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**IMCI DRUG MANAGEMENT
ASSESSMENT MANUAL**

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DRAFT**



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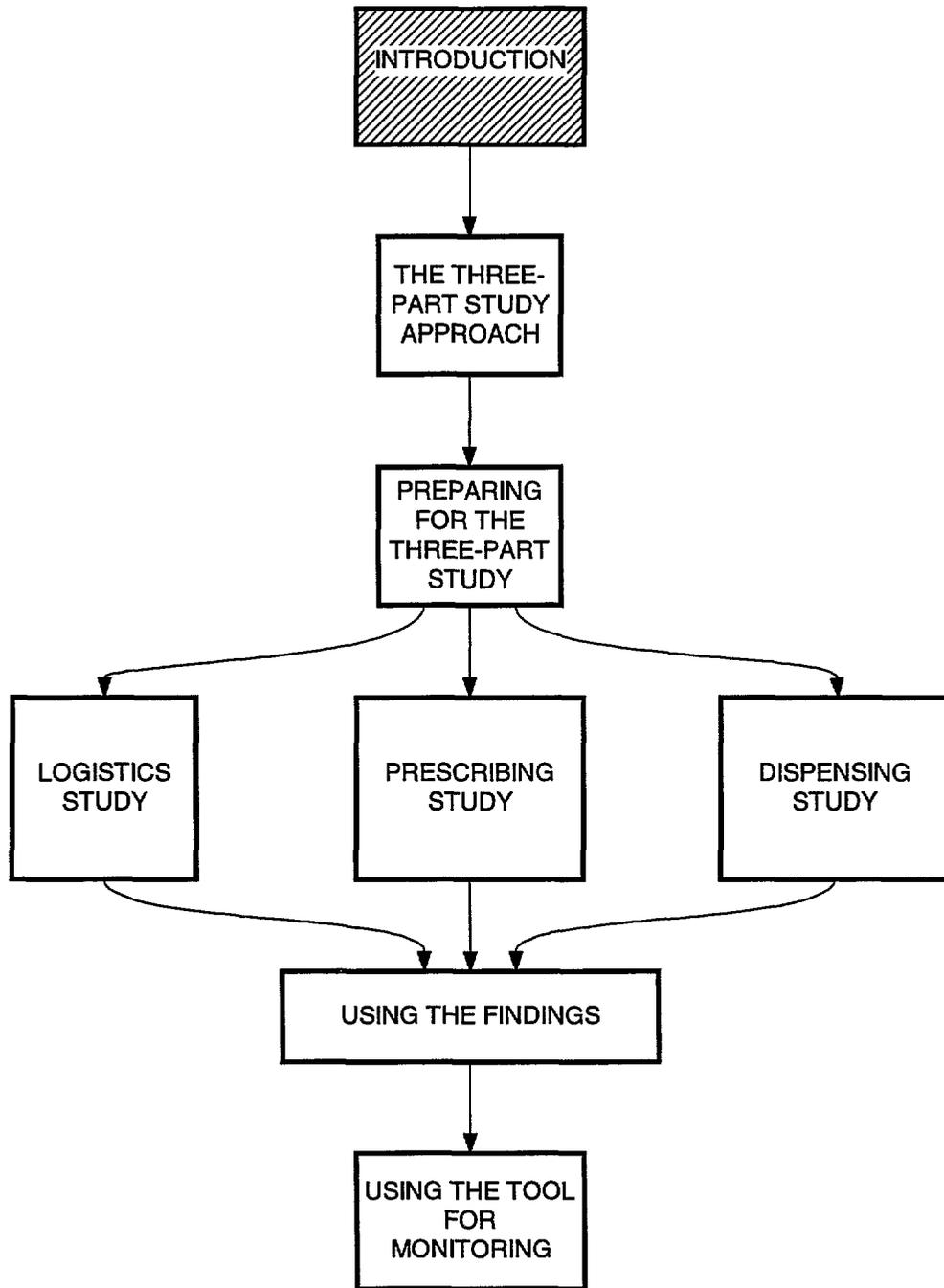
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I INTRODUCTION

A The IMCI Concept

The Integrated Management of Childhood Illness (IMCI) is a health promotion strategy designed to reduce significantly global mortality and morbidity associated with the major causes of disease in children and to promote their healthy growth and development. The core interventions of IMCI are case management of the five most important causes, globally, of childhood deaths: acute respiratory infection (ARI), diarrhea, measles, malaria and malnutrition, and of common associated conditions. The strategy also includes selected preventive interventions and recognizes the importance of maternal health. IMCI aims to improve practices in both health facilities and in the home.

In 1995, the World Health Organization, Division of Child Health and Development (WHO/CHD) and UNICEF produced a series of training modules to teach the integrated management process to health workers who treat sick children. The training series includes a model set of integrated standard treatment guidelines that incorporate existing disease-specific guidelines. To implement IMCI at the country level, WHO recommends that each country identify necessary adaptations of the model guidelines to fit country-specific requirements.

WHO/CHD began implementation of IMCI in 1996. In support of the global implementation of IMCI, WHO and UNICEF have acknowledged the need for ongoing research to better understand country-level issues concerning IMCI implementation. As part of its research agenda, WHO/CHD has identified three components that form the framework for the implementation of the IMCI strategy. These include:

- improvement of the case management skills of health staff in management of childhood illness,
- improvement in the health system needed to allow effective management of childhood illness, and
- improvement of family and community practices

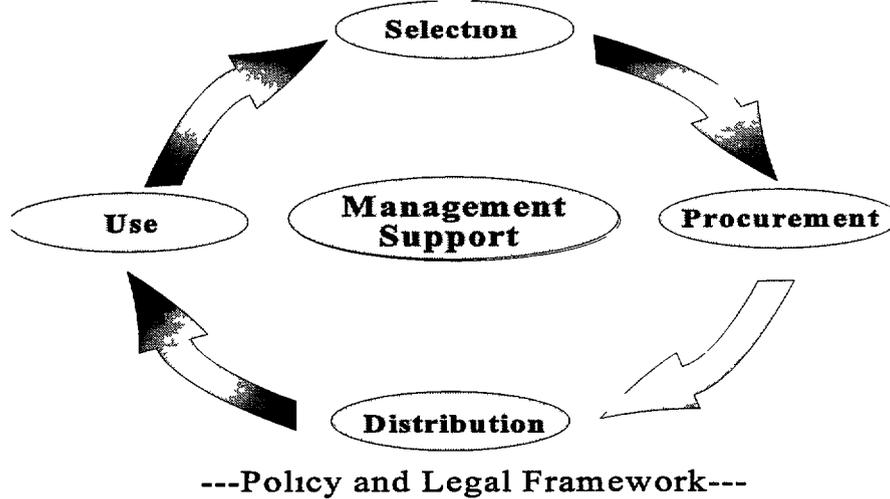
WHO/CHD has identified improving the supply and management of essential drugs and vaccines as a critical part of improving the health system. This *IMCI Drug Management Assessment Manual* is designed to review IMCI drug availability and rational use in MOH health facilities and drug retail outlets in support of planning and implementation of IMCI programs.

B Cornerstones of Drug Management: Selection, Procurement, Distribution, and Use

Drug management involves four basic functions: selection, procurement, distribution, and use. Selection involves reviewing the prevalent health problems, identifying treatments of choice, choosing individual drugs and dosage forms, and deciding which drugs will be available at each level of health care. Procurement includes quantifying drug requirements, selecting procurement methods, managing tenders, establishing contract terms, assuring drug quality, and ensuring adherence to contract terms. Distribution includes clearing customs, stock control, stores management, and delivery to drug depots and health facilities. Use includes diagnosing, prescribing, dispensing, and proper consumption by the patient.

At the center of the drug management cycle is a core of management support systems: organization, financing and sustainability, information management, and human resources management. These management support systems hold the drug management cycle together. Finally, the entire cycle rests on a policy and legal framework that establishes and supports the public commitment to essential drug supply. Figure One shows a graphic display of the drug management cycle.

Figure 1 The Drug Management Cycle



As described in chapter II, section A, this manual, using three studies, reviews different areas of the drug management cycle. A Logistics Study (LS) looks at various aspects of selection, procurement, and distribution. A Prescribing Study (PS) analyzes the use of IMCI drugs by reviewing the prescribing practices of health workers in MOH facilities and drug retail outlets, as well as the quality of the drug information provided to consumers in these two settings. A Dispensing Study (DS) analyzes issues of generic substitution, cost, and the quality of dispensing practices.

C Drug Management in Support of IMCI

One barrier to effective case management of IMCI in the health system is that the drugs needed are often not available. The IMCI model requires that health workers and consumers have access to a core group of drugs and supplies. If these products are not available, IMCI will not work.

The actual management and use of pharmaceuticals is influenced by a wide range of factors, including drug availability, provider experience, economic influences, cultural factors, community belief systems, and the complex interactions among these factors. Drugs have special importance because

- drugs save lives and improve health,
- drugs promote trust and participation in health services,
- drugs are costly, and
- significant improvements in the supply and use of drugs are often feasible.

Lack of careful selection, incorrect quantification, high prices, poor quality, theft, improper storage, expiration of drugs, irrational prescribing, and incorrect drug use by patients result in losses that can total more than 70 percent of initial acquisition costs. Improving the supply and management of essential drugs and vaccines needed for IMCI is possible. Effective management saves money and improves care by increasing drug availability and promoting rational drug use.

The drugs providers prescribe and dispense are an important index of the quality of care they deliver. The capacity to analyze prescribing data efficiently and make quantitative summaries of prevailing practices is one key to evaluating quality of care and intervening to improve care delivery.

D Purpose of the Assessment and Target Audience

Purpose of the Assessment

Country-level preparation activities for IMCI should ensure that the drugs recommended in the adapted treatment guidelines are available. This requires a thorough assessment. This manual presents an indicator-based approach for assessing pharmaceutical management systems (both public and private sector) and programs specifically tailored to the needs of IMCI. This *IMCI Drug Management Assessment Manual* has a number of potential applications, including

- defining the status of the pharmaceutical system, including strengths and weaknesses, for managers and donors,
- designing and planning interventions,
- defining budget or resource requirements,
- monitoring changes in systems and the impact of interventions, and
- comparing the performance of different systems, programs, or countries

Completion of the assessment should result in the identification of problems and an analysis of why the problems that exist have come to pass, which problems might be solved, and what types interventions are feasible in terms of cost-effectiveness and feasibility.

Target Audience

This manual is intended for use by health professionals with a background in drug management and who work at the central and/or district level. The users of this manual may include

- WHO and PAHO Essential Drugs Program staff in LAC, Africa, and Asia
- Ministry of Health (MOH) decision makers, health planners, health economists, donor representatives, or experts responsible for IMCI activities
- System managers at the national, regional, or local levels wishing to measure the performance of the IMCI drug management and supply system
- Social scientists and health project or facility managers who are interested in IMCI operational research and management tools

E Objectives

The purpose of this manual is to assist the user in assessing those aspects of the drug management system that are critical to ensure the availability and proper use of drugs and supplies essential to IMCI. This manual is not intended for users who need or wish to conduct a complete assessment of the entire pharmaceutical system. Such an assessment is beyond the scope of this manual. RPM has developed the *Rapid Pharmaceutical Management Assessment: An Indicator-Based Approach* manual to serve as a guide for conducting a complete assessment. The *IMCI Drug Management Assessment Manual* is intended to be morbidity-specific and is based on the rapid assessment model. The IMCI manual will complement the more general manual.

The main objective of this manual is to provide an approach for conducting studies that will

- provide data on availability and prescribing practices of IMCI drugs,
- identify ways to improve IMCI drug management (availability, treatment, and cost), and
- transfer self-assessment technology by creating country-based operations research capacity

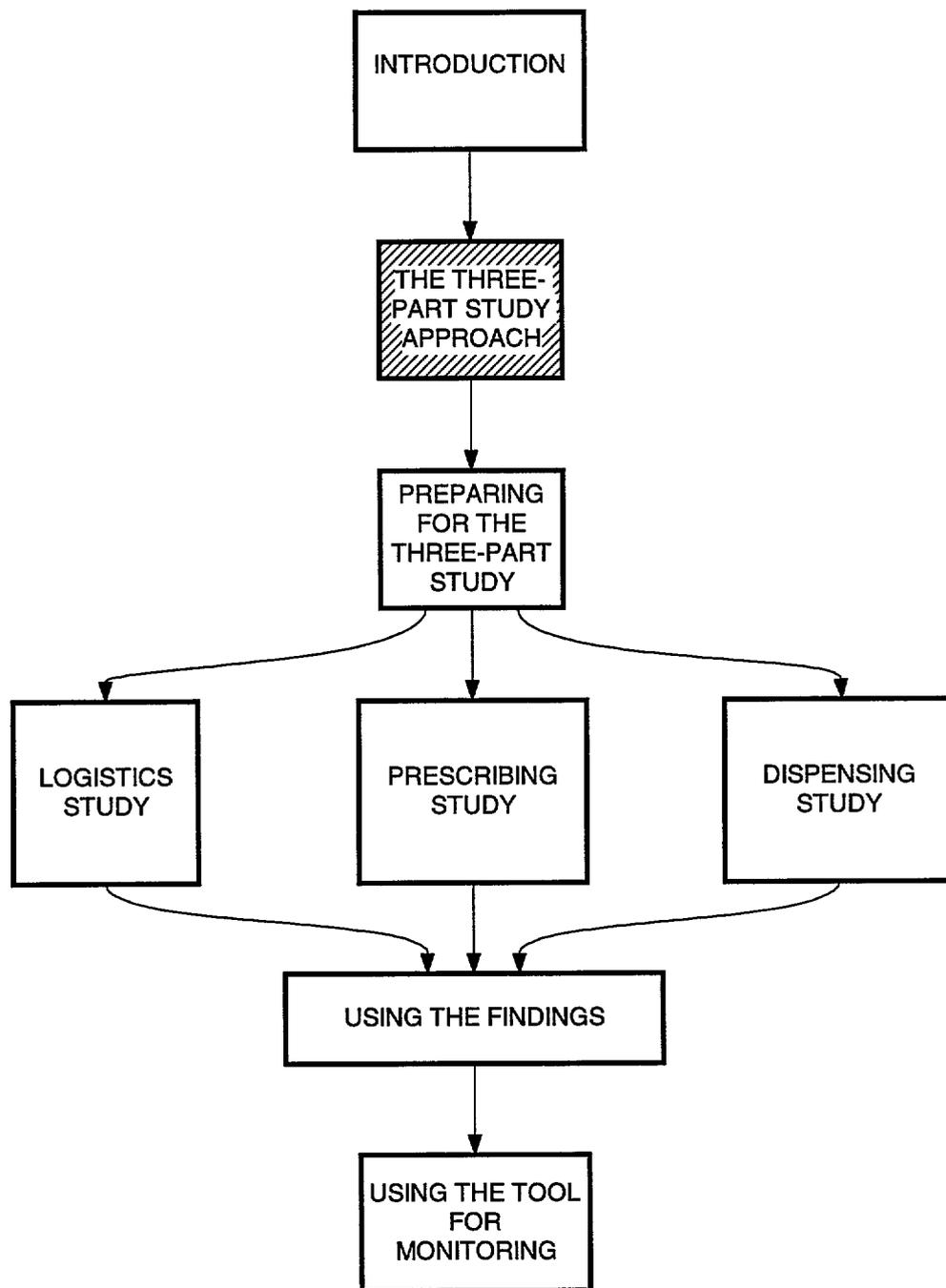
F The Role of PAHO and Other Collaborators

In response to the need for support in improving the supply and management of essential drugs and vaccines, the Pan American Health Organization (PAHO), the United States Agency for International Development (USAID), the USAID-funded Basic Support for Institutionalizing Child Survival (BASICS) Project, and Management Sciences for Health (MSH), through its USAID-funded Rational Pharmaceutical Management (RPM) Project, held a number of discussions that led to the formulation of the Latin America and the Caribbean (LAC) Regional IMCI Initiative. In support of LAC regional IMCI activities, PAHO, BASICS, and RPM have developed this *IMCI Drug Management Assessment Manual*.

This IMCI drug assessment tool has been designed so that it can be integrated into the IMCI planning process. This drug assessment tool is being developed jointly with the PAHO Essential Drugs Program (EDP) staff and will be field tested in Ecuador. Based on the results of field testing, the IMCI drug management assessment tool and methodology will be packaged and presented in a series of technical workshops for trainers and responsible officials of the LAC region. It is anticipated that country-based PAHO EDP staff will become an important resource for planning and implementation efforts throughout the region.

It is important to mention that the challenge to ensure an efficient and cost-effective drug supply system is constantly evolving. Changes in country policies, budgets, and economic priorities can have an impact on the pharmaceutical systems. USAID, PAHO, and others interested in drug supply systems will continue to work toward updating and improving the tools and strategies presented in this manual.

