A Pilot Project to Evaluate the Effectiveness of the Integrated Management of Childhood Illness (IMCI) Strategy in Two Districts in the Western Cape Province of South Africa

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Student:	Smruti Patel
Student Number:	2146288
Degree:	Masters in Public Health
Department:	Public Health
Faculty:	Community and Health Sciences
Supervisors:	Dr. Mickey Chopra
	Prof. David Sanders

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Introduction

The Integrated Management of Childhood Illnesses (IMCI) has been adopted as a national programme in South Africa to address facility-based management of acute childhood illnesses. This programme is an internationally endorsed WHO/UNICEF strategy which aims to reduce childhood mortality and morbidity by addressing the five common illnesses directly responsible for 70% of all childhood deaths world wide in an integrated manner (South African Health Review 2000).

The five common killer diseases throughout the world are respiratory illnesses, diarrhoeal disease, measles, malaria and malnutrition. The young child morbidity and mortality profile in South Africa is much the same as the rest of the world; of the five commonest killer diseases, respiratory illnesses, diarrhoeal disease and malnutrition or a combination of these conditions are the most important. These are the diseases upon which IMCI in South Africa focuses (South African Health Review 2000). HIV/AIDS has now also been added to this list.

The goal of the IMCI programme is to train all primary health care workers in IMCI by the end of 2003. The facility-based component of IMCI trains health workers using an eleven day training course consisting of classwork and hands-on clinical practice using integrated case management guidelines.

The training of each health worker is costly in terms of time and money. Health workers are absent from their normal duties for the eleven day course, leaving health facilities even more stretched with limited staff.

South Africa is relying upon, and investing enormously, in this untested IMCI strategy to reduce childhood morbidity and mortality. Despite the heavy cost involved in the implementation of IMCI, there have been very few international and no national

evaluations on the effectiveness of the IMCI intervention. It is essential that the IMCI strategy be evaluated to see if it is meeting its objectives.

In the Western Cape Province of South Africa, the IMCI strategy is first being implemented in the Tygerberg Administration. This presents an ideal opportunity to measure the impact of IMCI. In this study the preventive, promotive and clinical management of sick children by health workers will be assessed and measured before and after the implementation of the IMCI strategy, using previously tested standardised tools.

The results of this evaluation will then be reported back to the various stakeholders involved, in order that any changes necessary can be implemented speedily and hence strengthen the impact of the IMCI programme.

Literature Review

Extent and Causes of Childhood Morbidity and Mortality

Almost twelve million children under the age of 5 die worldwide annually, even though most of the causes of these deaths are preventable (UNICEF 2001). Worldwide, childhood mortality continues to fall. Despite increases in population, the estimated annual number of deaths among children under the age of 5 has decreased by more than 50% since the 1960's as shown in the table 1 below:

Table 1:Under 5 Mortality Rates

	<5 mortality rate		
	1960	1990	1999
Worldwide	198	92	82
South Africa	130	60	69

(UNICEF 2001)

However, progress has been uneven, and in some countries, including South Africa, childhood mortality rates are rising again: this is mostly attributed to the impact of the HIV/AIDS epidemic.

Seven out of ten of these deaths are due to five main conditions or a combination of them. They are: acute respiratory infection (mainly pneumonia), diarrhoea, measles, malaria and malnutrition. Even in the present climate of the HIV/AIDS epidemic these five conditions remain the commonest causes of morbidity and mortality. Projections show that the five conditions above will continue to be major contributors to child deaths in the year 2020 unless significantly greater efforts are made to control them (Murray 1996). In addition 3 out of 4 episodes of childhood illness are caused by one of these conditions.

Rationale for IMCI

The extent of childhood mortality and morbidity in the developing world caused by the five main conditions above is not in itself a rationale for an integrated approach to dealing with them. However, most sick children present with signs and symptoms related to more than one of these conditions. This overlap means that a single diagnosis may not be possible or appropriate and treatment may be complicated by the need to combine therapy for several conditions.

Table 2 below shows why for many sick children a single diagnosis may not be apparent or appropriate:

Presenting complaint	Possible cause or associated condition
Cough and/or fast breathing	Pneumonia Severe anaemia Malaria
Lethargy or unconsciousness	Cerebral malaria Meningitis Severe dehydration Very severe pneumonia
Measles rash	Pneumonia Diarrhoea Ear infection
"Very sick" young infant	Pneumonia Meningitis Sepsis

(IMCI Information 1998)

For example, a study in Bangladesh of over 1300 children presenting to a clinic found that only 15% of children presented with one symptom and most frequently presented with at least three (Arifeen 2000). Experience worldwide in the early 1990's led to the realisation that an integrated approach to the management of sick children was indicated. One such example was that the WHO noted that a reduction in deaths from diarrhoea could not be achieved by the use of oral rehydration therapy (ORT) alone. Even though ORT is the most appropriate management for acute watery diarrhoea, dietary measures are needed for persistent diarrhoea and antibiotics for dysentery

(Black 1993). Another study showed the overlap in clinical features of pneumonia and malaria in African children (O'Dempsey 1993).

Such evidence indicated that child health programmes needed to go beyond single disease specific programmes and address the overall health of the child (Lambrechts 1999). Guidelines and training materials that focus on one disease can result in undertreatment of other conditions. Asking health workers to integrate disease specific guidelines from several programmes when managing a sick child can result in inadequate care (Gove 1997).

The IMCI Strategy

Although the major stimulus to the development of IMCI came from the challenges of curative care, the strategy also focuses on nutrition, immunisation, counselling and other important factors influencing child health, including maternal health.

The IMCI strategy consists of 3 components:

1. Improving case management skills of health workers through training, supportive supervision and the use of locally adapted guidelines
2. Improving health delivery systems in order to provide quality care
3. Improving household and community practices so as to provide effective community based support for child survival, growth and development

The objectives of this strategy are to reduce death and the frequency and severity of illness and disability amongst young children and to contribute to their improved growth and development.

Development of Case Management Guidelines

The case management guidelines that have been developed are targeted at health workers in first line facilities. They are designed to give clear, practical guidelines for the diagnosis and treatment of the most important common childhood illnesses (Campbell 1996). The guidelines for integrated management of childhood illness are based on both expert clinical opinion and research results. A technical review of existing program guidelines was carried out with the cooperation of 12 WHO technical programmes. Draft guidelines were then reviewed by clinicians and experts in specific diseases who had experience in clinical and public health work in developing countries and then examined in research studies and by field-testing the training course (Gove 1997).

