

REPORT OF THE IMCI HEALTH FACILITY SURVEY IN BOTSWANA

TABLE OF CONTENTS

ABBREVIATIONS	3
EXECUTIVE SUMMARY	4
Background	4
Methods	4
Results	4
Recommendations	5
1. BACKGROUND	6
1.1 Child Health in Botswana	6
1.2 National trends and responses to child health in Botswana	6
2. METHODS	8
2.1 Design	8
2.2 Sampling	8
2.3 Selection of study population	8
2.4 Selection of Health workers	8
2.5 Survey Instruments	8
2.6 Training of Supervisors and Surveyors	8
2.7 Data Collection	8
2.8 Data Processing and Analysis	8
3. RESULTS	9
3.1 Description of study population and health workers	9
3.2 Assessment	10
3.3 Classification	12
3.4 Treatment	13
3.5 Counselling	15
3.6 Health Systems Support	15
4. DISCUSSION AND IMPLICATIONS OF THE RESULTS	17
4.1 Methods	17
4.2 Study population	17
4.3 Assessment	17
4.4 Classification	18
4.5 Treatment	18
4.6 Counselling	18
4.7 Health Systems Support	18
4.8 General observations and comments	19
4.9 Implications of the results	19
5. RECOMMENDATIONS	20
ANNEXES	21
Annexure one: Survey instruments	21
Annexure two: Priority and Supplemental Indicators	22
ACKNOWLEDGEMENTS	24

ABBREVIATIONS

DHTs:	District Health teams
FT:	Francistown district
G:	Gabarone district
HIV:	Human Immunodeficiency virus
KN:	Kgalagadi North district
KS:	Kgalagadi South district
HFS:	Health facility survey
IMCI:	Integrated Management of Childhood Illness Strategy
IMR:	Infant mortality rate
M:	Mahalapye district
MIAA:	Mean index of integrated assessment
MDG:	Millennium Development Goal
SE:	South East district
USD:	United States dollars
WHO:	World Health Organisation
U5MR:	Under-five mortality rate
UNICEF:	United Nations Children's Fund

EXECUTIVE SUMMARY

Background

The IMCI strategy was introduced to Botswana in 1997. Since then the Government of Botswana has been committed to implementing and funding IMCI activities; hence IMCI is part of the national health delivery system. By December 2004 Botswana was in the expansion phase of IMCI implementation; eleven out of 24 districts were implementing the IMCI case management component of IMCI.

Methods

In 2004 a cross sectional survey, to assess case management of sick children aged 2 months to five years and health system issues, was conducted in facilities implementing IMCI. The survey was conducted in the 6 districts that were the first to implement IMCI. Thirty-five (35) health facilities were selected from these 6 districts, using systematic random sampling with a logical geographical representation of health facilities that were implementing IMCI. WHO generic Health Facility Survey instruments were adapted to Botswana IMCI guidelines. Twenty surveyors were trained, during a three-day course, in how to interpret and administer the survey forms. All surveyors were either IMCI facilitators or supervisors. The first 6 sick children, aged 2 to 59 months, presenting for an initial visit (for any illness) on the day of the survey, and whose mothers consented, were enrolled into the survey. Surveyors conducted the following activities: Observation of case management of sick children (ii) exit interview with the caretaker (iii) re-examination of the child (by a skilled IMCI practitioner / Supervisor, who was the Gold Standard) and (iv) Health Facility review. Any health worker (not only IMCI-trained health workers) managing children (at the selected facilities) on the day of the survey was observed. Data were entered into EPI-INFO and analysed using a standardised WHO analysis programme. During data analysis various variables were created such as the mean index of integrated assessment. The latter, measured on a scale of 1 to 10, showed whether children received a comprehensive assessment: the closer to 10 the score, the more comprehensive the assessment.

Results

- 98 children were observed in 35 health facilities
- Only 33% of the health workers (nurses) observed had been trained in IMCI
- Among sick children surveyed and classified by the Gold Standard, 13% presented with a single IMCI classification; 77% presented with more than one classification
- 12.4% of children were checked for general danger signs
- 51.7% of children were checked for cough, diarrhoea and fever
- 34.6% of children had their weight checked against a growth chart
- 60% of children had their vaccination status checked
- The mean index of integrated assessment was 6.8 for IMCI trained health workers (n=30) and 4.2 for health workers not trained in IMCI
- Antibiotics were correctly prescribed in 31% of children
- 40.3% of children not needing an antibiotic left the facility with an antibiotic

- 22.5% of caretakers were advised to give the sick child extra foods and fluids
- 15.3% of caretakers of sick children were advised on when to return immediately
- 68.6% of facilities had all the essential supplies to support vaccination services
- 34.3% of facilities had all the essential equipment and supplies needed for child health care
- Only 3% of the facilities visited received one supervisory visit during the past 6 months

Recommendations

General

- IMCI expansion needs to be discussed, reviewed and carefully planned at the joint national and district IMCI planning meetings.
- Facilities and districts should be saturated with IMCI-trained health workers before implementation moves to another facility or district. This would ensure that trained health workers work synergistically to provide appropriate, high quality child health care.
- The National IMCI Task Team should visit facilities at regular intervals to provide support and guidance as well as to boost the morale of health workers
- The health system constraints need to be discussed and addressed at national and district levels.
- IMCI should be recognized as a strategy that would accelerate attainment of the 4th Millennium Development Goal; hence programmes such as Malaria Control, Health Promotion, Human Resource Development and HIV and AIDS should include IMCI in their agenda.