The IMCI Drug Management Tool



II THREE-PART STUDY APPROACH

This manual is designed to take users step-by-step through the assessment process, beginning with introducing the concept of indicator-based assessments, then conducting studies that identify specific strengths and weaknesses of the IMCI drug supply system, and ending with recommendations and possible strategies for improvement. The complete assessment is built around three complementary but conceptually independent studies: Logistics Management Study (Logistics Study [LS]), Prescribing Practices Study (Prescribing Study [PS]), and Dispensing Practices Study (Dispensing Study [DS]). The three studies assess various aspects of drug management in the public and private sectors.

Each study uses specific indicators to measure the performance of a particular aspect of the IMCI drug supply system. Objective indicators and specific program targets provide concrete measures against which actual performance can be compared. There are four general criteria for useful indicators. These are:

- **Importance** - Each indicator must reflect an important dimension of performance
- **Measurability** - Indicators must be measurable, within constraints of time and variable quality and availability of data
- **Reliability** - Each indicator must be reliable over time and with different observers
- **Validity** - Each indicator must allow a clear and consistent interpretation and have a similar meaning across different environments

The indicators used in each of the three studies described below meet these basic criteria.

A Logistics Management Study

An accurate and systematic assessment of the logistics supply system is a prerequisite for planning improvements to the IMCI drug supply system. Worldwide, a problem that frequently recurs with new health initiatives is the failure to ensure drug supplies before training and other implementation activities take place. Failure to solve this problem is a major factor in low facility utilization rates and high dropout rates for community volunteer programs.

The most important methods for collecting information for this study are likely to be document review, key informant interviews, and conducting physical inventory checks. Data collection sites will include MOH central offices, central and regional medical stores, health facilities, and selected drug retail outlets. The findings of the study will be useful to identify specific problems in the system, plan corrective interventions, monitor progress, and compare the performance of one system to another.

B Prescribing Practices Study

This study focuses on prescribing practices for treating selected childhood illnesses currently taking place in the health system. Most developing countries have adopted case management policies for various health problems based on WHO guidelines. However, despite years of promotion, health care providers frequently do not follow these guidelines when prescribing drugs. Whatever the intervention attempted in response to this problem, there are four needs that are constant: identifying the specific prescribing behaviors to change, intervening to bring about positive change, assessing the extent to which change takes place, and periodic monitoring of the status of problem behaviors. MSH has developed a database program, the Prescription Analysis Software System (PASS), to organize and tabulate the substantial amount of data required for useful analysis of prescribing practices.

The PASS program allows program managers to analyze treatment patterns for various health-related problems efficiently, identify problem practices, and plan appropriate interventions. PASS allows the user to generate a standard set of reports that provide information on

- describing current treatment practices,
- comparing the performance of regions or health facilities,
- monitoring or supervising specific drug use behaviors, and
- assessing the impact of interventions

In general, there are two options for collecting prescribing data: prospectively through observation and retrospectively through records. Prospective data collection is expensive and time consuming, but can provide useful information about the diagnostic process and on the communication between health providers and patients. Using observational methods for morbidity-specific analysis is particularly time consuming. This is because it is necessary to remain at one site, for example a health facility, until a sufficient number of cases of the target health problem(s) (for example, ARI and diarrhea) have been observed. This often requires considerable expense in order to obtain a good sample. Although the information provided by records is often incomplete, retrospective data collection is less time consuming, less expensive, and can also describe practices over a longer period of time.

Data collection for this study will involve a retrospective review of patient records in health facilities using standard data collection forms, copies of which are provided in chapter V, section L. Retrospective data collection requires that adequate sources of data exist (i.e., records that offer a method of selecting a random sample of patient encounters that took place within a defined period of time and the specific names and routes of administration of all drugs prescribed). **An important objective of the Ecuador field test is to determine the best means to collect data from records.**

To assess certain aspects of the interaction between health workers and caregivers, direct observation will be used. This will be followed by exit poll interviews of the caregivers to allow a comparison of what was told to the caregiver by the health worker and what information concerning drug treatment was actually understood or retained by the caregiver.

For the simulated purchases, assessors posing as customers seeking help for treating a selected childhood illness will visit retail outlets (or health facility pharmacies). The assessor will present him or herself (without a prescription) as the caretaker of a child who has had, for example, numerous bowel movements for two days. The assessor will ask the person who waits on him or her for advice about what products are best to treat this condition. All information is recorded on information sheets by the assessor after leaving the store.

C Dispensing Practices Study

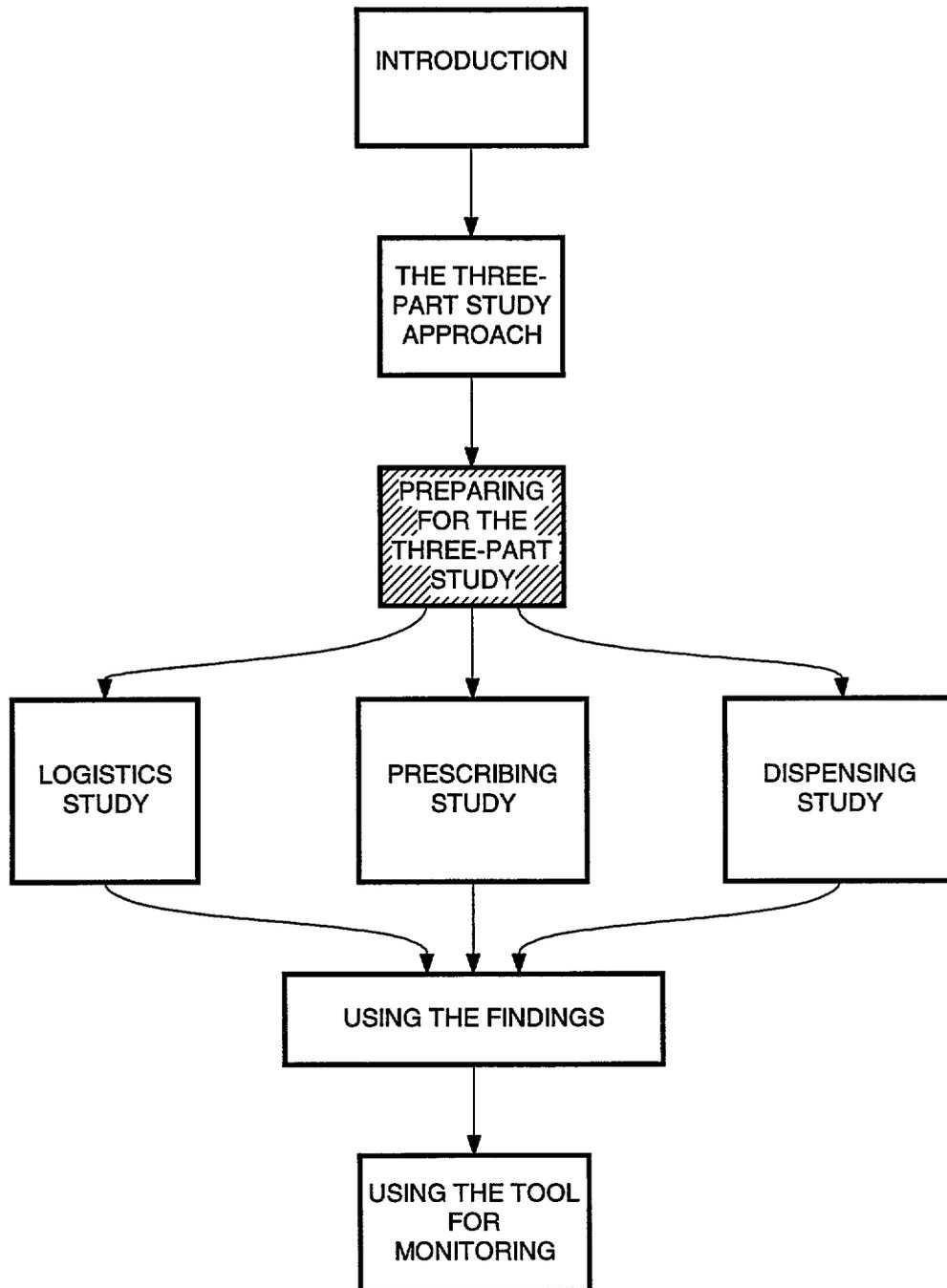
(THIS STUDY WILL NOT BE PERFORMED FOR THE ECUADOR FIELD TEST)

Dispensing the correct and most cost-efficient drug is a critical part of the IMCI treatment process. In addition to public sector health facilities, private sector retail outlets provide an important point of access for patients who either leave a health facility with a prescription that needs to be filled or who bypass the health facility and go directly to the retail outlet for advice and/or drug treatment. The quality of dispensing may be affected by the training and supervision the dispenser has received and the drug information available. Assessing current drug dispensing practices is necessary to have a full understanding of the IMCI drug system.

To conduct this study, data collectors will use the same simulated purchases technique employed for the prescribing practices study, except the assessor will go to the retail outlet (or health facility pharmacy) with a prescription for a brand name drug. The assessor will ask the person who waits on him or her for advice about a less expensive generic and attempt to buy the generic drug. The assessor will buy the generic or brand name drug recommended at the store or facility. Using the same process as in the prescribing study, all information is recorded on information sheets by the assessor after leaving the store.

By conducting this study, the user will be able to develop a profile of current practices for treating selected childhood illnesses. The information gathered can be used as a basis for 1) identifying factors that influence particular behaviors and 2) designing interventions for bringing about improvements.

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III PREPARING FOR THE THREE-PART STUDY

A General Approach

This manual is intended for use in an indicator-based three-part assessment of the drug management system in support of IMCI. Although the investigators may decide to conduct only one part of the assessment, the general approach to a systematic assessment requires answers to the following questions

Logistics

- 1 Are the drugs and medical supplies required to treat children zero to five years old available in public health facilities?
- 2 If unavailable in public facilities, are they available and affordable in the private sector?
- 3 What are the determinants of product availability in the public sector and what can be done to bring about improvement?

Prescribing

- 1 What are current prescribing practices for important childhood illnesses?
- 2 Are the current prescribing practices clinically appropriate?
- 3 How does the drug cost of current practices for treating IMCI health problems compare to what the cost would be if IMCI treatment guidelines are followed?

Dispensing

- 1 Are caregivers of sick children offered the most cost-efficient drug treatment by dispensing generic products?
- 2 Are drugs being dispensed using good dispensing practices?

Planning the Three-Part Assessment

This assessment consists of three studies (logistics, prescribing, and dispensing) in four different settings: central level, regional level, health facilities, and drug retail outlets. Each part addresses some aspect of the questions listed above and, when viewed together, provide a comprehensive assessment of the IMCI drug management situation. Following is a summary of the three studies.

The Logistics Study (LS) The purpose of conducting the LS is to determine the degree to which the drugs, vaccines, and supplies required for treating and preventing common childhood illnesses are available. Availability of these products should be assessed prior to introducing the IMCI initiative in the country. The LS indicators will also allow the investigators to identify possible reasons for the low availability of drugs and vaccines, as well as opportunities for improving the supply. These indicators will guide efforts to ensure the drugs, vaccines, and supplies required for IMCI are available in the public and private sectors. Three data collection techniques will be used: document reviews, structured interviews, and physical inventory checks.

The Prescribing Study (PS) The purpose of the PS is to review prescribing practices for IMCI health problems and assess their clinical and cost implications. This information will be used to involve prescribers in the initiative, and to target specific behaviors to encourage or discourage through IMCI training and subsequent monitoring and supervisory activities. The PS will use both retrospective and prospective methods. For the retrospective component of the study (in MOH facilities only), the data collection technique used will be medical records review. The prospective component will use the techniques of direct observation and exit poll interviews in MOH facilities, and simulated purchases in drug retail outlets.

The Dispensing Study (DS) The purpose of the DS is to evaluate the quality of dispensing practices and of the information about drug therapy provided to consumers. Dispensing behaviors in health facilities and in retail outlets may have clinical and cost implications that need to be considered when counseling the caregivers of sick children. The dispensing indicators will provide information on whether the prescribed drug was actually dispensed, the quantities dispensed and information provided to consumers. The DS in retail outlets is particularly important if shortages of IMCI drugs in MOH health facilities are frequent, and consumers often buy drugs from retailers. Three data collection methods will be used: prescription records review, exit poll interviews, and simulated purchases.

Personnel to Conduct the Assessment

RPM's experience in conducting a country-wide assessment of the drug management system suggests that the most practical way to carry out this type of study is for two or more experienced investigators to work together over a period of four to six weeks. An ideal combination would include the following:

- A *pharmaceutical management specialist* to take charge of study coordination and data collection for logistics at the *central and regional* levels. For this, familiarity with pharmaceutical policy, logistics management, procurement, and budget issues would be most useful.
- A *health care provider* such as a physician, pharmacist or nurse to take charge of the surveys to be carried out at the *health facility and retail outlet* levels. For this, familiarity with pharmaceutical products and work routines in health facilities would be an asset.
- The work of the investigators is supplemented by a team of data collectors who visit medical stores, sample health facilities, and drug retail outlets.

Selection of Target Sites

The three-part assessment takes place at the central level, central and regional medical stores, health facilities and retail outlets. Table One provides a list of data collection sites that should be included to conduct all three parts of the assessment.

Table One Data Collection Sites for Each Part of the Assessment

Study	Data Collection Sites
I Logistics Study	Ministry of Health Central Office
	Ministry of Health / Central Medical Store
	Regional Medical Stores
	Health Facilities
	Drug Retail Outlets
II Prescribing Study	Health Facilities
	Drug Retail Outlets
III Dispensing Study	Health Facilities
	Drug Retail Outlets

Conducting an assessment in all these sites may look difficult, but in practice, the entire set of 27 IMCI drug management indicators can be sorted into two groups, which constitute two distinct data collection efforts

- At the *central and regional levels*, data are collected for nine logistics indicators, of which four are collected through structured interviews and document review, and five through physical inventory and stock record review at the central and regional medical stores and drug retail outlets
- At the *health facility and retail outlet levels*, data for five LS indicators, 12 PS indicators, and for six DS indicators are collected through sample surveys. The health facility data collection effort requires organizing a survey to collect different types of data in 20 sites. The survey includes physical inventory and stock record review, patient record reviews, direct observations, exit poll interviews, and simulated purchases. A sample of 20 drug retail outlets are surveyed through prescription records review, exit polls, simulated purchases and physical inventory checks

Data Collection Techniques

Data for calculating the 27 indicators are collected using six different data collection techniques at central, health facility, and retail outlet levels. The seven techniques are document review, structured interviews, physical inventory checks, records review, direct observation, simulated purchases, and exit polls. Some of the techniques will be used at more than one level. Table Two lists the data collection techniques used at each level. This manual provides data collection forms and checklists as well as a detailed description for each technique in the following three chapters dedicated to each specific study.