Sufficient data were not available to make several guideline decisions. Particular problems were encountered in choosing clinical signs to detect anaemia and to decide which children with fever in a low malaria risk setting do not need antimalarial treatment (Gove 1997). Further studies were then conducted to decide on which clinical signs to use for the classification of anaemia. One study was done of 1226 children in a district hospital in rural Uganda and 668 children in a children's hospital in Dhaka, Bangladesh. Results show that simple clinical signs can correctly classify the anaemia status of most children. Grunting respiration may serve as a useful adjunct to pallor in the diagnosis of severe anaemia. Conjunctival pallor should be added to the IMCI anaemia section, or the guidelines need to be adapted in regions where palmar pallor may not readily be detected (Kalter 1997). Another study in the Gambia evaluated the IMCI algorithm in an area with seasonal malaria. The study involved 440 children aged 2 months to 5 years, The children were first assessed by a trained field worker using the algorithm and then by the paediatrician whose clinical

diagnosis was supported by laboratory investigations, and, when indicated, a chest X-ray. The study concluded that the draft IMCI algorithm proved to be effective in the diagnosis of pneumonia, gastroenteritis, measles and malnutrition, but not malaria, where its use without microscopy would result in considerable overtreatment, especially in a low transmission area or during a low transmission season in countries with seasonal malaria (Weber 1997)

The 11-day training course that has been developed combines classroom work and hands-on clinical practice built around the integrated case management guidelines. The seven modules of the complete course incorporate individual feedback on exercises, group discussions, drills, role plays, and photo and video exercises. The course provides substantial clinical experience in assessment, classification, treatment and counselling (Gove 1997). Classifications are based on valid yet simple clinical signs which health workers from various backgrounds can be trained to recognise accurately. The substantial clinical experience gained in the course gives the participants confidence in using this approach after training (Campbell 1996).

Following training of health workers, supervisors are selected who provide support and follow-up which includes:

- Observing and strengthening case management skills
- Reviewing facility support with the use of standardised checklists and questionnaires

Although the guidelines are not designed to address all paediatric conditions they enable health workers to manage very high proportions of presenting clinical problems, for example 86% in Kenya, 87% in Ethiopia, 93.5% in Uganda (Gove 1997).

Implementation of IMCI

Introducing and implementing the IMCI strategy in a country is a phased process that requires a great deal of coordination among existing health programs and services.

Phase I: The introduction of IMCI in a country. Initial activities focus on the orientation of decision-makers and the establishment of a national IMCI working group.

Phase II: Early implementation - gaining experience through early implementation. Once commitment has been made to implement the IMCI strategy, a country is encouraged to gain experience through a well-defined set of activities in a limited geographical area. This experience will guide future planning and implementation. The initial focus of this phase is on developing case management guidelines and improving care at first-level facilities.

Phase III: Expansion of activities and coverage. At the end of Phase II, countries plan expansion of IMCI activities in districts already covered and expansion to cover additional districts. The speed of implementation is determined by the time required to build capacity for IMCI management at the district level and by the availability of IMCI tools and guidelines.

The main steps involve:

- Adopting an integrated approach to child health and development in the national health policy.
- Adapting the standard IMCI clinical guidelines to the country's needs, available drugs, policies, and to the local foods and language used by the population.

- Upgrading care in local clinics by training health workers in new methods to examine and treat children, and to effectively counsel parents.
- Making upgraded care possible by ensuring that enough of the right low-cost medicines and simple equipment are available.
- Strengthening care in hospitals for those children too sick to be treated in an outpatient clinic.
- Developing support mechanisms within communities for preventing disease, for helping families to care for sick children, and for getting children to clinics or hospitals when needed.

(www.who.int/cah/interg.htm 2002).

Global Implementation of IMCI

IMCI was first implemented in a few countries (e.g. Uganda, Peru) in 1995, starting with the first component – training of health workers. By December 2001, 30 countries were in Phase I, 49 countries in Phase II and 33 countries in Phase III of IMCI implementation (www.who.int/cah/interg.htm 2002).

IMCI has helped countries update their child health policies, streamline the Essential Drugs List for children, increase service utilisation, improve quality of care and nutritional counselling, improve health systems and improve family and community practices (Patwari 2002).

Implementation of IMCI in South Africa

Implementation of the IMCI strategy commenced in South Africa in 1999 and is now in Phase III, the expansion phase. The Mpumulanga Province was the first to get started. The Western Cape only started with implementation in January 2000 and

training of health workers is an ongoing process. Once a district has been "saturated", that is, at least 75% of first-level health workers have been trained in IMCI case management, then implementation is rolled out to the next district.

Certain conditions included in the generic IMCI materials such as measles and malaria are not major problems in the Western Cape, whereas other conditions such as HIV/AIDS, tonsillitis and asthma are of concern. Hence, adaptation of generic IMCI content is needed with integration of locally generated paediatric case management guidelines; again this is an ongoing process.

Rationale for Evaluation of the IMCI Strategy

Most of the individual therapeutic and preventive elements that go to make up the IMCI treatment guidelines are accepted, proven practices.

However, the outcome of IMCI needs to be monitored and evaluated for the following reasons:

1. There is a need for clear evidence that the resources expended actually produce benefits for people
2. Consumers of service and those that provide the services want to know that programmes to which they devote their time make a difference
3. To help programmes improve services: outcome measurements provide a learning loop that feeds information back into programmes on how well they are doing. The findings can be used to adapt and improve programmes and to make them more effective.

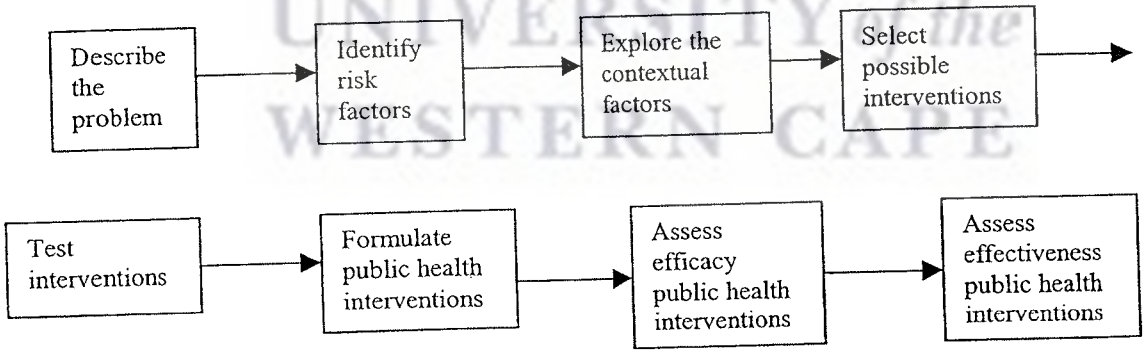
(Measuring Programme Outcomes 1996).

The outcome in this setting is understood to be the practice of health workers following training (increases in child survival would be the impact of the programme). Identifying and measuring outcome indicators assists managers at all levels, from facility to national, to identify where barriers to implementation exist within the health system and to intervene to overcome these, hence strengthening the impact of the programme. Certain factors can be measured within the health system to provide evidence for the impact or lack thereof of the IMCI intervention e.g. changes in the use of antibiotics since staff have been trained in IMCI.

Just the process of focusing on outcomes gives programme managers and staff a clearer picture of the purpose of their efforts. That clarification alone frequently leads to more focused and productive service delivery.

Framework for Research of IMCI Strategy

de Zoysa (1998) has identified several steps to be taken in research to plan, implement and evaluate public health interventions (illustrated below).



The first four steps with respect to IMCI have been described above in the literature review.

