13 years	66	11.8	58	8.0
13-18 years	7	1.2	5	0.7
Unknown	14	2.5	1	0.1
Total	561	100	728	100

Social context

	2012		*2013*	
Mother's wellbeing	*No.*	*%*	*No.*	*%*
Alive and well	453	80.7	551	75.7
Dead	19	3.4	21	2.9
Sick	33	5.9	42	5.8
Unknown	56	10.0	114	15.7
Total	561	100	728	100

Health context

NUTRITION

	2012		2013	
Nutritional category	*No.*	*%*	*No.*	*%*
Overweight for Age (OWFA)	14	2.5	13	1.8
Normal	147	26.2	189	26.0
Underweight for Age (UWFA)	129	23.0	180	24.7
Severe Malnutrition	222	39.6	305	42.0
Unknown	49	8.7	41	5.6
Total	561	100	728	100

HIV&AIDS

	2012		2013	
Laboratory category	*No.*	*%*	*No.*	*%*
Negative	138	24.6	206	28.3
Exposed	135	24.1	173	23.8
Infected	103	18.4	126	17.3
Unknown	185	33.0	223	30.6
Total	561	100	728	100
Clinical HIV staging	*No.*	*%*	*No.*	*%*
Stage I	4	0.7	3	0.4
Stage II	10	1.8	14	1.9
Stage III	24	4.3	29	4.0
Stage IV	95	16.9	88	12.1
Not staged (± indicated)	239	42.6	317	43.6
Unknown	189	33.7	277	38.0
Total	561	100	728	100

PMTCT

	2012		2013	
Perinatal ARV	*No.*	*%*	*No.*	*%*
Prophylaxis given	127	22.6	168	23.1
Prophylaxis not given	45	8.0	48	6.6
Mother negative	109	19.4	163	22.4
Unknown	280	49.9	349	47.9
Total	561	100	728	100

FEEDING PRACTICE

	2012		2013	
Feeding practice	*No.*	*%*	*No.*	*%*
Exclusive breast	135	24.1	173	23.8
No breast, ever	68	12.1	74	10.2
Mixed	90	16.0	115	15.8
Unknown	268	47.8	366	50.3
Total	561	100	728	100

PCP PROPHYLAXIS

	2012		2013	
Cotrimoxazole prophylaxis	*No.*	*%*	*No.*	*%*
Current	82	14.6	66	9.1
Ever	18	3.2	15	2.1
Never (but indicated)	46	8.2	61	8.4
Never (not indicated)	156	27.8	229	31.5
Unknown	259	46.2	357	49.0
Total	561	100	728	100

ART (CHILD DEATHS)

	2012		2013	
ART – child deaths	*No.*	*%*	*No.*	*%*
Current	58	10.3	71	9.8
Ever	23	4.1	17	2.3
Never (but indicated)	58	10.3	66	9.1
Never (not indicated)	209	37.3	290	39.8
Unknown	213	38.0	284	39.0
Total	561	100	728	100

In-hospital mortality rates

	Admissions		*Deaths*		*IHMR (%)*	
All admissions	*2012*	*2013*	*2012*	*2013*	*2012*	*2013*
0-28 days	755	1154	41	45	5.4	3.9
28 days-1 year	4340	5304	288	388	6.6	7.3
1-5 years	6293	7482	181	251	2.9	3.4
5-13 years	3015	3431	64	55	2.1	1.6
13-18 years	91	204	6	7	6.6	3.4
Unknown	30	16	0	2	0	12.5
Total (all)	14524	17591	580	748	4.0	4.3
Under-5						
Nutritional status						
≥ 3rd centile	6769	8240	134	173	2.0	2.1
< 3rd centile	1912	2118	121	138	6.3	6.5
Severe malnutrition	1459	2121	196	283	13.4	13.3
Unknown	1248	1461	59	90	4.7	6.2
Illness						
ARI	3116	3731	143	171	4.6	4.6
Acute diarrhoea	2538	3252	139	160	5.5	4.9
Other	5734	6957	228	353	4.0	5.1
Total (under 5)	11388	13940	510	684	4.5	4.9

Causes of child deaths

2012			2013		
Top 5	*All (No.)*	*% of deaths*	*Top 5*	*All (No.)*	*% of deaths*
Diarrhoea (all)	206	36.7	Pneumonia (incl PCP)	270	37.1
Pneumonia (incl PCP)	202	36.0	Diarrhoea (all)	247	33.9
Septicaemia	140	25.0	Septicaemia	216	29.7
Other	84	15.0	Other	137	18.8
TB (all)	66	11.8	TB (all)	82	11.3

Information about quality of child healthcare

Records

	2012		*2013*	
Records	*No.*	*%*	*No.*	*%*
Folder not available	44	7.8	50	6.9
Folder incomplete/inadequate	116	20.7	238	32.7
Folder available: OK	353	62.9	376	51.6
Unknown	48	8.6	64	8.8
Total	561	100	728	100

Modifiable factors

	2012		*2013*	
MFs: Where?	*No.*	*%*	*No.*	*%*
Ward	438	25.9	973	32.0
Admission & emergency care	383	22.7	829	27.3
Referring facility & transit	93	5.5	172	5.7
Clinic/OPD	272	16.1	405	13.3
Home	504	29.8	661	21.7
Total	1690	100	3040	100
MFs: Who?	*No.*	*Rate/death*	*No.*	*Rate/death*
Clinical personnel	1050	1.9	2140	2.9
Administrator	147	0.3	268	0.4
Caregiver	493	0.9	632	0.9
Total	1690	3.0	3040	4.2

Chapter 10

Northern Cape: 2012 - 2013

Baseline data

Northern Cape	*2012*	*2013*
No. of Sites	12	12
Total admissions	8765	9571
Total deaths	129	249
In-hospital mortality rate (%)	1.5	2.6
Audited deaths	191	288
Total modifiable factors	302	821
Modifiable factor rate (per death)	1.6	2.9

Information about children who died

Demographics

	2012		*2013*	
Age	*No.*	*%*	*No.*	*%*
0-28 days	18	9.4	17	5.9
28 days-1 year	79	41.4	132	45.8
1-5 years	62	32.5	110	38.2
5-13 years	21	11.0	25	8.7
13-18 years	6	3.1	4	1.4
Unknown	5	2.6	0	0
Total	191	100	288	100

Social context

	2012		*2013*	
Mother's wellbeing	*No.*	*%*	*No.*	*%*
Alive and well	154	80.6	247	85.8
Dead	11	5.8	7	2.4
Sick	12	6.3	15	5.2
Unknown	14	7.3	19	6.6
Total	191	100	288	100

Health context

NUTRITION

	2012		2013	
Nutritional category	*No.*	*%*	*No.*	*%*
Overweight for Age (OWFA)	9	4.7	10	3.5
Normal	60	31.4	78	27.1
Underweight for Age (UWFA)	50	26.2	57	19.8
Severe Malnutrition	50	26.2	129	44.8
Unknown	22	11.5	14	4.9
Total	191	100	288	100

HIV&AIDS

	2012		2013	
Laboratory category	*No.*	*%*	*No.*	*%*
Negative	97	50.8	92	31.9
Exposed	16	8.4	42	14.6
Infected	30	15.7	45	15.6
Unknown	48	25.1	109	37.8
Total	191	100	288	100
Clinical HIV staging	*No.*	*%*	*No.*	*%*
Stage I	4	2.1	4	1.4
Stage II	4	2.1	6	2.1
Stage III	5	2.6	23	8.0
Stage IV	17	8.9	35	12.2
Not staged (± indicated)	100	52.3	154	53.5
Unknown	61	31.9	66	22.9
Total	191	100	288	100

PMTCT

	2012		2013	
Perinatal ARV	*No.*	*%*	*No.*	*%*
Prophylaxis given	38	19.9	56	19.4
Prophylaxis not given	11	5.8	30	10.4
Mother negative	67	35.1	110	38.2
Unknown	75	39.3	92	31.9
Total	191	100	288	100

FEEDING PRACTICE

	2012		2013	
Feeding practice	*No.*	*%*	*No.*	*%*
Exclusive breast	65	34	100	34.7
No breast, ever	18	9.4	29	10.1
Mixed	27	14.1	60	20.8
Unknown	81	42.4	99	34.4
Total	191	100	288	100

PCP PROPHYLAXIS

	2012		2013	
Cotrimoxazole prophylaxis	*No.*	*%*	*No.*	*%*
Current	22	11.5	42	14.6
Ever	7	3.7	8	2.8
Never (but indicated)	8	4.2	33	11.5
Never (not indicated)	85	44.5	126	43.8
Unknown	69	36.1	79	27.4
Total	191	100	288	100

ART (CHILD DEATHS)

	2012		2013	
ART – child deaths	*No.*	*%*	*No.*	*%*
Current	24	12.6	26	9.0
Ever	1	0.5	1	0.3
Never (but indicated)	9	4.7	34	11.8
Never (not indicated)	88	46.1	151	52.4
Unknown	69	36.1	76	26.4
Total	191	100	288	100

In-hospital mortality rates

	Admissions		Deaths		IHMR (%)	
All admissions	*2012*	*2013*	*2012*	*2013*	*2012*	*2013*
0-28 days	442	526	13	16	2.9	3.0
28 days-1 year	1878	2546	50	112	2.7	4.4
1-5 years	3403	3598	47	81	1.4	2.3
5-13 years	2651	2482	15	34	0.6	1.4
13-18 years	349	418	4	6	1.1	1.4
Unknown	42	1	0	0	0	0
Total (all)	8765	9571	129	249	1.5	2.6
Under-5						
Nutritional status						
≥ 3rd centile	4070	4421	25	60	0.6	1.4
< 3rd centile	1055	1235	30	40	2.8	3.2
Severe malnutrition	249	407	35	78	14.1	19.2
Unknown	349	607	20	31	5.7	5.1
Illness						
ARI	1197	1455	24	54	2.0	3.7
Acute diarrhoea	864	1314	24	69	2.8	5.3
Other	3662	3901	62	86	1.7	2.2
Total (under 5)	5723	6670	110	209	1.9	3.1

