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MINISTRY OF HEALTH

ZAMBIA 2018 NATIONAL INTEGRATED MANAGEMENT OF NEWBORN AND CHILDHOOD ILLNESSES HEALTH FACILITY SURVEY - REPORT



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FOREWORD

The Integrated Management of Newborn and Childhood Illnesses (IMNCI) strategy was developed by the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) in order to contribute to the reduction of morbidity and mortality of children under five-years of age. In Zambia it was introduced in 1995, and the actual implementation started in 1996. IMNCI focuses on common childhood illnesses namely respiratory tract infections, malaria, diarrhoea, malnutrition, measles, HIV/AIDS and tuberculosis (TB).

IMNCI has three components, that include 1) Improving case management skills of health workers (development of standard guidelines, conducting trainings both in-service and pre-service/initial follow up after training); 2) Improving the health systems to deliver IMNCI (caters for essential drugs supply and management, good organization of work in health facilities for managing children, good quality management and supervision); 3) Improving family and community practices in caring for children at home.

IMNCI is being implemented in all districts in Zambia with support from various partners such as USAID, WHO, UNICEF, World Bank, Save the Children, World Vision, CHAZ, Project Concern International, and Zambia Red Cross. Adaptations have been done to include Early Child Development (ECD), caring for every newborn and management of Possible Serious Bacterial Infection (PSBI) where referral is not possible for the very sick young infant.

Rolling out and scaling up of IMNCI Computerised Adaptation and Training Tool (ICATT) in the pre-service health training institutions has mitigated and made things easier for implementation of IMNCI in the pre-service. ICATT is an electronic version of training IMNCI using computers. Although significant achievements have been made 24 years after IMNCI was introduced, some challenges still exist. The most cardinal being the failure to reach the target saturation levels of 80% of health workers managing sick children trained in IMNCI. Only about 38% of the districts currently meet this national target.

This report presents the key findings of the 3rd IMNCI health facility survey which was conducted to assess the quality of health services being provided to children, the performance of health workers trained in IMNCI and take stock of the available health systems that support effective implementation of IMNCI. The report further provides a comparison to the 1st and 2nd health facility surveys that were conducted in 2001 and 2008 respectively.

In line with my Ministry's transformation agenda and in the bid to achieve the universal health coverage, it is my sincere hope that this report will provide not only the evidence for decision making, but also guide the provision of strategic direction to further improve the implementation of IMNCI by supporting all the components within which bottlenecks have highlighted.

Dr. Chitalu Chilufya, MP
Minister of Health

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The technical support rendered by the World Health Organisation (WHO) and its effective financial management is much appreciated. The Ministry of Health wishes to further thank United Nations Children's Fund (UNICEF) for its technical and transport support for undertaking the IMNCI health Facility survey.

My thanks furthermore are extended to the technical staff of the Ministry of Health at our national provincial and district offices, who participated in this survey and manuscripts writing. I wish to also record my gratitude to other organization and individuals whose contribution was equally very valuable.

Dr. Kennedy Malama
Permanent Secretary - Technical Services
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ACRONYMS

DRC	Democratic Republic of Congo
ECD	Early Childhood Development
ENBC	Essential Newborn Care
ETAT	Emergency Triage Assessment and Treatment
HIV	Human Immunodeficiency Virus
ICATT	IMCI Computerised Adaptation and Training Tool
IMCI	Integrated Management of Childhood Illness
IMNCI	Integrated Management of Newborn and Childhood Illnesses
IRB	Institution Review Board
MOH	Ministry of Health
ODK	Open Data Kit
ORS	Oral rehydration Salt
PDA	Personal Digital Assistant
TB	Tuberculosis
WHO	World Health Organization
ZNHRA	Zambia National Health Research Authority

EXECUTIVE SUMMARY

Background

Zambia adopted IMCI as a strategy to reduce under-five morbidity and mortality in 1995. To date, all the districts are implementing IMNCI. As part of the on-going efforts to monitor the performance of health workers in implementation of IMNCI and because of changes in IMNCI guidelines to include HIV and health staff attrition rate, a national health facility survey was conducted in September 2018.

Objectives

1. To assess the quality of IMNCI case management of young infants aged less than 2 months in health centres
2. To assess the quality of IMNCI case management of sick children aged two months up to five years in health centres.
3. To assess the availability of triaging of sick children in referral health facilities
4. To assess the availability of drugs, supplies and services essential for the IMNCI case management algorithm, at the health centres.
5. To establish how health workers are classifying sick children with suspected and confirmed HIV infection using the current guidelines.
6. To establish how health workers are classifying sick children with suspected and confirmed TB infection using the current guidelines.
7. To compare IMNCI implementation between rural and urban areas
8. To develop recommendations to IMNCI implementers on strategies and approaches to strengthen the care of sick young infants and children aged less than 2 months and 2 months up to five years.

Methods

Survey design and target population

A cross sectional survey was conducted of health facilities managing children aged 0-5 years.

Sample size and sampling

Totals of 10 provincial hospitals, 22 district hospitals, 61 urban health centres and 147 rural health centres were covered in the survey. At least one health worker trained in IMNCI was observed managing sick children in each health centre. In each of the health centres (rural or urban), 5 child-caregiver pairs participated in the survey. The required sample size was 5 children multiplied by 208 (61 urban and 147 rural) health centres, which is 1040 child-caregiver pairs.

Key findings

1. Most children presented with pneumonia (15.5%) and malaria (12.4%)
2. Overall, 58.6% of the children were checked for three danger signs
3. Forty-four percent of children were correctly classified for HIV infection.
4. Forty-seven percent of children needing urgent referral were identified and prescribed urgent referral.
5. Overall, 61.6% (58.3% rural and 74.9% urban; $p<0.001$) children had their vaccination checked.
6. Altogether, 46.5% (49.1% rural and 36.3% urban, $p=0.003$) children had their weight checked against a growth chart; 35.5% were assessed for feeding practices and 68.8% were checked for lethargy.
7. Misuse of antibiotics was at 61.3%; and 84.0% of rural and 36.3% of urban ($p<0.001$) children needing an oral antibiotic were prescribed the drug correctly; and 78.2% of children needing an oral antimalarial were prescribed the drug correctly.
8. Eighty-eight percent of children prescribed oral medication had caretakers explained how to administer the treatment; and 47.1% were demonstrated how to administer the treatment.
9. Index of availability of 18 essential oral treatments was 14.7; and that for 8 injectable drugs was 6.7 with a higher score noted in rural (6.8) than urban (6.1) areas ($p<0.001$).
10. Most (87.7%) of the children needing vaccinations left facilities with all needed vaccinations.
11. Eighty-four percent of the health facilities had IMNCI chart booklet and mother's counselling cards.
12. 45.3% of health facilities had at least 60% of health workers managing sick children trained in IMNCI.

Conclusion

Generally, there is room for improvement in the provision of the quality of care given to sick children.

Quality of care

Assessment of sick children was inadequate. Three general danger signs were checked in about 6 in 10 children. Nutritional assessments were done in less than half case observations while the index of integrated assessment was 6.2.

Correct classification for HIV was reported in 44.4% of children. Most young infants needing an oral antibiotic were prescribed drug correctly.

Appropriate counseling was inadequate. Less than half of caretakers of young infants who were prescribed ORS and/or oral antibiotics, knew how to give treatment.

Availability of Drugs, Supplies and Services

Availability of essential oral treatment and injectable drugs and diluent for pre-referral treatment were inadequate. There was high achievement in provision of vaccines needed by children, with 87.7% of children needing a vaccination left the facility with all needed vaccinations.

Recommendations

- 1.0 Improve quality of care given to children in health facilities
 - 1.1 Increase coverage of IMNCI trained health workers to at least 60% per health facility.
- 2.0 Health system Support
 - 2.1 Ensure availability of all drugs (oral and injectable) recommended for IMNCI.
 - 2.2 Strengthen supervision at district level (including observation of case management).

INTRODUCTION

Among the top ten major causes of morbidity in children under the age of five years include malaria, respiratory infection, diarrhoea diseases, eye infection and pneumonia [Ministry of Health [Zambia], 2012]. The neonatal, infant and Under-5 mortality rates are high in Zambia at 24 (30 among males and 20 among females) per 1000 live births, 45 (53 among males and 43 among females) and 75 (87 among males and 74 among females), respectively. The main causes of these mortalities are malaria, respiratory infection, diarrhoea diseases, eye infection, pneumonia and malnutrition [Central Statistical Office [Zambia] et al 2015]. Among the interventions that may improve health outcomes for neonatal, infant and Under 5s is the Integrated Management of Newborn and Childhood Illnesses (IMNCI) strategy.

The three components of IMNCI are improving performance of health workers (case management skills), improving health systems and improving family and community practices (community component). All these three components need to be implemented simultaneously to effectively contribute to a reduction in childhood morbidity and mortality.

Zambia has been implementing the IMNCI strategy since 1996 and national health facility surveys were conducted in 2001 and 2008 in order to evaluate the strategy. At the time of the survey in 2001, 31 out of 72 districts were implementing and about 2000 health workers had been trained. To date, all 109 districts are implementing the IMNCI strategy with 38% of districts having at least 60% of health workers managing sick children trained in IMNCI.