Several studies have tested the intervention in carefully controlled trials. For example, studies have been conducted in Africa and India to evaluate the impact of IMCI at a health worker level. One African study was set in Ethiopia (Simoes 1997) and

evaluated the performance of 6 health workers after they had been trained in IMCI. This was an observational study that was carried out directly after the IMCI training had been completed. A paediatrician observed the performance of the IMCI trained health workers in assessing, classifying and treating the children and in counselling the caretaker with reference to appropriate advice, asking of checking questions and problem identification and solving. The same paediatrician then conducted an independent assessment of the children. The nurses who had been trained in interviewing techniques to determine the understanding and recall of the health workers' advice conducted exit interviews with a sample of the caretakers.

A further evaluation of the IMCI algorithm in Kenya was conducted over 14 months based in an outpatient clinic of a district hospital. 1795 children aged between 2 months and 5 years were included. Table 3 below shows the sensitivities and specificities for classification of illness by the health worker using the IMCI algorithm compared to diagnosis made by the physician:

Illness	Sensitivity	Specificity
Pneumonia	97%	49%
Dehydration in children with diarrhoea	57%	98%
Malaria	100%	0%
Ear Problem	98%	20%
Nutritional Status	96%	66%
Need for referral	42%	94%

(Perkins 1997)

Studies in India evaluated health workers following IMCI training; separate evaluations were conducted for the child aged one week to two months (Gupta 2000) and the child aged two months to five years (Shah 2000). These studies concluded that there was a sound scientific basis for adopting the IMCI strategy as:

- the coexistence of morbidities is common

- severe illness was assessed with high levels of sensitivity and specificity
- the IMCI algorithm is diagnostically and therapeutically superior to disease specific algorithms

Certain flaws were highlighted, such as the poor problem-solving techniques with caretakers, unnecessary referrals for upper respiratory infections and " breast-fed stools" in the young infant. These also highlight the need for adaptations of the generic IMCI algorithm to reflect the local morbidity profile.

Another study in Uganda assessed medical assistants who had 5 days of training in the IMCI algorithm. The medical assistants used the IMCI algorithm to classify children. The medical officer then saw these children independently, and reference standards were based on the medical officers' assessment. This study found that the use of the IMCI algorithm was able to classify the presenting illness in 93% of the children in the study. 69% of the children had more than one diagnosis, which confirms the importance of an integrated approach in the diagnosis and treatment of sick children (Kolstad 1997).

Unpublished information collected from the USAID/BASICS Project or using draft instruments prepared by the Interagency Working Group on IMCI Monitoring and Evaluation seems to show that the practices of health workers can be changed by training them in IMCI as shown in table 4 below (Tulloch 1999).

	Timing of evaluation	Morocco	Vietnam	Bolivia
Assessment of Danger Signs	Before training	0/70 (0%)	N/A	2/58 (3%)
	First follow-up	32/36 (89%)	19/55 (36%)	N/A
	5 months later	N/A	30/48 (60%)	N/A
	2 years later	N/A	N/A	31/80 (39%)
Assessment of all main symptoms	Before training	12/70 (17%)	N/A	N/A
	First follow-	33/36 (92%)	41/55 (75%)	N/A

	up			
	5 months later	N/A	37/48 (77%)	N/A
	2 years later	N/A	N/A	74/80 (93%)
Assessment of nutritional/feeding status	Before training	14/70 (20%)	N/A	16/58 (28%)
	First follow-up	32/36 (89%)	17/55 (29%)	N/A
	5 months later	N/A	29/48 (60%)	N/A
	2 years later	N/A	N/A	70/80 (88%)

N/A = Not Available

However, all these studies have been on the **efficacy** of the intervention. These studies have consisted of:

- Formulating the intervention for implementation in usual public health conditions
- Testing the intervention under controlled conditions, but in a public health context. These steps can be termed efficacy trials of public health interventions

(de Zoysa 1998).

Further research is necessary to evaluate if the intervention will succeed as a public health intervention, that is if the intervention is **effective** under real world conditions. To address this gap WHO and UNICEF are now implementing a multicountry evaluation (MCE) of IMCI. The study will document the effect of IMCI interventions on health workers' performance, health systems and family and community practices. It will determine whether, and to what extent, the strategy has had an impact on health outcomes and it will describe the costs of implementation. It is underway in 4 countries: Bangladesh, Peru, Tanzania and Uganda.

The MCE employs a set of compatible designs, according to the stage of IMCI implementation in each country and to local characteristics. In Bangladesh MCE is fully prospective, that is, the evaluation started before IMCI was introduced. Baseline

data were collected, then health facilities were randomised to have IMCI training or not. These health facilities will be revisited after case management IMCI training has been completed in the health facilities randomised to have IMCI training. In the 3 other countries IMCI has already started and MCE will have to rely on existing data to obtain baseline information. Special attention is being given to the selection of comparison districts without IMCI, as well as to ruling out external factors that could affect impact indicators (www.who.int/imci-mce/overview.htm 2002). This study is still underway but the following preliminary findings have been reported from Tanzania:

- Data provide evidence that IMCI is associated with improved performance by health workers and improved quality of care
- The implementation of IMCI is closely linked to health sector reform.
- A high proportion of neonatal deaths in some countries has highlighted the need to strengthen the young child care module

This study will require several years to produce answers; in the meantime local evaluation can and needs to be conducted (Tulloch 1999).

The last two steps in the research framework as described by de Zoysa assesses the effectiveness of the public health intervention.

- Evaluation of how well the intervention functioned as a large-scale public health programme, rather than a small-scale experiment.
- Continued monitoring and evaluation of the indicators for programme improvement.

The last steps are often not completed, and interventions are scaled up without appropriate concern for effectiveness and are later found to be ineffective. There is

very little in the literature assessing the **effectiveness** of this intervention, that is, the impact at the district level of implementation of a routine IMCI package.

Three factors have been identified that influence the impact of a public health intervention:

1. The degree of control in the delivery of the intervention.

2. The context and conditions in which the intervention is implemented, and the degree to which the intervention is appropriate to that context.

3. The level of the intervention in terms of how directly the input is related to the biological outcome.

Probability studies are characterized by randomisation to treatment and control groups and allow for statistical determination of whether or not the intervention had an effect. Such randomised trials are the preferred design for demonstrating efficacy.

Plausibility studies do not involve randomisation but achieve some degree of control by considering the relative impact either before and after or in groups (WHO/CHS/CAH 1999).

This study is an effectiveness study that seeks to evaluate the IMCI strategy implemented in normal programme conditions. A plausibility design is therefore appropriate.

Aim

To assess the effectiveness of the IMCI strategy in the management of sick children in child health clinics in the Tygerberg East and Tygerberg West districts of Cape Town.

Objectives

1. To compare the diagnostic skills of health workers treating sick children before and after the introduction of the IMCI strategy in the Tygerberg East and Tygerberg West districts of Cape Town.
2. To compare the treatment prescribed by health workers treating sick children before and after the introduction of the IMCI strategy in the Tygerberg East and Tygerberg West districts of Cape Town.
3. To compare the counselling skills of health workers treating sick children before and after the introduction of the IMCI strategy in the Tygerberg East and Tygerberg West districts of Cape Town.
4. To make recommendations concerning the effectiveness of the IMCI training.