Causes of child deaths

2012			2013		
Top 5	*All (No.)*	*% of deaths*	*Top 5*	*All (No.)*	*% of deaths*
Pneumonia (incl PCP)	48	25.1	Diarrhoea (all)	112	38.9
Septicaemia	46	24.1	Pneumonia (incl PCP)	76	26.4
Other	30	15.7	Septicaemia	70	24.3
TB (all)	30	15.7	Other	47	16.3
Diarrhoea (all)	29	15.2	TB (all)	36	12.5

Information about quality of child healthcare

Records

	2012		*2013*	
Records	*No.*	*%*	*No.*	*%*
Folder not available	21	11.0	10	3.5
Folder incomplete/inadequate	21	11.0	84	29.2
Folder available: OK	139	72.8	194	67.4
Unknown	10	5.2	0	0.0
Total	191	100	288	100

Modifiable factors

	2012		*2013*	
MFs: Where?	*No.*	*%*	*No.*	*%*
Ward	70	23.2	228	27.8
Admission & emergency care	24	7.9	36	4.4
Referring facility & transit	25	8.3	67	8.2
Clinic/OPD	39	12.9	135	16.4
Home	144	47.7	355	43.2
Total	302	100	821	100
MFs: Who?	*No.*	*Rate/death*	*No.*	*Rate/death*
Clinical personnel	118	0.6	369	1.3
Administrator	42	0.2	115	0.4
Caregiver	142	0.7	337	1.2
Total	302	1.6	821	2.9

Chapter 11

Western Cape: 2012 - 2013

Baseline data

Western Cape	*2012*	*2013*
No. of Sites	38	37
Total admissions	73827	74400
Total deaths	476	406
In-hospital mortality rate (%)	0.6	0.5
Audited deaths	504	416
Total modifiable factors	720	638
Modifiable factor rate (per death)	1.4	1.5

Information about children who died

Demographics

	2012		*2013*	
Age	*No.*	*%*	*No.*	*%*
0-28 days	57	11.3	44	10.6
28 days-1 year	224	44.4	182	43.8
1-5 years	147	29.2	118	28.4
5-13 years	60	11.9	65	15.6
13-18 years	15	3.0	6	1.4
Unknown	1	0.2	1	0.2
Total	504	100	416	100

Social context

	2012		*2013*	
Mother's wellbeing	*No.*	*%*	*No.*	*%*
Alive and well	457	90.7	371	89.2
Dead	8	1.6	6	1.4
Sick	19	3.8	21	5.0
Unknown	20	4.0	18	4.3
Total	504	100	416	100

Health context

NUTRITION

	2012		2013	
Nutritional category	*No.*	*%*	*No.*	*%*
Overweight for Age (OWFA)	12	2.4	4	1.0
Normal	203	40.3	201	48.3
Underweight for Age (UWFA)	182	36.1	122	29.3
Severe Malnutrition	73	14.5	58	14
Unknown	34	6.7	31	7.5
Total	504	100	416	100

HIV&AIDS

	2012		2013	
Laboratory category	*No.*	*%*	*No.*	*%*
Negative	266	52.8	215	51.7
Exposed	53	10.5	49	11.8
Infected	39	7.7	37	8.9
Unknown	146	29.0	115	27.6
Total	504	100	416	100
Clinical HIV staging	*No.*	*%*	*No.*	*%*
Stage I	0	0	1	0.2
Stage II	1	0.2	1	0.2
Stage III	8	1.6	12	2.9
Stage IV	22	4.4	20	4.8
Not staged (± indicated)	341	67.7	292	70.2
Unknown	132	26.2	90	21.6
Total	504	100	416	100

PMTCT

	2012		2013	
Perinatal ARV	*No.*	*%*	*No.*	*%*
Prophylaxis given	86	17.1	79	19.0
Prophylaxis not given	18	3.6	16	3.8
Mother negative	245	48.6	217	52.2
Unknown	155	30.8	104	25.0
Total	504	100	416	100

FEEDING PRACTICE

	2012		2013	
Feeding practice	*No.*	*%*	*No.*	*%*
Exclusive breast	106	21.0	124	29.8
No breast, ever	59	11.7	47	11.3
Mixed	86	17.1	67	16.1
Unknown	253	50.2	178	42.8
Total	504	100	416	100

PCP PROPHYLAXIS

	2012		2013	
Cotrimoxazole prophylaxis	*No.*	*%*	*No.*	*%*
Current	33	6.5	30	7.2
Ever	9	1.8	4	1.0
Never (but indicated)	18	3.6	27	6.5
Never (not indicated)	308	61.1	269	64.7
Unknown	136	27.0	86	20.7
Total	504	100	416	100

ART (CHILD DEATHS)

	2012		2013	
ART – child deaths	*No.*	*%*	*No.*	*%*
Current	30	6.0	22	5.3
Ever	4	0.8	4	1.0
Never (but indicated)	24	4.8	24	5.8
Never (not indicated)	331	65.7	284	68.3
Unknown	115	22.8	82	19.7
Total	504	100	416	100

In-hospital mortality rates

	Admissions		*Deaths*		*IHMR (%)*	
All admissions	*2012*	*2013*	*2012*	*2013*	*2012*	*2013*
0-28 days	4992	5188	61	55	1.2	1.1
28 days-1 year	21556	21479	205	162	1.0	0.8
1-5 years	28821	28925	129	114	0.4	0.4
5-13 years	15768	15791	69	69	0.4	0.4
13-18 years	2454	2615	12	6	0.5	0.2
Unknown	236	402	0	0	0	0
Total (all)	73827	74400	476	406	0.6	0.5
Under-5						
Nutritional status						
≥ 3rd centile	26375	28529	75	92	0.3	0.3
< 3rd centile	4592	3756	69	55	1.5	1.5
Severe malnutrition	1385	1101	42	19	3.0	1.7
Unknown	23017	22206	209	165	0.9	0.7
Illness						
ARI	13235	13107	75	54	0.6	0.4
Acute diarrhoea	7849	7588	37	30	0.5	0.4
Other	34285	34897	283	247	0.8	0.7
Total (under 5)	55369	55592	395	331	0.7	0.6

Causes of child deaths

2012			2013		
Top 5	*All (No.)*	*% of deaths*	*Top 5*	*All (No.)*	*% of deaths*
Pneumonia (incl PCP)	143	28.4	Septicaemia	132	31.7
Septicaemia	108	21.4	Pneumonia (incl PCP)	116	27.9
Diarrhoea (all)	73	14.5	Diarrhoea (all)	59	14.2
Congenital Heart Dis.	52	10.3	Other CNS	33	7.9
Other	37	7.3	Other	26	6.3

Information about quality of child healthcare

Records

	2012		*2013*	
Records	*No.*	*%*	*No.*	*%*
Folder not available	14	2.8	14	3.4
Folder incomplete/inadequate	72	14.3	33	7.9
Folder available: OK	412	81.7	366	88.0
Unknown	6	1.2	3	0.7
Total	504	100	416	100

Modifiable factors

	2012		*2013*	
MFs: Where?	*No.*	*%*	*No.*	*%*
Ward	207	28.8	142	22.3
Admission & emergency care	116	16.1	96	15.0
Referring facility & transit	80	11.1	98	15.4
Clinic/OPD	79	11.0	67	10.5
Home	238	33.1	235	36.8
Total	720	100	638	100
MFs: Who?	*No.*	*Rate/death*	*No.*	*Rate/death*
Clinical personnel	363	0.7	310	0.7
Administrator	155	0.3	142	0.3
Caregiver	202	0.4	186	0.4
Total	720	1.4	638	1.5

List of Abbreviations and Definitions

	Definitions
A&E	Admission and Emergency
ARI	Acute Respiratory Infection
ART	Antiretroviral Treatment
CFR	Case Fatality Rate
Clinical personnel	Nurses and doctors
DCST	District Clinical Specialist Team, comprising three doctors and four nurses, responsible for maternal and child health in a district
DOA	Dead On Arrival
ECD	Early Childhood Development
EDL	Essential Drug List
EPI-SA	Expanded Programme on Immunisation South Africa
ETAT	Emergency Triage Assessment and Treatment
IHMR	In-Hospital Mortality Rate
IMCI	Integrated Management of Childhood Illness
Health worker	Doctors, nurses, paramedical health workers
(P)ICU	(Paediatric) Intensive Care Unit
IMR	Infant Mortality Rate

KMC	Kangaroo Mother Care
MCWH	Maternal, Child and Women's Health
MF	Modifiable Factor: Events, actions, omissions contributing to the death of a child or to substandard care, in a child who died.
Mortality review meetings (M&M)	Regular audit meetings with all health workers involved, to discuss paediatric deaths
MRC	Medical Research Council
NDOH	National Department of Health
NHI	National Health Insurance
OPD	Outpatient Department
OWFA	Overweight-For-Age
PCP	Pneumocystis Carinii or jirovecii Pneumonia
PCR	Polymerase Chain Reaction blood test
PHC	Primary Health Care
PMTCT	Prevention of Mother-To-Child Transmission of HIV
QI	Quality Improvement
RTHC	Road-to-Health Chart: patient-retained record for children under five years
Severe malnutrition	Marasmus, kwashiorkor and marasmic kwashiorkor
UWFA	Underweight For Age (below the 3rd centile for weight-for-age, according to the Wellcome classification)
WHO	World Health Organization