Recommendations for District Health Team; District and Facility Managers or Supervisors and / or IMCI facilitators

- The findings of this survey, such as inadequacies regarding checking for danger signs, main symptoms, counselling and checking the mother's health, need to be brought to the attention of District Managers, District Supervisors and IMCI facilitators, course directors and clinical instructors.
- More emphasis should be placed on the clinical aspects of training, especially, assessment, classification and treatment. Follow up and support of trained IMCI health workers should be intensified.
- Facility and district supervisors should be trained in IMCI Signs not seen during training e.g. wheezing, palmar pallor, should be revisited during follow-up and subsequent supervisory visits.
- Managers need to be orientated to, or trained, in the IMCI strategy
- The training of health workers, community health workers and volunteers should include IMCI, so that they can effectively promote and practice IMCI activities at community or health facility levels
- The household and community component of IMCI should be discussed and implemented Pre-service training for nurses and Pharmacy technicians must be prioritized.

1. BACKGROUND

1.1 Child Health in Botswana

The 2001 population and housing census estimates that Botswana has a total population of 1,680,863, of which 2.5% are under the age of one year and 11.7% are under the age of 5 years.¹

According to World Bank data, 2002, the infant and under-five mortality rates in Botswana were 74 and 95 per 1000 live births, respectively.² The Human Development report cites Botswana as being one of the countries that have been “slipping back” in attaining Millennium Development Goal 4 (MDG 4) which aims to reduce by two-thirds the under five mortality rate by 2015.³ The report noted an increase in under-five mortality rate between 1990 and 2001, from 58 to 110 per 1000 live births; hence the average annual rate of reduction in under-five mortality needed to achieve MDG 4 is 13.4%.^{4;5} The sharp upward trend in under-five mortality is attributed to the HIV/AIDS epidemic. The other causes of under-five mortality are diarrhoeal diseases, acute respiratory infections and neonatal infections.⁶

1.2 National trends and responses to child health in Botswana

Health Care Delivery System

Government expenditure on health currently comprises 8 % of the total Government development budget. The Government of Botswana is committed to health development as an integral part of the total development of Botswana; hence the health of citizens is important in pursuit of national objectives in the context of vision 2016. The implementation of primary health care, as a strategy for attaining health for all, together with activities geared towards health promotion, care and disease prevention, have been prioritized by the Government. Other, equally important, key areas of Government emphasis are equitable distribution of health services and the provision of referral systems.

Botswana has a well-organized health care system. Health facilities are accessible to the general community. There are 2 referral hospitals with specialists, 13 district hospitals, 17 primary hospitals, 248 clinics (92 with maternity) and 339 health posts. The Ministry of Local Government largely provides Primary Health Care services that are coordinated by council health departments. Currently 24 health districts are structured and functioning as a District Health Teams (DHTs) led by public health specialists.

IMCI implementation in Botswana

The IMCI strategy was introduced to Botswana in 1997. The IMCI working group was formed in 1997 and five (out of 24) districts were selected to start IMCI implementation. This was followed by a national orientation workshop to advocate the impact of the strategy in reducing infant and under five mortality rates. In 1998 the generic materials were adapted and in 1999 national IMCI training was conducted. Subsequently, district IMCI training and follow-up after training, complemented with health facility support visits, continued. In June 2001, after a national IMCI review, plans were made to

expand the IMCI strategy to 6 other districts. This review also highlighted the need for initiation of the Household and Community Component of IMCI. To this effect, an orientation workshop on this component was held in Gaborone, Botswana, from 23rd - 26th October 2001.

By 2004 IMCI was part of the national health delivery system, with Government commitment and funding (180 000 USD per year), as well as the support of partners such as WHO and UNICEF. Moreover, by 2004 IMCI was in the expansion phase of implementation, and was being implemented^a in 11 of the 24 districts, namely Gaborone, Francistown, Chobe, Okovango, Maun, Kglagadi North, Kglagadi south, Kweneng, Kgatleng, South East and Mahalapye. By 2004, 176 people had been trained in IMCI case management. Joint national and district planning for IMCI implementation occurs twice a year.

In 2004 an IMCI health facility survey (HFS) was conducted. This document reports the results of this HFS.

^a This means that at least one person in each of these districts is trained in IMCI and that other activities such as planning, supervising and ensuring availability of drugs are occurring.