Methods

Study Design

This was an evaluation study. The study evaluated how the IMCI training of health workers affected the preventive, promotive and curative management of sick children by:

a. observing the practice of the IMCI components.

b. determining caretaker satisfaction and understanding of consultation and management of the sick child.

Study Population

Health Districts

The Tygerberg East and West districts of Cape Town have very similar socio-economic status and health indicators. A selection of these indicators are summerised in table 5 below:

	Tygerberg East	Tygerberg West
Population under 5 years	9%	8%
Infant mortality rate	23%	22%
Percentage living under the poverty line	17%	18%
Percentage unemployed	18%	23%
Percentage with no access to water	3%	<1%
Percentage with no access to electricity	5%	2%
Percentage informal dwellings	7%	4%

Throughout Cape Town there is a wide variation in living conditions, from very poor to very affluent areas. The Tygerberg East and West districts represent areas that fall between the two extremes. There are five local authority clinics in the Tygerberg East

district and twelve local authority clinics in the Tygerberg West districts. These clinics provide a range of health services between 8am to 5pm Monday to Friday. They include Child Health (preventive, promotive and curative), Family Planning, Tuberculosis and Sexually Transmitted Disease services. The paediatric training level of health workers in these clinics who attend to sick children is varied, some have attended a four week curative course based at Red Cross Children's Hospital while others have attended a one year part time curative course. The practical experience of these health workers is also varied, some with many years experience and some fairly newly qualified.

Tygerberg East and Tygerberg West were selected, as these health workers were the first to be trained in IMCI in the Western Cape. Only when these two districts were saturated was IMCI training rolled out to the other districts. Of all the professional nurses attending to sick children in these two districts, 83% have been trained in Tygerberg East and 89% in Tygerberg West.

Health Clinics

All five child health clinics in the Tygerberg East district and all twelve child health clinics in the Tygerberg West district of Cape Town.

Health Workers

All health workers in the clinics who attend to sick children.

Children

Children for inclusion in the study were those sick children under the age of 5 years attending the clinic with a fever, cough / difficulty breathing, diarrhoea or ear symptoms.

Sampling

Health Clinics

Two of the five clinics were randomly selected in the Tygerberg East district and five of the twelve clinics were randomly selected in the Tygerberg West district. This sample size was the maximum feasible within the time and resource constraints of this study.

Health Workers

Before the implementation of IMCI one health worker who was attending to sick children on the day of the visit was randomly chosen at each of the selected clinics. In the post IMCI visit a health worker was randomly selected who had been trained in IMCI and who was attending to sick children.

Children

The first 5 sick children in the queue to see the selected health worker and those whose caretakers agreed to participate in the study were chosen. Each health worker ideally conducted 5 sick children consultations, though this was not possible in all the clinics.

Data Collection Tools

Tools have been developed by BASICS and used in other African countries. These tools were circulated to various senior child health practitioners in the Western Cape and adapted for the local context.

Two tools were used (appendices 1-2):

Observation checklist of the sick child

- To observe that the health worker completes a full assessment and concludes the correct classification of the sick child, including danger signs

- To ensure that the appropriate treatment, referral and counselling is given

Exit Interview with the caretaker

- To assess the caretaker's satisfaction with the health worker consultation
- To assess the caretaker's understanding of the child's illness, immunisation and nutrition status, home care management, treatments given and signs of deterioration in child's condition that would warrant further medical assessment.

Data Collection Logistics

A team was identified to carry out the study using the data collection tools that had been adapted. The team consisted of two surveyors and visited one clinic per day. The responsibilities of the team members were as follows:

Surveyor 1

Complete the observation checklist of the sick child by observing the consultation between the health worker and the sick child / caretaker.

Surveyor 2

Conduct an exit interview, in private, with the caretaker of the sick child observed by surveyor 1, directly after the conclusion of the consultation.

Before IMCI training the two surveyors were trained in the administration of the two data collection tools. The training lasted for one day and role-plays were used to demonstrate and practice the administration of the two tools. Reliability was improved through the training of the two surveyors until they had achieved over 90% inter-rater reliability for at least two joint observations consecutively. During the training phase reliability was checked every day prior to observations. A detailed observation and interview rules and definition list was also developed during the piloting and training phase. Data collection sheets were collected every day after completion of fieldwork

and checked. Any discrepancies in recording or problems during data collection were immediately discussed with the team.

After IMCI training the same procedure as above was followed but on this occasion the data collection was part of a national review conducted by the National Department of Health, UNICEF and WHO (NDOH 2002).

A pilot study was performed in one clinic with the surveyors to test the data collection tools and logistics.

A clinical practitioner completed a validation checklist on a randomly selected sample of the sick children in order to validate classifications and treatments recorded in the observation checklist.

Data Analysis

A scoring system was used to assess the performance of the health worker for each consultation and was computed from critical points that they must include e.g. assessment of all danger signs. Frequencies were calculated using the WHO Epi Info 6 statistical package. Manual calculations were performed to compare differences in percentages before and after IMCI training. First the observed differences in percentages were calculated. This was then divided by the standard error of the differences in the two percentages to obtain a Z Score. A p value was then obtained from a table of normal distribution (Kirkwood 1998). The threshold statistical significance was set at $p < 0.05$.

Validity

Validity was increased by minimising measurement and selection bias. Measurement bias was minimised by the use of standardised tools and training of the observers.

Random sampling was used for the sampling of the clinics in the two districts, the health worker on the day of the study and the children and caretakers attending on the day of the study.

Reliability

The tools used were standardised and the surveyors conducting the research were trained to be consistent in their administration of the tools.

Generalisability

Clinics in the Eastern and Western districts of Cape Town cover all types of areas e.g. formal and informal housing, urban and semi-urban, different ethnic and cultural groups. The health workers in these districts are similar to those in the rest of Cape Town and so the findings of this study can be generalised to the other clinics and health workers in the city.

Ethics Statement

The ethical committee of the University of the Western Cape approved the protocol for this study. Informed consent was obtained from the facility managers, health workers and caregivers.

Results

Thirteen nurses were observed in seven clinics before IMCI training and ten in seven clinics after the training.