RATIONALE FOR THE STUDY

It is recommended that IMNCI surveys be conducted every 5 years and the current survey is five years overdue. The turnover and attrition rates for health workers trained in IMNCI are high. By 2006, 4000 HW had been trained but only 1300 were available on site during a stock taking exercise in 2006. Currently, there are 2,546 health workers trained in IMNCI reported to be treating children, but it is not known if they are using the IMNCI strategy. Further, in a Joint Annual Review of the Health sector in 2006-2007, it was observed that some IMNCI trained health workers were not managing sick children according to IMNCI guidelines. Hence, providing inadequate quality of care to sick children. The IMNCI guidelines have been updated to include HIV, and other updates such as the use of the rapid diagnostic test for malaria diagnosis, the use of zinc and low osmolar ORS for treatment of diarrhoea, care of the new born and early childhood development (ECD). It is thus important to periodically evaluate the performance of the strategy. It is also important to compare the quality of services offered to children between rural and urban settings that may have been caused by the maldistribution of the trained health staff in IMNCI, supplies and equipment, and essential drugs for managing sick children.

SIGNIFICANCE OF THE STUDY

Information collected will be useful in developing the IMNCI Strategic Plan 2019-2023. The findings will be useful in the development of plans to implement child health interventions. Some of the information is baseline data in referral hospitals on the quality of services provided for referred children and quality of training of IMNCI in the health training institutions.

STUDY AIM

To assess the quality of care provided to sick children attending public health centres in Zambia.

SPECIFIC OBJECTIVES

1. To assess the quality of IMNCI case management of young infants aged less than 2 months in health centres
2. To assess the quality of IMNCI case management of sick children aged two months up to five years in health centres.
3. To assess the availability of triaging of sick children in referral health facilities
4. To assess the availability of drugs, supplies and services essential for the IMNCI case management algorithm, at the health centres.
5. To establish how health workers are classifying sick children with suspected and confirmed HIV infection using the current guidelines.
6. To establish how health workers are classifying sick children with suspected and confirmed TB infection using the current guidelines.
7. To compare IMNCI implementation between rural and urban areas
8. To develop recommendations to IMNCI implementers on strategies and approaches to strengthen the care of sick young infants and children aged less than 2 months and 2 months up to five years.

ETHICAL ISSUES

Permission to conduct the survey was sought from ERES Converge an Institution Review Board (IRB No. 00005948) and the Zambia National Health Research Authority (ZNHRA). Consent was obtained from survey participants (caretakers and health workers) prior to enrolment into the survey after receiving information on the survey. Participation was voluntary and no incentives were given for participating in the survey.

LITERATURE REVIEW

Countries are at different levels of the implementation of the IMNCI strategy and the results of the assessments may not be fairly compared between countries. In the 2008 Zambia IMNCI survey [Ministry of Zambia [Zambia] et al 2009], 44.2% of children were checked for three general danger signs (not breastfeeding or drinking, vomiting everything and convulsions) compared to 71% in 2001

[Ministry of Health [Zambia] et al 2002]. Meanwhile, in South Africa and Tanzania, 83% and 95% of children were checked for cough, diarrhoea and fever [Ministry of Health [South Africa], 2000; Ministry of Health [Tanzania], 2000]. A lower rate than that observed in South Africa of Child checked for three danger signs of 56% was observed in Malawi [7]. Arithmetic mean of 10 tasks performed for each child was the same (7.6) in 2008 in Zambia and South Africa but lower in Malawi at 5.3 [Ministry of Health [Zambia] et al, 2009; Ministry of Health [South Africa], 2000; Ministry of Health [Malawi], 2000]. An arithmetic mean of 10 tasks performed for each child was 6.2 in Zambia in 2001 [Ministry of Health [Zambia], 20024].

In Zambia in 2008 and South Africa [Ministry of Health [Zambia] et al, 2009; Ministry of Health [South Africa], 2000], 20.7% and 4% of children with anaemia were correctly treated, respectively. A much higher rate of 44% of children with anaemia who were correctly treated was reported in Tanzania [Ministry of Health [Tanzania], 2000]. Whilst in South Africa [Ministry of Health [South Africa], 2000], 77% of children with pneumonia were treated correctly and 57% of children needing an antibiotic were prescribed the drug correctly, in Zambia in 2008, 76.4% of the children with pneumonia were correctly treated and 88.3% of the children needing an oral antibiotic were prescribed the drug correctly [Ministry of Health [Zambia] et al, 2009]. In a similar survey in Malawi, 73% of children with pneumonia were correctly treated and 67% of the children needing antibiotics were given to them correctly [Ministry of Health [Malawi], 2004]. Lower rates of child with pneumonia were correctly treated (68%) in Zambia in 2001 Ministry of Health [Zambia], 2002].

In the 2008 IMNCI survey in Zambia [Ministry of Health [Zambia] et al, 2009], of the children were identified as needing referral. Higher rates of referral (10-34%) have been reported elsewhere [Lambrechts et al, 1999; Simoes et al, 1997; Weber et al, 1997; Kalter et al, 1997]. A much higher rate of 65% of child needing urgent referral was identified and prescribed urgent referral was reported in Malawi [Ministry of Health [Malawi], 2004].

In a study conducted 10 years ago in Zambia [Ministry of Health [Zambia] et al, 2009] relating to health system support, the proportion of health workers lost in the previous 2 years to the survey was higher in rural (25.4%) than urban (13.3%) areas. About a third of health workers left their stations because they were transferred (38.4%).

Altogether, 72.3% of health centres had all the 8 essential oral treatments in Zambia in 2008 and 35% of facilities in South Africa had all seven essential oral drugs [Ministry of Health [South Africa], 2000]. Whilst in Zambia in 2008, 66.0% of health centres had all of the 3 injectable drugs for pre-referral treatment, only 36% in South Africa had them [Ministry of Health [South Africa], 2000]. In Zambia in 2008, 59.6% of health facilities had essential equipment and materials compared to 57% in South Africa [Ministry of Health [Zambia] et al, 2009; Ministry of Health [South Africa], 2000] and

27% in Malawi [Ministry of Health [Malawi], 2004]. In Zambia in 2008 [Ministry of Health [Zambia] et al, 2009], 16.0% of health centres had IMCI chart booklet and mother counselling cards, while in Malawi and Tanzania, 45% and 97% of health centres had them, respectively [Ministry of Health [Tanzania], 2000; Ministry of Health [Malawi], 2004].

In 2008 in Zambia, 22.3% of health facilities received at least one supervisory visit that included observation of case management during the previous six months (excluding follow-up after training visits) compared to 28% in South Africa [Ministry of Health [Zambia] et al, 2009; Ministry of Health [South Africa], 2000]. A higher rate of 49% health facilities received at least one supervisory visit in Malawi [Ministry of Health [Malawi], 2004]. Meanwhile, about of the health facilities in Tanzania had received at least one supervisory visit [Ministry of Health [Tanzania], 2000].

METHODOLOGY

STUDY AREA

Zambia is a landlocked country, covering an area of 752,612 square kilometres, situated within central-southern Africa. It shares borders with eight other countries: Tanzania and the Democratic Republic of Congo (DRC) in the north; Malawi and Mozambique in the East; Zimbabwe, Botswana and Namibia in the south; and Angola in the West. The country has an estimated population projection of 16,887,720 as of 2018 with an annual growth rate of approximately 2.8% per annum (2.4% in rural areas and 3.5% urban areas). Overall, 57.2% of the population live in rural areas [Central Statistical Office [Zambia], 2013]. The average household size was 5.1 persons (5.2 in rural and 5.0 in urban areas). The proportion of the population living below the poverty line was 54.4% (76.6% in rural and 23.4% in urban areas) in 2015 [Central Statistical Office [Zambia], 2016]. The study will be conducted in selected districts covering all the 10 provinces in the country.

SURVEY DESIGN AND TARGET POPULATION

A cross sectional survey was conducted of health facilities managing children aged 0-5 years.

SAMPLE SIZE AND SAMPLING

Children aged 2 months to 5 years

Totals of 10 provincial hospitals, 22 district hospitals, 61 urban health centres and 147 rural health centres were covered in the survey. At least one health worker trained in IMNCI was observed managing sick children in each health centre. In each of the health centres (rural or urban), 5 child-care taker pairs participated in the survey. The required sample size was 5 children multiplied by 208 (61 urban and 147 rural) health centres, which is 1040 child-care taker pairs. This was based on a recommended subject sample of 5 to minimize the error margin to 10% for an indicator [World Health

Organization, 2003].

Young infants aged below 2 months

An indicator level of 50±5% was considered in the sample size calculation for young infants because an indicator level in this population was not known. Considering a 95% confidence level, the sample size was 384 rounded up to 400.

Distribution of the number of selected health facilities in each province, district, urban and rural health centres.

Table 1 shows the number of health facilities in each province and the total number of health facilities that were sampled. Only one provincial hospital was selected from each province and district hospitals from each district, except for Southern and Western province where 3 district hospitals were selected.

Table 1: Distribution of the number of selected health facilities in each province, district, urban and rural health centres.

Province	Selected number of provincial hospitals	Selected number of district hospitals	Selected number of urban health centres	Selected number of rural health centres
Central	1	2	3	16
Copperbelt	1	2	22	10
Eastern	1	2	4	18
Luapula	1	2	2	16
Lusaka	1	2	26	8
Muchinga	1	2	1	8
Northern	1	2	2	13
Northwestern	1	2	1	20
Southern	1	3	0	21
Western	1	3	0	17
Total	10	22	61	147

includes mission and private health facilities

Provincial hospitals were conveniently selected, while district hospitals were selected using a simple random method. Urban and rural health centres were selected using systematic random sampling technique.