2. METHODS

The overall objective was to assess case management and health system issues relating to the management of sick children aged 2 months to five years in facilities implementing IMCI. The general objective was to evaluate the quality of care delivered to sick children by first level health facilities in IMCI-implementing^b districts. The specific objectives were to assess the following: (i) Case management skills of health workers; (ii) Caregiver satisfaction and understanding of the consultation; and (iii) The availability of health facility equipment, drugs, supplies and communication networks.

2.1 Design

The study was a cross sectional survey.

2.2 Sampling

The survey was conducted in the 6 districts that were the first to implement IMCI (Francistown, Mahalapye, South East, Gaborone, Kgalagadi North and Kgalagadi south). Thirty-five health facilities were selected in the 6 districts using systematic random sampling with a logical geographical representation of health facilities that were implementing IMCI. The sample size allowed for easy logistic management and calculation of indicators.

2.3 Selection of study population

The first 6 sick children aged 2 to 59 months attending a selected health facility on the day of the survey for an initial visit, with any illness and whose mothers consented, were enrolled in the survey.

2.4 Selection of Health workers

Any health worker managing children on the day of the survey was observed.

2.5 Survey Instruments

WHO generic IMCI HFS instruments were adapted to Botswana IMCI guidelines, national policies and standards. See Annexure one for details of the instruments used.

2.6 Training of Supervisors and Surveyors

Twenty surveyors were trained, during a three-day course, in how to interpret and administer the survey forms. Training included a theoretical component on use of the questionnaires and a practical component on administering the questionnaires. All surveyors were either IMCI facilitators or supervisors. Reliability testing scores at the end of the training were 92%.

2.7 Data Collection

Each survey team comprised of three people: one surveyor for observation of case management, one surveyor (the Gold Standard) for exit interview of the caretaker and re-examination of the child, and one surveyor for health facility equipment and supplies and enrollment of sick children. Two facilities were visited each day. Surveyors spent the morning and one facility and the afternoon at the second facility.

2.8 Data Processing and Analysis

Data was entered and analysed using EPI INFO. Data entry was done from 17th to 20th October. The WHO Analysis Plan was used to analyse the data. During data analysis the results to WHO-established IMCI Priority and Supplemental Childhood Health Indicators were generated (see Annexure 2).

^b An IMCI-implementing district is defined as a district in which at least one person in each of these districts is trained in IMCI and that other activities such as planning, supervising and ensuring availability of drugs are occurring.

3. RESULTS

3.1 Description of study population and health workers

Ninety-eight (98) children were observed in 35 health facilities (2 primary hospitals, 23 clinics and 6 health posts). The number of children observed per district ranged from 5 in Kgalagadi North to 29 in Francistown.

Fifty-three percent of children observed were males and 47% were females. Most children observed were aged between one and two years. 10 (10.2%) children were under the age of one year and 50 (52%) were aged between one and two years.

Seventy-three children (94%) were brought to the clinic by their mother.

Nurses managed 83% (81/98) children:

- 33% of nurses observed were trained in IMCI.

Among sick children surveyed and classified by the Gold Standard, 13% presented with a single IMCI classification while others presented with more than one classification. Table I shows that the commonest classifications made were cough, diarrhoea, fever and symptomatic HIV infection.

Table 1: Classification of sick children by IMCI Gold Standard

Indicator	No.	Percentage
Pneumonia	7	3
Cough or cold	42	20
Diarrhoea with severe Dehydration	2	1
Diarrhoea with some Dehydration	2	1
Diarrhoea with no Dehydration	18	9
Dysentery	1	0
Fever, Malaria unlikely	5	2
Fever No Malaria	34	16
Acute ear infection	4	2
Chronic ear infection	2	1
No ear infection	5	2
Anaemia	2	1
Low weight	8	4
No anaemia	57	27
Symptomatic HIV infection	22	10

3.2 Assessment

Assessment of general danger signs

Few children (range 0 in Kgalagadi South to 60% in Kgalagadi North) were checked for general danger signs (see Table 2).

Table 2: Checking for general danger signs

INDICATOR	DISTRICT						TOTAL
	FT	G	KN	KS	M	SE	
Child checked for three general danger signs	1/29 (3.5)*	2/26 (7.7)	3/5 (60)	1/10 (10)	0/7 0	5/20 (25)	12/97 (12.4)
Child checked for lethargy	½ (50)	0/1	0/0	1/1	0/0	0/1	2/5 (40)

*All values in parentheses are percentages

Few children were assessed for main symptoms (see Table 3). As shown in table 3, all indicators on assessment were low. However, checking for malnutrition was of particular concern. Checking for cough, diarrhoea and fever seemed to be better in Kgalagadi North and South East districts than in the other districts.