Appendices

Appendix A: Data Tables for Chapter 1

Appendix B: Child PIP Data Capture Sheets

Monthly Tally

Death Data Capture Sheet

Appendix C: Child PIP Code Lists

Cause of Death

Modifiable Factors

Table A1. Admissions, Deaths and Modifiable Factors, Per Province: 2012-2013

	Eastern Cape		*Free State*		*Gauteng*		*KwaZulu-Natal*		*Limpopo*	
Year	*2012*	*2013*	*2012*	*2013*	*2012*	*2013*	*2012*	*2013*	*2012*	*2013*
No. of sites	11	14	28	28	8	4	31	34	13	17
Admissions	11465	11485	20003	23157	12715	11580	33945	43868	8087	8157
Deaths	226	381	725	668	331	308	1228	1560	241	226
IHMR	2.0	3.3	3.6	2.9	2.6	2.7	3.6	3.6	3.0	2.8
Audited deaths	202	284	585	681	506	556	1384	1563	263	255
MFs (total)	757	1126	1954	2086	786	824	4172	4814	934	1067
MF rate per death	3.7	4.0	3.3	3.1	1.6	1.5	3.0	3.1	3.6	4.2

	Mpumalanga		*North West*		*Northern Cape*		*Western Cape*		*Total*	
Year	*2012*	*2013*	*2012*	*2013*	*2012*	*2013*	*2012*	*2013*	*2012*	*2013*
No. of sites	28	28	18	18	12	12	38	37	187	192
Admissions	25518	26449	14524	17591	8765	9571	73827	74400	208849	226258
Deaths	1159	1033	580	748	129	249	476	406	5095	5579
IHMR	4.5	3.9	4.0	4.3	1.5	2.6	0.6	0.5	2.4	2.5
Audited deaths	1167	1060	561	728	191	288	504	416	5363	5831
MFs (total)	7961	6545	1690	3040	302	821	720	638	19276	20961
MF rate per death	6.8	6.2	3.0	4.2	1.6	2.9	1.4	1.5	3.6	3.6

Notes:

Data in the above tables are taken only from those sites that submitted data to the Child PIP database from 2009-2011. The numbers may differ in some instances from those published previously, which combined paper- and computer-collated data.

Table A2. In-Hospital Mortality Rates by Age, Nutritional Status and Illness: 2012-2013

	Admissions		*Deaths*		*IHMR (%)*	
All admissions	***2012***	***2013***	***2012***	***2013***	***2012***	***2013***
0-1 month	14658	14722	544	441	3.7	3.0
1-12 months	60896	67730	2481	2787	4.1	4.1
1-5 years	81692	88855	1344	1588	1.6	1.8
5-13 years	46316	48504	657	667	1.4	1.4
13-18 years	4521	5236	62	85	1.4	1.6
Unknown	766	1211	7	11	0.9	0.9
Total	208849	226258	5095	5579	2.4	2.5
Under-5 admissions						
Nutritional status						
≥ 3rd centile	92845	104683	1290	1459	1.4	1.4
< 3rd centile	19283	19487	1072	1061	5.6	5.4
Severe malnutrition	9346	11704	1255	1568	13.4	13.4
Unknown	35772	35433	752	728	2.1	2.1
Illness						
ARI	42430	46119	1247	1279	2.9	2.8
Acute diarrhoea	29231	33354	1049	1319	3.6	4.0
Other	85585	91834	2073	2218	2.4	2.4
Total	157246	171307	4369	4816	2.8	2.8

Table A3. Age and Gender of Deaths: 2012-2013

	2012		2013	
Age	***No.***	***%***	***No.***	***%***
0 - 28 days	543	10.1	466	8.0
28 days - 1 year	2652	49.4	2990	51.3
1 - 5 years	1391	25.9	1632	28.0
5 - 13 years	655	12.2	642	11.0
13 - 18 years	61	1.1	68	1.2
Unknown	61	1.1	33	0.6
Total	5363	100	5831	100
Gender	***No.***	***%***	***No.***	***%***
Female	2557	47.7	2708	46.4
Male	2757	51.4	3066	52.6
Unknown	49	0.9	57	1.0
Total	5363	100	5831	100

Table A4. Referral Patterns of Deaths: 2012-2013

	2012		2013	
Referred	***No.***	***%***	***No.***	***%***
Yes	2700	50.3	3085	52.9
No	2416	45.0	2490	42.7
Unknown	247	4.6	256	4.4
Total	5363	100	5831	100
Referred from	***No.***	***%***	***No.***	***%***
Another hospital	859	16.0	970	16.6
Clinic	1508	28.1	1794	30.8
Private	312	5.8	301	5.2
Not referred	2416	45.0	2491	42.7
Unknown	268	5.0	275	4.7
Total	5363	100	5831	100
Re-admission	***No.***	***%***	***No.***	***%***
Yes	1050	19.6	1081	18.5
No	4016	74.9	4482	76.9
Unknown	297	5.5	268	4.6
Total	5363	100	5831	100

Table A5. Length of Stay and Time of Deaths: 2012-2013

	2012		2013	
Length of stay	***No.***	***%***	***No.***	***%***
DOA	243	4.5	257	4.4
< 24 hours	1840	34.3	1859	31.9
1 - 3 days	1297	24.2	1407	24.1
4 - 7 days	811	15.1	953	16.3
8 - 14 days	572	10.7	679	11.6
> 14 days	584	10.9	673	11.5
Unknown	16	0.3	3	0.1
Total	5363	100	5831	100
Time of death	***No.***	***%***	***No.***	***%***
Weekday (07:00-19:00)	1858	34.6	2144	36.8
Weeknight (19:00-07:00)	1769	33.0	1827	31.3
Weekend/Public Holiday	1446	27.0	1571	26.9
Unknown	290	5.4	289	5.0
Total	5363	100	5831	100

Table A6. Social Context: Caregiver Data for Deaths: 2012-2013

	2012		2013	
Primary Caregiver	***No.***	***%***	***No.***	***%***
Mother	4293	80	4662	80.0
Grandmother	443	8.3	526	9.0
Father	45	0.8	43	0.7
Other	158	2.9	156	2.7
Unknown	424	7.9	444	7.6
Total	5363	100	5831	100
Mother's wellbeing	***No.***	***%***	***No.***	***%***
Alive and well	4630	86.3	5042	86.5
Dead	205	3.8	185	3.2
Sick	225	4.2	242	4.2
Unknown	303	5.6	362	6.2
Total	5363	100	5831	100
Father's wellbeing	***No.***	***%***	***No.***	***%***
Alive and well	2680	50	2941	50.4
Dead	117	2.2	136	2.3
Sick	78	1.5	87	1.5
Unknown	2488	46.4	2667	45.7
Total	5363	100	5831	100

Table A7. Nutritional Status of Deaths: 2012-2013

	2012		2013	
Nutritional category	*No.*	*%*	*No.*	*%*
OWFA	84	1.6	71	1.2
Normal	1806	33.7	1958	33.6
UWFA	1596	29.8	1668	28.6
Kwashiorkor (Severe malnutrition)	852	15.9	897	15.4
Marasmus (Severe malnutrition)	452	8.4	650	11.1
Marasmic Kwashiorkor (Severe malnutrition)	230	4.3	227	3.9
Unknown	343	6.4	360	6.2
Total	5363	100	5831	100

Table A8. HIV Status of Deaths: 2012-2013

	2012		2013	
Laboratory category	*No.*	*%*	*No.*	*%*
Negative	1813	33.8	2133	36.6
Exposed	1136	21.2	1269	21.8
Infected	992	18.5	992	17.0
Unknown (incl. not tested or no result)	1422	26.5	1437	24.6
Total	5363	100	5831	100
Clinical HIV staging	***No.***	***%***	***No.***	***%***
Stage I	74	1.4	93	1.6
Stage II	51	1.0	71	1.2
Stage III	256	4.8	307	5.3
Stage IV	762	14.2	716	12.3
Not staged (but indicated)	612	11.4	581	10.0
Not staged (not indicated)	2351	43.8	2722	46.7
Unknown	1257	23.4	1341	23.0
Total	5363	100	5831	100

Table A9. Perinatal ARV Uptake: 2012-2013

	2012		2013	
Perinatal ARVs	*No.*	*%*	*No.*	*%*
Given	1366	25.5	1582	27.1
Not given	361	6.7	394	6.8
Mother negative	1596	29.8	1875	32.2
Unknown	2040	38.0	1980	34.0
Total	5363	100	5831	100

Table A10. Infant Feeding Practice in the First Six Months of Life: 2012-2013

	2012		2013	
Feeding practice	*No.*	*%*	*No.*	*%*
Exclusive breast	876	16.9	986	18.6
No breast, ever	1322	25.5	1451	27.4
Mixed	981	18.9	1082	20.5
Unknown	2009	38.7	1768	33.4
Total (under 5 years)	5188	100	5287	100

Table A11. PCP Prophylaxis in All Deaths (Cotrimoxazole): 2012-2013

	2012		2013	
Cotrimoxazole prophylaxis	*No.*	*%*	*No.*	*%*
Current	840	15.7	779	13.4
Ever	201	3.7	214	3.7
Never (but indicated)	490	9.1	591	10.1
Never (not indicated)	2343	43.7	2642	45.3
Unknown	1489	27.8	1605	27.5
Total	5363	100	5831	100