Table Two Data Collection Techniques Used in the IMCI Drug Management Assessment

Study	Techniques
I Logistics Study	Document review
	Structured interview
	Inventory check in medical stores
	Inventory check in health facilities
	Inventory check in retail outlets
II Prescribing Study	Patient medical record review
	Simulated purchases
	Prescription record review
	Direct observation
	Exit poll interviews
III Dispensing Study	Exit polls
	Prescription record review
	Simulated purchases

Preparations

Before any data are collected, three tasks must be completed

- Prepare background information,
- Prepare an overview of Ministry of Health pharmaceutical management operations, and
- Prepare the list of IMCI indicator drugs

B Gather IMCI Statistics and Background Information

There are certain figures, rates, and IMCI statistics that will provide useful context for presenting the results in the final report. Investigators should collect and record the following data, shown in Table Three, at the very outset of the work (a similar Background Information Checklist is included in section L of chapter V for use in the field)

Table Three Background Information

Background Information
Prevalence and incidence of the five IMCI health problems
The dates covered by the government fiscal year
Exchange rates of local currency for US dollars for the data collection periods
Inflation rates for the previous five years
National and regional population figures
Rates of population increase
Numbers and distribution of MOH health facilities and pharmacies
Numbers and distribution of drug retail outlets
Numbers and distribution of drug wholesalers, distributors, and manufacturers
Diagram showing system of drug procurement and distribution for IMCI drugs
List of sources of IMCI drugs flowing through the distribution system, and estimated values for each source, including budgets, and contributions of donors and NGOs
Summary of transport arrangements linking storage and health facilities
Copy of National Drug Formulary/Essential Drugs List or, total number of IMCI drug products plus total number of all drug products on the List
Is there a system(s) for recovering the cost of drugs dispensed in MOH health facilities? Identify the systems

C Prepare an Overview of MOH Pharmaceutical Management Operations

To efficiently carry out the three-part assessment, including interpreting the results, and making recommendations for supply system improvement, it is essential to have a good understanding of current drug management operations. At a minimum, this should include qualitative descriptions of major problems that affect the movement of drugs through the procurement and distribution system, and the information listed in Table Four, below

Table Four MOH Pharmaceutical Management Operations

MOH Pharmaceutical Management Operations
Numbers and distribution of MOH health facilities, pharmacies, and warehouses
Numbers and distribution of drug retail outlets
Numbers and distribution of drug wholesalers, distributors, and manufacturers
Diagram showing system of drug procurement and distribution for IMCI drugs This should also include the offices responsible for managing procurement of IMCI products (by both purchase and donation), storage facilities, and health facilities
List of sources of IMCI drugs flowing through the distribution system, and estimated values for each source, including budgets, and contributions of donors and NGOs
Summary of transport arrangements linking storage and health facilities This should be as specific as possible, indicating numbers and types of vehicles available by geographic zone If transport is through contract arrangements with parastatal or commercial agencies, describe those arrangements and indicate the budgets
Copy of National Drug Formulary/Essential Drugs List or, total number of IMCI drug products plus total number of all drug products on the List
Is there a system(s) for recovering the cost of drugs dispensed in MOH health facilities? Identify the systems

In most countries, investigators will gather all of these items through interviews and document review The best approach is to prepare a plan for collecting this information (see Table Five below)

Table Five Plan for Collecting Information to Provide an Overview of Drug Management Operations

Information Required	Who to Ask/Interview	What Document to Review or Data to Collect
Organigram	Central Health Administration, Pharmaceutical Section	Organizational structure of health system including job titles and names of persons
Drug sources	Central Warehouse Administration	Invoices of drug orders and receipts
Central/District budgets	Central and District Health Administrative Offices	Budgets for last two years plus current year
Warehouse distribution	Central/Regional Warehouse Administration	Distribution plan list of pharmacies and health centers indicating flow of drugs
Transport arrangements	Central/Regional Warehouse Administration	Transportation schedule for all pharmacies and health centers, indicating how drugs are delivered
Major procurement problems	Central/Regional Warehouse and Pharmaceutical Section of Central Health Administration	Reports of past tenders, drug orders and receipts, interviews with section director and warehouse director
Major distribution problems	Central/Regional Warehouse and Pharmaceutical Section of Central Health Administration	Reports of distribution problems, interviews with section director and warehouse director

D Prepare the List of IMCI Indicator Drugs

Some of the assessment indicators are measured on the basis of a list of selected drugs, vaccines, and essential supplies. This list may also be called “an indicator product list.” There is no “universal” indicator product list. The IMCI indicator drug list will be used at the central, regional, health facility, and retail levels to collect data for deriving inventory management and price indicators. The IMCI drug list in Table Five is a sample indicator product list, adapted from the *Guide for the Introduction of Integrated Case Management* for the five IMCI health problems.¹ It also includes polio, measles, and DPT vaccines and a few essential supplies. The sample IMCI indicator drug list should be adapted to the country-specific setting.

¹ *Guide for the Introduction of Integrated Case Management* Second Draft February 1996 Support for Analysis and Research in Africa (SARA), Health and Human Resources Analysis for Africa (HHRAA), USAID Africa Bureau Office of Sustainable Development in collaboration with Basic Support for Institutionalizing Child Survival (BASICS)

WHO-sponsored IMCI training for health workers includes information on the use of first and second line treatments. Understanding the need for and proper selection of second line therapies is essential in any clinical setting. In many instances drugs of first choice may be in high demand and, as a result, in limited supply. Health workers must know effective second line treatments when the first line therapy is not available. Also, selecting an appropriate treatment may depend on more than just the availability of a first line therapy. Other patient- and drug-related variables must be considered. For the purposes of this assessment, the sample list of IMCI indicator drugs is limited primarily to first line treatments.

Preparing an IMCI indicator drug product list is a two-step process:

1. Use the methods recommended by WHO/CHD *IMCI Adaptation Guide* to adapt the list in Table S1x on the next page to the specific country setting.²
2. Gather a group of local IMCI experts to review the list created in the step above and prepare a list of commonly used products that should be available in the stores and health facilities.



IMPORTANT

Remember, this sample IMCI indicator drug list should first be adapted and finalized in terms of local products used, dosage forms, and strengths

² *IMCI Adaptation Guide* Parts 1-4, June 1997 Working Draft Version 3 For Limited Distribution Only
World Health Organization/Division of Child Health and Development

Table Six Sample List of IMCI Indicator Drugs and Supplies

N	Product	Condition
1	Oral Rehydration Salts	Diarrhea, Dehydration
2	Co-trimoxazole tab 20/100 mg	ARI, Dysentery, Cholera
3	Co-trimoxazole syrup 40/200 mg per 5 ml	ARI, Dysentery, Cholera
4	Amoxicillin tab 250 mg	ARI
5	Amoxicillin syrup 150 mg per 5 ml	ARI
6	Chloramphenicol IM 1000 mg in 5 ml sterile water	ARI
7	Gentamicin IM 20 mg per 2 ml vial	Sepsis, Pneumonia
8	Benzylpenicillin 600 mg 1,000,000 IU	Sepsis, Pneumonia
9	Nalidixic Acid tab 250 mg	Dysentery
10	Tetracycline tab 250 mg	Cholera
11	Furazolidone tab 100 mg	Cholera
12	Erythromycin tab 250 mg	Cholera
13	Chloroquine tab 150/100 mg base	Malaria
14	Sulfadoxine/Pyrimethamine tab 500/25 mg (Fansidar)	Malaria
15	Quinine IM 300 mg/ml	Malaria
16	Mebendazole tab 100 mg	Hookworm/Whipworm/Anemia
17	Iron Folate tab 200/250 mg	Anemia
18	Iron suspension 20 mg/ml	Anemia
19	Gentian Violet	Oral Candidiasis
20	Tetracycline ophthalmic ointment 1%	Eye infection
21	Vitamin A drops 5000IU/0.1 ml	Measles, Malnutrition
22	Paracetamol tab 100 mg	Fever, Pain
23	Paracetamol syrup 24 mg/ml	Fever, Pain
24	Polio Vaccine	Prevention
25	Measles Vaccine	Prevention
26	DPT Vaccine	Prevention
27	Syringe and needle	Essential Supplies
28	Thermometer	Essential Supplies

E Planning the Study

After completing the three preparatory tasks previously discussed, the next activity is to plan the study and to develop a preliminary budget. The financial and human resource requirements may be reduced if only one part of the study is carried out at a time. However, in general, it is more cost-efficient to consolidate the data collection for the three parts of the study into one overall process. Therefore, this manual will provide guidance for planning and carrying out the combined three-part study. The study plan consists of three tasks:

- 1 Appoint investigators and assign responsibilities,
- 2 Plan data collection, and
- 3 Develop the sample design

Appoint Investigators and Assign Responsibilities

The investigators will spend about one week planning the study, two to three weeks in data collection and two to three weeks analyzing data and writing the report. The basic organizational strategy for carrying out this three-part study is to approach the assessment as two separate data collection efforts:

- 1 Central and regional level data collection, and
- 2 Sample survey of health facilities and retail outlets

As described earlier in the "Personnel to Conduct the Assessment" section, each of the two investigators should be in charge of one of the data collection efforts. Specifically, the *pharmaceutical management specialist* should be in charge of organizing the collection of central and regional data and the *health care provider* should be in charge of the surveys of health facilities and drug retail outlets. Actual data collection may be largely or entirely handled by a team of data collectors.

Each of the investigators should be responsible for carrying out the preparatory steps for their respective data collection areas, as described earlier in this chapter. Another important planning assignment is preparation of a budget for the assessment. This should be a collaborative effort and, at a minimum, involve both investigators. The budget should include a detailed listing of the costs to be incurred. For example:

- Salaries of investigators and data collectors
- Preparation and reproduction of data collection forms
- Communications with district and local authorities
- Training of data collectors
- Travel and per diem for the investigators
- Travel and per diem for data collectors
- Data entry costs
- Other costs during the study

Plan Data Collection

All of the data required at the central level should be available in the capital city, and most of it should be obtainable through structured interviews and document review. Most of the vital statistics and background information discussed in sections B and C of this chapter will be collected at the central level. Data collection at the levels of the health facilities and drug retail outlets will require a visit to each health facility and drug retail outlet included in the sample.

Two types of data collection instruments are required for carrying out the studies described in this manual. One is central and regional level data collection checklists and questionnaires and the other is data collection forms for health facilities and drug retail outlets. Sample checklists, questionnaires, and forms are presented in the corresponding study chapters and are listed in Table Seven below. There are two sets of these sample data collection instruments provided in each corresponding chapter. The first set contains forms that are filled in with illustrative data (NOT INCLUDED IN THIS DRAFT). The second set contains blank forms that may be photocopied and used in field tests and they are accompanied by brief instructions.



IMPORTANT

It is essential to understand that all of these are sample forms, and although they have been used in a number of countries, they still must be tested and adapted prior to launching data collection activities

To adapt and test the data collection instruments, follow these procedures

- **First**, one of the investigators should review the sample data collection instruments and identify any terms, references, or questions that are not applicable to the country-specific setting. For example, some countries may use the terms central, regional, district, and community to describe the levels of MOH facilities, while others may use the terms national, provincial, and local for MOH levels, or even some other combination. The suggested changes should then be reviewed by the other investigator (or other study team members) and a consensus reached on the needed changes. Where necessary, add the IMCI indicator drug products.
- **Second**, visit a few health facilities and test the data collection instruments and the methods for collecting the data as described in this chapter.
- **Third**, revise the data collection instruments and, if necessary, the data collection methodology, to ensure familiarity with the entire data collection process and confirm readiness to train data collectors to do their job.

Table Seven Summary of Data Collection Instruments Required by Each Study

I. Logistics Study	II. Prescribing Study	III. Dispensing Study
LS-1 General Checklist and Questionnaire	PS-1 Encounter Data Form	DS-1 Drug Recommended for Health Problem Scenario Data Collection Form
LS-2 Inventory Data Form	PS-2 Drug Price Data Form	
LS-3 Stockout Data Form	PS-3 Calculate Percentage of Encounters Prescribed Various Drugs	
LS-4 Retail Price Comparison Form	PS-4 Calculate Cost of IMCI Drugs	
LS-5 International Price Comparison Form	PS-5 Drug Information Data Form	
	PS-6 Observation of Health Worker Form	
	PS-7. Exit Poll Data Form	

Sampling

The goal of the sampling process is to collect enough data, in terms of the actual number of patient encounters and variety and number of sites, for the results to be considered representative of current IMCI drug availability and use within the country. This aspect of the planning process is very important and deserves careful consideration by organizers of the assessment. Failure to ensure that the data set collected is a large enough and varied enough sample to be considered representative could seriously limit the utility of the data analysis and conclusions, because they will not be generally representative of the country's IMCI drug management situation. The following sections address the four areas of sampling that are critical to the IMCI drug management assessment process.

**IMPORTANT**

This survey design task is divided into four steps

- 1 Selection of central and regional sites sample**
- 2 Selection of patient encounter sample**
- 3 Selection of the health facility sample**
- 4 Selection of the drug retail outlet sample**

F Sample Design for Selection of Central and Regional Sites

The exercise of constructing the overview of MOH pharmaceutical management operations often reveals that important variations exist within a procurement and distribution system, and that those differences may affect the supply of IMCI products. Some features of the system vary from region to region, facility to facility, and from prescriber to prescriber. These local variations include such items as climate, financing, sources of drug supply, ease of access to facilities, condition of inventory records, or patterns of prescribing practices.

It is important to include facilities representing all significant variants of the overall system in the sample. One way to do this is to choose four geographic areas (that is, districts or regions) in which to work, based on an informed division of the country into groupings determined by such variables as geography, socio-economic factors, population density, or key features of the health care system. Below are some criteria for selecting four areas in a country.

- The capital city and the main population center (if different) should always be included as one or two of the study areas.
- If the country is relatively homogeneous, geographically and epidemiologically, simply choose the capital city and three other regions or districts at random.
- If you expect varying conditions in different areas of the country to influence the way pharmaceuticals are managed, first organize all regions or districts into groups, based on these characteristics, then select the capital city and three study areas at random from these groups.

The following three examples show how geographic considerations may be used to develop a sample that is representative of the country.

- | | |
|-----------|---|
| Example 1 | (1) Capital city, (2) Highland agricultural district, (3) Lowland agricultural district, and (4) Arid district |
| Example 2 | (1 and 2) Capital city and one other densely settled urban area, and (3 and 4) Two rural agricultural districts |
| Example 3 | (1) Capital city, (2 and 3) Two rural districts with reasonably good transportation links, and (4) One relatively inaccessible rural district |

G Sample Design of Health Facilities and Drug Retail Outlets

To understand the approach for the study design proposed in this manual, it is important to review the purpose and intent of the IMCI drug management assessment. To summarize:

- The purpose of the assessment is to identify high priority problem areas that might hinder the implementation of IMCI, and to point to appropriate follow-up activities
- The study design is cross-sectional to establish the baseline for monitoring of future interventions
- The study design is not intended to compare regions, districts or facilities but rather to describe a reasonably representative drug management profile for the sample as a whole
- The study design is intended to facilitate the logistics of the data collection effort within a reasonably short time (one day per health facility) and with limited financial resources

The next step in the design process is the selection of patient encounters and the selection of health facilities and drug retail outlets.

Selection of Patient Encounter Samples

The sample of patient encounters is important for both the prescribing and dispensing studies. For each IMCI health problem studied, a minimum of 600 patient encounter records must be reviewed. This is achieved by randomly selecting 30 medical records for each IMCI problem in each of the 20 health facilities. Examples of patient encounter records include daily registers, medical records, or prescription slips. The rationale for selecting a sample size of 600 patient encounters per IMCI health problem studied is based on the following statistical assumptions:

- The design is intended to estimate percentage indicators that summarize values for the whole sample with a 95% confidence interval, and plus or minus 7.5% error
- Experience has shown that the results of collecting larger samples are not more useful for identifying the main problems, and therefore, do not justify the increased time, cost and effort

For the Prescribing Study of the Ecuador field test, two IMCI health problems will be studied: ARI and diarrhea. ARI is further subdivided into pneumonia and no-pneumonia (cough or cold). Therefore, 1,800 patient encounter records (30 randomly selected records for diarrhea, 30 for pneumonia, and 30 for no-pneumonia [cough or cold] per facility) are needed.

Selection of Health Facilities Sample

The sample size used in this manual is 20 health facilities, five from each of the four selected geographic regions of the country. The rationale for selecting a sample size of 20 health facilities is based on experience and the study design factors and assumptions previously discussed.

To make the actual site selections, follow these procedures:

- First, select the district hospital outpatient unit, which should always be one of the facilities selected in each study district. Select randomly if there is more than one district hospital in the district.

- Then, randomly select four other health facilities from the list of health centers in the selected district. For systems organized with only one basic tier of outpatient facilities below the district hospital (for example, rural health centers) select the other four as follows
 - If geographic distances and transportation logistics are such that all facilities can be visited, and all data can be collected in one day, select four of these second level units at random, from all of those in the district
 - If transportation is more difficult, select two facilities at random, and then choose two other facilities that are geographically close to them, so that the paired facilities may be visited in one trip
- For systems with two tiers below the district hospital level (for example, poly-clinics staffed by physicians and lower level health posts staffed by paramedics) select the other four facilities as follows
 - Choose two second level health facilities at random
 - For each of those two second level health facilities choose, from among the group of third level facilities that are geographically close, one site. The result is paired sets of second and third tier facilities
- For systems that are organized in a different way, distribute the five facilities to be studied in each district among the possible types of health facilities, according to such factors as their geographic location or patient load



IMPORTANT

The most important principle to remember in each phase of this process is *random selection*

The simplest approach to random selection is to apply the interval method to site lists. Make sure that the site lists are complete and organized alphabetically, and select every n^{th} site, where n is determined by dividing the total number of available sites by the desired sample size. For example, if there are 40 sites available, and four are needed for the study, select every tenth site ($n=10$) on the list.

Selection of Drug Retail Outlet Samples

The sample size for drug retail outlets is 20, five from each of the four geographical regions of the country. The same outlets will be used for both diarrhea and ARI simulated purchases scenarios, but employ two different data collectors, one for each scenario.

The most commonly recognized drug retail outlets are pharmacies. However, there may be other types, such as over-the-counter (OTC) drug stores. It is important to obtain a clear idea of the different types of outlets operating, their relative proportions and geographic distributions, and regulations that affect what may be sold. The drug retail outlet sample should be selected to include proportional numbers of all major types. To do this, apply the principles described above for sampling different types of health facilities.