Table 3: Checking for main symptoms

INDICATOR	DISTRICTS						TOTAL
	FT	G	KN	KS	M	SE	
Child checked for the presence of cough, diarrhoea, and fever	12/29 (41.4)*	10/26 (38.5)	5/5 (100)	7/11 (63.6)	2/5 (40)	9/11 (81.8)	45/87 (51.7)
Child checked for other problems	23/29 (79.3)	10/26 (38.5)	5/5 (100)	5/11 (45.5)	4/7 (57.1)	9/19 (47.4)	56/97 (57.7)
Child weight checked against a growth chart	7/27 (25.9)	1/18 (5.5)	4/4 (100)	8/11 (72.7)	1/6 (16.7)	7/15 (46.7)	28/81 (34.6)
Child under two years of age assessed for feeding practices	5/18 (27.8)	2/14 (14.3)	1/2 (50)	3/9 (33.3)	2/5 (40)	2/12 (16.7)	15/60 (25)
Child with low weight is assessed for feeding problems	0/0	1/1 (100)	0/0	0/3 (0)	1/2 (50)	0/3 (0)	2/9 (22.2)
Child vaccination status checked	18/29 (62.1)	7/26 (26.9)	5/5 (100)	9/11 (81.8)	5/7 (71.4)	15/20 (75)	59/98 (60)

*All values in parentheses are percentages

During data analysis, an index of integrated assessment was created. Ten tasks contributed to this index namely checking for at least three general danger signs, diarrhoea, cough, fever, palmar pallor, vaccination status, child's weight and whether weight was checked against the growth chart. For each child observed a score of 1 was allocated every time a task was performed. Hence the integrated assessment for each child observed was scored out of 10. The higher the score, the more the comprehensive the assessment. The mean index of integrated assessment was 6.8 for IMCI trained health workers (n=30) and 4.2 for health workers who did not have IMCI training. Thus IMCI-trained health workers tended to do a more comprehensive assessment than non-IMCI-trained health workers.

Table 4 shows the mean index of integrated assessment by year of IMCI-training:

Table 4: Mean index of integrated assessment (MIAA) by year of training

Year	MIAA
1999	6.0
2000	7.1
2001	8.2
2002	6.1

3.3 Classification

Of the sick children surveyed, 13% had a single classification; most children had more than one IMCI-classification. Overall, 60.2% (59/98) children were correctly classified, and 22% (2/9) children with very low weight were correctly classified. More than 60% of children in Gabarone, Kgalagadi North and South East were correctly classified.

Figure 1 below shows details of the classifications made by health workers, and table 5 compares classifications made by the Gold Standard with those made by health workers.

Figure 1: Distribution of IMCI classification among surveyed sick children

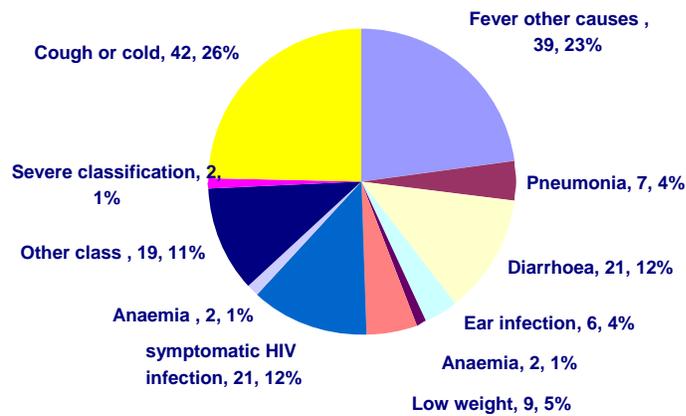


Table 5: Classifications made by the Gold Standard versus those made by the health worker

Classification Indicator	Classifications made by Gold Standard		Classifications made by observed health worker
	No.	%	%
Severe classification	2	1	2
Pneumonia	7	3	7
Cough or cold	42	20	42
Diarrhoea with severe Dehydration	2	1	21
Diarrhoea with some Dehydration	2	1	
Diarrhoea with no Dehydration	18	9	
Dysentery	1	0	none
Fever, Malaria unlikely	5	2	none
Fever No Malaria	34	16	none
Fever other cause	none		39
Acute ear infection	4	2	6
Chronic ear infection	2	1	
No ear infection	5	2	none
Anaemia	2	1	2
Low weight	8	4	9
No anaemia	57	27	none
Symptomatic HIV infection	22	10	21
Other classifications	none		19

3.4 Treatment

Table 6 shows that few children were treated correctly. The following are of concern:

- antibiotics were correctly prescribed in 31% of children
- 40.3% of children not needing an antibiotic left the facility with an antibiotic
- none of the two children needing urgent referral were treated correctly (data not shown in table).