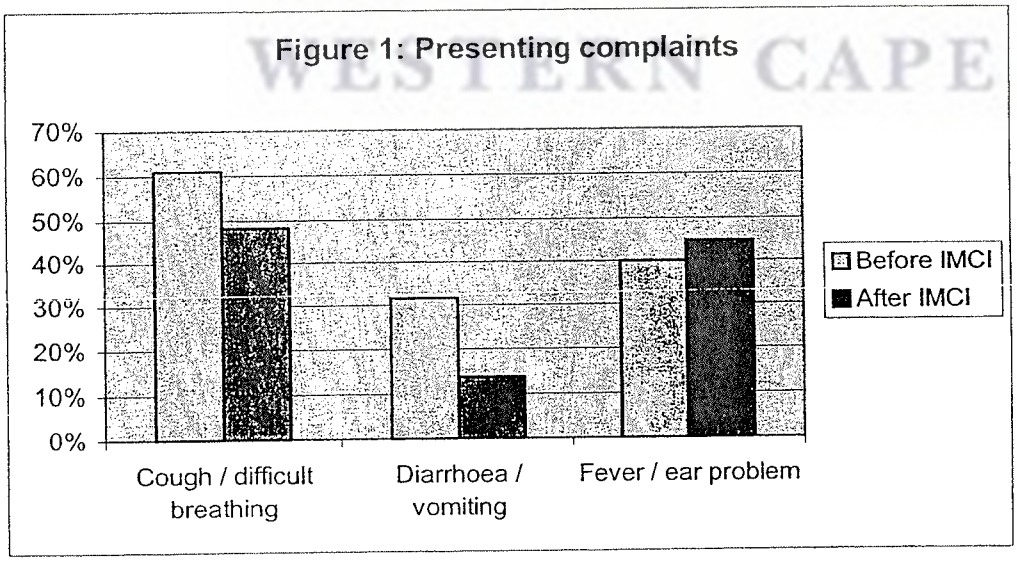
A total of ninety sick child observations were conducted before IMCI and fifty-five after IMCI implementation. The age distribution of the children was similar in the two groups (Table 6).

Table 6: Age distribution of sick children

	< 6 months	7-12 months	13-24 months	>25 months
Before IMCI	16.8%	16.8%	20.5%	45.7%
After IMCI	13.8%	17.1%	30.8%	41%
P value	0.3156	0.4801	0.0793	0.2877

The distribution of the presenting complaints of sick children was also comparable with cough and difficult breathing being the commonest presentation (Figure 1).

Figure 1: Presenting complaints of sick children



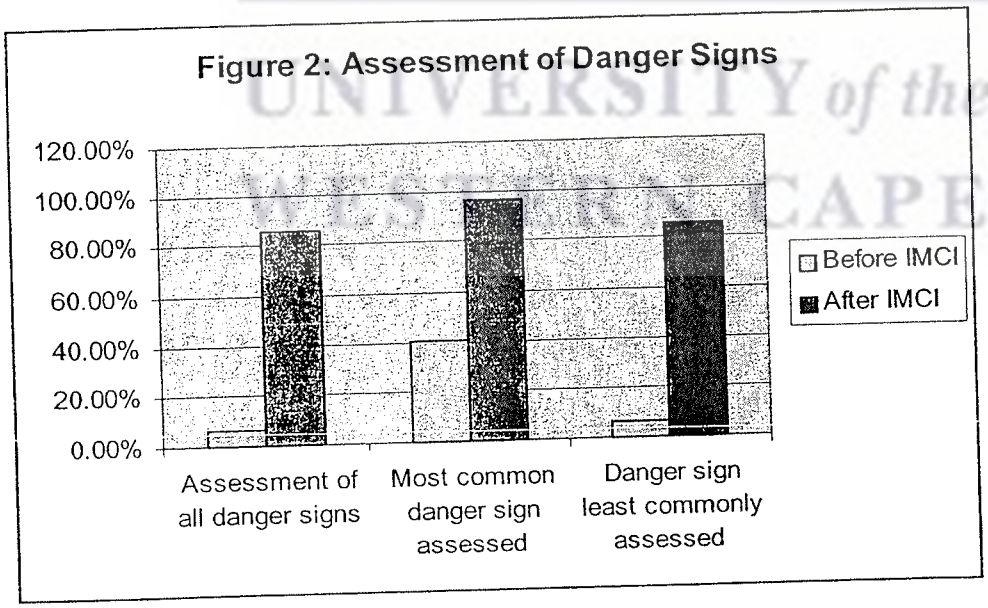
Assessment of Sick Children

Before IMCI training the majority of sick children (81.9%) had their weight recorded on the RTHC. Following training this improved to 100%.

Similarly, there was a significant improvement in checking the vaccination status of sick children after training (64.5% vs. 100%, <0.001,).

Assessment of danger signs (lethargic/unconscious, not able to drink or breastfeed, vomiting everything, convulsions in this illness) was not well done before IMCI training with only 6.6% of sick children being correctly assessed for these crucial signs. After training there was a statistically significant improvement with 86.2% of sick children being assessed for all these signs. Both before and after training the most commonly assessed danger sign was the ability of the child to drink or breastfeed and the least commonly asked was the presence of convulsions in this illness (Figure 2).

Figure 2: Danger Signs



Before IMCI training, 63.3% of caretakers were asked about the presence of cough or difficult breathing, 36.1% about the presence of diarrhoea, and 55.4% about the

presence of fever. After training there was a significant improvement with each symptom being inquired about in 89.7% of all the cases ($p<0.001$). Before IMCI training only 15.7% of caretakers were asked about all three the main symptoms, again there was a statistically significant improvement to 86.2% after training.

Table 7: Main Symptoms and Signs Assessed

	Before IMCI	After IMCI	P value
Caretaker asked about cough	63.3%	89.7%	0.0002
Caretaker asked about diarrhoea	36.1%	89.7%	<0.0001
Caretaker asked about fever	55.4%	89.7%	<0.0001
Caretaker asked about cough, diorrhoea and fever	15.7%	86.2%	<0.0001
Child checked for all respiratory signs and symptoms	34.9%	57.1%	0.0004
Child checked for all diarrhoea and dehydration signs and symptoms	21.1%	100%	<0.0001
Child checked for all the signs and symptoms of fever	15.7%	44.4%	<0.0001
Child examined for severe wasting	51.2%	69%	0.0170
Child examined for oedema of both feet	12.7%	64.3%	<0.0001
Child examined for palmar pallor	28.3%	65.5%	<0.0001

Examination of the signs related to the three main symptoms was poor before IMCI training with only 34.9% of sick children being correctly examined for all respiratory signs, 21.1% for signs of dehydration and 15.7% for signs associated with a fever. After training all these examination skills improved, the greatest improvement being in the examination of dehydration (Table 7).

Examination of children with malnutrition and anaemia again was poorly conducted before training and the assessment of pedal oedema was only completed in 12.7% of all the sick children. All the examination tasks for the assessment of malnutrition and anaemia improved significantly after training with approximately 65% of all sick children being examined for these signs.

Treatment

The treatment tasks performed by health workers mostly improved after IMCI training (Table 8).

Table 8: Treatment

	Before IMCI	After IMCI	P value
Child prescribed correct treatment for pneumonia	90%	66%	<0.0001
Child not needing an antibiotic leaves the clinic without antibiotic	64.1%%	100%	<0.0001
First dose of treatment given in the clinic	43.3%	65%	0.0054
Vitamin A given to any sick child	11.5%	5%	0.0918
Treatment explained to the caretaker	64.5%	75%	0.0918
First dose of treatment demonstrated to the caretaker	31.1%	70%	<0.0001

However, it is noted there was a significant reduction in the correct treatment prescribed for pneumonia from 90% to 66%($p<0.001$). However, there was a very small sample size with only three cases in the post-training group.