Table A12. Cotrimoxazole Prophylaxis in PCP Main Cause of Death (Suspected or Confirmed): 2012-2013

	2012		2013	
Cotrimoxazole prophylaxis	*No.*	*%*	*No.*	*%*
Current	87	46.8	48	32.9
Ever	10	5.4	3	2.1
Never (but indicated)	41	22.0	37	25.3
Never (not indicated)	16	8.6	27	18.5
Unknown	32	17.2	31	21.2
Total	186	100	146	100

Table A13. Antiretroviral Therapy (ART) in Child Deaths and Mothers: 2012-2013

	2012		2013	
ART - child deaths	*No.*	*%*	*No.*	*%*
Current	550	10.3	624	10.7
Ever	211	3.9	223	3.8
Never (but indicated)	720	13.4	698	12.0
Never (not indicated)	2630	49.0	2989	51.3
Unknown	1252	23.3	1297	22.2
Total	5363	100	5831	100

Table A14.1 Cause of Death: Main and Other Diagnosis (All Diagnoses): 2012

2012	*Main*	*Other*	*Total*	*Percent*
Pneumonia, ARI	1056	482	1538	28.7
Acute diarrhoea, hypovolaemic shock	862	371	1233	23.0
Septicaemia, possible serious bacterial infection	867	353	1220	22.7
Other Endocr, Nutritional, Metabol. (specify)	162	432	594	11.1
PCP (suspected 160, 146) (confirmed 26, 27)	186	173	359	6.7
Other Respiratory System (specify)	239	103	342	6.4
TB: Pulmonary	133	198	331	6.2
Other diagnosis (specify)	183	135	318	5.9
Anaemia	29	287	316	5.9
Chronic diarrhoea	180	125	305	5.7
Other Poisoning (specify)	48	197	245	4.6
Meningitis: bacterial	158	56	214	4.0
Acute renal failure	40	163	203	3.8
Other Nervous System (specify)	85	100	185	3.4
Cirrhosis, Portal Hypertension, Liver Failure, Hepatitis	91	65	156	2.9
Congenital Heart Disease	87	57	144	2.7
Hypoglycaemia	31	96	127	2.4
Unknown	82	38	120	2.2
Other possible serious infection	43	61	104	1.9
Other Digestive System (specify)	38	66	104	1.9
Heart failure, Pulmonary Oedema	57	46	103	1.9
TB: Meningitis	76	22	98	1.8
Status epilepticus	44	50	94	1.8
Other Oncology/Haematology (specify)	38	49	87	1.6
Other Circulatory System (specify)	35	52	87	1.6
Hospital-acquired infection	42	38	80	1.5
TB: Miliary, other extra-pulmonary	42	36	78	1.5
Ill-defined/Unknown cause of mortality	68	4	72	1.3
Tumours (28, 14); Leukaemias (22, 6)	50	20	60	1.1
Surgical (Appendix, hernia, intestines, peritoneum)	34	23	57	1.1
Inhalation of foreign body or gastric content	38	17	55	1.0
Burns	36	9	45	0.8
Cardiomyopathy	19	20	39	0.7
Acute nephritis (2, 4); Other Genito-urinary System (4, 29)	6	33	39	0.7
Pneumothorax, Pyothorax, Pleural effusion	7	29	36	0.7
Bites and Stings	3	31	34	0.6
Non-accidental injury, Abuse-related, Neglect	10	18	28	0.5
Meningitis: viral (meningo-encephalitis)	20	6	26	0.5
Chronic renal disease	18	8	26	0.5
Other inflammatory disease of CNS (e.g. abscess)	13	11	24	0.4
Myocarditis	15	8	23	0.4
Dysentery	11	12	23	0.4
Transport-related accidents	20	0	20	0.4
Croup (9, 6); Asthma (3, 1)	12	7	19	0.4
Congenital Infections (not HIV)	3	15	18	0.3
Other accidents (incl. Drowning; specify)	14	4	18	0.3
Cong malformations of the respiratory system	12	3	15	0.3
IDDM, DKA	7	5	12	0.2
Malaria	4	4	8	0.1
Paraffin (5, 2); Corrosives (1, 0)	6	2	8	0.1
RHD, Rheumatic fever	2	4	6	0.1
Measles	1	0	1	0.0
Total	5363	4144	9507	100

Table A14.2 Cause of Death: Main and Other Diagnosis (All Diagnoses): 2013

2013	*Main*	*Other*	*Total*	*Percent*
Pneumonia, ARI	1112	517	1629	27.9
Septicaemia, possible serious bacterial infection	1058	426	1484	25.5
Acute diarrhoea, hypovolaemic shock	1068	408	1476	25.3
Other Endocr, Nutritional, Metabol. (specify)	162	467	629	10.8
Anaemia	27	320	347	6.0
Chronic diarrhoea	200	144	344	5.9
Other Respiratory System (specify)	206	134	340	5.8
Other diagnosis (specify)	151	184	335	5.7
TB: Pulmonary	132	197	329	5.6
PCP (suspected 114, 150) (confirmed 32, 11)	146	161	307	5.3
Other Nervous System (specify)	105	127	232	4.0
Other Poisoning (specify)	51	179	230	3.9
Acute renal failure	46	179	225	3.9
Hypoglycaemia	39	143	182	3.1
Cirrhosis, Portal Hypertension, Liver Failure, Hepatitis	91	83	174	3.0
Meningitis: bacterial	128	39	167	2.9
Other possible serious infection (specify)	55	104	159	2.7
Congenital Heart Disease	74	73	147	2.5
Heart failure, Pulmonary Oedema	81	46	127	2.2
Other Circulatory System (specify)	56	69	125	2.1
Status epilepticus	59	58	117	2.0
TB: Meningitis	80	26	106	1.8
Other Oncology/Haematology (specify)	43	62	105	1.8
Tumours (44, 10); Leukaemias (29, 18)	73	28	101	1.7
Other Digestive System (specify)	40	60	100	1.7
Hospital-acquired infection	43	48	91	1.6
TB: Miliary, other extra-pulmonary	48	41	89	1.5
Unknown	60	16	76	1.3
Burns	49	23	72	1.2
Ill-defined/Unknown cause of mortality	51	9	60	1.0
Inhalation of foreign body or gastric content	39	18	57	1.0
Acute nephritis (0, 7); Other Genito-urinary System (6, 36)	6	43	49	0.8
Surgical (Appendix, hernia, intestines, peritoneum)	30	18	48	0.8
Cardiomyopathy	28	15	43	0.7
Meningitis: viral (meningo-encephalitis)	28	8	36	0.6
Chronic renal disease	19	14	33	0.6
Non-accidental injury, Abuse-related, Neglect	8	23	31	0.5
Pneumothorax, Pyothorax, Pleural effusion	14	17	31	0.5
Myocarditis (10, 8); Endocarditis (4, 4)	14	12	26	0.4
Other inflammatory disease of CNS (e.g. abscess)	18	7	25	0.4
Croup (12, 6); Asthma (5, 2)	17	8	25	0.4
Dysentery	3	16	19	0.3
Congenital Infections (not HIV)	7	11	18	0.3
Other accidents (incl. Drowning; specify)	13	4	17	0.3
Cong malformations of the respiratory system	5	12	17	0.3
Transport-related accidents	15	2	17	0.3
Bites and Stings	4	8	12	0.2
Malaria (10, 0); Measles (0, 1)	10	1	11	0.2
IDDM, DKA	7	3	10	0.2
Paraffin (4, 2); Corrosives (1, 1)	5	5	8	0.1
Homicide	6	1	7	0.1
RHD, Rheumatic fever	1	5	6	0.1
Total	5831	4620	10451	100

Table A15. Quality of Records: 2012-2013

	2012		2013	
Records	*No.*	*%*	*No.*	*%*
Folder not available	349	6.5	410	7.0
Folder incomplete and/or inadequate	1485	27.7	1592	27.3
Folder available: OK	3420	63.8	3699	63.4
Unknown	109	2.0	130	2.2
Total	5363	100	5831	100

Table A16. Avoidable Deaths: 2012-2013

	2012		2013	
'Was this death avoidable?'	*No.*	*%*	*No.*	*%*
Yes	1606	29.9	1866	32.0
Not sure	1922	35.8	2158	37.0
No	1594	29.7	1597	27.4
Unknown	241	4.5	210	3.6
Total	5363	100.0	5831	100.0

Table A17. 'Where' and 'Who' of Modifiable factors (MFs): 2012-2013

	2012		2013	
Where they occur	*No.*	*%**	*No.*	*%**
Ward	4986	0.9	5656	1.0
Admission & Emergency care	4378	0.8	4784	0.8
Referring facility and Transit	960	0.2	1088	0.2
Clinic/Outpatients	2877	0.5	2819	0.5
Home	6075	1.1	6614	1.1
Total	19276	3.6	20961	3.6
Who is responsible	*No.*	*Rate†*	*No.*	*Rate†*
Clinical personnel	10974	56.9	12248	58.4
Administrator	2476	12.8	2478	11.8
Caregiver and family	5826	30.2	6235	29.7
Total	19276	100.0	20961	100.0