Table 6: Treatment of sick children

INDICATOR	DISTRICTS						TOTAL
	FT	G	KN	KS	M	SE	
Child needing oral antibiotic is prescribed drug correctly	0/9 (0)*	3/8 (37.5)	1/1 (100)	3/4 (75)	0/2 (0)	2/5 (80)	9/29 (31)
Child with pneumonia correctly treated	0/3 (0)	0/1	1/1 (100)	1/1 (100)	0/1 (0)	0/0	2/7 (28.6)
Child with dehydration correctly treated	0/0	1/1 (100)	0/0	1/1 (100)	0/0	0/0	2/2 (100)
Child with anaemia correctly treated	0/0	0/0	0/0	0/1 (0)	0/0	0/1 (0)	0/2 (0)
Child received first dose in facility	2/20 (10)	1/24 (4.1)	1/5 (20)	1/11 (9)	0/6 (0)	0/18 (0)	5/84 (5.9)
Child not needing an antibiotic leaves facility without one	13/21 (61.9)	10/23 (43.5)	4/4 (100)	4/7 (57.1)	4/5 (80)	8/12 (66.7)	43/72 (59.7)
Child needing vaccination left facility with all needed vaccinations	5/5 (100)	0/0	1/1 (100)	0/0	1/1 (100)	0/1 (0)	7/8 (87.5)

*All values in parentheses are percentages

3.5 Counselling

Table 7 shows that counseling skills were poor: less than one third of caretakers received appropriate counseling.

Table 7: Counselling skills of observed health workers

INDICATOR	DISTRICTS						TOTAL
	FT	G	KN	KS	M	SE	
Caretaker advised to give extra fluids	6/29 (20.7)*	4/26 (15.4)	2/5 (40)	3/11 (27.3)	1/7 (14/3)	6/20 (30)	22/98 (22.5)
Sick child whose caretaker is advised on when to return immediately	2/29 (6.9)	2/26 (7.7)	4/5 (80)	6/11 (54.4)	1/7 (14.3)	6/20 (30)	15/98 (15.3)
Caretaker of child who is prescribed ORS, and/or an oral antibiotic and/or an oral antimalarial knows how to give the treatment	18/18 (100)	16/16 (100)	2/2 (100)	8/9 (88.9)	4/4 (100)	10/11 (90.9)	58/60 (96.7)
Child with very low weight whose caretaker received correct counselling	0/0	1/1 (100)	0/0	0/3 (0)	2/2 (100)	0/3 (0)	3/9 (33.3)
Caretaker shown mother's card	0/1 (0)	4/25 (16)	0/3 (0)	0/11 (0)	0/5 (0)	2/17 (11.8)	6/62 (9.7)

*All values in parentheses are percentages

3.6 Health Systems Support

Table 8 shows that essential drugs, vaccines and equipment were not readily available at many facilities. Of particular concern is that not all facilities had the essential equipment and supplies to provide full vaccination services.

Furthermore, not all 8 essential oral treatments^c were available, and not all injectable drugs were available.

^c ORS, Amoxicillin, Co-trimoxazole, SP, Paracetamol, Salbutamol, prednisolone and Erythromycin

Table 8: Availability of essential vaccines, drugs and other supplies on the day of the survey

INDICATOR	DISTRICTS						TOTAL
	FT	G	KN	KS	M	SE	
Index of availability of oral treatment (mean)	6.75	6.67	7.25	6.4	7	5	6.5
Index of availability of injectable drugs for pre-referral treatment	2.38	2.4	2.5	2.8	1.6	2	2.3
Proportion of facilities with equipment and supplies to provide full vaccination services	5/8 (62.5)*	4/9 (44)	3/4 (75)	5/5	3/5 (60)	4/4	21/35 (68.6)
Mean of 4 recommended antigens available at facility	3.75	3.89	4	4	3	3.75	3.73
% of health facilities with 60% of health workers managing children trained in IMCI	0/8 (0)	0/9 (0)	0/4 (0)	0/5 (0)	0/5 (0)	1/4 (25)	1/35 (2.9)
Health facility has all the essential equipment and supplies	4/8 (50)	1/9 (11.1)	2/4 (50)	2/5 (40)	3/5 (60)	0/4 (0)	12/35 (34.3)
Health facility has IMCI chart booklet and mother's card	7/8 (87)	3/9 (33)	3/4 (75)	1/5 (20)	5/5 (100)	3/4 (75)	22/35 (62.9)

*All values in parentheses are percentages

Health facility support visits occurred infrequently: only 3% of the facilities visited received one supervisory visit and none of the facilities received a supervisory visit that included observation of case management.

4. DISCUSSION AND IMPLICATIONS OF THE RESULTS

According to numerous global reports, Botswana is slipping back in achieving MDG 4: ⁷⁻⁹Data from the Human Development Report 2004⁷ and the MDG Promises and Progress Report⁸ show that Botswana is one of 17 countries that have experienced a decline in measles immunisation coverage. These data also show that under five mortality rates in Botswana have increased since 1990; hence the average annual rate of reduction in under-five mortality rate needed to achieve MDG 4 is 13.4%⁹.

Data that show that IMCI is an intervention that can contribute towards decreasing under five mortality¹⁰, and that training of health workers in IMCI produces positive effects if the training includes clinical practice, sufficient facilitators and use of materials relevant to local culture and language¹¹.

4.1 Methods

The study was a cross sectional observational study; hence it provides a snap-shot of how children are managed within randomly-selected health facilities. It is likely that observation could have resulted in improved performance of health workers.

Only 33% of health workers observed were trained in IMCI; hence this survey could provide baseline information for a follow-up survey on quality of care provided in districts implementing IMCI.