The inappropriate prescribing of antibiotics was eliminated after IMCI training with 100% of sick children who did not need an antibiotic leaving the clinic without an antibiotic, this was an improvement from 64,1% before the training ($p<0.001$).

Vitamin A prescribing actually declined from 11.5% to 5% after training, but this was not statistically significant. Explanation of the treatment prescribed and administration of the first dose in the clinic improved after IMCI training (Table 8).

Communication and Counselling

Sick Child's Health

Signs the caretaker should look for in the sick child which indicate the need to return immediately to the clinic were not well communicated either before or after the IMCI training. In fact two of the signs - if the child is not able to drink or breastfeed or if the child develops a fever - were communicated less frequently after IMCI training. Only 34.5% of caretakers were told of at least three signs that would necessitate immediate return to the clinic after the training.

80.1% of caretakers were advised when to bring the child for follow up before training; this dropped to 75.9% after training, but this difference is not significant..

After IMCI training there was some improvement in the counselling of the sick child's need for extra fluids and food.

Table 9: Counselling related to the sick child

	Before IMCI	After IMCI	P value
Caretaker told to return immediately if child not able to drink or breastfeed	32.4%	27.6%	0.2709
Caretaker told to return immediately if child gets sicker	35.1%	62.1%	0.0007
Caretaker told to return immediately if child develops a fever	37.8%	27.6%	0.1020
Caretaker told to return immediately if child develops fast or difficult breathing	27%	51.7%	0.0013
Caretaker advised to return immediately if child has blood in the stool	5.4%	10.3%	0.1335
Caretaker of sick child told of at least 3 signs which indicate the need to return immediately to the clinic	16.8%	34.5%	0.0071
Caretaker advised when to return for follow up	80.1%	75.9%	0.2743
Caretaker advised to give sick child extra fluids	35.5%	58.6%	0.0035
Caretaker advised to give sick child extra food	36.7%	44.8%	0.1660

Caretaker's Health

Before IMCI training very little counselling was done for the caretaker. Only 13.5% of caretakers were asked about their family planning needs / situation. This improved significantly to 86.2% after training ($p<0.001$).

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Caretaker's Health

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Unfortunately counselling about the caretaker's general health was non-existent before training and only very poor after, with 6.9% of caretakers asked about their own health.

Caretaker's Understanding

There was a significant reduction from 100% before to 76.2% after training ($p<0.001$) of the caretakers understanding of how to give the prescribed medication. There was also a marked reduction from 68.6% before to 44.8% after training of caretakers' knowing at least two signs that the child was becoming sicker.

Discussion

The aim of IMCI is to reduce childhood mortality and morbidity by addressing in an integrated manner the five common illnesses directly responsible for 70% of all childhood deaths worldwide. During the IMCI training health workers learn about signs and symptoms that suggest serious disease and that require urgent treatment and referral, how to assess sick children using an integrated approach and counselling on preventive, promotive and curative practices. This study has shown that the IMCI training has had a mixed effect on the care of sick children in two districts in Cape Town.

There was a significant improvement in the correct assessment of danger signs in sick children after IMCI training. This is a very important aspect of a sick child's assessment as the correct identification and management of children with these severe signs is crucial. A study conducted in clinics and in the outpatients department of a district hospital in rural Kenya showed that the mortality risk associated with having at least one danger sign was 6.5 times higher than for that for children without any signs (Paxton 1996).

There was improvement in the overall assessment of sick children with 86.2% of all children being systematically checked for the presence of cough, diarrhoea and fever. This is compared to only 15.7% before training. The benefits of using an integrated approach in the assessment of sick children are very important and have been well documented (Arifeen 2000; Black 1993; O'Dempsey 1993).

Examination of the sick children also significantly improved after IMCI training specifically for the examination of dehydration, fever, pedal oedema and palmar pallor. The examination signs that are used in IMCI training have been researched and validated in several studies (Kalter 1997, Weber 1997).

Encouragingly, 100% of sick children had their weight recorded on the RTHC and their vaccination status checked after IMCI training. The assessment of a child's weight is essential to identify growth faltering or malnutrition. There is a vicious cycle whereby sick children are likely to become malnourished and malnourished children are likely to become sick, hence the need to integrate these factors in a sick child's assessment and management.

Childhood immunisation rates remain a problem in South Africa. In the Western Cape only 80% were fully immunised at one year in 2000 (PAWC 2001). The improvement in the checking of a child's vaccination status suggests that there will be fewer missed opportunities and hence an improvement in the overall immunisation coverage. Studies in Cape Town have shown that there is a very high rate of missed opportunities for immunisation in settings where preventive and curative services are run separately, but far fewer opportunities for immunisation were missed at integrated services. These studies further support the need for integrated management of sick children. (Harrison 1993, Bachmann 1994).

There was some improvement in the treatment of sick children after IMCI training. Prior to IMCI training large numbers of sick children were prescribed antibiotics that were not necessary. The inappropriate use of antibiotics was found to have been eliminated in this study. This finding is supported by a study by Qazi (1996) that showed that the use of standard case management guidelines for the management of acute respiratory infections reduced the usage of inappropriate antibiotics. This improvement will lead to a reduction in drug costs and help minimise the development of antibiotic resistance.

Unfortunately, there were some aspects of the management of sick children that were disappointing. There was a decline in Vitamin A prescribing with only 5% of sick

children receiving Vitamin A after IMCI training. This is despite the fact that Vitamin A supplementation of young children is one of the best proven, safest and most cost-effective interventions in public health (Ross 2002). Supplementation with large doses of Vitamin A has been shown to decrease the incidence and severity of diarrhoea and respiratory disease possibly through enhanced activity of the immune system (Cheng 2002). There has been a big campaign by the National Department of Health for Vitamin A supplementation and there is a Western Cape protocol in place. Further training of health workers is needed in this regard.

Counselling proved to be another area of concern. The counselling component of IMCI training is focused and appropriate with particular emphasis on: when the sick child should return immediately to the clinic, extra feeding of the sick child, follow-up of the sick child, checking the caretaker's understanding and caretaker's health. Unfortunately the counselling skills of health workers did not improve much after IMCI training. In fact some aspects of counselling related to the child's health deteriorated. Counselling related to the family planning requirements of the caretakers improved significantly but the caretaker's general health was not discussed in the majority of observations. The lack of improvement in counselling may be due to a number of factors. It may be that health workers were focusing more on the assessment, examination and treatment of the sick child (as confirmed by improvements in these aspects after training) and hence there was less time available for counselling. Another possible explanation is that the counselling component of the training itself may have limited impact on health workers practice. Perhaps there was not enough emphasis on the counselling component or perhaps this aspect of the training was poorly executed and hence health workers may not have felt confident in

this practice. Counselling for the child and the caretaker is essential for IMCI to be effective and this aspect definitely needs further attention.

There have not been many studies that have measured comparable baseline indicators that were used in this study. However, a study in the Eastern Cape Province in 1999 found that only 43% of nurses plotted the child's weight on the RTHC compared to 82% in this study but 70% of the children had their immunisation status checked compared to 65% in this study (Mahlalela 2000).