INCLUSION CRITERIA

The following criteria were used to select health centres:

1. A daily caseload of at least 5 sick children under 5 years of age
2. Having at least one IMCI trained health worker with at least 2 years post training experience
3. Facility easily accessible by road

The inclusion criteria for children and their caretakers was as follows:

1. Child and caretaker pairs attending the facility for an initial sick child visit for child aged 2 months up to 59 months, presenting with any illness
2. Child and caretaker pairs attending the facility for a well child visit for child aged less than 2 months.
3. Child not referred from another health facility for further health care
4. Consenting caretaker

Health workers was selected based on the following criteria:

A health worker who was trained in IMNCI case management with at least two years post training experience, screening sick children on the day of the survey was eligible for observation as they manage children. Categories of health workers included doctors, clinical officers, nurses and environmental health technicians and nutritionists.

DATA COLLECTION

Data collection for each child included enrolment form, observation of case management of a sick child by a health worker in the facility, exit interview of caretaker after completing management of the child and re-examination of the child by an IMNCI supervisor (Gold standard/Survey team supervisor) upon exit. Meanwhile, data collection for each facility included assessment of health facility (health facility workers, equipment, drugs, supplies, supervision and patient attendance) and a self-administered questionnaire given to the health workers to determine how they manage children with suspected symptomatic HIV infection. There were a few cases in which the health workers were given a set of scenarios where there were not be enough children to be observed. The above tools were adapted from the WHO generic Health Facility Survey instruments so that they may be consistency with the recently updated Zambian IMCI guidelines. Caretakers exit interviews were conducted in local languages.

The following Forms (Annex 1) were used in the survey:

Enrolment form of the sick child

All Children aged 0 to 59 months of age, who are sick, coming for the first visit and whose caretakers had consented to participate in the survey were enrolled using Form 0.

Zambia IMNCI Health Facility Survey for children 2 months up to 5 years module

A research assistant observed a health worker during case management. The research assistant recorded what the health worker was doing or saying during case management process from assessment, classification, treatment and counselling. They conducted an exit interview and a re-examined the child who was seen by a health worker and observed by a research assistant.

Zambia IMNCI Health Facility Survey for infants up to 2 months module

A research assistant observed a health worker during case management. The research assistant recorded what the health worker was doing or saying during case management process from assessment, classification, treatment and counselling. They conducted an exit interview and a re-examination of the infant. The supervisor gave a Gold standard of care to the young infant and the findings were recorded

Health Facility Equipment and Supplies

A research assistant documented the availability of essential equipment, drugs, vaccines, supplies and accessibility to mechanisms for referral at the health centre. The number of health workers in the facility and their IMCI training status was also documented. The information was obtained through observation and interviewing the person in-charge of the facility.

Provincial and District Hospital module

It assessed the service availability and readiness to respond to a referred sick child. A research assistant documented the availability of essential equipment, drugs, vaccines, supplies and accessibility to mechanisms for referral at the health centre. The number of health workers in the facility and their IMCI training status was also documented. The information was obtained through observation and interviewing the person in-charge of the facility.

Pre-service Health Training Institution Module

The health training institution model assessed the quality of care being offered in the training institutions including availability of IMNCI trained tutors, training materials, type of trainings (including Integrated Computerised Adaptation Training Tool – ICATT), and clinical practicals.

DATA PROCESSING AND ANALYSIS

WHO Zambia office facilitated the data processing using a personal digital assistant (PDA) which had the Open Data Kit (ODK) programme installed. An analysis program consistent with the Zambian version of the questionnaires was prepared. WHO adapted Analysis Plan was used to analyse the data according to WHO established IMNCI priority and supplemental Health Indicators (Annex 2) and to analyse other factors that were added to the WHO generic questionnaire.

The analyses was stratified by rural – urban locations for health centres. Comparisons of percents of indicators or of other factors between rural and urban locations were made using the corrected Chi-squared test. Means were compared using the student's t test for two independent samples. The cut off point for statistical significance was set at the 5% level.

RESULTS

The results are presented into four sections: Facility survey for children 2 months up to 5 years module; Facility survey for children up to 2 months of age, district and provincial health facility survey and training institutions survey.

Section 1: Children aged 2 months to 5 years

A total of 203 facilities were visited: 170 in rural and 33 in urban areas. Altogether 862 cases were observed with 691 cases being observed in rural and 171 in urban areas. The overall response rate was 97.6%. Rural health facilities were oversampled by 15.6% while urban health centres had a response rate of 54.1%.

Table 1.1 shows the distributions of the children's characteristics by residence. Most of the children were aged below 12 months (37.1%). Most of the caretakers were mothers (90.7%).

Table 1.1: Children: Age, gender and caretaker

Factor	Total n (%)*	Rural n (%)*	Urban n (%)*	p value
Age (months)				0.537
<12	318 (37.1)	252 (36.7)	66 (38.6)	
12-23	252 (29.4)	200 (29.2)	52 (30.4)	
24-35	152 (17.7)	119 (17.3)	33 (19.3)	
36-47	78 (9.1)	65 (9.5)	13 (7.6)	
48-59	57 (6.7)	50 (7.3)	7 (4.1)	
Gender of sick children				0.330
Male	429 (49.9)	338 (49.1)	91 (53.2)	
Female	431 (50.1)	351 (50.9)	80 (46.8)	
Caretaker				0.131
Mother	782 (90.7)	624 (90.3)	158 (92.4)	
Father	32 (3.7)	30 (4.3)	2 (1.2)	
Other	48 (5.6)	37 (5.4)	11 (6.4)	

*These are column percentages according to the category of the total sample

The majority of the health workers were nurses (75.1%). There were more males in urban (73.1%) than rural (51.2%) areas. About half (55.2%) of health workers were trained between 2015 and 2017. Half of the health workers were in-service trained (50.3%) as shown in Table 1.2.

Table 1.2: Cases observed by type, gender and IMNCI training status of health workers

Factor	Total n (%)*	Rural n (%)*	Urban n (%)*	p value
Type of health worker				0.862
Clinical officer	192 (22.3)	156 (22.6)	36 (21.1)	
Nurse	647 (75.1)	516 (74.7)	131 (76.6)	
Other	23 (2.7)	19 (2.7)	4 (2.3)	
Gender of health worker				<0.001
Male	479 (55.6)	354 (51.2)	125 (73.1)	
Female	383 (44.4)	337 (48.8)	46 (26.9)	
Health worker trained				0.505
In-service	434(50.3)	344 (49.8)	90 (52.6)	
Pre-service	428 (49.7)	347 (50.2)	81 (47.4)	
Year of training				0.036
2000-2004	77 (9.1)	64 (9.4)	13 (7.7)	
2005-2009	80 (9.4)	55 (8.1)	25 (14.9)	
2010-2014	224 (26.4)	187 (27.4)	37 (22.0)	
2015-2017	469 (55.2)	376 (55.1)	93 (55.4)	

*These are column percentages according to the category of the total sample

NB: These are case-management-observations and not different health workers

Most children presented with pneumonia (15.5%) and malaria (12.4%) as shown in Table 1.3.

Table 1.3: Child classifications based on gold standard re-examination

Child classification	Total n (%)*	Rural n (%)*	Urban n (%)*
Child needing referral	32 (3.7)	28 (4.1)	4 (2.3)
Pneumonia	134 (15.5)	106 (15.3)	28 (16.4)
Severe persistent diarrhoea	0 (0)	0 (0)	0 (0)
Persistent diarrhea	2 (0.2)	2 (0.3)	0 (0)
Anaemia	31 (3.6)	26 (3.8)	5 (2.9)
Complicated severe malnutrition	5 (0.6)	4 (0.6)	1 (0.6)
Chronic ear infection	4 (0.5)	3 (0.4)	1 (0.6)
Acute ear infection	12 (1.4)	11 (1.6)	1 (0.6)
Measles	3 (0.3)	1 (0.1)	2 (1.2)
Malaria	107 (12.4)	98 (14.2)	9 (5.3)
Dysentery	9 (1.0)	7 (1.0)	2 (1.2)

*These are column percentages according to the category of the total sample

Table 1.4 shows child assessment findings. Overall, 58.6% of the children were checked for three danger signs (not able to drink or breastfeed, vomiting everything and convulsions) with significantly more children in rural (60.8%) than urban (49.7%) areas checked for these signs ($p=0.008$). Meanwhile, 80.3% of children were checked for cough, diarrhea and fever. Overall, 68.8% of children were checked for lethargy, Altogether, 59.9% of the children were checked for other problems. Significantly ($p=0.003$) more children in rural (49.1%) than urban (36.3%) areas had weight checked against a growth chart. However, significantly ($p<0.001$) more children in urban (74.9%) than rural (58.3%) areas had vaccination status checked. Overall, 35.5% of the children were assessed for feeding practices.

Table 1.4: Child assessment

Indicator	Total n (%)*	Rural n (%)*	Urban n (%)*	p value
Child checked for three danger signs (global)	505 (58.6)	420 (60.8)	85 (49.7)	0.008
Child checked for four danger signs (Zambia)	67 (7.8)	61 (8.8)	6 (3.5)	0.020
Child checked for the presence of cough, diarrhea and fever	692 (80.3)	563 (81.5)	129 (75.4)	0.076

Child checked for lethargy	108 (68.8)	96/132	12/25	0.027
Child checked for other problems	516 (59.9)	405 (58.6)	111 (64.9)	0.156
Child weight checked against a growth chart	401 (46.5)	339 (49.1)	62 (36.3)	0.003
Child vaccination status checked	531 (61.6)	403 (58.3)	128 (74.9)	<0.001
Child under two years of age assessed for feeding practices	200 (35.5)	167 (37.4)	33 (28.4)	0.074

*These are column percentages according to the category of the total sample

About half of the children were correctly classified for malnutrition and 44.4% of the children were correctly classified for HIV (Table 1.5).