4.2 Study population

Between two and three children (and not six) were enrolled per facility as few children presented for care per facility. This was due to poor utilisation of health services in Botswana.^d

4.3 Assessment

In general assessment skills can be improved:

- 51.7% of children were checked for cough, diarrhoea and fever
- 57.7% of children were checked for other problems

Assessment for nutrition is of particular concern: only 34.6% of children had their weight checked against a growth chart and 22% of children with low weight were assessed for feeding problems. Malnutrition is a leading cause of childhood mortality globally – almost half of the deaths amongst children under the age of five years are associated with malnutrition¹². Hence it is crucial that health workers correctly assess for malnutrition.

If, as data show, measles immunisation coverage is decreasing, it is imperative that all children have their vaccination status checked.

The data show that IMCI-trained health workers tended to perform a more integrated assessment than non-IMCI trained health workers. This is consistent with the results

^d Data from Ministry of Health, Botswana

from the Tanzanian multi-country evaluation of IMCI and the South African IMCI Health facility surveys.

4.4 Classification

It is likely that not all children were correctly classified because they were not correctly assessed.

4.5 Treatment

Data show that antibiotic use was sub-optimal: they were either incorrectly prescribed (incorrect dose / frequency) or prescribed unnecessarily. This is not surprising as less than one third of health workers were trained in IMCI.

4.6 Counselling

Counselling skills need to be greatly improved: less than one third of caretakers received appropriate counseling. Most sick children are managed at home; hence to prevent complications of illness, and thus morbidity and mortality, caregivers need to receive and understand key messages.

4.7 Health Systems Support

Of particular concern is that not all facilities had the essential oral treatment; injectable treatment and equipment and supplies to provide full vaccination or child health services. Recent studies have shown that the presence of strong health system support may provide a necessary foundation for implementation of IMCI and maintaining adequate performance after training.¹³ Hence the reasons for a poorly functioning health system need to be ascertained so that the deficiencies can be addressed.

4.8 General observations and comments

During the survey, surveyors made the following general observations:

- District managers had many responsibilities and had no time to visit health facilities.
- The ratio of one facilitator to four participants during IMCI case management courses is not strictly maintained; this is likely to impact negatively on the quality of the training.
- The course director sometimes has had to act as a facilitator or clinical instructor. Directing a course effectively requires full dedication, and is a difficult and specific role; hence when the course director has to take on the responsibilities of facilitator or clinical instructor the quality of the course may be compromised.

4.9 Implications of the results

There are few published studies on child health care and health services in Botswana; hence this study, which observed many health workers not trained in IMCI, would serve as an important landmark against which progress can be measured.

There is no doubt that IMCI is an intervention that can contribute towards decreasing under five mortality¹⁴. However, high quality of training during the IMCI case management course, and follow-up after training, are essential if the IMCI strategy is to reduce morbidity and mortality of the under-fives. This survey shows that despite the fact that Botswana is in the expansion phase of IMCI implementation:

1. few facilities are saturated with IMCI-trained health workers
2. quality of care for sick children needs improvement (assessment, treatment and counselling)
3. the health system needs to be strengthened to support key child health care services such as immunisation

In order for Botswana to accelerate action for the attainment of MDG 4, the following needs to be done:

- common vaccine-preventable childhood illnesses need to be prevented through routine immunisation
- care seeking behaviour and management of sick children at household and community levels need to be appropriate
- quality of case management at facility level needs to be improved and
- the functioning of the health system needs to be improved

5. RECOMMENDATIONS

General

- IMCI expansion needs to be discussed, reviewed and carefully planned at the joint national and district planning meetings. Facilities and districts should be saturated with IMCI-trained health workers before implementation moves to another facility or district. This would ensure that trained health workers synergistically provide appropriate child health care, instead of their efforts being diluted if they are widely distributed across many facilities in different districts.
- The health system constraints, which extend beyond the realm of work of the IMCI practitioner, need to be discussed at national and district levels.
- IMCI must be recognized as a strategy that would accelerate attainment of MD 4 so that all programme coordinators at provincial level, such as Health Promotion, Human Resource Development, and others, include IMCI in their agenda.
- Adequate human, financial and material resources need to be allocated to IMCI.

Recommendations for action at district level

- Managers at all levels need to be orientated to or trained in the IMCI strategy.
- The National IMCI Task Team should visit facilities at regular intervals to provide support and guidance as well as to boost the morale of health workers.
- Facility and district supervisors should be trained in IMCI.
- Follow up and support of trained IMCI health workers must be intensified.
- The findings of this survey, such as inadequacies regarding checking for danger signs, main symptoms, counselling and checking the mother's health, need to be brought to the attention of District Managers, District Supervisors IMCI facilitators, course directors and clinical instructors.
- The training of health workers, community health workers and volunteers should include IMCI, so that they can effectively promote and practice IMCI activities at community or health facility levels.
- The household and community component of IMCI calls for extensive discussion and implementation with the community.
- Pre-service training for nurses and Pharmacy technicians must be prioritized.
- More emphasis should be placed on the clinical aspects of training, especially, assessment, classification and treatment. Signs not seen during training e.g. wheezing, palmar pallor, should be revisited during follow-up and subsequent supervisory visits.