In selecting the drug retail outlet site sample, the simplest approach, from the logistical point of view, would be to choose the site that is geographically closest to each randomly selected health facility visited. Two problems with this approach are that (a) those outlets situated closest to health facilities may not be representative of all outlets, and (b) in some settings where rural health facilities are located, there may be no pharmacies or other drug retail outlets. A better approach, from the point of view of representative sampling, is random selection within each of the four geographic areas in the sample design. The best way to accomplish this is to apply the systematic interval sampling method to site lists, as described under *Selection of Health Facilities Sample*.

H Logistical Arrangements

Recruiting and Training Data Collectors

It is necessary to recruit and train two groups of data collectors as follows

- one group to collect data in health facilities, and to obtain availability and price data in drug retail outlets, and
- another group to carry out the simulated purchases

For the first of these, the most effective data collectors will usually be doctors, pharmacists, nurses or paramedical personnel who have worked in health facilities. There is some risk in using students or other parties who have no practical experience in working with the record keeping systems that they will encounter. The risks are that the students will have difficulty identifying the required data, the work will be unduly slow and frustrating, and this could negatively affect the quality of the data. A related problem, which could produce similar results, lies in recruiting parties, particularly some doctors, who may consider themselves too senior to carry out the relatively tedious work required.

To minimize both risks, and promote productivity, a very useful strategy would be to pair health care providers and other workers with experience in storage facilities. This would provide a team that has practical experience with product names as well as with both the stock and clinical record keeping systems.

No matter who is recruited, however, it is essential that they be trained, and that the training include actual practice in filling out all forms required for both health facility and drug retail outlet data collection. Table Eight illustrates a model training course that may be adapted to suit local circumstances.

Finding data collectors for the simulated purchases poses less of a recruiting problem. No technical expertise is required to do this quick and simple work. It is, however, very important to train the data collectors through role playing, and to verify that they understand what to do by observing their performance in two or three encounters in drug retail outlets. This can be set up with the help of a sympathetic store owner whose store could be used as a training site.

Scheduling, Additional Staffing, Transport and Authorizations

Scheduling is a complicated issue that is affected by factors such as the average time required to collect data in each site, the number of data collectors available, distances between sites, and transport arrangements. It is best to begin by thinking in terms of averages, and then make refinements by considering the geographic implications of the site sample of the study. Experience with the indicator studies completed so far suggests that, on average, about one day of data collection time and one to two days of travel time are required for completing work at one health facility.

This suggests that five data collectors, each working in four sites, would require ten work days each, or perhaps 11 to 12 calendar days for the whole group to travel out, complete work, and travel back. The time required for covering the drug retail outlets must also be considered. For this group of sites, however, work time is much shorter, so the main variable is geographic distribution.

Thus far, discussions have covered the roles of the study investigators and the data collectors. Other types of *staffing* that may be required include one or more data collection managers to supervise and coordinate groups of data collectors, persons to enter or process collected data, and drivers. It should be clear that the practical problems of managing a data collection schedule will be greatly simplified by employing these types of workers. Not employing them to save money will be false economy in most cases.

Concerning *transport*, it is certainly faster to chauffeur data collectors directly to sites, but buses or other public transport can also be used. In some cases, combination approaches will be useful, in which some data collectors working in closely grouped sites are ferried around by drivers, while others, who are going to remote sites, take the bus.

One important detail that can cause serious problems if overlooked is the matter of *letters of authorization*. Each data collector, supervisor, and investigator should be provided with letters from the appropriate authority (such as MOH), which introduce the bearer, request cooperation, and authorize data release. Letters from different authorities may be required for visits to health facilities and drug retail outlets. Whenever possible, central level officials should inform the health facility authorities by telephone communication or radio prior to the arrival of the data collectors.

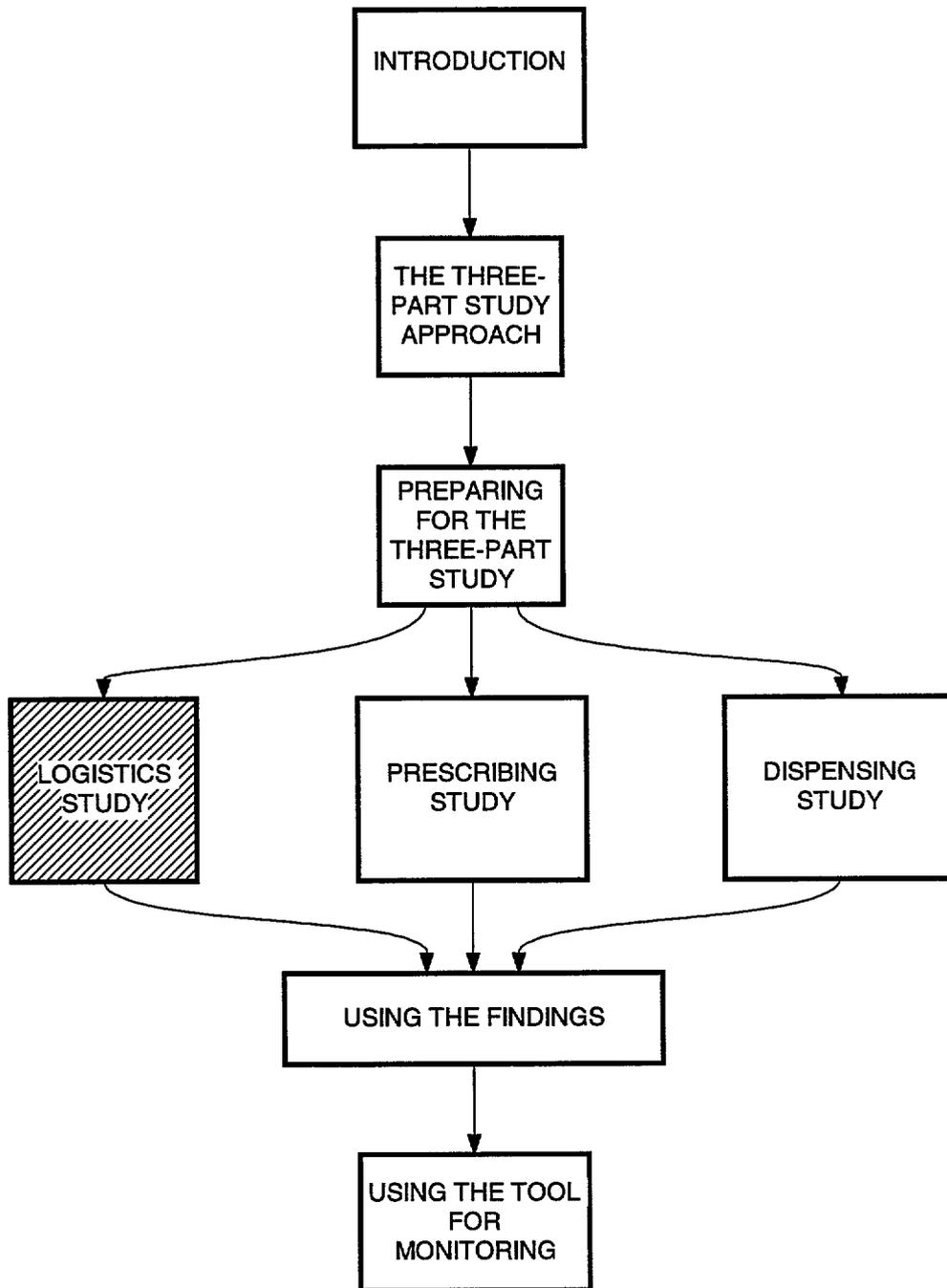
Summary of Data Collection Activities by Site

This chapter has described the different data collection activities that need to be carried out in the different target sites to complete the three-part assessment. To facilitate the planning of this effort, Figure 2 provides a graphic depiction of the entire data collection process in each of the sites.

Table Eight Illustrative Three-Day Training Course for Data Collectors in Health Facilities and Drug Retail Outlets

	Topic	Materials	Time
1	<p>Overview of the indicator study</p> <ul style="list-style-type: none"> - What the study is and why MOH is interested - Role of data collectors - Work to be carried out in both health facilities and drug retail outlets - Work schedule and compensation - Location of sites to be visited 	Briefing package	1 hour
2	<p>How the data are collected</p> <ul style="list-style-type: none"> - Review types of data to be collected in both health facilities and drug retail outlets - Group the forms into one set for each type of site, review them one by one and field by field 	Complete set of forms	1-2 hours
3	<p>Practice session for entering data</p> <ul style="list-style-type: none"> - Begin with the health facility forms Use poster-sized examples to lead class through filling out each field - Standardize data recording, e g , abbreviations, decimal points, format for large numbers, format for numerals - Repeat this exercise for the drug retail outlet forms 	Complete set of forms	1-2 hours
4	<p>How to draw a sample of patient encounters from health facility records</p>	Sample register and patient encounter form	1 hour
5	<p>Practice session in health facility</p> <ul style="list-style-type: none"> - Visit and collect a complete set of data using all forms - Critique performances and troubleshoot problems 	Set of health facility forms	1 day
6	<p>Practice session in retail outlet</p> <ul style="list-style-type: none"> - Visit and collect a complete set of data using all forms - Critique performances and troubleshoot problems 	Set of drug retail outlet forms	½ day
7	<p>Final discussion</p> <ul style="list-style-type: none"> - Review experiences of field test and address concerns and questions - Discuss revisions in forms, if any have been made since the visits - Assign data collectors to teams or groups, as required 	Schedules, letters of introduction, sets of forms for each site, expense money	½ day

The IMCI Drug Management Tool



IV DESIGN FOR LOGISTICS MANAGEMENT STUDY (LOGISTICS STUDY)

A List of Logistics Indicators

Following is the list of nine indicators that will be used to assess the logistics systems operations for IMCI drugs and supplies. The detailed text for the indicators, including the definition, rationale, data collection process, an example of how to derive the indicator, how to present the indicator results, and in some cases, notes of additional information, are presented at the end of this chapter in section K.

- 1 Percentage of IMCI indicator drug products on the National Drug Formulary List
- 2 Percentage of median international price paid for a set of IMCI indicator drugs as part of the last regular MOH procurement
- 3 Average percentage of a set of unexpired IMCI indicator drugs available in MOH storage and health facilities
- 4 Average percentage of time out of stock for a set of IMCI indicator drugs in MOH storage and health facilities
- 5 Median private sector drug retail prices as a percentage of MOH acquisition prices for a set of IMCI indicator drugs
- 6 Average percentage of stock records that correspond with physical counts for a set of IMCI indicator drugs in MOH storage and health facilities
- 7 Percentage of MOH storage and health facilities visited that have at least one working refrigerator with freezing compartment and thermometer
- 8 Percentage of MOH health facilities visited that have adequate cold packs and cold boxes
- 9 Percentage of MOH storage and health facilities with up-to-date refrigerator temperature charts

B Define Methods

The purpose of conducting the Logistics Study is to determine the degree to which the drugs, vaccines, and supplies needed for treating and preventing common childhood illnesses are available. This will require collecting information and data that will allow the investigator to calculate or derive the indicators listed in section A above, and to answer the following questions:

- 1 Are the drugs and medical supplies required to treat children zero to five years old available in public health facilities?
- 2 If not available in the public sector, are the drugs available and affordable in the private sector?
- 3 What are the determinants of product availability in the public sector and what can be done to bring about improvement?

By conducting an accurate and systematic assessment of the logistics supply system for IMCI drugs and supplies, the investigator will identify specific strengths and weaknesses of the system, and in the process, gather information that will be useful in planning corrective interventions for identified weaknesses in the logistics system

Before working through the specific logistics indicators, it is critical to the success of the Logistics Study that investigators and other study team members complete the planning steps outlined in chapter III. To summarize, investigators should have planned a schedule for collecting the following information

- Vital statistics and background information such as exchange rates, national and regional population figures, incidence of major health problems, etc (See chapter III, Table Three)
- Overview of MOH pharmaceutical management operations such as schematic of flow of drugs, transport, delivery schedules, numbers and locations of MOH health facilities, budgets at central and regional levels, numbers and locations of drug wholesalers, distributors, and manufacturers, drug cost recovery systems, etc (see chapter III, section C)

Once this information has been collected, it should be distributed to all investigators prior to the start of data collection. Also mentioned in chapter III, section E, was a process to follow for adapting the data collection instruments to the country-specific situation. To repeat the steps, **first**, review the sample checklist, questionnaire, and data collection forms for any terminology that is not applicable to the country-specific situation. For example, the country may have a National Drug Formulary List rather than an Essential Drugs List. Identify any changes that need to be made and discuss the changes with other members of the study team. Once a consensus is reached, make the necessary changes. Where necessary, add the IMCI indicator drug products to the tracer drug list. **Second**, visit at least three health facilities (one that is considered to be well organized, one that is considered to be average, and one that is considered to be poorly organized) and test the data collection instruments and the methods for collecting the data as described in chapter III. **Third**, revise the data collection instruments and, if necessary, the data collection methodology, and then train data collectors to carry out the work.

The investigators should adapt the following data collection instruments using the samples located at the end of this chapter

- LS-1 Logistics Study General Checklist and Questionnaire
- LS-2 Logistics Study Inventory Data Form
- LS-3 Logistics Study Stockout Data Form
- LS-4 Logistics Study Retail Price Comparison Form
- LS-5 Logistics Study International Price Comparison Form

An important point to understand and remember while conducting the Logistics Study is that IMCI is not a distinct program in and of itself. IMCI is a strategy that seeks to integrate the management of different childhood illnesses. The management of some of these diseases, for example measles, may be supplied through the vertically-managed EPI program, and thus, have a separate logistics system of drug supply. At the same time, another IMCI health problem, for example diarrhea, may be dependent on the MOH's routine distribution system for its source of drugs. Therefore, it is important to collect all the information that is needed to provide a "complete" picture of the logistics system for all IMCI indicator drugs.

Sites for data collection are specified for each of the nine logistics indicators in section K. In general, the data collection sites for the logistics indicators include MOH central offices, central and regional medical stores, health facilities, and drug retail outlets. For the Logistics Study, data for forms LS-2, LS-3, and LS-5 will be gathered from MOH facilities, while data for form LS-4 will be collected from the drug retail outlet sample. Among these sites, four different data collection techniques will be used to gather information for deriving or calculating the logistics indicators. These techniques include document review, structured interviews, and physical inventory checks. Table Nine summarizes the data collection sites and techniques for the Logistics Study.

Table Nine Data Collection Sites and Techniques for the Logistics Study

Study	Data Collection Sites	Data Collection Techniques
I Logistics Study	Ministry of Health Central Offices	Structured Interviews and Document Review
	Ministry of Health / Central Medical Store	Physical Inventory Check and Records Review
	Regional Medical Stores	Physical Inventory Check and Records Review
	Health Facilities	Physical Inventory Check and Records Review
	Drug Retail Outlets	Physical Inventory Check and Records Review

Select the Study Time Period

Several of the logistics indicators are based on a retrospective review of stock records. For the drug management assessment, investigators should select a study time period to cover the last consecutive 12 months or an equivalent period of time. It is important for all data collectors to use the same 12-month time period to ensure that the data received from all sites are comparable. Therefore, the time period should be decided prior to the start of the data collection process and every data collector should know the agreed upon time period.

Sample Size

Determining the appropriate sample size for the IMCI drug management assessment is a critical part of the planning process and should be established prior to the start of any data collection. Chapter III, Preparing for the Three-Part Study, provides a detailed discussion for selecting study sites in sections F and G. In summary, about four warehouses (one at the central level and one for every additional region included in the study), 20 health facilities, and 20 retail drug outlets will be visited. Details of sample design may vary from country to country.

C Conduct Survey

As part of the planning process, a complete work plan should be completed that includes all the specific sites, facilities, departments, and personnel to be visited, a timetable of when the visits will occur, the assignment of teams to specific locations or areas, and the transport and accommodation arrangements. In preparation for conducting the survey of MOH offices, facilities and drug retail outlets, it is important to review the work plan with the whole study team. Maintaining a high level of open communication among study team members and making sure that all team members know their respective responsibilities will help to minimize problems during the data collection process.

As a part of supervising the data collection process, study investigators should make sure that each person is familiar with, and has enough copies of, all the data collection instruments they will need for the site(s) that person is responsible for, before sending data collectors into the field. Explicit, written instructions for using the data collection instruments should be given to each data collector. Samples of written instructions are included with the respective samples of data collection instruments in section L of this chapter.

Supplies such as pens, notebooks, bags for carrying forms, etc., should also be given to each data collector. Study investigators should also make sure that all the site visits have been approved and scheduled by the MOH or drug retail outlet managers. Data collectors should be given copies of letters of introduction that confirm their identity and authorization to survey that site. Study investigators should develop a system for collecting, grouping, and storing completed data collection forms.