* Proportion of total MFs † Rate, i.e. number of MFs per death

Table A18. Modifiable Factors Category by Person Responsible: 2012-2013

	2012		*2013*	
Clinical Personnel	***No.***	***%***	***No.***	***%***
History	456	5.0	526	5.2
Examination	326	3.6	327	3.2
Assess	2900	31.6	3068	30.1
Classify	29	0.3	41	0.4
Problem List	166	1.8	191	1.9
Plan	154	1.7	206	2.0
Investigation	648	7.1	775	7.6
Treat	267	2.9	299	2.9
Manage	2107	23.0	2435	23.9
Monitor	1671	18.2	1898	18.6
Communication	449	4.9	419	4.1
Total - Clinical Personnel	9173	100	10185	100
Administrators	***No.***	***%***	***No.***	***%***
Staff	536	26.9	571	28.7
Buildings/Beds	551	27.7	518	26.0
Consumables	160	8.0	173	8.7
Equipment	224	11.3	218	10.9
Laboratory	137	6.9	180	9.0
Transport	193	9.7	166	8.3
Policy	190	9.5	165	8.3
Total - Administrators	1991	100	1991	100
Caregivers	***No.***	***%***	***No.***	***%***
Care-seeking & Compliance	4103	93.5	4336	93.1
Home treatment	284	6.5	322	6.9
Total - Caregivers	4387	100	4658	100
Cross-cutting	***No.***	***%***	***No.***	***%***
Notes	1700	45.6	1875	45.4
Growth and development	973	26.1	1137	27.6
Disease prevention	468	12.6	464	11.2
Other	584	15.7	651	15.8
Total - Cross-cutting	3725	100	4127	100
Total Modifiable Factors	**19276**	**100**	**20961**	**100**

Appendix B:

Child PIP Data Capture Sheets

- Monthly Tally
- Death Data Capture Sheet

Child Healthcare Problem Identification Programme

Monthly Tally Sheet

Child PIP v3.1

Hospital: _____ Year: _____

Ward: _____ Month: _____

		Admissions[1]	Deaths[2]	IHMRs[4,5]
Age	0 - < 28 days			
	≥ 28 days - < 1 yr			
	≥ 1 yr - < 5 yrs			
	≥ 5 yrs - < 13 yrs			
	≥ 13 yrs - 18 yrs			
	Unknown			
	Totals			

Complete information below for children <u>< 5 years only</u>				
		Admissions[1]	**Deaths[2]**	**IHMRs[4,5]**
Weight	Above or on 3rd centile			
	UWFA			
	Severe malnutrition[3]			
	Unknown			
	Totals (< 5 years)			
Illness	Acute respiratory infections (ARI)			
	Diarrhoeal disease (DD)			
	Other			
	Totals (< 5 years)			

Notes:

1. Include **<u>all</u>** children admitted to your institution's paediatric/paediatric surgical/children's service
2. If age categories are not known, enter zero in age boxes and the total number admissions/deaths in 'Unknown'
3. Severe malnutrition includes marasmus, marasmic-kwashiorkor and kwashiorkor
4. Only enter one diagnosis per admission (choose the most appropriate if more than one applicable)
5. Shaded areas will be automatically calculated by the computer
6. In-hospital mortality rates can be manually calculated: IHMR = $\frac{\text{deaths}}{\text{admissions}}$ X 100

Compiled by: _____ (Print name) _____(Sign)

Date: _____ Fax/Tel number: _____

Hospital: _____

Deaths Register No: _____

Child Healthcare Problem Identification Programme

Child Death Data Capture Sheet

Child PIP v3.1

Ward: _____

Entered on computer: _____

Confidential document

Patient name:				Folder no:			Residential Subdistrict:	
DoB	yyyy-mm-dd	Age	pc auto	Gender	Ⓜ / Ⓕ / Ⓤ	Re-admission	Ⓨ / Ⓝ / Ⓤ	Dead on arrival	Ⓨ / Ⓝ / Ⓤ

Date of Admission	yyyy-mm-dd	Time of Admission	hh : mm	When death occurred	Weekend / Public holiday	
Date of Death	yyyy-mm-dd	Time of Death	hh : mm	Weekday (07:00-19:00)	Weeknight (19:00-07:00)	Unknown

Records (include RTHC assessment)

1. Folder not available	2. Folder present, records incomplete	3. Folder present, notes inadequate (quality of notes is poor)	4. Folder present, records incomplete AND notes inadequate	5. Folder available, records & notes OK

Referred

	Name of referring hospital/clinic:				
Ⓨ / Ⓝ / Ⓤ	If yes, from:	1. Another hospital	2. A clinic	3. Private practitioner	Unknown
	If yes, from:	1. Inside drainage area	2. Outside drainage area	Unknown	

Social

Mother	1. Alive and well	2. Dead	3. Sick	Unknown	Primary caregiver	1. Mother	2. Grandmother	3. Father
Father	1. Alive and well	2. Dead	3. Sick	Unknown		4. Other: _____		Unknown

Nutrition (tick one category box, then fill in actual weight)

1. OWFA	2. Normal	3. UWFA	4. Marasmus	5. Kwashiorkor	6. M-K	Unknown	Weight _____ kg

HIV & AIDS (enter status at time of admission, not at time of audit: this is NOT a post-mortem assessment)

Lab	1. Negative	2. Exposed	3. Infected	4. No result	5. Not tested (but indicated)	6. Not tested (not indicated)	Unknown
Clinical	1. Stage I	2. Stage II	3. Stage III	4. Stage IV	5. Not staged (but indicated)	6. Not staged (not indicated)	Unknown

Perinatal ARV	1. Prophylaxis given	2. Prophylaxis not given	3. Mother negative at delivery	Unknown
Feeding in first 6 months	1. Exclusive breast for 6/12	2. No breast, ever	3. Mixed, from birth	Unknown

Cotrimoxazole	1. Current	2. Ever	3. Never (but indicated)	4. Never (not indicated)	Unknown
ART (child)	1. Current	2. Ever	3. Never (but indicated)	4. Never (not indicated)	Unknown
ART (mother)	1. Current	2. Ever	3. Never (but indicated)	4. Never (not indicated)	Unknown

Cause of Death (insert codes)

Main cause of death:		Underlying condition (if any):	
Other important diagnoses (max 4):			

Modifiable Factors (insert codes)

Code	Ward: Hospital		Comments
	Probable	Possible	
	Probable	Possible	
	Probable	Possible	
	Probable	Possible	
	Probable	Possible	

Code	Admissions & Emergency: Hospital		Comments
	Probable	Possible	
	Probable	Possible	
	Probable	Possible	
	Probable	Possible	

Code	Referring Facility & Transit		Comments
	Probable	Possible	
	Probable	Possible	
	Probable	Possible	

Code	Clinic/Outpatients		Comments
	Probable	Possible	
	Probable	Possible	

Code	Home		Comments
	Probable	Possible	
	Probable	Possible	
	Probable	Possible	

In your opinion, had the process of caring been different, would this death have been avoidable?

1. Yes	2. Not sure	3. No	Unknown

Case Summary/Comments (write summary at time of death, if possible)

Child's Details (age, weight, where from, admission date/time)
History of Presenting Complaint
Relevant Background History (including details of HIV and TB)
Examination

Problem List

Problem	Investigations	Progress	Outcome
1.			
2.			
3.			
4.			
5.			

Comments

Appendix C:

Child PIP Code Lists

- Causes of Death
- Modifiable Factors

Causes of Death

Child PIP v3.1

Please note: The **nutritional** categories and the clinical and laboratory classifications concerning **HIV** do not appear here. They have to be captured in the relevant fields on the data sheet.

Category	Causes of Death	Code
Infections and Parasitic Diseases	Acute diarrhoea, hypovolaemic shock	101
	Chronic diarrhoea	102
	Dysentery	103
	TB: Pulmonary	110
	TB: Meningitis	111
	TB: Miliary, other extra-pulmonary	112
	Septicaemia, possible serious bacterial infection	120
	Congenital Infections (not HIV)	130
	Meningitis: Bacterial	140
	Meningitis: Viral (meningo-encephalitis)	141
	Other inflammatory disease of CNS (e.g. abscess)	142
	Measles	150
	Other possible serious infection (specify)	151
	Malaria	170
	Hospital-acquired infection	180
Oncology, Haematology	Leukaemias	201
	Tumours	204
	Anaemia	202
	Other Oncology/Haematology (specify)	203
Endocrine, Nutritional, Metabolic	IDDM, DKA	301
	Hypoglycaemia	304
	Other Endocrine, Nutritional, Metabolic (specify)	305
Nervous System	Status epilepticus	401
	Other Nervous System (specify)	402
Circulatory System	RHD, Rheumatic fever	501
	Heart failure, Pulmonary oedema	502
	Myocarditis	503
	Cardiomyopathy	504
	Congenital Heart Disease	507
	Endocarditis	505
	Other Circulatory System (specify)	506
Respiratory System	Croup	601
	Pneumonia, ARI	602
	PCP (suspected)	603
	PCP (confirmed)	608
	Pneumothorax, Pyothorax, Pleural effusion	604
	Asthma	605
	Congenital malformations of the respiratory system	606
	Other Respiratory System (specify)	607

Category	Causes of Death	Code
Digestive System	Cirrhosis, Portal Hypertension, Liver Failure, Hepatitis	701
	Surgical (appendix, hernia, intestines, peritoneum)	702
	Other Digestive System (specify)	703
Genito-urinary System	Acute nephritis	801
	Acute renal failure	802
	Chronic renal disease	803
	Other Genito-urinary System (specify)	804
Ill-defined/Unknown Cause	Ill-defined/Unknown causes of mortality	900
Other Diagnosis	Other diagnosis (specify)	901
Burns	Burns	1000
Poisoning	Paraffin	1101
	Corrosives	1102
	Other Poisoning (specify)	1103
Bites and Stings, Toxic plants	Bites and stings, Toxic plants	1200
Inhalation/Aspiration	Inhalation of foreign body or gastric contents	1300
Accidents	Transport-related accidents	1400
	Other accidents (incl. Drowning; specify)	1500
Non-accidental injury, Abuse	Non-accidental injury, Abuse-related, Neglect	1600
Homicide	Homicide	1700
Suicide	Suicide	1800