ANNEXES

Annexure one: Survey instruments

Form 0 Enrollment of the sick child

This form was used to enroll all children 2 months to 5 years of age, who were sick, coming for the first visit and whose caretakers had consented to participate in the survey.

Form 1 Observation of Case Management

Surveyors observed health workers managing sick children. They recorded what they heard or observed during the case management process, on Form 1. This included following the child during all the management steps from Assessment, Classification, Treatment, and Counselling of caretakers on home management.

Form 2 Exit Interview

A survey team supervisor who was also the Gold Standard administered this instrument. This was applied to caretakers whose child had been observed during the case management. The caretaker understands of prescription and counselling done by the health worker on home care was evaluated.

Form 3 Re-examination

The IMCI Gold Standard re-examined, using standard IMCI guidelines, the child who was previously managed by a health worker and observed by a surveyor. This was done in order to obtain the correct assessment and classification (Gold Standard). A comparison was then made between the Gold Standard Classification and that of the health worker observed.

Form 4. Health Facility Equipment and Supplies

The second surveyor obtained information on the availability of health system supports by observing activities in the health facility, interviewing the person in-charge of the facility for information on the number of health workers in the facility and their IMCI training status, the availability of essential equipment, drugs, vaccines, supplies and accessibility to mechanisms for referral.

Annexure two: Priority and Supplemental Indicators

Priority Indicators

Indicator	Definition
Priority indicator 1: Child checked for three danger signs:	Proportion of children checked for three danger signs
Priority indicator 2: Child checked for the presence of cough, diarrhoea and fever:	Proportion of children checked for the presence of cough, diarrhoea and fever
Priority indicator 3: Child weight checked against a Road to Health chart:	Proportion of children who have been weighed the same day and have their weight checked against a recommended growth chart
Priority indicator 4: Child vaccination status checked:	Proportion of children who have their vaccination status checked
Priority indicator 5: Index of integrated assessment:	Arithmetic mean of 10 assessment tasks performed for each child
Priority indicator 6: Children under two years of age assessed for feeding practices	Proportion of children under 2 years of age whose caretakers are asked about breastfeeding, complementary foods and feeding practices during this episode of illness
Priority indicator 7: Child needing an oral antibiotic and/or oral antimalarial is prescribed drug correctly:	Proportion of children who do not need urgent referral, who need an oral antibiotic or anti-malarial who are prescribed the drug correctly
Priority indicator 8: Child not needing antibiotic leaves facility without one	Proportion of children who do not need urgent referral and who do not need an antibiotic for one or more IMCI classifications, who leave the facility without having received or prescribed antibiotics
Priority indicator 9: Caretaker of sick child is advised to give extra fluids and continue feeding	Proportion of sick children whose caretakers are advised to give extra fluid and continue feeding
Priority indicator 10: Child needing vaccination leaves facility with all need vaccinations	Proportion of children needing vaccinations (based on vaccination card or history) who leave the health facility with all needed vaccinations
Priority indicator 11: Caretaker of child who is prescribed ORS, and or oral anti biotic and or oral antimalarial knows how to give treatment	Proportion of children prescribed ORS, and or oral antibiotic, and or oral antimalarial whose caretaker can describe correctly how to give the treatment
Priority indicator 12: Child needing referral is referred	Proportion of children needing referral who are referred by health workers to a higher level of the health system
Priority indicator 13: Health facility received at least one supervisory visit that included observation of case management during the previous 6 months	Proportion of health facilities that received at least one supervisory visit that included the observation of case management during the previous 6 months
Priority indicator 14: Index of availability of essential oral treatments	Essential oral drugs for home treatment of sick children present at facility on the day of the visit
Priority indicator 15: Index of availability of injectable drugs for pre-referral treatment	Injectable antibiotics and antimalarials for pre-referral treatment of severely ill children and young infants present at the facility on the day of the visit
Priority indicator 16: Health facility has the equipment and supplies to support full vaccination	Proportion of health facilities that have the equipment and supplies to provide full vaccination services the day of the survey
Priority indicator 17: Index of availability of 4 vaccines	Mean of 4 recommended antigens available at each facility the day of the visit
Priority indicator 18: Health facilities with at least 60% of workers managing children trained in IMCI	Proportion of health facilities with at least 60% of health workers managing children trained in IMCI