Table 1.5: Classification of children

Indicator	Total n (%)*	Rural n (%)*	Urban n (%)*	p value
Children is correctly classified for malnutrition	13/27	11/21	2/6	0.648
Child is correctly classified for HIV infection	383 (44.4)	332 (48.0)	51 (29.8)	<0.001

*These are column percentages according to the category of the total sample

Table 1.6 shows that globally, the index of integrated assessment averaged 6 tasks out of ten performed for each child, with a higher score observed in rural than urban areas (p=0.035). Meanwhile, a lower score of 5.7 was obtained for the tasks considered for Zambia.

Table 1.6: Index of integrated assessment

Indicator	Total n (%)	Rural n (%)	Urban n (%)	p value
Mean of integrated assessment (mean of 10 tasks checked), globally	6.2	6.3	6.0	0.035
Mean of integrated assessment (mean of 10 tasks checked), Zambia	5.7	5.8	5.5	0.053

Significantly, more children needing an oral antibiotic and/or an oral antimalarial who were prescribed the drug correctly in rural (30.4%) than urban (21.6%) areas. Considering the drugs separately, a higher proportion of children needing an antibiotic who were prescribed correctly was observed in rural (84.0%) than urban (36.3%) areas. No significant difference was observed in the proportion of children needing an oral antimalarial who were prescribed antimalarial correctly between rural and urban areas ($p=0.184$). Overall, 78.2% of children needing an oral antimalarial were prescribed antimalarial correctly. The rate of mis-use of antibiotic was at 61.3%. Overall, 87.7% of children needing vaccinations left facilities with all needed vaccinations. These findings are shown in Table 1.7.

Table 1.7: Prescription of drugs and receiving vaccination

Indicator	Total n (%)*	Rural n (%)*	Urban n (%)*	p value
Child needing an oral antibiotic and/or an oral antimalarial is prescribed the drug correctly	247 (28.7)	210 (30.4)	37 (21.6)	0.023
Child needing an oral antibiotic is prescribed the drug correctly	156 (83.4)	126 (84.0)	62 (36.3)	<0.001
Child needing an oral antimalarial is prescribed the drug correctly	115 (78.2)	106 (79.7)	9 (64.3)	0.184
Child not needing antibiotic leaves the facility with antibiotic (mis-use)	152 (61.3)	120 (60.6)	32/ (64.0)	0.660
Child needing vaccinations leaves the facility with all needed vaccinations	756 (87.7)	611 (88.4)	145 (84.8)	0.196

*These are column percentages according to the category of the total sample

Altogether, 40.6% of caretakers of sick children were advised to give extra fluids and continue feeding. A higher proportion of caretakers of children who were prescribed ORS and/or an oral antibiotic and/or an oral antimalarial knew how to give the treatment (Table 1.8).

Table 1.8: Counseling and caretaker understanding of it

Indicator	Total n (%)*	Rural n (%)*	Urban n (%)*	p value
Caretaker of sick child is advised to give extra fluids and continue feeding	350 (40.6)	291 (42.1)	59 (34.5)	0.070
Caretaker of child who is prescribed ORS and/or an oral antibiotic and/or an oral antimalarial knows how to give the treatment	582 (67.5)	483 (69.9)	99 (57.9)	0.003
Child prescribed oral medication whose caretaker is explained how to administer the treatment	666 (88.1)	558 (92.4)	108 (71.1)	<0.001
Child prescribed oral medication whose caretaker is demonstrated how to administer the treatment	352 (47.1)	305 (51.0)	47 (31.5)	<0.001
Sick child whose caretaker is advised on when to return immediately	606 (73.4)	494 (74.6)	112 (68.3)	0.123
Child leaving facility whose caretaker was shown a mother's card	107 (12.4)	80 (11.6)	27 (15.8)	0.172

*These are column percentages according to the category of the total sample

An overall referral rate was 47.1% of children needing urgent referral who were identified and prescribed urgent referral (Table 1.9).

Table 1.9: Treatment of children needing urgent referral

Indicator	Total n (%)	Rural n (%)	Urban n (%)	p value
Child needing urgent referral is identified and prescribed urgent referral	24 (47.1)	21 (43.8)	3/3	0.097

About a third (31.5%) of health facilities received at least one supervisory visit that included observation of case management during the previous six months. Index of availability of 18 essential oral treatments was 14.7. A higher index of availability of 8 injectable drugs was observed in rural (6.8) than urban (6.1) areas ($p < 0.001$). None of the health centres had all the equipment and supplies to support full vaccination services nor all the essential equipment and materials. The index of availability of 8 vaccines was higher in urban (7.9) than rural (7.7) areas ($p = 0.022$). Altogether, 81.4% of health facility had IMCI chart booklet and mother counseling card. Overall, 45.3% of health facilities had at least 60% of workers managing children trained in IMNCI, 1.6% trained in ETAT and 5.9% trained in ENBC (Table 1.10).

Table 1.10: Facility support, availability of supplies, vaccines and drugs

Indicator	Total n (%)*	Rural n (%)*	Urban n (%)*	p value
Health facility received at least one supervisory visit that included observation of case management during the previous six months.	62 (31.5)	56 (33.9)	6 (18.8)	0.090
Index of availability of 18 essential oral treatments	14.7	14.7	14.8	0.710
Index of availability of 8 injectable drugs	6.7	6.8	6.1	<0.001
Health facility has IMCI chart booklet and mother counseling card	166 (81.4)	138 (80.7)	28 (84.8)	0.807
Index of availability of 8 vaccines	7.7	7.7	7.9	0.022

Health facility with at least 60% of workers managing children trained in IMNCI	87 (45.3)	76 (47.8)	11 (33.3)	0.129
Health facilities with at least 60% of Health workers managing children trained in ETAT	3 (1.6)	1 (0.6)	2 (6.5)	0.071
Health facilities with at least 60% of workers managing children trained in ENBC	11 (5.9)	8 (5.1)	3 (9.4)	0.403

**These are column percentages according to the category of the total sample*

Section 2: Young infants age below 2 months

Totals of 45 (41 rural and 4 urban) health facilities were visited with 223 (184 rural and 38 urban) cases observed. No information on residence was recorded for one case.

Table 2.1 shows distributions of age, gender and caretaker for young infants. More observation of young infants aged below 2 months were made in rural (48.6%) than urban (57.9%) areas ($p=0.033$). Overall, 52.3% of the children were male and 98.6% of caretakers were mothers.

Table 2.1: Young infants: Age, gender and caretaker distributions by residence

Factor	Total n (%)*	Rural n (%)*	Urban n (%)*	p value
Age (weeks)				0.033
<2	108 (50.2)	86 (48.6)	22 (57.9)	
2-3.9	38 (17.7)	37 (20.9)	1 (2.6)	
4-5.9	32 (14.9)	27 (15.3)	5 (13.2)	
6-7.9	37 (17.2)	27 (15.3)	10 (26.3)	
Gender of young infants				0.899
Male	116 (52.3)	97 (52.7)	19 (50.0)	
Female	106 (47.7)	87 (47.3)	19 (50.0)	
Caretaker				1.000
Mother	219 (98.6)	181 (98.4)	38 (100)	
Other	3 (1.4)	3 (1.6)	0 (0)	

*These are column percentages according to the category of the total sample

Concerning characteristics for health workers (Table 2.2), 81.5% of health workers were nurses and 65.3% of them were female. A third (33.3%) were in-service trained. Most (81.2%) health workers were training after 2010.

Table 2.2: Cases observed by type, gender and IMNCI training status of health workers

Factor	Total n (%)*	Rural n (%)*	Urban n (%)*	p value
Type of health worker				0.812
Nurse	181 (81.5)	149 (81.0)	32 (84.2)	
Other	41 (18.5)	35 (19.0)	6 (15.8)	
Gender of health worker				1.000
Male	77 (34.7)	64 (34.8)	13 (34.2)	
Female	145 (65.3)	120 (65.2)	25 (65.8)	
Health worker trained				0.753
In-service	74 (33.3)	60 (32.6)	14 (36.8)	
Pre-service	148 (66.7)	124 (67.4)	24 (63.2)	
Year of training**				0.501
2000-2004	21 (9.6)	20 (11.0)	1 (2.7)	
2005-2009	20 (9.2)	16 (8.8)	4 (10.8)	
2010-2014	55 (25.2)	49 (27.1)	6 (16.2)	
2015-2017	122 (56.0)	96 (53.0)	26 (70.3)	

*These are column percentages according to the category of the total sample

NB: These are case-management-observations and not different health workers

** compared before 2010 with after 2010

The under 2 months old infants were mostly (78.8%) brought to Under5 clinics as opposed to being ill (Table 2.3).

Table 2.3: Reasons for bringing child to health facility

Reason	Total=222	Rural=184	Urban=38
Difficulty in feeding	7 (3.2)*	7 (3.8)*	0 (0)*
Fever	41 (18.5)	39 (21.2)	2 (5.3)
Fast/difficulty in breathing	38 (17.1)	35 (19.0)	3 (7.9)
Convulsions	2 (0.9)	2 (1.1)	0 (0)
Crying a lot	13 (5.9)	11 (6.0)	2 (5.3)
Diarrhoea	9 (4.1)	9 (4.9)	0 (0)
Other**	175 (78.8)	142 (77.2)	33 (86.8)

*These are column percentages according to the category of the total sample

** Under5 clinic, postnatal, newly delivered,

NB: Some young infants had more than one reason for coming to the health facility

Less than half (46.4%) of the young infants were checked for the presence of severe jaundice, diarrhea and HIV infection. Overall, 52.3% of young infants were checked for feeding practices and 87.4% were checked for vaccination status. Altogether, 86.9% of young infants were assessed for feeding difficulties, 71.2% were checked for the presence of local bacterial infection and 68.5% of the infants were checked for other problems (Table 2.4).