The National Department of Health / UNICEF / WHO have conducted two annual reviews of IMCI in health facilities countrywide in 2001 and 2002. The 2001 review was conducted in four provinces – Kwazulu Natal, Mpumalanga, Northern Province and Northern Cape. The 2002 review was conducted in three provinces – Western Cape, Gauteng and Free State. The results in this study on the whole show higher standards of care than in other provinces post-IMCI training, especially compared to the 2001 data. This is especially true for the recording of the child's weight on the RTHC (80% in 2001, 91% in 2002, 100% in this study), the immunisation status of the child (87% in 2001, 91% in 2002, 100% in this study) and the inappropriate use of antibiotics (12% in 2001, 17% in 2002, 0% in this study). One aspect that was done poorly in this study compared to the national average was the counselling of the caretaker's health (26% in 2001, 11% in 2002, 7% in this study).

Limitations of the Study

There are some possible limitations to this study. The study did not take into account the previous experience of health workers in terms of other child health training and years of experience, both of which could have affected their management of the children in this study. But there is no reason to believe that this would be different

from the baseline sample compared to after the intervention. The children included in this study were those sick children that arrived early in the morning and whose caretakers agreed to participate. The characteristics of these children and caretakers may be different to those that may have attended later in the day. For example, these may be sicker children, the caretaker is more likely to be the mother, the caretaker may be more or less knowledgeable about childhood illnesses or they may live nearer the clinic. However once again there is no reason to believe that the child and caretaker population was different at baseline or post-intervention.

Conclusions

In the Tygerberg East and Tygerberg West districts the improvements in the management of sick children should have a positive impact on child health and survival as the local authority clinics in these districts are well utilised by the community. It is recommended that the impact of this intervention be monitored through regular surveillance of death notifications in the two districts.

In conclusion, IMCI has led to significant improvements in some important aspects of care. However, the counselling aspects of the training and supervision of trained health workers needs further attention. Ongoing follow-up and in-service training of these health workers is needed in order to consolidate their knowledge and practices and hence achieve and maintain the best outcomes following the implementation of IMCI.

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1. OBSERVATION CHECKLIST SICK CHILD

Province/District_____ Date_____/_____/_____

Facility Name_____

Interview No._____ Child's DOB_____

Begin Timing the Observation Now. Time:_____

Does the health worker ASK about (or does the caretaker REPORT)			**Does the health worker perform these EXAMINATION tasks**		
Danger signs:			5. Look for lethargy or unconsciousness?	Y	N
1. Not able to drink or breastfeed?	Y	N			
2. Vomits everything?	Y	N			
3. Convulsions?	Y	N			
4. Change in consciousness/ lethargic/sleepy?	Y	N			

6 a. Does the health worker ask for the Road to Health card?..... Y N

b. **If YES**, does the child have the card? Y N

c. Is the *child* referred for vaccination?

____Today ____Another day ____Not referred ____Up to date

7. Does the health worker ask the age of the child or have the age available?..... Y N

8 a. Is the child weighed?..... Y N

b. Is the child's weight plotted on a growth chart?..... Y N

9. Is the child's temperature checked ? . . . . . Y N

Immunization and Screening

10. Does the Health Worker inform the caretaker about the growth of the child. Y N

11. Does the Health Worker ask about:

a. The appetite and feeding habits of a child relevant to its age? Y N

b. Exclusive breast feeding for six months ? Y N

c. Complimentary feeds? Y N

d. Who feeds ? Y N

e. How often ?

12. What reason does the caretaker give for bringing the child to the health facility? **(Tick all that apply.)**

____Diarrhea/vomiting ____Fever/ear problem ____Difficulty breathing/cough/pneumonia

Does the health worker ASK about (or does the caretaker REPORT)		Does the health worker perform these EXAMINATION tasks	
13.a Cough or difficult breathing?	Y N	17. Raise the shirt?	Y N
.b For how long?	Y N	18. Count breaths/minute?	Y N
c. Ask about wheeze	Y N	19. Look for chest in drawing?	Y N
14.a Diarrhea?	Y N	20. Observe drinking or breastfeeding?	Y N
b. For how long?	Y N	21. Pinch the skin on abdomen?	Y N
c. Is there blood in the stool?	Y N	22. Look for sunken eyes?	Y N
15. a Fever?	Y N	23. Look or feel for stiff neck?	Y N
.b For how long?	Y N	24. Look for generalized rash?	Y N
		25. Look for runny nose or red eyes?	Y N
16.a Ear problem?	Y N	26. Look for pus from ear?	Y N
.b Ear pain?	Y N	27. Feel for swelling behind ear?	Y N
.c Ear discharge?	Y N		
.d **If YES,** for how long?	Y N		
17. If HIV symptom present are other symptoms asked about?	Y N	**Malnutrition:**	
		28. Undress and look for wasting?	Y N
		29. Look for palmar or conjunctival pallor?	Y N
		30. Look for edema of both feet?	Y N

A. All danger signs (Q. 1 to Q. 5) assessed? **Y N**

B. All main symptoms (Q. 13 to Q. 16) assessed? **Y N**

C. Number of diarrhea assessment tasks completed? (Circle one.)
(History and Examination) **0 1 2 3 4 5**

D. Number of ARI assessment tasks completed? (Circle one.)
(History and Examination) **0 1 2 3 4**

E. Number of fever assessment tasks completed? (Circle one.)
(History and Examination) **0 1 2 3 4**

F. Nutritional status correctly assessed? (Q. 8, 10, 11. Q. 28 to Q. 30) **Y N**

Diagnosis

How does the health worker classify the child?					
31. Severe pneumonia	Y	N	38. Mastoiditis	Y	N
32. Pneumonia	Y	N	39. Acute ear infection	Y	N
33. Upper respiratory infection (cough or cold)	Y	N	40. Chronic ear infection (discharging)	Y	N
Asthma	Y	N			
34. Simple diarrhea	Y	N	41. Severe malnutrition/anemia	Y	N
.a Severe dehydration	Y	N	42. Moderate malnutrition/anemia	Y	N
.b Some dehydration	Y	N			
.c No dehydration	Y	N			
35. Dysentery	Y	N			
36. Severe persistent diarrhea	Y	N			
37. Persistent diarrhea	Y	N			
			43. HIV	Y	N
			43 (a) No diagnosis	Y	N

*** If validation is performed:**

G.a Health worker classification agrees with validator?		**Y**	**N**
G.b Severely ill children classified correctly?	**N/A**	**Y**	**N**

Treatment

What does the health worker administer or prescribe for the child?					
44. Immediate referral?	Y	N	50. ORS/RHF	Y	N
45. Paracetamol	Y	N	51. Worm syrup/tablets	Y	N
46. Tepid bath	Y	N	52. Tablets/syrup, unknown type	Y	N
47. Antibiotic injection	Y	N	53. Salbutamol inhaler	Y	N
48. Antibiotic tablets/syrup	Y	N	54. None	Y	N
49. Vitamin A or vitamins	Y	N	55. Other (specify) _____	Y	N