Supplemental Indicators

Indicator	Definition
Supplemental indicator 1: Child checked for other problems	Proportion of children brought to the facility for other problems who were checked for this other problem
Supplemental indicator 2: All main symptoms identified	Proportion of children with one or more main symptoms for whom all symptoms were identified
Supplemental indicator 3: Children with very low weight assessed for feeding problems	Proportion of sick children with very low weight who are assessed for feeding problems
Supplemental indicator 4: Child with very low weight is correctly classified	Proportion of children with very low weight who are correctly classified
Supplemental indicator 5: Child is correctly classified	Proportion of children whose classifications given by the h/w match all classifications given by the IMCI-trained surveyor
Supplemental indicator 6: Child with pneumonia correctly treated	Proportion of children with pneumonia who are prescribed antibiotic treatment correctly
Supplemental indicator 7: Child with dehydration treated correctly	Proportion of children with dehydration who are prescribed antibiotic treatment correctly
Supplemental indicator 8: Child with malaria treated correctly	Proportion of children with malaria who are prescribed antibiotic treatment correctly
Supplemental indicator 9: Child with anaemia treated correctly	Proportion of children with anaemia who are prescribed antibiotic treatment correctly
Supplemental indicator 10: Child received first dose at the facility	Proportion of children who do not need urgent referral, who need an antibiotic or antimalarial, who receive the correct first dose at the facility
Supplemental indicator 11: Child checked for lethargy	Proportion of children not visibly awake who are checked for lethargy
Supplemental indicator 12: Child with severe illness treated correctly	Proportion of children with severe classification needing urgent referral who receive correct treatment and referral
Supplemental indicator 13: Child prescribed oral medication whose caretaker is advised on how to administer the treatment	Proportion of children who do not need urgent referral, who received or were prescribed an antibiotic and /or antimalarial, and/or ORS who received at least two treatment counselling messages
Supplemental indicator 14: Sick child whose caretaker is advised on when to return immediately	Proportion of sick children whose caretakers received at least 3 counselling messages on when to return immediately
Supplemental indicator 15: Child with very low weight whose caretaker received correct counselling	Proportion of children with very low weight whose caretaker are provided with age-appropriate feeding messages
Supplemental indicator 16: Child leaving facility whose caretaker was shown a mothers card	Proportion of children not needing urgent referral whose caretakers have a mothers counselling card with them at departure, or report having been shown a mothers card by the h/w
Supplemental indicator 17: Health facility has all the essential equipment and materials	Proportion of health facilities that have all the equipment and materials available on the day of the survey
Supplemental indicator 18 Health facility has IMCI chart booklet	Proportion of health facilities that have an IMCI chart booklet available for use by h/w on the day of the survey

ACKNOWLEDGEMENTS

The Ministry of Health, Botswana
District Medical Officers from participating Districts, Health facility staff and caretakers
who were involved in the survey, WHO AFRO, UNICEF.

Reference

- ¹ 2001 Population and Housing Census; Botswana. http://www.cso.gov.bw/html/census/census_2k.html. Accessed 12 February 2005.
- ² World Development Indicators database – The World Bank, <http://www.worldbank.org/data/countrydata/countrydata.html>. Accessed October 31 2004
- ³ Human Development Report 2004. <http://hdr.undp.org/reports/global/2004/>. Accessed 5 December 2004
- ⁴ State of the World's Children, UNICEF, 2003. http://www.unicef.org/sowc04/sowc04_contents.html. Accessed 12 October 2004
- ⁵ Progress for Children: A Child Survival Report Card: September 2004: New York <http://www.unicef.org/publications/files/29652L01Eng.pdf>. Accessed 3rd December 2004
- ⁶ At a Glance, Botswana. <http://www.unicef.org/infobycountry/botswana.html>. Accessed 14 March 2005
- ⁷ Human Development Report 2004. <http://hdr.undp.org/reports/global/2004/>. Accessed 5 December 2004
- ⁸ The Millennium Development Goals in Africa: Promises and Progress: Report prepared by UNDP and UNICEF at the request of the G-8 personal representatives for Africa, New York, June 2002. <http://www.undp.org/mdg/mdgreportinafrica.pdf>
- ⁹ UNICEF. State of the World's Children, 2003. http://www.unicef.org/sowc04/sowc04_contents.html. Accessed 12 October 2004
- ¹⁰ Bryce J, el Arifeen S, Pariyo CF, Gwatkin D, Habicht J-P and the multi-country evaluation of IMCI study group. Reducing child mortality: can public health deliver? *The Lancet* 2003; 362: 159-64
- ¹¹ Tanzania IMCI multicountry evaluation of health facility survey study group. Health care for under –5'in rural Tanzania: effect of Integrated Management of Childhood Illness on observed quality of care. *Health Policy and Planning* – in press
- ¹² Nutrition for health and development: A global agenda for combating malnutrition. Progress Report. World Health Organisation. 2000: http://www.who.int/nut/documents/nhd_mip_2000.pdf. Accessed 10 October 2004
- ¹³ Bryce J, Cutts F, Naimoli JF, Beasley M. What have teachers learnt? *Lancet* (letter). 1993; **342**: 160-161.
- ¹⁴ Bryce J, el Arifeen S, Pariyo CF, Gwatkin D, Habicht J-P and the multi-country evaluation of IMCI study group. Reducing child mortality: can public health deliver? *The Lancet* 2003; 362: 159-64