Table 2.4: Young infant assessment

Indicator	Total n (%)*	Rural n (%)*	Urban n (%)*	p value
Young infant checked for the presence of severe jaundice, diarrhea and HIV infection	103 (46.4)	88 (47.8)	15 (39.5)	0.446
Young infant checked for feeding practices	116 (52.3)	94 (51.1)	22 (57.9)	0.558
Young infant checked for vaccination status	194 (87.4)	160 (87.0)	34 (89.5)	0.875
Young infant assessed for feeding difficulties	193 (86.9)	163 (88.6)	30 (78.9)	0.180
Young infant checked for other problems	152 (68.5)	129 (70.1)	23 (60.5)	0.334
Young infant checked for the presence of local bacterial infection	158 (71.2)	134 (72.8)	24 (63.2)	0.317

*These are column percentages according to the category of the total sample

Most (82.9%) young infants needing an oral antibiotic were prescribed the drug correctly and 89.6% of infants not needing antibiotic left facility without one (Table 2.5).

Table 2.5: Prescription of drugs and receiving vaccination

Indicator	Total n (%)*	Rural n (%)*	Urban n (%)*	p value
Young infant needing an oral antibiotic is prescribed drug correctly	34 (82.9)	33/40	1/1	1.000
Young infant needing treatment for local infection is prescribed drug correctly	17/18	16/17	1/1	1.000
Young infants not needing antibiotic leaves facility without one	164 (89.6)	132 (87.4)	32 (100.0)	0.049
Young infant needing vaccinations leaves facility with all needed vaccinations	112 (56.6)	97 (59.9)	21 (58.3)	0.854

*These are column percentages according to the category of the total sample

Table 2.6 shows findings on counseling. Overall, 83.7% caretakers of infants were advised to give more breastmilk at home, 40.0% of caretakers of infants who were prescribed ORS and/or oral antibiotics knew how to give treatment. Of note is that just over half of those referred accepted referral.

Table 2.6: Counseling and caretaker understanding of it

Indicator	Total n (%)*	Rural n (%)*	Urban n (%)*	p value
Caretaker of young infant is advised to give more breastmilk at home	164 (83.7)	137 (83.0)	27 (87.1)	0.792
Caretaker of young infant who is prescribed ORS and/or oral antibiotics, knows how to give treatment	40 (40.0)	38/90	2/10	0.308
Caretaker of young infant accepted referral	11/21	11/19	0/2	0.214

*These are column percentages according to the category of the total sample

In terms of health facility support (Table 2.7), 97.8% of them received at least one supervisory visit during the previous 6 months to the survey and 59.0% received at least one supervisory visit that included observation of case management of young infants during the last visit to the survey. Out of

12 essential oral treatment, an overall average of 7.0 was obtained among health facilities and a score of 3.8 out of 5 injectable drugs and diluent for pre-referral treatment. Only 6.7% of health facilities had weighing scale, baby scale, Under5 card, syringes and fridge to support vaccinations of young infant.

Table 2.7: Facility support, availability of supplies, vaccines and drugs

Indicator	Total n (%)	Rural n (%)	Urban n (%)	p value
Health Facility received at least one supervisory visit during the previous 6 months	44 (97.8)	40/41	4/4	
Health Facility received at least one supervisory visit that included observation of case management of young infant during the last visit	23 (59.0)	22/36	1/3	0.557
Index of availability of 12 essential oral treatment	7.0	7.0	7.0	0.449
Index of availability of 5 injectable drugs and diluent for pre-referral treatment	3.8	3.9	3.0	0.107
Health facility has weighing scale, baby scale, Under5 card, syringes and fridge to support vaccinations of young infant	3 (6.7)	3/41	0/4	1.000

Table 2.8 shows that globally, the index of integrated assessment averaged 7.6 tasks out of ten performed for each child, with a higher score observed in rural than urban areas (p=0.002). A higher score was observed in rural (7.7) than urban (7.2) areas (p=0.002).

Indicator	Total n (%)	Rural n (%)	Urban n (%)	p value
Index of integrated assessment 7.6 (mean of 10 tasks checked)		7.7	7.2	0.002

Overall, 29.3% of the infants were correctly classified, with 81.5% of infants with feeding problems or low weight for age being correctly classified and 75.7% of them being correctly classified for HIV (Table 2.9).

Table 2.9: Classification of young infants

Indicator	Total n (%)*	Rural n (%)*	Urban n (%)*	p value
Young infant with feeding problems or low weight for age is correctly classified	181 (81.5)	151 (82.1)	30 (78.9)	0.825
Young infant is correctly classified	65 (29.3)	59 (32.1)	6 (15.8)	0.070
Young infant is correctly classified for HIV	168 (75.7)	140 (76.1)	28 (73.7)	0.915
Young infant with very severe disease treated correctly	15/17	15/17	0/0	-

**These are column percentages according to the category of the total sample*

Section 3: Provincial and district hospitals

A total of 26 provincial and district hospitals (21 rural and 5 urban) participated in the survey. All the provincial hospitals and hospitals in the sampled districts were represented in the sample (Table 3.1). Half (13) of the respondents were nurses (Table 3.2) and 12 were female. Altogether, 13 were trained in IMNCI.

Table 3.1: Distribution of hospitals by province

Province	Frequency
Central	1
Copperbelt	4
Eastern	5
Luapula	2
Lusaka	2
Muchinga	2
North-western	2
Northern	3
Southern	3
Western	2
Total	26

Table 3.2: Distribution of respondents by health worker type.

Type of health worker	Frequency
Clinical Officer	1
Hospital administration	2
Medical Officer	8
Nurse	13
Other	1
Purchasing Officer	1
Total	26

Availability and privacy of a maternity waiting home or shelter

A total of 16 out of 26 facilities had a maternity waiting home or shelter and all of the facilities had adequate privacy.

Availability of resources

Table 3.3 shows availability of resources in the 26 facilities. Most facilities had resources to deliver health care. However, only 14 facilities had at least one otoscope.

Table 3.3: Facilities with available resources

Resource	Frequency
Blood pressure machine or cuff	26
Stethoscope	26
Adult weighing scale	26
Weighing scale for under-five-year-olds	25
Neonatal scale	25
Height/length board	26
Clinical thermometer	26
Sterile gauze and bandages	24
Timer or device to measure time in seconds	22
Otoscope	14
Light source to ensure visibility such as lamp and or flashlight	21
Examination light	23
Infusion kits for intravenous solution (giving sets)	26
Cord clamp	26
Suction machine	26
Partograph	24
Vaginal speculum	24

Availability of functional equipment

All the facilities had needles and syringes: 16 had disposable and 10 had disposable auto-destruct. One facility did not have oxygen system (Table 3.4).

Table 3.4: Availability of functional equipment

Functional equipment	Frequency
Oxygen system	25
Needles and syringes	26
Disposable	16
Disposable Auto-destruct	10

Most commonly used method for disinfecting or sterilizing medical equipment

All but one facility disinfected equipment using electric autoclave and one facility disinfected equipment outside the facility (Table 3.5).

Table 3.5: Availability of disinfecting or sterilizing medical equipment

Method	Frequency
Autoclave (electric)	25
Dry heat sterilizer (electric)	9
Boiling pot: electric boiler or steamer (no pressure)	2
Boiling pot: non-electric pot with cover (for boiling or steaming)	1
Chemical method	22
Process outside facility	2

Control of sterilization processes

Altogether, 25 out of 26 facilities had control over the sterilization processes. One facility used chemical indicators for sterilization and 19 used physical indicators (Table 3.6).

Table 3.6: Control of sterilization process

Control	Frequency
Chemical indicators	1
Physical indicators	19
Physical indicators Chemical indicators	5
Physical indicators Chemical indicators Microbiological indicators	1

Staffing

A total of 22 out of 26 facilities had regular employees or on shorter term service contracts. Table 3.7 shows type of training received by staff in the previous two years. All the facilities reported having staff who were trained in diagnosis and treatment of sexually transmitted infections. Meanwhile, only 8 facilities reported having staff trained in emergency triage assessment and treatment (ETAT) and 21 had staff trained in infant and young child feeding (IYCF) counseling.

Table 3.7: Training undergone by staff

Type of training	Frequency
Emergency triage assessment and treatment (ETAT)	8
Infant and young child feeding counseling	21
Pediatric HIV and AIDS	20
Adolescent sexual and reproductive health (ASRH)	19
Basic Emergency Obstetric Care /BEmONC) or Integrated Management of Pregnancy and Childbirth (IMPAC)	17
Comprehensive Emergency Obstetric Care (CEmONC)	17
Safe motherhood	17
Integrated management of adult illness (IMAI)	5
Integrated Management of Emergency and Essential Surgical Care (IMEESC)	6
Family planning	20
Appropriate use of blood and safe transfusion practice	18
Infection control	17
Diagnosis and treatment of STIs	26
Information or documents regarding obligations under the International Health Regulations	8
Fistula prevention and management	8
Post-Exposure Prophylaxis (PEP)	21
HIV/AIDS opportunistic infection treatment and care	20
HIV/AIDS counseling	16
HIV testing	18
Elimination of mother to child transmission (eMTCT) of HIV	20
Management of TB/HIV co-infection	21
Comprehensive ART therapy	20
Diabetes diagnosis and treatment guidelines	12
Primary prevention and early diagnosis of breast and cervical cancers	18
Hospital logistics management	16
Health management information system (HMIS) training	19
Human resources management	17
Management of finances, budgets, and fundraising	17
Referral services guideline	12

Patient referral

Overall, 25 out of 26 facilities had a medical records or patient information registry. Almost all (25) facilities had patient referral system in place and had defined procedures for the referral system. Out of 26 facilities, 24 had an emergency transportation service or ambulance for patient transport.