H. Is the medication appropriate for the diagnosis?	**N/A**	**Y**	**N**

I.a Pneumonia case received appropriate medication?	**N/A**	**Y**	**N**
I.b Diarrhea case received appropriate medication?	**N/A**	**Y**	**N**
I.c Ear case received appropriate medication?	**N/A**	**Y**	**N**
I.d Malnutrition case received appropriate medication	**N/A**	**Y**	**N**

*** If validation is performed:**

		Y	**N**
J.a Is the child treated correctly?	**N/A**	**Y**	**N**
J.b Severe classification correctly referred?	**N/A**	**Y**	**N**
J.c Pneumonia case correctly treated?	**N/A**	**Y**	**N**
J.d Diarrhea case correctly treated?	**N/A**	**Y**	**N**
J.e Ear case correctly treated?	**N/A**	**Y**	**N**
J f Malnutrition case correctly treated			

Interpersonal Communication

For all oral medications

56.a Does the health worker explain how to administer medications/ORS? ..... N/A Y N
.b Does the health worker demonstrate how to administer medications/ORS? N/A Y N
.c Does the health worker ask an open-ended question to verify the comprehension of how to administer medications/ORS? ..... N/A Y N

K. Number of treatment tasks performed? (Circle one.) **N/A 0 1 2 3**

57. Does the health worker explain when to return for follow-up? ..... Y N
58. Does the health worker explain the need to give more liquid at home? ..... Y N
59. Does the health worker explain the need to continue feeding or breastfeeding at home ..... Y N
60 Does the health worker give advice about growth and nutrition? ..... Y N
   a. Explain the pattern of growth on the RTHC (i.e. gaining, static, losing) Y N
   b. Exclusive breast feeding for six months Y N
   c. When to introduce solids ? Y N
   d. How to enrich solids Y N
   e. Importance of food rich in Vitamin A Y N
61. Does the health worker tell the caretaker to bring the child back for the following signs? ..... Y N
   Child is not able to drink or drinking poorly ..... Y N
   Child is not able to breastfeed/eat ..... Y N
   Child becomes sicker ..... Y N
   Child develops a fever ..... Y N
   Child develops fast or difficult breathing ..... Y N
   Child develops blood in the stool ..... Y N
   Change in consciousness/lethargic ..... Y N

L. Are at least three of the Q. 60 messages circled? **Y N**

62 a. Does the health worker ask for the *caretaker's* family planning card? ..... N/A Y N
   b. **If YES**, does the caretaker have the card? ..... Y N
   c. Is the *caretaker* referred for family planning? Y N
63. Does the healthcare worker ask about the caregivers health? Y N
   - if the caregiver is sick, is care provided for her or is she referred for help?
64. Does the health worker provide information about: Y N
   a. the caregivers nutrition Y N
   b. STD Y N
   c. HIV

Check the time of the observation as the caretaker leaves: Time:_____
Duration of observation:_____minutes

END OF HEALTH WORKER OBSERVATION

The surveyor may need to ask the health worker about the diagnosis made and the treatment given during the consultation, but only if these two components were not stated during the consultation.

The surveyor *must complete* this form *before* the next child observation.

2. EXIT INTERVIEW SICK CHILD

Province/District_____ Date_____/_____/_____

Facility Name_____

Interview No._____ Child's DOB_____

Greet the caretaker and say that you would like to ask some questions about his/her visit to the health facility today.

1. Has the weight been plotted on the road to health card? Y N
2. Is the child growing well? Y N
3. Was advice given on feeding of the child? Y N
4. Which diseases will be prevented by the immunizations you or your child has received?

(**Tick all that apply**.)

____**D**oesn't know
____**D**iphtheria
____Tetanus
____Whooping cough
____Measles
____Tuberculosis
____Polio
____Other (specify):_____

5.a Do you know what might happen as a side effect after the immunization? ..... Y N

.b **If YES,** what do you know? (**Tick all that apply.**)

____**F**ever
____**I**rritability/crying
____**P**ain at injection site
____Swelling
____Other (specify):_____

6.a Did your child receive an immunization today? ..... Y N

.b **If NO,** was your child referred for vaccination another day? (Prompted question. **Tick a single response.**)

____Referred for vaccination another day ____Not referred for vaccination ____Up to date

7. Do you have your child's vaccination card?

____Yes ____Lost ____Never received ____Left at home

If the caretaker has the card, record ALL VACCINATIONS that have been administered both today and in the past, and the child's birth date and age.

Birth date:____/____/____

Age: ____Months

Immunization	Received	
Polio-0 (birth)	Y	N
BCG	Y	N
DPT-1 Hep B, HIB	Y	N
Polio-1	Y	N
DPT-2 Hep B, HIB	Y	N
Polio-2	Y	N
DPT-3 Hep B, HIB	Y	N
Polio-3	Y	N
Measles	Y	N

A. Child is up to date. **Y** **N**

8. Did the healthcare worker tell you what was wrong with the child? Y N
9. What advice were you given to care for your child at home? **(Tick all that apply.)**
   a. Doesn't know
   b. Continue feeding or breastfeeding the child
   c. Give the same quantity or more fluids to the child
   d Fever management/tepid sponging
   e. Complete course of medications/ORS/RHF
   f. Home remedies
   g. Bring the child back if he/she doesn't get better or gets worse
   h. Other (specify): _____

B. Caretaker knows at least two aspects of home case management? (Ques. 9) **Y** **N**

10. How will you know if the child becomes worse at home? **(Tick all that apply.)**
    ____Doesn't know
    ____Fever begins or doesn't go away
    ____Child unable to eat
    ____Diarrhea continues
    ____Child has chest indrawing
    ____Vomiting begins or continues
    ____Child unable to drink
    ____Child has convulsions
    ____Child has difficulty breathing
    ____Blood in stool
    ____Other (specify):_____

C. Caretaker knows at least two signs of child getting worse at home? (Ques. 10) **Y** **N**

11. Did the health worker give you or prescribe any oral medicines at the health facility today? ..... Y N

If NO, go to question 12.

If YES, Complete the table below.

Complete the table below for the listed oral medications. Fill in the information in the table below by asking

HOW MUCH medicine will you give the child EACH TIME?
HOW MANY TIMES will you give it to the child EACH DAY?
HOW MANY DAYS will you give the medicine to the child?
ARE YOU AWARE of expiry dates?

If the caretaker's answer is

As required, write AR in the appropriate box.
Until completed, write UC in the appropriate box.
I don't know, write DK in the appropriate box.

Medicine	How Much Each Time?	How Many Times/Day?	How Many Days?	All Correct? (Y or N)
Antibiotic tablets/syrup Name:_____ Dose/tablets:_____				
Paracetamol tablets/syrup Dose/tablets:_____				
ORS/RHF				
Other:_____				

D. Caretaker knows how to give ALL *essential* medications correctly? N/A Y N

12. Do you have your family planning card?
_____Yes _____Lost _____Never received _____Left at home _____N/A

END OF EXIT INTERVIEW

Thank the caretaker for answering your questions and ask if he/she has any questions. Be sure that the caretaker knows how to prepare ORS for a child with diarrhea, when to return for vaccination, how to give the prescribed medications, and when to return if the child becomes worse at home.