Review of Data Collection Techniques

Chapter III outlined the six data collection techniques used for the IMCI drug assessment. Four of the techniques used for the Logistics Study are: 1) structured interviews with key informants, 2) reviews of reports and other descriptive documents, 3) physical inventories, and 4) review of stock records in storage and health facilities as well as drug retail outlets.

For the Logistics Study, key informant interviews are person-to-person discussions used to gather information and documentation. The most important aspect of the interview is asking questions in a structured or standardized way. Using a questionnaire during the interview will help the data collector/interviewer organize their thoughts. The questionnaire (see sample at the end of this chapter) can also serve as a checklist to ensure that all the topics for which the data collector needs information are covered. To carry out this work it is important to keep two points in mind:

- 1) Informants should be selected for their knowledge about the issues and their ability to provide current and reliable data. Take into consideration their official position and factors that may bias their views.
- 2) To the extent possible, data collected through interviews should be verified through review of documents or records.

The physical inventory and review of records takes place in MOH storage and health facilities as well as drug retail outlets. The physical inventory and review of stock records serve as a "point-in-time" check that is carried out by examining the bin card and the stock card records of each IMCI indicator drug item in stock. A physical count of stock on hand will be necessary to check that the stock balance records are correct. Conducting the physical inventory check in MOH facilities will provide an additional form of evaluation that may reveal defects in the warehousing system and identify surplus, expired, and obsolete stock.

To collect the data on availability and prices for IMCI indicator drugs in drug retail outlets, a different data collector will visit the drug retail outlets and simply record the sales prices of at least one product for each of the IMCI indicator drugs on the appropriate form. If an item is not stocked, skip that drug and go on to the next one. Where a site stocks more than one brand of the same product, record the name and price of the least expensive product.

D Data Entry

It is important to instruct data collectors to write legibly with a pen (not pencil), and to use marks or phrases that indicate a complete thought or response when filling out the data collection instruments. Depending on the data collection instrument, this may mean using a check mark, writing "yes" or "no," circling a response, or writing a phrase or sentence to explain a particular finding. This is important because the person completing the form may not be the same person who will enter the data or tabulate the results.

Someone on the study team should be designated to review each data collection instrument when it is completed, to check the data for completeness and correctness. This process is useful because it will allow identification of any problems early in the data collection phase and corrective interventions can be implemented to avoid future mistakes.

After the forms have been collected from each site, sort the forms according to the indicators for which they will be needed. If a data collection form is used for more than one indicator, make a copy of the form and include it with every indicator for which it is needed.

For example, Logistics Study Inventory Data Form, LS-2, is used to collect data for indicators #3 and #6. Therefore, one additional copy of the completed LS-2 data collection form will need to be made. When the copies have been made and sorted, each indicator that requires a data collection form will have a separate stack of completed data collection forms. Each sample data collection form is marked in the lower left hand corner with the number of the indicator for which it is intended. The forms are included at the end of this chapter in section L.

To avoid confusion, it is advisable to collate and prepare data for analysis as it is collected. The most efficient approach for data entry is to identify experienced data entry clerks to do the data entry. While this represents an additional expense, it is more cost-effective over time. The data entry person should be instructed to put their initials on each data collection form in a designated spot to indicate that the data entry is completed for that form.

Completing the Data Collection Instruments

At the end of each site visit, every data collection questionnaire, checklist, or form completed during the visit should be examined for incomplete data. The responsible data collector should make every attempt to collect the incomplete data before leaving the site.

Before beginning the process to derive the specific indicators, a complete re-check and editing is necessary to clean the data. If data for a particular item on the data collection form are missing or incomplete, that item (not the entire data collection form) should be eliminated. The number of eliminated items should be counted and discussed in the final report.

E Generate Reports From Software Program

(This section will be developed after the completion of the Ecuador field test)

F Derive Indicators

Once the data collection process is complete, the next step is to derive the indicators. For each of the nine logistics indicators, calculate or develop the value for the specific indicator from the appropriate data collection instrument. Within the text of the specific indicator are specific instructions, with an example on how to compute the indicator. Follow the steps below for each of the nine Logistics Study indicators.

- 1 Calculate indicators from data collection forms
- 2 Review results
- 3 Calculate averages and percentages of selected indicators
- 4 Draft tables of indicator data where necessary

G Prepare Written Report

A written report should be prepared to summarize the data collection experience and the findings of the data collected. The indicators can serve as the format for organizing the report. The report should include indicator tables, observations made during data review, survey background information, and the methodology used to collect the data. In general, the written report should include the following sections:

- Executive Summary - To give a brief overview of the entire report
- Introduction - To summarize the study objectives, the scope of the Logistics Study, and the outline of the way the report is presented
- Methods - To summarize the indicator-based approach, the data collection techniques, instruments, sites, the sampling process, personnel, field work organization and supervision, and mode of data analysis
- Findings - To tabulate and describe the study results that include identification of the strengths and weaknesses of the logistics system. Also discuss any assumptions, biases, inaccuracies, or inconsistencies that may exist, and what precautions are necessary in interpreting the data.
- Discussion - To address the problems encountered in conducting the study and possible underlying reasons and explanations for the main findings
- Conclusion and Recommendations - To present inferences, corrective actions, suggestions, and likely follow-up interventions

H Present Findings

This involves tabulating and describing the study results. A considerable amount of data will be collected from the Logistics Study. Therefore, it is important to distill the large volume of data down into a few key findings that summarize the study results. Two important considerations in deciding how to present the findings are to think about the intended audience and what specific results the audience should understand by looking at the findings. The presentation can be descriptive or quantitative depending on the intended use of the results. In general, visual presentations of data in the form of tables, graphs, pie charts, etc., work best, supported by the written report to explain the details.

I Provide Report to Health System Manager

A copy of the written report should be presented to the MOH IMCI health system manager. When developing presentations for health system managers and other policy makers, it is important to present a very clear executive summary, and to the extent possible, present key findings, recommendations, and projections of impact graphically as well as in text or table form. The report should provide the necessary documentation to support the need for system improvements and include recommendations for follow-up interventions.

J Troubleshooting

As mentioned earlier, the key to conducting a successful Logistics Study is good planning. However, no matter how thorough the planning, there are always problems that can arise. Such unexpected problems can be minimized if good, open communication among study team members is maintained, and all participants remain flexible and willing to adapt to new situations. Table Ten, below, presents a few typical problems, along with suggested solutions, that can happen while conducting the Logistics Study. However, remember these examples are only illustrative. Every country is different and can present the investigator with different, country-specific problems.

Table Ten Illustrative Examples of Potential Problems and Possible Solutions

Potential Problems	Possible Solutions
Key informants do not keep scheduled appointments	Reconfirm meeting times, clinic hours, retail outlet hours Create backup options and, if possible, try to schedule meetings in the same geographic area on the same day
Data collectors do not show up for training and work	Recruit a few extra data collectors to anticipate any transportation or personal emergencies among data collectors Also, pairing data collectors into teams will ensure having a backup option
IMCI indicator products are not available in the country	As mentioned in chapter III, the study team should adapt the sample list of IMCI indicator products (Table S1x) to the country setting If a product on the list is not available, select the best alternative available in-country
The dosage form of the IMCI drug is different than indicated on the sample data collection form	The sample data collection forms should also be adapted and tested as outlined in chapter III This should catch any inconsistencies before the data collection begins
Health facility and drug retail managers are skeptical or resistant to permitting someone to go through confidential patient records	Sometimes having an “official government letter of authorization” may not be enough to gain cooperation of managers Try to gain support for the study from health professional groups such as associations for doctors or pharmacists Also talk to the managers about the study and the ultimate benefit to the country
A sample facility is closed or not functioning for some reason	Have a defined “substitute” list of facilities in anticipation of any closings Data collectors should not be left to make the decision on their own about selecting sites
Data collectors are not completing the data forms correctly and some are not legible	Make sure that the data collectors use pens, not pencils, to fill out the data collection forms Conduct spot checks of the forms to catch any problems early in the process and make pay contingent upon receiving acceptable forms

K Logistics Management Study Indicators

Indicators Description Format

This section presents detailed descriptions for each logistics management study indicator. Each description follows exactly the same format, which is summarized below.

Indicator data can be collected at four different levels of the health care system. Each indicator in the descriptions that follow is coded according to the level at which it is measured, with the code appearing in parentheses after the indicator title. The health system level codes used are:

- C** Central level - under direct supervision of the central government
- R** Regional or district level - acts as the intermediary, provides supplies to the health facilities and not directly to patients
- F** Health facility level - provides direct care to the patient population
- D** Drug retail outlet level - usually serves as the patient's primary private sector source for drugs

Indicator Name The name of the indicator, along with the different system levels that may be examined (for example, *C/R/F* signals that the indicator may be applied at the central, regional and health facility levels)

Rationale The reason that the indicator is important

Definition The meaning of the indicator, and the terms used to describe this indicator

Data Collection The most likely source(s) of information are summarized in a table indicating *where* the data are to be collected, *who* to ask for assistance, and *what* documents and records to review

Brief discussions of methods and issues related to data collection

Citations of the data collection forms to be used, if any

Computation & Example Computations, if any are needed, are accompanied by an example using illustrative data

Presentation Brief example of how results may be presented

Notes Suggestions for additional information or discussion required to put the indicator in proper context, or to provide more detail

1 Percentage of IMCI indicator drug products on National Drug Formulary List (C)

Rationale The WHO IMCI model treatment guidelines have been used to develop a standard list of drugs that should be available locally to treat the most common childhood illnesses. The WHO guidelines also include information on first and second-line treatments. For the purposes of this assessment, the sample list of IMCI indicator drugs is limited primarily to first-line treatments.

The percentage of IMCI drug products on a National Drug Formulary List (NDFL) or National Essential Drugs List (NEDL) is one measure of the potential availability of IMCI drugs and services and to containing drug costs by using only essential and cost-effective products in the health care system. Sometimes, however, the term "Essential Drugs List" refers only to a list of products authorized for use in primary health care facilities. It is important, therefore, to understand how the terms related to essential drug lists are used before assuming that they meet the test of being equivalent to an NDFL.

Definition The term NDFL refers to a listing of all the unique drug products approved for medical practice in MOH facilities in a particular country. Sometimes the NDFL will appear in a manual that contains a description for each product on the list. In countries where the MOH uses the term "National Essential Drug List," this is often the equivalent of an NDFL.

Data Collection

<i>Where to Go</i>	<i>Who to Ask</i>	<i>What to Get</i>
MOH	Director of Pharmaceutical and/or Medical Supplies Services	NDFL and/or NEDL
Central Medical Stores	Officer in charge/Director/Mgr	

Determine whether a NDFL/NEDL exists. If so, study investigators must obtain copies to assess the number of IMCI indicator drug products it contains. To make an accurate assessment, it is necessary to specify criteria for counting products containing the same active ingredient(s). This indicator is based on the list, developed by study organizers, of IMCI indicator drugs used to treat common childhood health problems (see chapter III "Preparing for the Three-Part Study," section D, "Prepare a List of IMCI Indicator Drugs")

Products that are counted as the *same* item include

- Brand name products that are chemically equivalent to generic products of the same strength and dosage form appearing on the list. For example, Bactrim 200/40 mg tablets and co-trimoxazole 200/40 mg tablets are counted as the same product.
- Tablets and capsules of the same product appearing in the same strength. For example, ampicillin 250 mg tablets and ampicillin 250 mg capsules are counted as one product.
- Fixed combination drug products, no matter how many chemicals they contain. For example, a combination product such as co-trimoxazole, containing trimethoprim and sulfamethoxazole, is counted as one drug product.

Products that are counted as *different* items include

- Different strengths of the same chemical entity For example, co-trimoxazole 100/20 mg tablets and co-trimoxazole syrup 200/40 mg/5 ml are counted as two products
- Dosage forms for different routes of administration For example, tablets and capsules (oral), suppositories (rectal), and injectables (IM/IV/SC) should each be counted as different drug products for a particular drug product
- Different dosage forms for the same route of administration, such as tablets and suspensions For example, amoxicillin 250 mg tablets and amoxicillin 25 mg/ml suspension are counted as two different drug products

See the "Logistics Study General Checklist and Questionnaire, LS-1" in section L

Computation &

Example

The indicator is recorded as the percentage of IMCI indicator drug products on the National Drug Formulary List Record the year of the most recent edition of the published NDFL If no NDFL exists, this indicator would be recorded as *none*

$$\begin{array}{l} \text{\% of IMCI Indicator} \\ \text{Drugs on the NDFL} \end{array} = \frac{\text{Number of IMCI Drugs on NDFL}}{\text{Total Number of IMCI Indicator Drugs}} \times 100$$

$$\begin{array}{l} \text{\% of IMCI Indicator} \\ \text{Drugs on the NDFL} \end{array} = \frac{20}{30} \times 100 = 66.7\%$$

Presentation

Country A has a National Drug Formulary List with a total of 230 unique drug products listed It was revised in 1993 There is also an Essential Drugs List for primary health care facilities with 20 of the 30, or 66.7% of IMCI indicator drug products listed

2 Percentage of median international price paid for a set of IMCI indicator drugs as part of the last regular MOH procurement (C/R/F)

Rationale The cost of drugs procured as a percentage of median international prices is a measure of the efficiency of procurement systems. This indicator will help determine the potential savings that could be achieved if procurement practices are improved, and in this way support changes in the pharmaceutical supply system.

Definition Median international price is the median free on board (FOB) price from a set of international suppliers. One source of price information is the MSH *International Drug Price Indicator Guide*. The last regular procurement price refers to the cost, insurance, freight (CIF) price paid during the last regular MOH procurement.

Data Collection

<i>Where to Go</i>	<i>Who to Ask</i>	<i>What to Get</i>
MOH-Procurement Unit	Officer in charge of pharmaceutical purchases	List of most recent prices paid for a set of IMCI indicator drugs
Central Medical Store	Manager or Reception Officer	
Regional government administration or Medical Store	Manager	
Health facilities	Pharmacist or Procurement Officer	Tender documents, supplier invoices

This indicator is based on the list, developed by study organizers, of IMCI indicator drugs used to treat common childhood health problems (see chapter III "Preparing for the Three-Part Study," section D, "Prepare a List of IMCI Indicator Drugs"). Information on CIF prices paid by the MOH for the indicator drugs should apply to the last regular procurement. Any more recent *ad hoc* or emergency procurements that may have taken place should be compared separately to international prices. The median international prices for the indicator drugs may be determined by reference to the international unit prices in the MSH *International Drug Price Indicator Guide*. Do not use the average cost listed in the Guide. Instead, determine the median price for each indicator drug.

The *median* (or middle-most), is used instead of the *mean* (or average) retail price to avoid bias caused by outlying high or low prices for a given drug product. To determine the median retail price for each product, examine the complete list of 20 prices obtained from all sites, arranged in ascending order, and pick the middle two numbers (the 10th and 11th). Add these two numbers and divide by two to obtain the median. If the list contains an odd number of items, simply select the middle-most number as the median. See the following examples:

Ex 2,3,4,5,6 Median is 4

Ex 2,3,4,5,6,7 Median $4 + 5 = 9 - 2 = 4.5$

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The prices in the *International Drug Price Indicator Guide* are FOB, and should be adjusted upward by 20% to reflect average shipping and insurance costs. Specify the source of international prices and the year of both data sets. If all purchases are not done by one central agency, compile information separately by type of institution, and compute the percentage of international price for each type of purchasing institution (e.g., Regional Medical Stores, hospitals, health centers, etc). Note the date of the most recent regular drug procurement. When making calculations, it may be necessary to convert prices paid in local currencies into U.S. dollars. **It is important to use the exchange rates in effect at the time the purchases were made, and to use the edition of the Price Guide that corresponds with the year in which purchases were made.**

See the "Logistics Study International Price Comparison Form, LS-5" in section L.