Epidemic or pandemic preparedness

Altogether, 23 out of 26 facilities had an epidemic or pandemic preparedness and response plan; and 22 had the epidemic or pandemic preparedness and response plan in alignment with national emergency preparedness plan.

Surgical services

Blood transfusion services were offered by 24 out of 26 facilities. Table 3.8 shows the services offered. A total of 24 facilities had acute burn management services.

Table 3.8: Surgical services offered

Surgical service	Frequency
Incision and drainage of abscess	24
Wound debridement	24
Acute Burn management	22
Suturing	25
Closed Treatment of Fracture	23

Family planning services

A total of 25 out of 26 facilities offered family planning services and 20 facilities offered antenatal services. Table 3.9 shows the antenatal services provided.

Table 3.9: Antenatal services provided.

Antenatal service	Frequency
Tetanus immunization	18
Ferrous sulphate dose (iron supplementation)	21
Folic acid supplementation	21
Mebendazole	21
EMTCT	22
HIV counseling and testing for pregnant women	21
IPT	21
Screening for syphilis	22
Screening for HIV	23
Screening for anaemia	22

Obstetric care services

Out of 26 facilities, 23 offered obstetrics care services. Table 3.10 shows the obstetrics care services offered.

Table 3.10: Obstetrics care services offered.

Obstetrics care service	Frequency
Delivery services at the facility	23
Parenteral administration of antibiotics	23
Parenteral administration of oxytocic drugs	23
Parenteral administration of anti-convulsants to women with (pre)clampsia	23
Manual removal of placenta	23
Removal of retained products after delivery	24
Caesarian section	22

Postpartum services

Overall, 24 out of 26 facilities offered postpartum services. Table 3.11 shows the postpartum services offered.

Table 3.11: Postpartum services offered

Postpartum service	Frequency
HIV counseling	24
Family planning during postpartum period	21
Counseling on infant and young child feeding	24

Newborn care

Almost all facilities (25) had newborn care. Meanwhile, 14 out of 26 facilities had neonatal intensive care unit. Table 3.12 shows the newborn care services that were provided by facilities.

Table 3.12: Newborn care services provided

Newborn care service	Frequency
Newborn resuscitation	24
Eye prophylaxis	23
Clean cord care	26
Counseling on breastfeeding and feeding of young infants	25
Kangaroo mother care for low birth weight babies	20

Emergency Triage Assessment and Treatment (for children)

A total of 20 out of 26 facilities offered Emergency Triage Assessment and Treatment (for children). The Emergency Triage Assessment and Treatment (for children). Services offered are shown in Table 3.13.

Table 3.13: Emergency triage assessment and treatment services offered

Emergency triage assessment and treatment services	Frequency
Area/space for Emergency Triage Assessment and Treatment of very ill children available	23
Children are assessed for severity/ priority need (triage) immediately on arrival (at least during high patient-load periods	21
Patients do not have to wait for registration, payment, their turn etc before a first assessment is done and action taken	22
A wall chart or job aid for identifying children by severity of condition is located in the emergency admissions area	13
A qualified staff is designated to carry out triage	19
A health worker is available without delay to manage children determined to have an emergency condition	20
Essential drugs for emergency conditions (anticonvulsants, glucose, iv fluids) are always available and free	22
Essential lab tests (Hb or PCV, glucose) are available	23
Essential equipment (needles and syringes, nasogastric catheters, oxygen equipment, nebulizer or spacers) is available	21
The staff doing triage is trained in the guidelines and can implement them appropriately when the emergency room gets busy during peak hours	12
Staff is skilled in the management of common emergency conditions and starts treatment without delay: Management of convulsions, lethargy, severe respiratory distress, shock and severe dehydration	23

Malaria services offered

All facilities offered malaria services. The malaria services that were offered are shown Table 3.14.

Table 3.14: Malaria services offered

Malaria service	Frequency
Malaria diagnosis	26
Treatment of malaria	26
ITN bednet distribution	13

TB services

All facilities offered TB services (Table 3.15), except for directly observed treatment, short course that was offered by 21 facilities and 19 that offered treatment follow-up of tuberculosis patients during continuation phase.

Table 3.15: Tuberculosis services offered

Tuberculosis service	Frequency
TB screening -identification of suspects	26
TB diagnosis services	26
diagnosis of tuberculosis through X-ray for eligible patients	24
TB treatment services	26
Treatment of tuberculosis with 1st line drugs	26
Directly Observed Treatment, Short-course (DOTS)	21
Treatment follow-up of tuberculosis patients during continuation phase	19

HIV/AIDS services

All 26 facilities offered HIV/AIDS services. The HIV/AIDS services that were offered are shown in Table 3.16.

Table 3.16: HIV services offered

HIV service	Frequency
HIV counseling and testing	26
Antiretroviral therapy (ART)	26
Elimination of mother-to-child transmission (eMTCT) through cARVs	26
Post-exposure prophylaxis	26
Youth friendly services	19

Management of infections.

All 26 facilities offered management of opportunistic infections and all facilities provided treatment of Sexually Transmitted Infections (STIs). Out of 26 facilities, 24 had a working relationship with any NGO or CBO for HIV prevention activities.

Provision of non-communicable disease services

All 26 facilities offered non-communicable disease services. Table 3.17 shows the NCDs services that were offered.

Table 3.17: Non-communicable disease services offered

Non-communicable disease service	Frequency
Cervical cancer screening (Papanicolaou test and/or Visual Inspection with Acetic acid (VIA)	21
Breast cancer screening	22
Diabetes screening	25
Hypertension screening	26
Palliative care	18
CVS diseases screening	24

Section 4: Pre-service Health Training Institutions

A total of 19 training institutions took part in the survey from all the ten provinces of Zambia (Table 4.1). All but one institution was offering certificate courses. All training institutions used Paediatric teaching methods as shown in Table 4.2.

Table 4.1: Distribution of training institutions by province

Province	Frequency
Copperbelt	3
Central	1
Eastern	2
Lusaka	2
Luapula	1
Muchinga	1
Northern	3
Northwestern	2
Southern	2
Western	2
Total	19

Table 4.2: Paediatric teaching methods

Paediatric teaching method	Frequency
Tutorial	14
Seminar	6
Problem solving	10
Discussion	19
Role play	13
Demonstration	19
Case study	13
Problem based learning	11
Other	6

ICATT

Of the 19 training institutions, 8 had introduced ICATT as a training tool. Four of the 8 training institutions that introduced ICATT as a training tool did so persistently. Methods of teaching ICATT included LCD (6), Individual (5) and combination (1).

IMNCI orientation

All institution had IMNCI orientation. The reasons for introducing IMNCI teaching are shown in Table 4.3. The most common reason for introducing IMNCI teaching was that it equips students with better skills to serve the community (18) followed by IMNCI teaching being a holistic approach (14).

Table 4.3: Reasons for introduction of IMNCI teaching

Reason	Frequency
Holistic approach	14
Addresses common problems	12
Addresses fatal problems	11
Equips students with better skills to serve the community	18
Other	5

Challenges or difficulties experienced in planning and implementation of IMNCI teaching

Most institutions indicated that availability of learning materials was the major challenge in planning and implementing IMNCI teaching (Table 4.4).

Table 4.4: Challenges in planning and implementing IMNCI teaching

Challenges in planning and implementing IMNCI teaching	Frequency
Resistance from decision makers	0
Incorporating IMNCI into the curriculum	2
Availability of learning materials	17
Availability of teaching aids	14
Availability of trained tutors	13
Financial constraints	12
Other difficulties	6

All institutions had a focal person or group responsible for IMNCI teaching and coordination between different departments. Table 4.5 shows components of IMNCI strategy that were taught. All the institutions taught health workers'skills as a component of IMNCI strategy.

Table 4.5: Components of IMNCI strategy that were taught

Component	Frequency
Health workers' skills	19
Family and community practice	15
Health systems support	14

Effect of the introduction of IMNCI teaching on previous teaching

Effects of the introduction of IMNCI on previous teaching is shown in Table 4.6. Out of 19 institutions, 11 indicated incorporation into revised previous teaching as being the effect of the introduction of IMNCI on previous teaching.

Table 4.6: Effects of the introduction of IMNCI on previous teaching

Effect on introduction of IMNCI on previous teaching	Frequency
Replaced previous teaching	0
Added to previous teaching (Block teaching only)	1
Incorporated into revised previous teaching	11
Other	3

Most institutions (15) reported that constraints with other resources was the main challenge that was experienced with placement of IMNCI teaching (Table 4.7).

Table 4.7: Main challenges or difficulties experienced with placement of IMNCI teaching

Challenges	Frequency
Identifying appropriate time for IMNCI teaching	2
Allocating time to cover IMNCI	3
Harmonizing IMNCI contents with existing topics	0
Constraints with planning and coordination	2
Constraints with IMNCI trained staff	13
Constraints with other resources	15
Other challenges	7

WHO/National materials used for IMNCI classroom teaching/ learning activities

Table 4.8 shows WHO/national materials that were used for IMNCI classroom teaching/learning activities. Most institutions reported that the IMNCI chart booklet and IMNCI hand book were used as materials for IMNCI classroom teaching/learning activities for instructors (18 vs 18, respectively) and students (17 vs 17, respectively). Set of IMNCI modules and IMNCI chart booklet were developed by 10 and 11 institutions, respectively.