Underlying Conditions	Code
Cerebral palsy	1
Hydrocephalus	2
Birth defect (preconception = chromosomal/genetic, or post conception e.g. foetal alcohol syndrome)	3
Ex-low birth weight/preterm infant	4
Twin/Multiple pregnancy	5
Other Underlying Condition (specify)	10

Categorising Modifiable Factors

Who is responsible

Where they occur

	Clinical **P**ersonnel	**A**dministrators	**F**amily/Caregiver
Ward	Clinical Methods Assessment Management Monitoring	Infrastructure Staff Consumables	Growth & development Disease prevention Home treatment Care seeking & compliance
Emergency & Admission	Clinical Methods Assessment Management Monitoring	Infrastructure Staff Consumables	Growth & development Disease prevention Home treatment Care seeking & compliance
Referring Facility & **T**ransit	Pre-transit care in referring facility In-transit care	Pre-transit care in referring facility In-transit care	Growth & development Disease prevention Home treatment Care seeking & compliance
Clinic and Outpatient Care	Clinical Methods Assessment Management Monitoring	Infrastructure Staff Consumables	Growth & development Disease prevention Home treatment Care seeking & compliance
Home	Promotion Prevention Social support	Transport Community development	Growth & development Disease prevention Home treatment Care seeking & compliance

Notes on codes:

The coding format has changed to enable more efficient data sorting and analysis. The modifiable factors are grouped against priority conditions and activities as described in IMCI, ETAT, and the WHO Pocketbook on Hospital Care for Children.

PLEASE note that although the categories of modifiable factors are presented beginning at home, the order of the code list has been reversed, starting with the ward, to avoid undue caregiver-blaming.

- First letter applies to "***place"***: **W** = **W**ard**; E** (admission and **E**mergency) = the place of entry to the hospital and admission; **T** = **T**ransit (Referring facility and ambulance); **C** = **C**linic and Outpatient care (i.e. ambulatory); **H** = **H**ome
- Second letter applies to the "***who***": **P** = clinical **P**ersonnel; **A** = administrator; **F** = **F**amily/ caregiver
- Third letter or digit applies to the priority condition or activity. **R** = **R**ecords; **M** = Clinical **M**ethods; **O** = **O**ther and has "COMMENT" fields (If you use this code, you should add the modifiable factor in the 'Comment' box); **X** =Cross-cutting; **1** = Danger Signs; **2** = ARI; **3** = DD; **4** = Fever; **5** = Nutrition; **6** = PSBI (Sepsis); **7** = HIV; **8** = TB; **9** = Immunisation
- Please note: a **Referral** hospital is a higher level hospital you refer your patients to; and a **Referring** hospital is a lower level hospital where your patients come from
- Acronyms used in the code list include:

A&E	Admissions and Emergency	IV	Intravenous
APLS	Advanced Paediatric Life Support	LP	Lumbar puncture
ARI	Acute Respiratory Infection	NGT	Nasogastric tube
BLS	Basic Life Support	PSBI	Possible Serious Bacterial Infection
CDG	Child Dependency Grant	OPD	Outpatients Department
CSG	Child Support Grant	RTHC	Road to Health Chart
DD	Diarrhoeal Disease	SIRS	Systemic Inflammatory Response Syndrome
ETAT	Emergency Triage, Assessment and Treatment	TB	Tuberculosis
FCG	Foster Care Grant	WHO	World Health Organisation
HIV	Human Immunodeficiency Virus		

Ward

Priority Condition or Activity	Category	v3 Code	Modifiable factor
Ward - Clinical Personnel			
Records	Notes	WPR01	Insufficient notes on clinical care in ward (assess, manage, monitor)
Clinical methods	Problem List	WPM01	Inadequate case assessment and management at previous admission to ward
	History	WPM02	Inadequate history taken in ward
	Examination	WPM03	Inadequate physical examination in ward
	Investigation	WPM04	Inadequate investigations in ward
		WPM05	Results of investigations inadequately documented (including x-rays) in ward
	Problem List	WPM06	Inadequate daily 'Problem List' in ward
	Plan	WPM07	Inadequate daily 'Care Plan' in ward
Emergency & Priority Conditions	Assess	WP101	New danger signs inadequately identified while in ward
	Manage	WP102	Inadequate response to new danger signs
	Monitor	WP103	Danger signs missed due to inadequate monitoring in ward
ARI	Assess	WP201	Inadequate review of severe ARI in ward
	Manage	WP202	Inadequate oxygen therapy in ward
	Monitor	WP203	Inadequate response to non-responding ARI/pneumonia
		WP204	Inadequate monitoring of respiratory rate and/or oxygen saturation in ward
DD	Assess	WP301	Inadequate review of child with severe dehydration
	Manage	WP302	Inadequate revision of fluid management plan, despite child's changing condition in ward
	Monitor	WP303	Inadequate blood chemistry review in child with shock and/or dehydration
		WP304	Inadequate monitoring of shocked child in ward
Convulsions/ Coma	Assess	WP401	Inadequate assessment of fitting and/or comatose child in ward
	Manage	WP402	Convulsions not managed according to standardised protocol in ward
		WP403	Inadequate referral to higher level of care for child with coma, from ward
	Monitor	WP404	Inadequate monitoring of blood glucose in ward
		WP405	Children's coma score and/or 'neuro-obs' not done in ward
		WP406	Inadequate monitoring of convulsions in ward
Nutrition/ Intake	Assess	WP501	Child not categorised as having severe malnutrition in ward
	Manage	WP502	Too much/too little, incorrect type of IV fluids given in ward
		WP503	Inadequate prescription for IV fluids in ward
		WP504	NGT feedings not prescribed when indicated in ward
		WP505	WHO '10 Steps' not followed for child with severe malnutrition
		WP506	Prescribed NGT feeds not given in ward
		WP507	Prescribed feeds not given in ward
		WP508	Inadequate NGT feeding technique causing problems, e.g. cough, cyanosis
	Monitor	WP509	Inadequate monitoring of IV fluids and/or drip sites
		WP510	Inadequate intake-output charting in ward
PSBI	Assess	WP601	Possible serious bacterial infection (including nosocomial infection) not considered in ward
		WP602	Inadequate 'septic workup' in ward
	Manage	WP603	Inadequate antibiotics prescribed in ward
	Monitor	WP604	Child with 'septic shock'/SIRS inadequately monitored in ward

Modifiable Factors

Child PIP v3.1

Priority Condition or Activity	Category	v3 Code	Modifiable factor
HIV	Assess	WP701	Inadequate HIV assessment in ward
		WP702	HIV-infected but not adequately screened for TB
		WP703	Inadequate HIV review (testing and staging) in ward
	Manage	WP704	Delayed initiation of ART in ward
	Monitor	WP705	HIV results (including serology, PCR and viral load) not obtained in ward
TB	Assess	WP801	Inadequate TB assessment in ward
		WP802	TB-infected child, but not screened for HIV
		WP803	Inadequate TB review in ward
	Manage	WP804	Inadequate initiation of TB treatment
		WP805	Incorrect TB regimen prescribed in ward
	Monitor	WP806	TB not notified
Immunisation	Manage	WP901	Immunisations not brought up to date in ward
Cross-cutting	Communication	WPX01	Doctor not called for critically ill child in ward
		WPX02	No hand-over of critically ill child in ward
		WPX03	Doctor called, but did not respond and/or did not come
		WPX06	Junior doctor did not call more senior doctor to ward
		WPX07	Doctor at peripheral hospital did not call referral hospital
		WPX08	Inadequate advice from higher level facility
		WPX09	Unable to contact responsible doctor at higher level facility
		WPX10	Critical clinical information inadequately communicated between ward staff
		WPX11	Ward staff inadequately communicated with caregiver
	Monitor	WPX12	Critically ill child not reviewed by doctor during weekend/public holiday in ward
	Manage	WPX04	Essential prescribed treatment not given in ward
		WPX05	No team decision for terminal care
		WPX13	Appropriate blood product not prescribed
		WPX14	Essential treatment not prescribed
Other	Other	WPO	Other clinical personnel modifiable factor in ward (COMMENT)
Ward - Administrator			
Records	Notes	WAR01	Inadequate record keeping system for children in ward
		WAR02	Inadequate notes on administrator problems in ward
Emergency & Priority Conditions	Consumables	WA101	Inadequate blood product supply to ward
	Equipment	WA102	No functioning pulse oxymeter in ward
		WA103	Inadequate oxygen supply to ward
		WA104	Inadequate suction in ward
		WA105	Inadequate resuscitation area and/or trolley in ward
	Buildings/Beds	WA106	Lack of High Care and/or ICU facilities for children in own and higher level facility
ARI	Equipment	WA201	Inadequate oxygen delivery equipment in ward
Nutrition/ Intake	Care Seeking & Compliance	WA501	Inadequate supply of food/milk to ward
PSBI	Consumables	WA601	Inadequate antibiotic supply to ward