Computation & Example

The indicator should be presented as the percentages of median international prices for the set of IMCI indicator drugs. If data are collected from different levels of the system, a separate average should be calculated for each level. The computation involves two steps:

- First, the percentages are calculated for each of the IMCI indicator drugs by dividing the purchase cost of the *comparison unit* (e.g., tablet, milliliter, etc.) at the last regular MOH procurement by the median international price of that unit and multiplying the result by 100.

$$\frac{\% \text{ of Median International Price}}{\text{International Price}} = \frac{\text{Comparison Unit Price}}{\text{Median International Unit Price}} \times 100$$

- Second, the average percentage for all IMCI indicator drugs is calculated by summing their percentages and dividing by the total number on the list.

$$\frac{\text{Average \% of All IMCI Indicator Drugs}}{\text{IMCI Indicator Drugs}} = \frac{\text{Sum of Percentages of All IMCI Indicator Drugs}}{\text{Total Number of IMCI Indicator Drugs}}$$

For purposes of illustrating the computation of the result at the CMS, assume an indicator list of three products:

Product	Comparison Unit Price	Adjusted Median International Unit Price*
Co-trimoxazole 20/100 mg tab	0.0207	0.0163
OR 200 ml pkt	0.0677	0.0578
Paracetamol Syrup 24 mg/ml	0.0070	0.0051

*The figures in this column have been adjusted to reflect estimated CIF prices

1 The first step is to calculate the percentage for each product

For co-trimoxazole, the first product on the list, this is done as follows

$$\frac{\% \text{ of Median International Price}}{\text{International Price}} = \frac{0.0207}{0.0163} \times 100 = 127\%$$

Using the data in the table, the percentages for ORS and paracetamol are calculated as 117% and 137%, respectively

2 Next, the average percentage for all three products is calculated as follows

$$\frac{\text{Average \% of All IMCI Indicator Drugs}}{3} = \frac{127 + 117 + 137}{3} = 127\%$$

Presentation In country C, comparisons of drug purchase prices with median international prices were made at both the Central Medical Store and at a sample of one national and three regional hospitals. In 1992 the CMS paid 127% of the median international price, while the hospitals paid 206%

3 Average percentage of a set of unexpired IMCI indicator drugs available in MOH storage and health facilities (C/R/F)

Rationale The availability of IMCI indicator drugs is perhaps the single most important indicator of this entire set. This indicator measures a procurement and distribution system's ultimate effectiveness in fulfilling its basic mission, that is, providing drugs at health facilities

Definition A drug is defined as available if even one unit of unexpired product is in stock. Since expired drugs are inappropriate for use in almost all situations, they are not counted as stock available for use

Data Collection

Where to Go	Who to Ask	What to Get
Central Medical Store	Inventory Officer/Storekeeper	Inventory records and stock count for IMCI indicator drugs
Regional Medical Store	Manager/Storekeeper	
20 MOH health facilities	Dispenser/Pharmacist/Storekeeper	

This indicator is based on the list, developed by study organizers, of IMCI indicator drugs used to treat common childhood health problems (see chapter III "Preparing for the Three-Part Study," section D, "Prepare a List of IMCI Indicator Drugs") First, in consultation with staff at the CMS, RMS, and local health facilities, determine which of these products are normally stocked at each level The figure for drugs *normally stocked* becomes the denominator in calculations Then, determine whether each of the normally stocked drugs is available If any of each of the IMCI indicator drugs is unexpired and available, record that item as "present" even if it is likely to be out of stock very soon If all stock for a product on the list is expired, record 0 Do not worry about stock levels for this indicator

See the "Logistics Study Inventory Data Form, LS-2" in section L

Computation &

Example This indicator is recorded as a percentage, calculated by dividing the number of unexpired IMCI products found in stock by the total number of products for which availability was assessed, and multiplying by 100

$$\begin{matrix} \% \text{ of IMCI} & = & \frac{\text{Number of Unexpired IMCI Indicator Drugs in Stock}}{\text{Total Number of Indicator Drugs Normally Stocked}} \times 100 \\ \text{Indicator Drug} & & \\ \text{Availability Stocked} & & \end{matrix}$$

Present the data in separate tables for each type of facility (CMS, RMS and peripheral health facilities) visited For the sample of health facilities, the indicator is calculated as the average of the facility-specific averages

$$\begin{matrix} \text{Average \% of IMCI Indicator} & = & \frac{\text{Sum of Average \% for Each Facility}}{\text{Total Number of Facilities in Sample}} \\ \text{Drug Availability} & & \end{matrix}$$

To calculate the average percentage of IMCI indicator drug availability for the sample of health facilities, carry out the following steps

- 1 For one health facility with 11 unexpired IMCI indicator drugs in stock, from a list of 19 indicator drugs normally stocked, the calculation is

$$\begin{array}{l} \text{\% of IMCI Indicator} = \frac{11}{19} \times 100 = 58\% \\ \text{Drug Availability} \end{array}$$

- 2 For a sample of 20 health facilities, for which the sum of percentages of indicator drugs in stock is 960%, the average percentage of indicator drugs in stock is calculated as

$$\begin{array}{l} \text{Average \% of IMCI Indicator} = \frac{960\%}{20} = 48\% \\ \text{Drug Availability} \end{array}$$

Presentation In a survey of 20 health facilities, where 19 IMCI indicator products were confirmed to be normally stocked, an average of 48% of the listed products was found in stock. The range among facilities was 25% to 85%, with the lower end of the range being associated with more peripheral health facilities. The facility-specific averages are listed below

- Regional medical stores - 85%
- District hospitals - 64%
- Health centers and posts - 48%

4 Average percentage of time out of stock for a set of IMCI indicator drugs in MOH storage and health facilities (C/R/F)

Rationale The percentage of time out of stock for a set of IMCI indicator drugs gives a measure of a procurement and distribution system's capacity to maintain a constant supply of drugs

Definition Time out of stock, or stockout time, is defined as the number of days that a product was not present in a warehouse or health facility over a recent twelve-month period (usually the 12 months preceding the one during which the assessment takes place) To be considered a stockout, there must have been none of an unexpired drug in stock If even small quantities of an unexpired drug were present, the drug should be counted as in stock. Percentage of time out of stock is defined as the percentage of days during a 12- month period that a drug has been out of stock (based on inventory records)

Data Collection

<i>Where to Go</i>	<i>Who to Ask</i>	<i>What to Get</i>
Central Medical Store	Inventory Officer/Storekeeper	Drugs that are normally stocked from the list of indicator drugs, number of days these normally stocked drugs were out of stock during the 12 months prior to assessment or previous year
Regional Medical Store	Manager	
20 MOH health facilities	Dispenser/Pharmacist/Storekeeper	

This indicator is based on the list, developed by study organizers, of IMCI indicator drugs used to treat common childhood health problems (see chapter III "Preparing for the Three-Part Study," section D, "Prepare a List of IMCI Indicator Drugs") In order to determine stockout duration, it is necessary that there be a reasonably accurate inventory recording system (computer/ledger/bin cards) in place As in the previous indicator, the first step is to consult with staff at each facility and determine which of the products are normally stocked It is the number of drugs *normally stocked* that will be used in calculations To determine average stockout duration, identify which of the normally stocked drugs were out of stock during the last year, and then determine for how many days the product was out of stock during that time Ideally, this should be determined for the 12 months prior to the month in which the visit occurs The critical issue is that the same 12-month period should be used for all health facilities and warehouses visited

See the "Logistics Study Stockout Data Form, LS-3" in section L

Computation &**Example**

Enter the historical stock data into a table, recording the names of the IMCI indicator drugs, and the number of days of stockout in the previous year. To compute this indicator, carry out the following steps

- First, for each IMCI indicator drug in the table, record the number of days out of stock for each of the last 12 months. Then sum the total numbers of days out of stock over the past 12 months for all drugs
- Second, to record this indicator, compute the *average percentage of time that all IMCI indicator drugs were out of stock*, within the 12 month period, by adding all the stockout days for all drugs, dividing by 365 times the number of drugs, and multiplying by 100

Average % of Time that IMCI Indicator Drugs were Out of Stock =

$$\frac{\text{Total Number of Stockout Days for All IMCI Indicator Drugs}}{365 \times \text{Total Number of IMCI Indicator Drugs Normally Stocked}} \times 100$$

Present this data in tables, and report averages for each type of facility visited (CMS, RMS, and peripheral health facilities)

For purposes of illustrating the computation, assume an IMCI indicator drug list of three products

Product	Total Days Out of Stock
Co-trimoxazole 20/100 mg tab	36
OR 200 ml pkt	64
Paracetamol 24 mg/ml syr 100 ml bot	123

Assume that in a CMS, all three of these indicator drugs are normally stocked

Average % of Time that IMCI Indicator Drugs were Out of Stock =

$$\frac{36 + 64 + 123}{365 \times 3} \times 100 = 20\%$$

Presentation

In country C, over a 12-month period, the IMCI indicator drugs were out of stock an average of 20% of the time at the Central Medical Stores. In the Regional Medical Store, the indicator drugs were out of stock an average of 30% of the time. In the sample of health clinics, the IMCI indicator drugs were out of stock an average of 40% of the time.

5 Median private sector drug retail prices as a percentage of MOH acquisition prices for a set of IMCI indicator drugs (C/D)

Rationale Many caregivers will seek to purchase drugs from a retail drug outlet as an alternative to a health facility, especially if the drugs are not available in the health facility. Having information on private sector drug costs will assist in understanding consumer affordability of, and thus, access to, IMCI drugs in the private sector. In addition, the percentage of median IMCI indicator drug prices in private sector drug retail outlets provides a measure of the cost-effectiveness of operating in-house retail pharmacy services in MOH health facilities. Cost-effectiveness increases to the degree that retail prices exceed MOH acquisition prices.

Definition The median private sector retail prices are the median retail prices for a list of 25 to 50 (delete numbers) IMCI indicator drugs, based on data collected at a sample of 20 drug retail outlets. These data can be collected as part of the sample survey covering both MOH health facilities and drug retail outlets that is required for covering a number of other indicators (See chapter III, "Preparing for the Three-Part Study"). The MOH acquisition prices are the median of CIF prices paid for the same IMCI indicator drugs in the most recent MOH procurement.

Data Collection

Where to Go	Who to Ask	What to Get
MOH Procurement Unit or CMS	Officer in charge	Most recent regular CIF price paid for list of IMCI drugs
Sample of drug retail outlets	Pharmacy owner /Dispenser /Pharmacist	Retail price for list of IMCI drugs

This indicator is based on the list, developed by study organizers, of IMCI indicator drugs used to treat common childhood health problems (see chapter III "Preparing for the Three-Part Study," section D, "Prepare a List of IMCI Indicator Drugs"). To collect prices from retail outlets, begin with the list of IMCI indicator drugs. Visit the sample of pharmacies or other drug retail outlets, and at each site obtain the current selling price for each of the indicator drugs. If an item is not stocked, skip that drug and go to the next. If more than one brand is stocked, use the price of the least expensive product. Select the *median* price for each indicator drug from the aggregate of prices collected from all sites visited. The *median* (or middle-most), is used instead of the *mean* (or average) retail price to avoid bias caused by outlying high or low prices for a given drug product. To determine the median retail price for each product, examine the complete list of 20 prices obtained from all sites, arranged in ascending order, and pick the middle two numbers (the 10th and 11th). Add these two numbers and divide by two to obtain the median. If the list contains an odd number of items, simply select the middle-most number as the median. See the following examples:

Ex 2,3,4,5,6 Median is 4

Ex 2,3,4,5,6,7 Median $4 + 5 = 9 - 2 = 4.5$

The MOH acquisition price is the CIF price paid for the indicator drugs for the most recent regular (non-emergency) procurement

See the "Logistics Study Retail Price Comparison Form, LS-4" in section L

Computation &

Example

Using the *median retail prices*, this indicator is calculated as follows

- For each IMCI indicator drug, divide the median retail unit price by the MOH acquisition unit price, and multiply by 100

$$\% \text{ of MOH Acquisition Price} = \frac{\text{Median Retail Unit Price}}{\text{MOH Acquisition Unit Price}} \times 100$$

- For the entire list of IMCI indicator drugs, add up the results of the above calculation done for each product, then divide by the total number of indicator drugs

Average % of MOH Acquisition Price =

$$\frac{\text{Sum of \% of MOH Acquisition Prices for all IMCI Indicator Drugs}}{\text{Total Number of IMCI Indicator Drugs}}$$

For example, for purposes of illustrating this result, assume an IMCI indicator drug list of three products

Product	Median Retail Unit Price	MOH Acquisition Unit Price
Co-trimoxazole 20/100 mg tab	0.112 per TAB	0.014 per TAB
ORS 200 ml pkt	0.36 per PKT	0.04 per PKT
Paracetamol 24 mg/ml syr 100 ml bot	4.30 per ML	0.43 per ML

- 1 To arrive at the average percentage of MOH acquisition price, the first step is to calculate the percentage of MOH acquisition price for each product. For co-trimoxazole, the first product on the list, this is done as follows

$$\% \text{ of MOH Acquisition Price} = \frac{0.112}{0.014} \times 100 = 800\%$$

- 2 Using the data provided in the table, the percentages of MOH acquisition prices for ORS and paracetamol syrup are calculated as 900% and 1000%, respectively

- 3 Finally, the average percentage of MOH acquisition price for all three products is calculated as follows

$$\text{Average \% of MOH Acquisition Price} = \frac{800 + 900 + 1000}{3} = 900\%$$

Presentation In country Q, retail prices of 25 IMCI indicator drugs were found to be, on average, 900% of MOH acquisition prices, based on retail data collected in July 1993 and MOH acquisition prices paid in March 1993

6 Average percentage of stock records that correspond with physical counts for a set of IMCI indicator drugs in MOH storage and health facilities (C/R/F)

Rationale The average percentage of stock records that correspond with physical counts is a measure of the quality of the stock record keeping system. Low percentages of stock records that correspond to physical counts may be due to wastage or pilferage and highlight problems of accountability, all of which contribute to financial losses.

Definition This is the average percentage of in-stock IMCI indicator drug inventory records that correspond exactly with physical stock count for a set of IMCI indicator drugs.

Data Collection

<i>Where to Go</i>	<i>Who to Ask</i>	<i>What to Get</i>
Central Medical Store	Inventory Officer/Storekeeper	Most accurate records of current stock levels for each IMCI indicator drug, issues and receipts not entered, method of recording stocks, physical count of unexpired stock levels
Regional Medical Store	Manager	
20 MOH health facilities	Dispenser/Pharmacist/Storekeeper	

Note For the purposes of the Ecuador field test, this indicator is based on the list, developed by study organizers, of IMCI indicator drugs used to treat common childhood health problems (see chapter III "Preparing for the Three-Part Study," section D, "Prepare a List of IMCI Indicator Drugs")

Visit the CMS (and at least one regional store if they exist in this system), and a sample of 20 health facilities. At each site, carry out the following procedure:

- Ask staff to produce the most accurate records of current stock level for each of the IMCI indicator drugs. Ask them to produce their records for any recent issues or receipts that have not been entered in their stock level records.
- Take note of the means used to produce these estimates (computerized system, manual ledgers, in cards). If bin cards exist, and if they were not used to produce the best estimates, obtain a second set of data based on bin cards.
- Finally, carry out a physical count of the unexpired stock levels for these drugs, and record the number of units for each IMCI indicator drug in stock. The expired units should not be counted. Indicator drugs that are not normally stocked by the facility should be excluded.

See the "Logistics Study Inventory Data Form, LS-2" in section L.

Computation &

Example For the set of indicator drugs calculate the percentage of records checked that correspond exactly with the physical counts according to the tally and the ledger. To do this, divide the number of records for which no discrepancy was found by the total number of records checked, and multiply this result by 100.

% of Stock Records Corresponding with Physical Counts =

$$\frac{\text{Number of Stock Records with No Discrepancies}}{\text{Total Number of Records Examined}} \times 100$$

Present the data in separate tables for each type of facility in the sample (CMS, RMS, or peripheral health facilities) For the sample of health facilities, the indicator is calculated as the average of the facility-specific averages

$$\text{Average \% of Stock Records Corresponding with Physical Counts} = \frac{\text{Sum of Average \% for Each Facility}}{\text{Total Number of Facilities in Sample}}$$

For purposes of illustrating this computation, assume an IMCI indicator drug list of three products

Product	Record	Count
Co-trimoxazole 20/100 mg tab	10,000	10,000
OR 200 ml pkt	1,000	990
Paracetamol 24 mg/ml 100 ml bott	88	87

To calculate the percentage of stock records that correspond exactly with physical counts, carry out the following steps

For one health facility, using the IMCI indicator drug list above

- 1 The number of records examined = 3
- 2 The number of records with no discrepancy = 1

$$\text{\% of Stock Records Corresponding with Physical Stock Counts} = \frac{1}{3} \times 100 = 33\%$$

For a sample of 20 health facilities, for which the sum of percentages of stock records that correspond exactly with physical counts is 600%, the average percentage of IMCI indicator drugs that correspond exactly with physical counts is calculated as

$$\text{Average \% of Stock Records Corresponding with Physical Counts} = \frac{600\%}{20} = 30\%$$

Presentation After adjusting for issue tickets not yet entered in the records at the Central Medical Store in country Q, the percentage of records for three IMCI indicator drugs that corresponded exactly with physical counts was 33% The average percentage of health facility records that corresponded exactly with physical counts was 30%, with the range among facilities from 10% to 60%

7 Percentage of MOH health facilities visited that have at least one working refrigerator with freezing compartment and thermometer (C/R/F)

Rationale Vaccines aid in protecting children from preventable diseases and must be administered during the first three years of life. To measure the availability of important polio, measles, and DPT prevention efforts, vaccines have been included on the sample IMCI indicator drug list. Refrigerators with freezing compartments and thermometers are essential to ensure the adequate storage of vaccines.³ Vaccines that are stored at improper temperatures at any point in their transport to the health facilities or in the health facilities may be damaged and no longer efficacious. Therefore, reviewing the existing cold chain system is important to address the availability of vaccines.