Table 4.8: WHO/ National materials used for IMNCI classroom teaching/ learning activities

Material	Used by instructor	Used by student	Developed by faculty/school
IMNCI course director's guide	8	6	4
IMNCI facilitators guide for the module	15	11	9
Set of IMNCI modules	15	15	10
IMNCI chart booklet	18	17	11
Adapted mother's card	8	7	4
Photograph booklet	14	13	8
IMNCI videos	15	14	9
IMNCI wall charts	14	13	8
Case recording forms	13	12	8
IMNCI hand book	18	17	10
IMNCI model Chapter	6	5	3
ARI timer	7	7	5
Others	1	1	2

Principles of referral was one of the topics that was included in classroom/theory sessions (Table 4.9) by most institutions (16 as a block method and 14 as staggered method). Triage was mentioned by a few institutions as a topic that was covered in classroom/theory sessions (4 vs 3, as block and staggered method, respectively).

Table 4.9: IMNCI topics included in classroom/theory sessions

Topic	Block method	Staggered method
Management of young infant	15	14
Assess, classify and management of sick child	15	14
Identify treatment	15	14
Treat the child and the young infant	14	13
Where referral is not possible	14	13
Counsel the mother	15	13
Follow-up	15	13
Principles of referral	16	14
Principles of referral-triage	4	3

The least methods listed by institutions for IMNCI classroom instruction included individual feedback, group work, group discussion, ward report, case write up/report and work-based (on-the-job) training (Table 4.10).

Table 4.10: Teaching methods used for IMNCI classroom instruction

Teaching method	Frequency
Demonstration	15
Individual student practice	15
Group practice	13
Observation of student practice	13
Case studies	12
Patient simulation	13
Case conference	10
Question and answer	15
Individual feedback	7
Group feedback	4
Group discussion	6
Ward report	5
Case-write-up/report	4
Work-based (on-the-job) training	2
Others	3

Clinical practice

About 8 in 10 of the institution included the IMNCI skills in clinical practice listed in Table 4.11. How to perform referral using triage was reported being included in the IMNCI skills in clinical practice in block method. Five institutions reported including IMNCI skills in clinical practice in staggered method.

Table 4.11: IMNCI skills included in clinical practice

Skill	Block method	Staggered method
How to use the IMNCI chart	15	5
How to use the case recording form	13	4
How to assess young infant	15	5

How to assess sick child	15	5
How to identify treatment	15	5
How to treat a child and young infant	15	5
How to counsel caretaker	15	5
How to assess and manage a child came for follow up	15	5
How to perform referral:	15	5
How to perform referral using triage	2	6

Table 4.12 is a distribution of materials used for IMNCI clinical practice training. All but one institution reported instructors using clinical thermometers, IMNCI chart booklet and weighing scales clinical practice training. Ready to use therapeutic foods were reported being used by 9 institutions in clinical practice training. All institutions reported their students using clinical thermometers in IMNCI clinical practice training. Less than three institutions developed materials for IMNCI clinical practice training.

Table 4.12: WHO/National materials used for IMNCI clinical practice training

Material	Used by instructors	Used by students	Developed by faculty/school
Wall chart	16	14	2
Facilitator guide for outpatient clinical practice	10	6	1
IMNCI chart booklet	17	16	2
Adapted mother's card	10	10	1
Case recording forms	14	14	1
Integrated U5 registration book	14	11	1
MUAC Tape	15	14	2
ARI timer	13	10	2
Weighing scales	17	16	2
Clinical Thermometers	18	19	2
Feeding utensils (cups, plates, jags, spoons	15	15	2
Ready to use therapeutic foods (RUTF)	9	7	1
Height and length boards	12	14	1

Clinical instructions

All institutions used demonstrations in IMNCI clinical instruction (Table 4.13). Seventeen institutions used group discussion as a method for IMNCI clinical instructions.

Table 4.13: Teaching methods used for IMNCI clinical instruction

Teaching method	Frequency
Demonstration	19
Individual student practice	14
Group practice	14
Observation of student practice	15
Clinical rounds	14
Case studies	13
Patient simulation	9
Supervised clinical practice	15
Case presentation	14
Case conference	4
Question and answer	15
Individual feedback	16
Group feedback	13
Group discussion	17
Ward report	13
Case-write-up/report	10
Work-based (on-the-job) training	8
Others	2

Practicum sites

Most (17) institutions reported the outpatient ward being used as a clinical practicum site (Table 4.14).

Table 4.14: IMNCI clinical practicum sites

Site	Frequency
Inpatient ward	14
Outpatient ward	17
Outreach	13
Other	4

The common conditions reported were students being allowed, under supervision, to dispense oral drugs (18) and cooperation from caretakers (17) as shown in Table 4.15.

Table 4.15: IMNCI clinical practice site(s) conditions present

Condition	Frequency
All administration and staff at the sites(s) are briefed or informed about IMNCI	12
A staff member is available to help the IMNCI instructor(s) select cases	14
The case provided at the site(s) conforms to IMNCI guidelines	14
Students are allowed, under supervision, to dispense oral drugs	18
Co-operations from caretakers	17

Student management and assessment

Table 4.16 shows tasks managed by students during IMNCI clinical practice. All the institutions except one reported that students saw children with severe illness such as severe pneumonia, very severe febrile disease and severe malaria.

Table 4.16: IMNCI clinical practice student management

Student management	Frequency
Manage both outpatient and inpatient cases of childhood illness	15
See many children with variety of signs related to cough, diarrhoea, fever, measles, ear problems, HIV, TB, malnutrition and anemia	16
See children with severe illness such as severe pneumonia, very severe febrile disease and severe malaria	18
Manage at least 20 children throughout IMNCI clinical practice	8
Receive feedback on his/her performance from a clinical instructor who trained in IMNCI	16

A total of 18 out of 19 health institutions reported that IMNCI classroom and clinical instruction included ways to regularly check how much and how well students were learning. Table 4.17 shows the IMNCI questions or problems that were included in examinations. All the institutions included written examinations in assessing students.

Table 4.17: IMNCI questions or problems included in examinations

Type of examination	Frequency
Oral exams	12
Written exam	19
Written projects or reports	10
Practical exams	16
Other	4

All the 19 health institution formally evaluated student knowledge about IMNCI, 17 indicated that students were formally evaluated their skills about IMNCI and 17 institutions reported that students were observed and evaluated as they managed at least one sick child following the IMNCI guidelines from start to finish.

DISCUSSION

Children aged 2 months to 5 years

This is the largest health facility survey ever conducted in Zambia. It follows two other surveys conducted in 2001 and 2008. Almost exclusively, children were cared for by mothers and were mostly managed to by nurses. Hence, the curriculum for training nurses (pre- or in-service) should reflect the aspirations in the IMNCI strategy.

The finding in the current survey that 58.6% of the children were checked for three danger signs (cough, diarrhea and fever) indicates an increase from 44.2% observed in 2008 in the Zambia IMNCI health facility survey [Ministry of Health [Zambia], 2009]. However, the current finding is lower than what was observed in South Africa of 63% [Ministry of Health [South Africa], 2001].

A higher proportion of children were checked for lethargy in the present study (68.8%) compared to 50.0% in 2008 [Ministry of Health [Zambia], 2009]. Meanwhile, 80.3% of children were checked for cough, diarrhea and fever in the current study comparable to 81.9% observed in the Zambia 2008 IMNCI health facility survey but higher than what was reported in South Africa of 72% [Ministry of Health [South Africa], 2001].

Altogether, 59.9% of the children were checked for other problems in the current study and this proportion is lower than the 74.6% observed in Zambia 2008 health facility survey [Ministry of Health [Zambia], 2009].

Less than half (46.5%) of the children had weight checked against a growth chart in the current survey, indicating an increase from 32.6% found in 2008 [Ministry of Health [Zambia], 2009]. However, these rates are not satisfactory. It is important that severely malnourishes children are identified and given appropriate treatment as soon as possible. These rates are much lower than the rate that was found in South Africa of 80% [Ministry of Health [South Africa], 2001].

Overall, 61.6% of children had vaccination status checked in the present study, indicating a reduction from 78.5% observed in Zambia 2008 health facility survey (Ministry of Health [Zambia], 2009).

The finding that 35.5% of the children were assessed for feeding practices in the current survey is lower than the 43% observed in South Africa [Ministry of Health [South Africa], 2001].

In the current study, 78.5% of children had their vaccination status checked compared to 87% reported in a South African study [Ministry of Health [South Africa], 2001]. It is important that the vaccination status of children is checked to identify children who may not have been vaccinated to be

vaccinated in order to prevent vaccine preventable diseases.

Less than half (44.4%) of the children were correctly classified for HIV. This low rate of classification may suggest that the health workers lacked the skills to do so and need to be trained in doing so.

The index of integrated assessment averaged 6 tasks out of ten performed for each child in the current study comparable to 6.2 observed in Zambia 2002 health facility survey [Ministry of Health [Zambia], 2002] but lower than the rate observed in the Zambia 2008 survey of 7.6 [Ministry of Health [Zambia], 2009] and 7.3 in South Africa [Ministry of Health [South Africa], 2001]. Ideally all tasks should be performed to avoid missing other symptoms.

Significantly, more children needing an oral antibiotic and/or an oral antimalarial who were prescribed the drug correctly in rural (30.4%) than urban (21.6%) areas. Considering the drugs separately, a higher proportion of children needing an antibiotic who were prescribed correctly was observed in rural (84.0%) than urban (36.3%) areas. No significant difference was observed in the proportion of children needing an oral antimalarial who were prescribed antimalarial correctly between rural and urban areas ($p=0.184$). Overall, 78.2% of children needing an oral antimalarial were prescribed antimalarial correctly. The rate of mis-use of antibiotic was at 61.3%.