Modifiable Factors

Child PIP v3.1

Priority Condition or Activity	Category	v3 Code	Modifiable factor
Cross-cutting	Staff	WAX01	Inadequate number of doctors assigned to children's ward
		WAX02	Doctors in children's ward inadequately supervised
		WAX03	Inadequate number of nurses assigned to children's ward
		WAX04	Inadequate supervision of nurses in children's ward
		WAX05	Lack of professional nurse in children's ward 24 hours a day
		WAX06	Lack of experienced doctors (post Community Service), for children's ward
	Consumables	WAX08	Inadequate ward stock of essential consumables
		WAX09	Inadequate hospital stock of essential consumables
	Laboratory	WAX10	Basic laboratory investigations not available to ward 24 hours a day
	Buildings/Beds	WAX11	Lack of hospital beds and/or ward overcrowded
	Policy	WAX12	Lack of standardised case management protocols in ward
		WAX13	No policy or system for weekend and/or public holiday ward rounds
Other	Other	WAO	Other administrator modifiable factor in ward (COMMENT)
Ward - Family or Caregiver			
Records	Notes	WFR01	RTHC information not present in child's folder
	Care Seeking & Compliance	WFR02	Child's 'patient held records' left at home
		WFR03	Previous folder number and/or discharge letter not available
Danger signs	Care Seeking & Compliance	WF101	Caregiver declined consent for life-saving intervention in ward
HIV	Care Seeking & Compliance	WF701	Caregiver declined HIV test in ward
Other	Other	WFO	Other caregiver modifiable factor in ward (COMMENT)

Admissions and Emergency Care

Priority Condition or Activity	Category	v3 Code	Modifiable factor
Admissions and Emergency Care - Clinical Personnel			
Records	Notes	EPR01	Inadequate notes on clinical care (assessment, management, monitoring at A&E)
		EPR02	Admission records incomplete or inappropriate
Clinical methods	History	EPM01	Inadequate history taken at A&E
	Examination	EPM02	Inadequate physical examination at A&E
	Investigation	EPM03	Inadequate investigations (blood, x-ray, other) at A&E
		EPM04	Results of urgent investigations not obtained at A&E
	Problem List	EPM05	Inadequate problem list compiled at A&E
	Plan	EPM06	Inadequate emergency care plan in A&E
Emergency & Priority Conditions	Assess	EP101	Emergency signs not recognised at A&E
		EP102	Priority signs not recognised at A&E
		EP103	Not classified as critically ill despite presence of danger signs at A&E
	Manage	EP104	Child not triaged at A&E (spent time in a queue)
Airway	Assess	EPA01	Airway obstruction not recognised or correctly classified at A&E
	Manage	EPA02	Inadequate management of airway obstruction in A&E
	Monitor	EPA03	Critical airway not monitored at A&E
Breathing	Assess	EPB01	Respiratory rate not taken, respiratory distress not noticed in A&E
	Manage	EPB02	Correct oxygen therapy not prescribed or not given at A&E
	Monitor	EPB03	Oxygen saturation not monitored at A&E
		EPB04	Respiratory rate not monitored at A&E
Circulation	Assess	EPC01	Inadequate assessment of shock at A&E
	Manage	EPC02	Inadequate treatment for shock in A&E (fluid type, amount, rate; intraosseus line)
	Monitor	EPC03	Shock not monitored while awaiting admission, at A&E
DD	Assess	EP301	Inadequate assessment of dehydration at A&E
	Manage	EP302	Inadequate rehydration plan at A&E
	Monitor	EP303	Hydration not reviewed at A&E
Convulsions/ Coma	Assess	EP401	Convulsions not recognised at A&E
	Manage	EP402	Convulsions not managed according to accepted protocol at A&E
	Monitor	EP403	Convulsions not monitored at A&E
	Assess	EP411	Inadequate assessment of level of consciousness at A&E
	Manage	EP412	Inadequate management of child with depressed LOC at A&E
	Monitor	EP413	Blood glucose not monitored in child with danger signs at A&E
		EP414	Level of consciousness not monitored at A&E
PSBI	Assess	EP601	Possible serious bacterial infection not considered at A&E
	Manage	EP602	Appropriate antibiotics not prescribed at A&E
	Investigation	EP603	Important cultures (blood, CSF, urine) not sent at A&E
	Monitor	EP604	LP result not obtained at A&E
HIV	Assess	EP701	Inadequate HIV assessment at A&E
Cross-cutting	Communication	EPX01	Inadequate communication by staff to caregiver at A&E
		EPX02	Doctor not called for critically ill child at A&E
		EPX03	Doctor called for A&E, but did not respond or did not come
		EPX04	No hand-over of critically ill child from admitting doctor to ward doctor at A&E
Other	Other	EPO	Other clinical personnel modifiable factor at A&E (COMMENT)

Modifiable Factors

Child PIP v3.1

Priority Condition or Activity	Category	v3 Code	Modifiable factor
Admissions and Emergency Care - Administrator			
Records	Notes	EAR01	Inadequate notes on administrator problems at A&E
		EAR02	Inadequate record keeping system for A&E
Emergency & Priority Conditions	Policy	EA101	Barriers to entry to A&E service
	Staff	EA102	Insufficient professional nurses allocated to A&E
		EA103	No A&E staff trained in ETAT/BLS/APLS
	Consumables	EA104	Inadequate blood product supply at A&E
		EA105	Inadequate emergency drugs at A&E
	Buildings/Beds	EA106	Inadequate paediatric resuscitation area in casualty/OPD
Airway	Equipment	EAA01	Inadequate suction capability in A&E
Breathing	Equipment	EAB01	No pulse oxymeter at A&E
	Consumables	EAB02	Inadequate oxygen supply and/or equipment at A&E
Circulation	Consumables	EAC01	Inadequate IV fluid supply at A&E
Dehydration	Equipment	EA301	No mechanical intravenous flow controller available at A&E
Convulsions/ Coma	Consumables	EA401	Intravenous phenobarbitone not available at A&E
	Equipment	EA402	No children's coma score sheet available at A&E
PSBI	Consumables	EA601	Inadequate antibiotic supply at A&E
Cross-cutting	Staff	EAX01	Lack of experienced doctors at A&E
	Transport	EAX04	Inadequate transport from home to A&E
	Laboratory	EAX05	24 hour emergency laboratory investigations not available to A&E
	Buildings/Beds	EAX06	Lack of ward beds, delaying movement out of Emergency Room
		EAX07	Lack of beds in the resuscitation area/Emergency Room in A&E
		EAX08	Lack of Intensive and High Care beds in own, or higher level hospital
	Policy	EAX09	No formal, structured triage system for A&E
		EAX10	Lack of standardised case management protocols at A&E
Other	Other	EAO	Other administrator modifiable factor at A&E (COMMENT)
Admissions and Emergency Care - Family or Caregiver			
Danger signs	Care Seeking & Compliance	EF101	Did not arrive at A&E on day of referral
		EF102	Declined consent for life saving procedure in A&E
HIV	Care Seeking & Compliance	EF701	Caregiver declined HIV test in A&E
Records	Notes	EFR01	Caregiver did not bring RTHC and/or referral letter to A&E
Cross-cutting	Care Seeking & Compliance	EFX01	Primary caregiver not present at A&E
		EFX02	Accompanying caregiver knew little about the child at A&E
Other	Other	EFO	Other caregiver modifiable factor at A&E (COMMENT)

Referring Facility and Transit Care

Priority Condition or Activity	Category	v3 Code	Modifiable factor
Referring Facility and Transit Care - Clinical Personnel			
Referring facility	Notes	TPR01	Inadequate notes on transit care
		TPR02	Inadequate referral letter from referring facility
	Assess	TPP01	Severity of child's condition incorrectly assessed at referring facility
		TPP02	Child not re-assessed at time of departure from referring facility
	Manage	TPP03	Emergency or priority care not provided at referring hospital
		TPP04	Referring pathway and/or procedure not followed by referring facility
		TPP05	No or delayed referral to higher level
	Monitor	TPP06	Child with life-threatening condition not monitored at referring facility while awaiting ambulance
	Manage	TPP07	No plan for transporting caregiver to receiving facility
		TPP08	Inappropriate care or late referral from private sector/GP
In-transit care	Assess	TPI01	Child not assessed properly by ambulance crew at time of entry into ambulance
		TPI02	Major complications (e.g. blocked or dislodged ETT) in ambulance not identified
	Manage	TPI03	Child not managed correctly in ambulance
	Monitor	TPI04	Child not monitored correctly in ambulance
Other	Other	TPO	Other clinical personnel modifiable factor in transit care (COMMENT)
Referring Facility and Transit Care - Administrator			
Records	Notes	TAR01	Inadequate record keeping system for proper transit care
Pre-transit care	Staff	TAP01	No nurse assigned responsibility for monitoring the child while awaiting the ambulance
Referring facility	Staff	TAP02	No doctor assigned responsibility for monitoring the child while awaiting the ambulance
Referring facility	Consumables	TAP03	Inadequate critical care consumables (e.g. volume expander, ETT, ICD) in referring facility
	Equipment	TAP04	Inadequate monitoring and critical care equipment (e.g. ventilator) in referring facility
	Buildings/Beds	TAP05	No high care bed in referring facility for pre-transfer care of critically ill child
	Policy	TAP06	Referral pathways and/or procedures not clear to referring and/or receiving facility
In-transit care	Transport	TAI01	Inadequate ambulance service from health facility to receiving hospital
		TAI02	No ambulance available for transfer from referring to receiving hospital
		TAI03	Delayed arrival of ambulance at referring facility
		TAI06	No or inappropriate grade of ambulance (i.e. vehicle) available
	Staff	TAI04	Grade of ambulance crew (i.e. personnel) inappropriate for child's condition
	Consumables	TAI05	Inadequate in-transit consumables (e.g. volume expanders, dextrose, anticonvulsant) in ambulance
	Equipment	TAI07	Inadequate monitoring and critical care equipment in ambulance
	Policy	TAI08	No known/available policy on child transfers in ambulance service (EMRS)
Other	Other	TAO	Other administrator modifiable factor in transit care (COMMENT)
Referring Facility and Transit Care - Family or Caregiver			
Danger signs	Care Seeking & Compliance	TF101	Caregiver not available to accompany child on transfer
Other	Other	TFO	Other caregiver modifiable factor in transit care (COMMENT)