Definition To qualify as a working refrigerator the appliance must have a functioning main refrigerator area, freezing compartment, and thermometer, and be able to cool the vaccines to between 2°C and 8°C. The freezer temperature should be below 0°C at the time of the inspection.⁴

This indicator is measuring whether each health facility has at least one working refrigerator for vaccines, therefore, any health facility with more than one refrigerator will be judged by the refrigerator used for vaccines. If more than one is used to store vaccines, then information about each of the refrigerators should be noted by the data collector, and the facility judged by whether it has at least one working refrigerator.

Data Collection

<i>Where to go</i>	<i>Who to ask</i>	<i>What to get</i>
Central Medical Store	Inventory Officer/Storekeeper	Inspect the condition of the refrigerators in each of these facilities. Check if it is working and has a freezing compartment and a thermometer.
Regional Medical Store	Manager/Storekeeper	Inspect the condition of the refrigerators in each of these facilities. Check if it is working and has a freezing compartment and a thermometer.
20 MOH health facilities	Dispenser/Pharmacist/Storekeeper	Inspect the condition of the refrigerators in each of these facilities. Check if it is working and has a freezing compartment and a thermometer.

³ Management Sciences for Health *Managing Drug Supply* Kumarian Press West Hartford, 1997, p 349

⁴ James E F Reynolds, ed, *MARTINDALE The Extra Pharmacopoeia* Thirteenth Edition (London The Pharmaceutical Press, 1993)

This indicator is based Monitoring the storage of polio, measles, and DPT vaccines, which are on the list, developed by study organizers, of IMCI indicator drugs used to treat common childhood health problems (see chapter III "Preparing for the Three-Part Study," section D, "Prepare a List of IMCI Indicator Drugs"), can help to determine whether the refrigeration and/or cold chain systems are adequate The oral polio vaccine is the only vaccine that is currently packaged with Vaccine Vial Monitors (VVM) These VVMs indicate whether heat exposure exceeded the temperature limits on use Random spot checks of the VVMs can be useful in determining whether the cold chain system is functioning Also, by spot-checking DPT vaccines it is possible to verify whether vaccines have been damaged by freezing DPT rapidly forms a dense precipitate when thoroughly shaken The precipitate contains floccule or granular particles if it has been frozen If the DPT vaccine has not been damaged by freezing, the vaccine will look cloudy and smooth after 15 minutes If it has been frozen, the vaccine will have sediment settling on the bottom of the vial After 30 minutes the DPT vaccine should either be clear, indicating that the vaccine is fine for use, or be almost clear with a dense sediment, indicating that it has been frozen Frozen vaccines indicate a break in maintaining adequate storage temperatures and should not be used

To determine whether the refrigerator is in working condition, the data collector should physically inspect the appliance The data collector should note the capacity, physical condition, and features of the appliance such as freezer and thermometer If more than one refrigerator is used to store vaccines, then the facility will be judged by whether it has at least one working refrigerator

This data can also be obtained from question 20 in part four of the BASICS *Integrated Health Facilities Assessment Survey*⁵ The question on the BASICS survey addresses the type and condition of the refrigerator The question also addresses whether the refrigerator has a freeze watch indicator and thermometer inside For this indicator, the health facility would be considered to have a working refrigerator if the BASICS survey showed the following responses 1) the condition of the refrigerator was either Fair or Good, 2) the refrigerator had both a freezer watch indicator and a thermometer inside, and 3) the temperature at the time of inspection was between 2°C and 8°C If any of these conditions are not met, then the health facility would be considered not to have a working refrigerator

See the "Prescribing Study Encounter Data Collection Form, PS-1" in section L

Computation & Example

This indicator is a percentage It is computed by dividing the total number of health facilities with at least one working refrigerator by the number of facilities visited and multiplied by 100, to convert the decimal to a percentage

$$\begin{array}{l} \% \text{ of Health Facilities} \\ \text{With at Least One} \\ \text{Working Refrigerator} \end{array} = \frac{\text{Total \# of Health Facilities with at} \\ \text{Least One Working Refrigerator}}{\text{Total \# of Health Facilities}} \times 100$$

⁵ United States Agency for International Development (USAID)/Basic Support for Institutionalizing Child Survival (BASICS) *Integrated Health Facility Assessment Survey* Draft August 1997

For example, in country Z, 20 health facilities' refrigerators were inspected. Two health facilities had newly donated refrigerators that seemed to cool the vaccines well, but did not have a thermometer system in the refrigerator, and therefore did not meet the working refrigerator criteria. Fourteen health facilities had refrigerators that were old, but had thermometers and freezing compartments, and were registering adequate temperatures during the visit. Therefore, they met the working refrigerator criteria. Two facilities' refrigerators were under repair and one health facility did not have any refrigeration system, therefore these did not meet the working refrigerator criteria. Finally, one facility had two refrigerators that had thermometers, freezers, and adequate cooling, and therefore met the criteria of having at least one working refrigerator.

$$\begin{array}{l} \text{\% of Health Facilities} \\ \text{With Working Refrigerators} = \end{array} \frac{14+1}{20} = \frac{15}{20} \times 100 = 75\%$$

Presentation: In country Z, in a survey of 20 health facilities, 75% had at least one working refrigerator per health facility.

8 Percentage of MOH health facilities visited that have adequate cold packs and cold boxes (C/R/F)

Rationale To transport vaccines from one facility to another, and in case of a shortage of electricity or breakdown of the refrigerator in the health facility, there must be a means to maintain the vaccines at a temperature cold enough to prevent compromising the state of the vaccines. In the event of such situations, health facilities should have cold boxes available.

Definition Cold packs are a type of ice pack that is used to maintain a cold temperature. Cold boxes, as the name indicates, are storage boxes that are insulated to maintain the temperature of the cold packs and, when needed, to serve as temporary storage. To maintain a cold temperature within the box, cold packs must be placed in the cold box and the cold box must not have leaks or openings.

Data Collection

<i>Where to go</i>	<i>Who to ask</i>	<i>What to get</i>
Central Medical Store	Inventory Officer/Storekeeper	Determine whether the health facility has cold packs and cold boxes
Regional Medical Store	Manager/Storekeeper	Determine whether the health facility has cold packs and cold boxes
20 MOH health facilities	Dispenser/Pharmacist/Storekeeper	Determine whether the health facility has cold packs and cold boxes

The sampling of the health facilities used in this data collection effort will be the same as that discussed in chapter III. In each facility, the data collector should inspect the cold packs and cold boxes. The data collector should consider a cold box adequate if there are no cracks or leaks in the cold box. A cold pack is considered adequate if it doesn't have any leaks.

This data can also be obtained from questions 21 and 22 in part four of the BASICS *Integrated Health Facilities Assessment Survey*. Only if the answers to both of those questions are affirmative, would the health facility be considered to have adequate cold boxes and cold packs.

Computation &

Example This indicator is a percentage and can be calculated by dividing the number of health facilities that have adequate cold packs and cold boxes by the total number of facilities surveyed.

$$\% \text{ of Health Facilities With Adequate Cold Packs and Cold Boxes} = \frac{\# \text{ of Facilities with Adequate Cold Packs and Cold Boxes}}{\# \text{ of Health Facilities in the Sample}} \times 100$$

For example, in country M, 20 health facilities were surveyed. Nineteen facilities had adequate cold packs and cold boxes. One facility only had a cracked cold box that was not able to maintain a cold temperature.

$$\begin{array}{l} \text{\% of Health Facilities} \\ \text{With Adequate Cold} \\ \text{Packs and Cold Boxes} \end{array} = \frac{19}{20} \times 100 = 95\%$$

Presentation In country M, 95% of the health facilities have adequate cold packs and cold boxes.

9 Percentage of MOH health facilities with up-to-date refrigerator temperature charts (C/R/F)

Rationale Vaccines that are stored at improper temperatures at any point in their transport to the health facilities or in the facilities themselves may be damaged and no longer efficacious. To ensure that vaccines are not compromised, it is important to establish a system to monitor the storage temperature of vaccines. Such a system would permit identification of any breakdown in the system and enable repair before damage of vaccines occurs.

Definition Temperatures of all refrigerators where vaccines are stored must be recorded daily for the past thirty days up to the day of the site visit in order to meet the criteria for an up-to-date refrigerator temperature chart. A break in recording of over ___ days indicates that the health facility does not have an up-to-date temperature chart.

Data Collection

<i>Where to go</i>	<i>Who to ask</i>	<i>What to get</i>
Central Medical Store	Inventory Officer/Storekeeper	Check whether a refrigerator temperature chart is in use in each of these facilities
Regional Medical Store	Manager/Storekeeper	Check whether a refrigerator temperature chart is in use in each of these facilities
20 MOH health facilities	Dispenser/Pharmacist/Storekeeper	Check whether a refrigerator temperature chart is in use in each of these facilities

Data collectors will look for an up-to-date temperature chart for each refrigerator used to store vaccines in health facilities. If the temperature was recorded daily up to the day of the site visit, then the health facility will be considered to have an up-to-date chart. However, if during that time period the temperature was not recorded for more than ___ days, then the health facility will be considered as not having an up-to-date chart.

If more than one refrigerator is used for the storage of vaccines, the data collector must check that all refrigerators have an up-to-date temperature chart in use. For this indicator, if a health facility has more than one refrigerator for vaccines, then it will be considered to meet the criteria if a temperature chart is in use for at least one of the refrigerators used to store vaccines.

To collect this information, it will be necessary to inspect the records of the monitoring efforts over the past thirty days, up to the day of the site visit for each refrigerator used in each health facility. The data collector should note the frequency of temperature records and whether there were gaps in monitoring of over ___ days for the last thirty days. If such gaps occurred, the data collector should note the dates that temperatures were not recorded. This information will be useful in determining any pattern in the breakdown of monitoring efforts. Data for this indicator can be obtained from question 20 in part four of the *BASICS Integrated Health Facilities Assessment Survey*.

See the "Prescribing Study Encounter Data Collection Form, PS-1" in section L.

Computation &**Example**

This indicator is a percentage. It is computed by dividing the total number of health facilities with up-to-date refrigerator temperature charts for at least one refrigerator by the number of facilities visited and multiplying by 100, to convert the decimal to a percentage.

$$\begin{array}{l} \text{\% of health facilities} \\ \text{with up-to-date charts} \end{array} = \frac{\text{Total \# of health facilities with up-to-date charts}}{\text{Total \# of health facilities}} \times 100$$

For example, in country P, 20 health facilities' refrigerator temperature charts were reviewed. Assessment of these 20 health facilities showed that up to the day of the site visit 2 had no temperature monitoring, 8 monitored temperature daily, 5 monitored temperature every other day and 5 monitored temperatures intermittently.

$$\begin{array}{l} \text{\% of health facilities} \\ \text{with up-to-date} \\ \text{temperature monitoring} \end{array} = \frac{8+5}{20} = \frac{13}{20} \times 100 = 65\%$$

Presentation

Of the 20 health facilities surveyed, 65% had an up-to-date temperature chart for their refrigerators.

L Sample Checklist, Questionnaire, and Data Collection Forms

LS-1 LOGISTICS STUDY GENERAL CHECKLIST AND QUESTIONNAIRE

Instructions At the MOH central offices, obtain the information listed below

<p>10 Prevalence and incidence of ARI and diarrhea</p> <p>11 The dates covered by the government fiscal year</p> <p>12 Exchange rates of local currency for U S dollars for the data collection periods</p> <p>13 Inflation rates for the previous five years</p> <p>14 National and regional population numbers, and rates of population increase</p> <p>15 Numbers and distribution of MOH health facilities</p> <p>16 Numbers and distribution of drug retail outlets</p> <p>17 Numbers and distribution of drug wholesalers, distributors, and manufacturers</p> <p>18 Diagram showing system of drug procurement and distribution for IMCI drugs</p> <p>19 List of sources of IMCI drugs flowing through the distribution system, and estimated values for each source, including budgets, and contributions of donors and NGOs</p> <p>20 Summary of transport arrangements linking storage and health facilities</p> <p>21 Is there a system(s) for recovering the cost of drugs dispensed in MOH health facilities Are certain groups of citizens exempt from paying for drug charges? Identify the system(s) and groups</p> <p>22 Copy of the National Drug Formulary/Essential Drugs List, or if unable to obtain a copy, record the number of IMCI drug products plus total number of all drug products on List</p> <p>(Use for indicator <i>IV A 1 Percentage of IMCI Indicator Drug Products on the National Formulary List</i> Refer to the individual indicator description section of this manual for information on how to calculate the indicator)</p>	<p>Collected ✓</p>
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LS-1 Use with indicator IV A 1

LS-2 LOGISTICS STUDY INVENTORY DATA FORM

This form is used for the indicators listed below

- IV A 3 Average percentage of a set of unexpired IMCI indicator drugs available in MOH storage and health facilities
- IV A 6 Average percentage of stock records that corresponds with physical counts for a set of IMCI indicator drugs in MOH storage and health facilities

Data collection summary.

For indicator IV A 6, data are taken from any or all of computerized stock record keeping systems, manual stock ledgers or stock record cards and bin cards. Details are given with the individual indicator descriptions on how to collect data from these types of records, and how to make required adjustments for recent receipts and issues, and take physical counts. For indicator IV A 3, data are recorded after physical inspection of the drug products.

Instructions

- 1 **Date** Fill in the date on which the data are collected. If possible, these data should be collected on the same day.
- 2 **Facility Name** Fill in the name of the health facility or warehouse in which the data are being collected.
- 3 **Facility Type** Fill in the type of facility in which the data are being collected, for example, warehouse, district hospital, health center, or health post.
- 4 **Location** Fill in the geographic location of the facility in which the data are being collected (usually the name of a region, district, city, or town).
- 5 **Data Collector** Fill in the name of the person collecting the data.
- 6 **Manual Available** Check *YES* if staff are able to produce the most recent edition of a manual based on the National Drug Formulary List or Essential Drugs List. Check *NO* if staff cannot produce this document. Record its year and title.
- 7 **Data Collected From** Check if the data presented on the form are collected from a computerized system, manual ledger or stock record cards, or tally sheets or bin cards. In cases where more than one of these systems is being assessed, for example, the manual ledger and bin cards, it will be necessary to fill out this data form separately for each system.
- 8 **Product** In *Column 1*, the list of indicator products being used for the assessment should be pre-printed. For each indicator product, include the generic name, dosage form, strength and other appropriate nomenclature.
- 9 **Counting Unit** In *Column 2*, indicate the smallest unit by which the product is counted, for example, tablets or milliliters.

- 10 **Record Count** In *Column 3*, write the number of units of each product shown to be present by the record system
- 11 **Recent Receipts and Recent Issues** It is often and understandably the case that posting of record keeping systems may lag behind recent receipts and issues of stock. For each of the indicator products, after the record count has been entered, ask staff to add up all receipts and all issues not yet reflected in the records. Enter the results of this exercise in *Columns 4 and 5*
- 12 **Adjusted Total** *Column 6* is used for recording the adjusted total of the record count, taking into consideration the recent receipts and issues of stock. For each indicator product, make the following calculation, and enter the result in *Column 6*
- Adjusted Total = Record Count + Recent Receipts - Recent Issues
- 13 **Physical Count** For each indicator product take a physical count of the number of units actually present. Record the results in *Column 7*
- 14 **Expired YES, NO** For each indicator product that has an expiration date, check the expiration dates of all existing stock. In *Column 8*, write *YES, NO, or NA* as follows
- *YES* if any expiration date of a particular indicator product is earlier than the month in which data are being collected for this assessment
 - *NO* if all expiration dates are equal to or later than the month in which data are being collected for this assessment
 - *NA* if no expiration date is required for this product, write *NA* in the column
- 15 **Row 1, Total # Products Where Col 6 does not = Col 7** For each product, compare the numbers in the *Adjusted Total* and *Physical Count* columns. In *Row 1*, record the total number of products where the counts in *Columns 6 and 7* are not equal
- 16 **Row 2, % Records Correspond with Physical Counts** Calculate the percentage of records corresponding with physical counts for each storage or health facility as follows
- Gather all *Inventory Data Forms* for the individual storage or health facility
 - Count the total number of products in *Column 1* from each *Inventory Data Form* for the facility, and record the total number on the back of the last form
 - Count the numbers in *Row 1* from each *Inventory Data Form* for the facility, and record the total number on the back of the last form
 - Using the formula provided in *Row 2* of this form, calculate the *% Records Corresponding with Physical Counts* for the facility and record in *Row 2*

17 Row 3, % of Expired Products Calculate the percentage of expired products for the storage or health facility as follows

- Count the number of products where *YES* is written in *Column 8* of each *Inventory Data Form* for the facility and record the number on the back of the last form
- Count the number of products where an expiration date is required, and record the number on the back of the last form
- Use this formula to calculate % of expired products

$$\% = \frac{\text{Number of Expired Indicator Products Found}}{\text{Total Number of Indicator Products Requiring an Expiration Date}} \times 100$$

- Record the percentage in the space provided in *Row 3* of this form

For further instructions and examples on how to use the data collected on these forms, and how to compute and present the indicator, refer to the individual indicator description section of this manual

Note All blanks should be filled in on this data collection form Enter "N/A" if data for a particular item is not available

LS-3 LOGISTICS STUDY STOCKOUT DATA FORM

This form is used for the indicator listed below

- IV A 4 Average percentage of time out of stock for a set of IMCI indicator drugs in MOH storage and health facilities

Data collection summary.