Overall, 87.7% of children needing vaccinations left facilities with all needed vaccinations. This finding is a reflection of the high vaccine coverage in Zambia.

The finding that 78.2% of the children needing an oral antimalarial were prescribed the drug correctly is similar to the 72% that was observed in Zambia 2001 health facility survey [Ministry of Health [Zambia], 2002] but much lower than the 94.2% obtained in the Zambia 2008 study [Ministry of Health [Zambia], 2009]. These changes in rates of correct prescription partly reflect the attrition rate of trained health care workers in IMNCI.

The proportion of children needing an oral antibiotic and prescribed the drug correctly is higher in the present survey (83.4%) and in the Zambia 2008 survey (88.3%) [Ministry of Health [Zambia], 2009] than in the South Africa study (73%) [Ministry of Health [South Africa], 2001]. A reduction of the proportion of child needing an oral antibiotic and/or an oral antimalarial is prescribed the drug correctly is lower in the current survey (overall=28.7%; rural=30.4% urban=21.6%) than in the Zambia 2008 survey (overall= 65.7%; rural=60.6%, urban=83.1%) [Ministry of Health [Zambia], 2009]. There is need to improve these indicators.

The rate of counseling in the current and previous studies in Zambia is low. Given the IMNCI training period of 11 days, the time allocated for counselling may not be adequate to impart the skills for

counseling. Further, time for counseling may have been limited during assessment of children due to increased patient load. Reductions were observed in rates of caretaker of sick child is advised to give extra fluids and continue feeding from 55.8% in 2008 to 40.6% in the current study and in the Child leaving facility whose caretaker is shown a mother's card from 36.3% in 2008 to 12.4% in the present study. However, an indicator on caretaker of child who is prescribed ORS and/or an oral antibiotic and/or an oral antimalarial knows how to give the treatment improved from 43.8% in the 2008 Zambia facility survey [Ministry of Health [Zambia], 2009] to 67.5% in the current study.

Although, the proportion of sick child whose caretaker is advised on when to return immediately (73.4%) was higher in the current study than in the Zambia 2008 survey (22.9%) [Ministry of Health [Zambia], 2009], much still needs to be done to improve this indicator. A lower indicator was also reported in South Africa (60%) [Ministry of Health [South Africa], 2001].

An indicator for a sick child whose caretaker is advised on when to return immediately improved from 22.9% in 2008 [Ministry of Health [Zambia], 2009] to 73.4% in the current study. A low indicator has also been reported in South Africa of 60% [Ministry of Health [South Africa], 2001].

A low indicator on caretaker of child who is prescribed ORS and/or an oral antibiotic and/or an oral antimalarial knows how to give the treatment of 67.5% was observed in the current study compared to a 49.1% obtained in 2008 [Ministry of Health [Zambia], 2009], indicating an improvement in the indicator. However, these levels of the indicator are lower than the 75% observed in South Africa [Ministry of Health [South Africa], 2001].

The proportion of children needing urgent referral who were identified and prescribed urgent referral was down from 64% in 2001 to 47.1% in the current survey [Ministry of Health [Zambia], 2002]. A high proportion of children needing urgent referral were missed. Hence, the need for strengthening the referral system.

None of the health centres had all the equipment and supplies to support full vaccination services nor all the essential equipment and materials. This finding may offset the efforts of health workers. Availability of drugs is partly a measure of quality of health services and a major determinant of health services use.

About a third of health facility received at least one supervisory visit that included observation of case management during the previous six months in the current survey, indicating some improvement in the indicator from the 22.3% in the Zambia 2001 survey [Ministry of Health [Zambia], 2002]. Supervisory visits are important to ensure that quality of care is provided to children through the IMCI strategy.

The greatest improvement in indicators was the availability of IMNCI chart booklet and mother counseling card that increased to 81.4% from 16.0% in the Zambia 2008 health facility survey [Ministry of Health [Zambia], 2009]. These materials should be made available in health facilities all the time. The importance of IMNCI chart booklet cannot be overemphasized for the assessment and treatment of children.

The indicator level on health facility with at least 60% of workers managing children trained in IMNCI was 45.3%, down from the 54.3% recorded in the Zambia 2008 facility health survey [Ministry of Health [Zambia], 2009]. More training is required to increase the number of trained health workers in IMNCI.

Index of availability of 18 essential oral treatments was 14.7 and that for 8 vaccines was 6.7 in the current study. Health facilities should well stocked with essential oral treatments and vaccines for effective implementation of the IMNCI strategy.

Young infants age below 2 months

This survey has provided baseline information on the implementation of the IMNCI strategy among infants aged less than 2 months. We are not aware of similar previous studies; hence, comparisons cannot be made of our findings with other findings.

About half, 50.2% of infants who participated in the survey were aged less than 2 weeks; 98.6% of infants were taken care of by mothers and 81.5% of the health workers were nurses. Most infants were brought to the health facilities for under5 clinic appointments. Thus, the findings for infants under the age of 2 months was not powered for assessing ill infants.

None of the young infants had severe disease. Hence, the indicator on checking young infants for severe disease was not evaluated. Less than half (46.4%) of the young infants were checked for the presence of severe and 52.3% of young infants were checked for feeding. The implementation of the IMNCI strategy should deliberately target this population.

It is pleasing that 87.4% of the infants were checked for vaccination status and 86.9% for feeding difficulties. The checking of infants for presence of local bacterial infection (71.2%) and for other problems (68.5%) need to be improved.

Prescription of antibiotics was satisfactory with the majority of young infants needing an oral antibiotic is prescribed drug correctly (82.9%) and most (89.6%) infants not needing antibiotic left facility without one.

Generally, counseling was poor with only 40.0% of caretaker of young infants who is prescribed ORS and/or oral antibiotics, knows how to give treatment and about have of caretaker of young infant accepted referral. Meanwhile, 83.7% caretaker of young infants is advised to give more breastmilk at home, suggesting that this indicator was satisfactory.

Although, 97.8% of health facilities attending to young infants received at least one supervisory visit during the previous 6 months to the survey, only 59.0% received at least one supervisory visit that included observation of case management of young infants during the last visit to the survey. The later indicator could have been biased because the study on young infants was not powered to assess sick young infants.

Provision of essential oral treatment and injectable drugs was not satisfactory. Health facilities were poorly equipped with weighing scale, baby scale, Under5 card, syringes and fridge to support vaccinations of young infants as only 6.7% of health facilities had these supplies.

There is room for improvement in the index of integrated assessment that averaged 7.6 tasks out of ten performed for each child.

Health workers performed badly in classifying young infant with only 29.3% of the infants correctly classified. Meanwhile, they performed better in classifying young infants with feeding problems (81.5%) and for HIV (75.7%).

District and provincial health facilities

Slightly over half of the facilities had maternity waiting home. Most facilities are within reach and lack of maternity waiting homes at health facilities may not have negatively affected maternity deliver services. Generally, most facilities had resources to deliver health care. Of concern is that one two facilities disinfected equipment outside the health facility. To lessen contamination during transportation, all health facilities should have in-house sterilization equipment.

Gaps were identified in the training of health staff. There is need to train more staff in ETAT, given the high attrition rate. Other areas for training that were identified included integrated management of emergency and essential surgical care; and infection control.

Generally, surgical services were available at health facilities and so were other services such as family planning, antenatal, obstetric care, postpartum and neonatal care services. Emergency triage assessment and treatment must be offered in all health facilities for children.

Only half of the facilities offered ITN bednets. The provision of bednets to pregnant women and children should be continued.

Provision of TB and HIV services was universal and provision of non-communicable diseases services had room for improvement. Only 16 of the 26 health facilities had palliative care services.

Training institutions

All but one health training institution offered certificate courses. This is a reflection of more short courses than diploma courses that are offered by the institutions. Both inservice and preservice should be continued to be offered.

The introduction of IMNCI teaching was generally accepted citing the equipping of students with better skills and the teaching of IMNCI being holistic. However, availability of learning aids was the major challenge in planning and implementing IMNCI teaching. Teaching aids should be developed in-house to make them readily available.

Generally, institutions covered IMNCI topics, except for Principles of triage. Emphasis should be placed on this topic in order to curtail death while waiting for treatment at health facilities

The least methods that were used for IMNCI classroom instruction were individual feedback, group discussion and feedback and ward report. While individual feedback is important, it may not be feasible for large classes. It is thus important to train more instructors.

Most institutions used block method to deliver IMNCI skills in clinical practice. Generally, materials for IMNCI clinical practice were not universally available in the institutions. It is important to enhance the teaching of IMNCI clinical practice through the provision of teaching materials.

The assessment of students should broadly utilize oral examinations, written examinations, projects and practical examinations. There was little emphasis on oral examinations and projects. These areas need strengthening in the examination process.

Limitations

There are several limitations to this survey:

1. The lack of surveys covering young infants prior to this one makes it difficult to compare the findings to previous practice.
2. Direct observation of health workers may have caused health providers to alter their behaviour in their interaction with the patient and caretaker.
3. The survey was not powered for some indicators.

CONCLUSIONS

Generally, health facilities were well equipped to deliver health care. However, there is room for improvement in the provision of the quality of care given to sick children.

RECOMMENDATIONS

- 1.0 Improve quality of care given to children in health facilities
 - 1.1 Increase coverage of IMNCI trained health workers to at least 60% per health facility.
 - 1.2 Include oral and projects in all examinations in training institutions.

- 2.0 Health system Support
 - 2.1 Ensure availability of all drugs (oral and injectable) recommended for IMNCI.
 - 2.2 Strengthen supervision at district level (including observation of case management).

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