Clinic and Outpatient Care

Priority Condition or Activity	Category	v3 Code	Modifiable factor
Clinic and Outpatient Care - Clinical Personnel			
Records	Notes	CPR01	Inadequate notes on clinical care (assess, classify, treat) at clinic
		CPR02	RTHC inadequately documents child's health history
		CPR03	Inadequate referral letter from clinic to hospital
Clinical methods	Assess	CPM01	IMCI not used for patient assessment at clinic/OPD
		CPM02	Incorrect IMCI assessment at clinic/OPD
		CPM03	Insufficient assessment for chronic illness at clinic/OPD
		CPM04	Insufficient investigations done at clinic/OPD
	Classify	CPM05	Inadequate IMCI classification at clinic/OPD
	Treat	CPM07	IMCI not used for case management at clinic/OPD
		CPM08	IMCI not used to guide patient referral from clinic/OPD
Danger signs	Assess	CP101	Danger signs missed at clinic/OPD
	Treat	CP102	Inadequate response to danger signs at clinic/OPD
		CP103	Delayed referral of child with danger signs, from clinic/OPD
	Monitor	CP104	Child with danger signs not monitored at clinic/OPD
ARI	Assess	CP201	Inadequate assessment for ARI at clinic/OPD
	Treat	CP202	Oxygen not prescribed or given at clinic/OPD
		CP203	Bronchodilator not given to child with wheeze, in clinic/OPD
	Manage	CP204	Delayed referral for ARI from clinic/OPD
	Monitor	CP205	Oxygen saturation not monitored at clinic/OPD
DD	Assess	CP301	Severity of dehydration incorrectly assessed at clinic/OPD
	Manage	CP302	Inadequate fluid management for diarrhoeal disease with dehydration
		CP303	Delayed referral for child with severe dehydration from clinic/OPD
		CP304	Delay in referring chronic diarrhoea from clinic/OPD
	Monitor	CP305	Inadequate review of child with dehydration at clinic/OPD
Fever	Assess	CP401	Meningitis not considered in child with fever at clinic/OPD
		CP402	Malaria not considered in child with fever at clinic/OPD
	Treat	CP403	Antipyretic measures not taken at clinic/OPD
		CP404	Appropriate anti-meningitis treatment not initiated at clinic/OPD
		CP405	Appropriate anti-malarial treatment not initiated at clinic/OPD
Nutrition/ Intake	Assess	CP501	Growth not plotted correctly on RTHC
		CP502	Child's growth problem (severe malnutrition, not growing well) inadequately identified or classified
	Manage	CP503	Inadequate response to growth faltering or failure, at clinic/OPD
		CP504	Delayed referral for severe malnutrition, weight loss, or growth faltering from clinic/OPD
	Monitor	CP505	No follow up for child's nutritional problem at clinic/OPD
PSBI	Assess	CP601	Possible serious bacterial infection (PSBI) not considered at clinic/OPD
	Manage	CP602	Appropriate antibiotics not given for PSBI at clinic/OPD
HIV	Assess	CP701	No documentation of mother's antenatal HIV status
		CP702	Inadequate assessment for HIV (IMCI not used) at clinic/OPD
		CP703	No clear documentation of child's HIV status at clinic/OPD
		CP704	Inadequate response to HIV classification at clinic/OPD
	Manage	CP705	Not referred for ART from clinic/OPD, though indicated
		CP706	Referred for ART but ART not initiated
	Monitor	CP707	HIV result not obtained/documented at clinic/OPD

Modifiable Factors

Child PIP v3.1

Priority Condition or Activity	Category	v3 Code	Modifiable factor
TB	Assess	CP801	Inadequate assessment for household TB contact at clinic/OPD
	Manage	CP802	No response to/delayed referral of chronic cough (>2 weeks) at clinic/OPD
		CP803	INH prophylaxis not initiated in child with household TB contact
		CP804	Child had household TB contact, but no contact tracing was done
Immunisation	Disease Prevention	CP901	Missed vaccines despite clinic/OPD attendance
Cross-cutting	Communication	CPX01	Communication problems: Staff to caregiver
		CPX02	Staff to staff communication problem at clinic or between clinic & hospital
	Assess	CPX03	Insufficient assessment for non-IMCI condition at clinic/OPD
	Manage	CPX04	Delay in referring other acute problem from clinic/OPD
Other	Other	CPO	Other clinical personnel modifiable factor at clinic/OPD (COMMENT)
Clinic and Outpatient Care - Administrator			
Records	Notes	CAR01	Inadequate record keeping system in clinic
Clinical methods	Policy	CAM01	Lack of standardised case management protocols in clinic/OPD
		CAM02	Inadequate IMCI implementation at clinic/OPD
Danger signs	Transport	CA101	No transport from home to clinic
		CA102	No emergency transport from clinic to hospital
	Equipment	CA103	No pulse oxymeter at clinic/OPD
		CA104	No suction at clinic/OPD
	Buildings/Beds	CA105	Lack of high care beds and/or resuscitation area in clinic/OPD
		CA106	No clinic within reach of child's home or limited opening times
	Policy	CA107	No policy on short-stay for paediatric patients at clinic/OPD
		CA108	Barriers to entry to clinic/OPD
	Laboratory	CA109	Basic laboratory investigation not available (e.g. blood glucose)
ARI	Consumables	CA201	No oxygen or oxygen delivery system at clinic/OPD
		CA202	No bronchodilators at clinic/OPD
	Equipment	CA203	No spacer or nebuliser for bronchodilators at clinic/OPD
DD	Consumables	CA301	No oral rehydration solution at clinic/OPD
		CA302	Inadequate intravenous sets or solutions at clinic/OPD (incl. intra-osseous)
PSBI	Consumables	CA601	Inadequate antibiotics at clinic (as per IMCI/EDL)
HIV	Consumables	CA701	No ART drugs available at clinic/OPD
	Laboratory	CA702	Delayed or lost laboratory results (especially HIV) at clinic/OPD
		CA703	Initiation of ART at clinic/OPD delayed due to lost or delayed laboratory investigations
	Buildings/Beds	CA704	No ART service provided at clinic/OPD
Cross-cutting	Staff	CAX01	No professional nurse at clinic/OPD
Other	Other	CAO	Other administrator modifiable factor at clinic/OPD (COMMENT)
Clinic and Outpatient Care - Family or Caregiver			
Records	Care Seeking & Compliance	CFR01	Caregiver did not bring RTHC and/or referral letter to clinic
Danger Signs		CF101	Caregiver refused treatment at clinic
Cross-cutting		CFX01	Did not arrive at clinic/OPD on day of referral/did not keep appointment
Other	Other	CFO	Other caregiver modifiable factor at clinic/OPD (COMMENT)

Home Care

Priority Condition or Activity	Category	v3 Code	Modifiable factor
Home Care - Clinical Personnel			
Records	Notes	HPR01	Insufficient notes on home circumstances or child's health history
Danger signs	Disease Prevention	HP101	Caregiver not advised about danger signs at previous visit
		HPX02	Caregiver not advised about home treatment at previous visit
Nutrition/ Intake	Growth & Development	HP501	Never referred to integrated nutrition programme (INP)
HIV	Assess	HP701	Caregiver not assessed and managed for HIV&AIDS
	Disease Prevention	HP702	Sibling of child with HIV&AIDS, but never traced and assessed
TB	Disease Prevention	HP801	TB not notified
		HP802	No TB contact tracing or treatment at home
Cross-cutting	Growth & Development	HPX01	Not referred for social grant, though eligible
Other	Other	HPO	Other clinical personnel modifiable factor in home/community (COMMENT)
Home Care - Administrator			
Records	Notes	HAR01	Lost RTHC not replaced (facility 'policy' not to replace cards)
Danger signs	Transport	HA101	Inadequate transport from home to nearest health facility
DD	Disease Prevention	HA301	No tap water at home
		HA302	No electricity
Cross-cutting	Growth & Development	HAX01	Referred for grant (CSG, CDG, FCG) but never received
		HAX02	Primary caregiver unemployed, or no household breadwinner
		HAX03	Child came from child-headed household
	Policy	HAX05	No home/community IMCI in health subdistrict
Other	Other	HAO	Other administrator modifiable factor at home (COMMENT)
Home Care - Family or Caregiver			
Records	Disease Prevention	HFR01	RTHC not used or lost by caregiver
	Care Seeking & Compliance	HFR02	Caregiver unaware of child's health history
Danger signs	Care Seeking & Compliance	HF101	Caregiver did not recognise danger signs/severity of illness
		HF102	'Traditional remedy' given from traditional healer, with negative effect on child
		HF104	Caregiver delayed seeking care
	Home Treatment	HF103	Inappropriate treatment given at home with negative effect on the child, e.g. enema
Nutrition/ Intake	Growth & Development	HF501	Child not provided with adequate (quality and/or quantity) food at home
HIV	Care Seeking & Compliance	HF701	Caregiver declined HIV test for the child
Immunisation	Care Seeking & Compliance	HF901	Caregiver did not take child to clinic for vaccines as scheduled
Accidents	Home Treatment	HFA01	Child accessed poison/drug
		HFA02	Unsafe home environment (e.g. open flames)
		HFA03	No adult supervision at home
Cross-cutting	Care Seeking & Compliance	HFX01	Caregiver took child to clinic infrequently
Other	Other	HFO	Other caregiver modifiable factor at home/in community (COMMENT)