Data for this indicator are collected for each indicator product from the central stock record keeping system in place in a given facility. This may be a computerized system or manual system based on ledgers or stock record cards.

Instructions

- 1 **Date** Fill in the date on which the data are collected
- 2 **Facility Name** Fill in the name of the warehouse or health facility where the data are collected
- 3 **Facility Type:** Fill in the type of facility in which data are being collected, for example, warehouse, district hospital, health center, or health post.
- 4 **Location** Fill in the geographic location of the facility in which the data are collected (usually the name of a region, district, city, or town)
- 5 **Data Collector** Fill in the name of the person collecting the data.
- 6 **Product** The list of products being used for the assessment should be pre-printed in this column. For each indicator product, include the generic name, dosage form, strength, and other appropriate nomenclature.
- 7 **Month-Numbered Columns** To the right of the product names are twelve columns numbered in order from one to twelve. They are for the twelve months preceding the one in which the data are being collected. For each product, record, for each of the twelve months, the number of days in which that product was out of stock.
- 8 **Total Days Out** In this column, enter for each product the total number of days, over the twelve-month period, that the product was out of stock. In other words, for each product, add up the numbers in each of the twelve columns and enter the total in the far right column.
- 9 **Row 1, Total # stockout days all products** Calculate the total number of stockout days for all indicator products on the form as follows: add the numbers in the *Total Days Out* column for each product, and place the sum in the space provided in *Row 1*.
- 10 **Row 2, Total # indicator products stocked** Count the number of products in the *Product* column of this form that are normally stocked in the facility, and place the sum in the space provided in *Row 2*.

11 **Row 3, % of time IMCI indicator products out of stock** This is the calculation of the indicator itself, and should be done only on the last *Stockout Data Form* for a facility as follows

- Gather all *Stockout Data Forms* for the facility
- Add the numbers in *Row 1, Total # stockout days all products* from each form and record the sum on the back of the last form
- Add the numbers in *Row 2, Total # indicator products stocked* from each form and record the sum on the back of the last form
- Using the formula provided on this form calculate the *% of Time IMCI Indicator Products Were Out of Stock*, and record in the space provided.

For further instructions and examples on how to use the data collected on these forms, and how to compute and present the indicator, refer to the individual indicator description section of this manual

Note All blanks should be filled in on this data collection form Enter "N/A" if data for a particular item are not available

LS-4 LOGISTICS STUDY RETAIL PRICE COMPARISON FORM

This form is used for the indicator listed below

IV A 5 Median private sector drug retail prices as a percentage of MOH acquisition prices for a set of IMCI indicator drugs

Data collection summary

The data for this indicator are collected in a sample of drug retail outlets and at the MOH office responsible for purchasing drugs. At each drug retail site, record the selling price for each of the set of indicator products. If more than one brand is stocked, use the least expensive product in stock (brand or generic name). At the MOH office, record the CIF prices for the most recent regular procurement.

Instructions

- 1 **Date.** Fill in the date on which the data are collected
- 2 **Outlet Name** Fill in the name of the drug retail outlet in which the data are being collected
- 3 **Outlet Type** Fill in the type of drug retail outlet, for example, pharmacy, kiosk, or over-the-counter drug store
- 4 **Location** Fill in the geographic location of the outlet in which the data are collected (usually the name of a region, district, city, or town)
- 5 **Data Collector** Fill in the name of the person collecting the data.
- 6 **Currency Used** Record the currency used to report the price data collected
- 7 **1 U.S. Dollar =** Record the equivalent of one U.S. dollar in the currency used to report the price data collected
- 8 **Product** In this column, the list of indicator products being used for the assessment should be pre-printed. For each indicator product, include the generic name, dosage form, strength, and other appropriate nomenclature
- 9 **Other Name (Brand or Generic)** For each indicator product, fill in the brand or generic name of the least expensive product that is sold at the site
- 10 **Comp Unit** For each indicator product, fill in the comparison unit being used (e.g., tab, ml, sachet, each)
- 11 **# Units Per Pack** For each indicator product, fill in the number of units per pack (e.g., 1000 tablets per pack or 100 ml per bottle)
- 12 **Retail Pack Price** For each indicator product, fill in the retail pack price

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- 13 **Retail Unit Price** For each product, fill in the retail unit price, calculated by dividing the retail pack price by the number of units per pack. It is necessary to enter the price to four decimal places because the units involved are so small. The unit price is the price, for example, per tablet, milliliter, or ampule.
- 14 **MOH Comp Unit Price** For each indicator product, fill in the MOH CIF unit price for the most recent regular procurement.

For further instructions and examples on how to use the data collected on these forms, and how to compute and present the indicator, refer to the individual indicator description section of this manual.

Note All blanks should be filled in on this data collection form. Enter "N/A" if data for a particular item are not available.

LS-5 LOGISTICS STUDY INTERNATIONAL PRICE COMPARISON FORM

This form is used for the indicator listed below

- IV A 2 Percentage of median international price paid for a set of IMCI indicator drugs as part of the last regular MOH procurement

Data collection summary

The data for this indicator are collected at the MOH office responsible for purchasing drugs. For the set of indicator drugs, the CIF prices for the most recent regular procurement are recorded and compared to the international prices.

Instructions

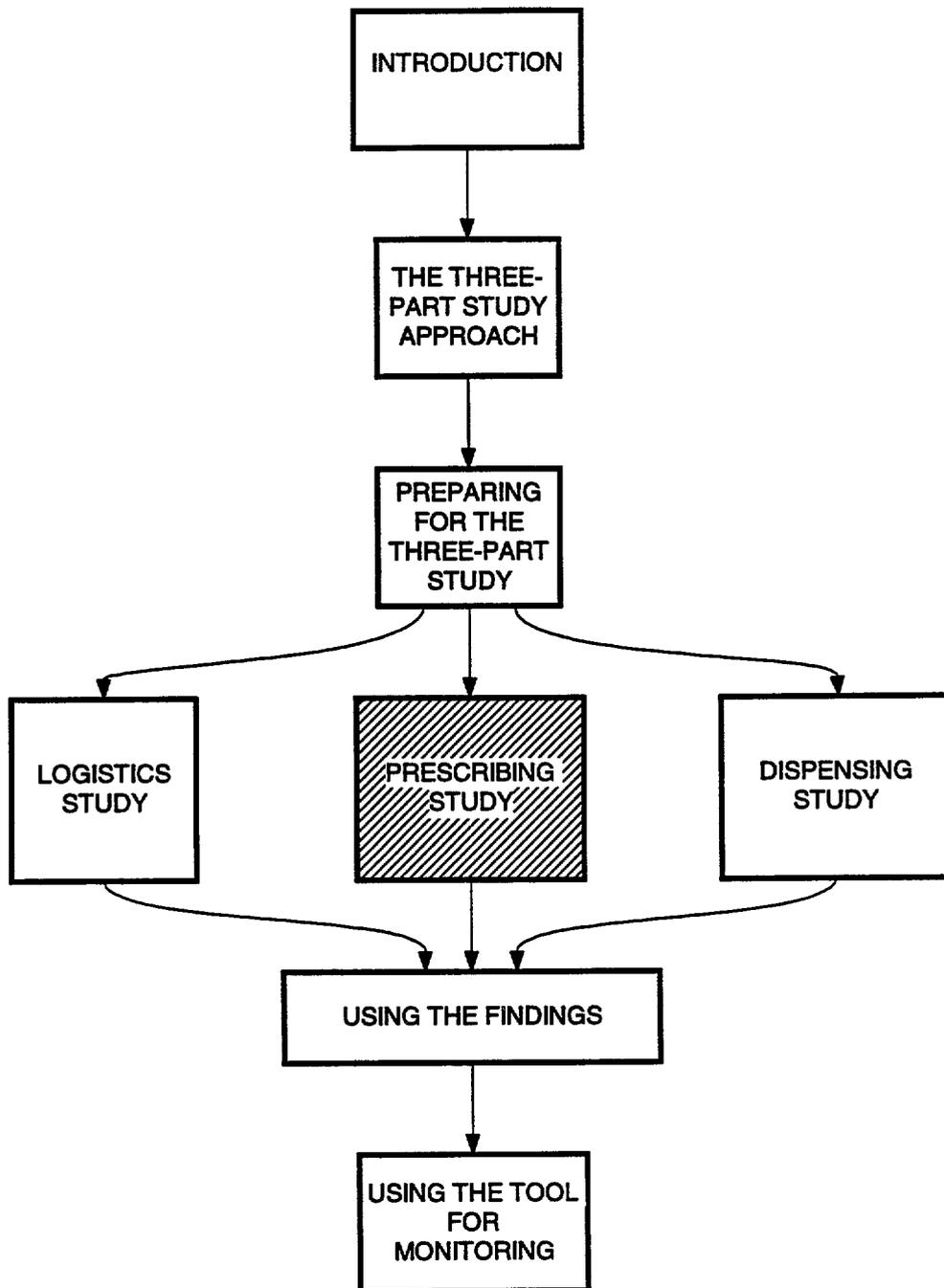
- 1 **Date** Fill in the date on which the data are collected
- 2 **Facility Name** Fill in the name of the facility in which data are being collected
- 3 **Facility Type** Fill in the type of facility, for example, Ministry of Health or Ministry of Finance
- 4 **Location** Fill in the geographic location of the facility in which the data are collected (usually the name of a region, district, city, or town)
- 5 **Data Collector** Fill in the name of the person collecting the data.
- 6 **Currency Used** Record the currency used to report the price data collected, and record the rate of the currency for US\$ 1 00
- 7 **1 U.S Dollar =** Record the equivalent of one U S dollar in the currency used to report the price data collected
- 8 **Product** In this column, the list of indicator products being used for the assessment should be pre-printed. For each indicator product, include the generic name, dosage form, strength, and other appropriate nomenclature
- 9 **Other Name (Brand or Generic)** For each indicator product, fill in the brand or generic name of the product purchased by the MOH
- 10 **Comp Unit** For each indicator product, fill in the comparison unit being used (e g , tab, ml, sachet, each)
- 11 **# Units Per Pack** For each indicator product, fill in the number of comparison units per pack (e g 1000 tablets per pack or 100 ml per bottle)
- 12 **MOH Comp Pack Price** For each indicator product, fill in the MOH CIF pack price

- 13 **MOH Comp Unit Price** For each product, fill in the MOH CIF unit price for the most recent regular procurement, calculated by dividing the MOH pack price by the number of units per pack. It is necessary to enter the price to four decimal places because the units involved are so small. The unit price is the price, for example, per tablet, milliliter, or ampule.

For further instructions and examples on how to use the data collected on these forms, and how to compute and present the indicator, refer to the individual indicator description section of this manual.

Note All blanks should be filled in on this data collection form. Enter "N/A" if data for a particular item are not available.

The IMCI Drug Management Tool



V DESIGN FOR PRESCRIBING PRACTICES STUDY (PRESCRIBING STUDY)

The purpose of the Prescribing Study is to review prescribing practices for IMCI health problems and assess their clinical and cost implications. For the Ecuador field test, the IMCI conditions of acute respiratory infections (subdivided into the categories of pneumonia and no-pneumonia [cough or cold]) and diarrhea have been selected to test the study methodology. The chapter is divided into two main sections: one for prescribing in MOH health facilities, and the other for prescribing in drug retail outlets. Each section details the data collection techniques used for each respective setting.

A List of Prescribing Study Indicators

Following is the list of 12 indicators that will be used to review the prescribing practices for the IMCI conditions of ARI and diarrhea. The detailed text for the indicators, including the definition, rationale, data collection process, an example of how to derive the indicator, how to present the indicator results, and in some cases, notes or additional information, are presented at the end of this chapter in section K.

- 1 Percentage of MOH health facilities visited with a copy of official standard treatment guidelines (STGs) for childhood illnesses, where IMCI has not been introduced
- 2 Percentage of MOH health facilities visited with an official manual of treatment guidelines for childhood illnesses, based on WHO IMCI treatment guidelines
- 3 Percentage of encounters diagnosed as no-pneumonia (cough or cold) that are prescribed antibiotics
- 4 Percentage of encounters diagnosed as pneumonia that are prescribed appropriate antibiotics according to treatment guidelines
- 5 Percentage of encounters that are prescribed ORS for diarrhea
- 6 Percentage of encounters that are prescribed antidiarrheals for diarrhea
- 7 Percentage of encounters that are prescribed antibiotics for non-bacterial diarrhea
- 8 Average cost of drugs prescribed as a percentage of costs if IMCI norms for treatment were followed
- 9 Average cost of drug treatment for each encounter that includes an IMCI health problem studied

Observation Only

- 10 Percentage of encounters where health worker asked no clinical questions from IMCI guidelines to determine severity of health problem
- 11 Percentage of health workers who provided any information to patient on how to take the recommended drug(s)
- 12 Percentage of health workers who mentioned to the patient any signs of progressive illness and recommended a doctor or clinic visit if those signs appeared

B Prescribing Study in MOH Health Facilities

Define Methods

As mentioned above, the purpose of the Prescribing Study is to assess the clinical and cost implications of prescribing practices for the treatment of ARI and diarrhea. For these two conditions, study investigators will gather data from records available in health facilities to calculate or derive results for the indicators listed above and to answer the following questions

- 1 What are current prescribing practices in MOH facilities for ARI and diarrhea?
- 2 Are the current prescribing practices clinically appropriate?
- 3 How does the drug cost of current practices for treating ARI and diarrhea compare to what the cost would be if IMCI treatment guidelines are followed?

By completing the indicator-based assessment and seeking answers to these questions, the investigators will identify prescribing problems that might hinder rational drug use and implementation of IMCI. This information will provide a quantitative description of current prescribing practices. Once existing patterns are understood, inquiries can be directed at understanding why care providers prescribe the way they do.

Chapter III outlines several planning activities to collect country-specific vital statistics and background information, as well as data on MOH pharmaceutical management operations. This should be completed prior to the start of data collection for the Prescribing Study. Once this information has been collected, it should be distributed to all investigators at the outset of the work.

Also mentioned in chapter III was a process to follow for adapting the data collection instruments to the country-specific situation. To repeat the steps, **first**, review the sample data collection forms for any terminology that is not applicable to the country-specific situation. For example, the country has a National Drug Formulary List rather than an Essential Drugs List. Identify any changes that need to be made and discuss the changes with other members of the study team. Once a consensus is reached, make the necessary changes. Where necessary, add the IMCI indicator drug products. **Second**, visit at least three health facilities and test the data collection instruments and the methods for collecting the data as described in chapter III. **Third**, revise the data collection instruments and, if necessary, the data collection methodology, to ensure familiarity with the entire data collection process and then, train data collectors to carry out the work.

The investigators should adapt the following Prescribing Study data collection instruments using the sample forms located at the end of this chapter:

- PS-1 Prescribing Study Encounter Data Form
- PS-2 Prescribing Study Drug Price Data Form
- PS-3 Prescribing Study Calculate Percentage of Encounters Prescribed Various Drugs
- PS-4 Prescribing Study Calculate Cost of IMCI Drugs
- PS-5 Prescribing Study Drug Information Data Form
- PS-6 Prescribing Study Observation of Health Worker Form
- PS-7 Prescribing Study Exit Poll Data Form

Sample Size

An important step in planning for the Prescribing Study is determining the appropriate sample size. For the Prescribing Study in health facilities, two of the four sampling design steps discussed in chapter III, that is, selection of the health facility sample and selection of the patient encounter sample, will apply to this portion of the assessment.

The sample size used in this manual for health facilities is 20, five from each of the four selected geographic regions of the country. Chapter III, section G details the steps for actually making the site selections. For the Ecuador field test, the sample size for patient encounters is dependent on whether the method of data collection is retrospective or prospective. Therefore, patient encounter sampling is addressed in the section on *Retrospective and Prospective Data Collection*.

Conduct Survey

Before starting data collection, review the work plan with the entire study team. The review should include the specific health facility sites, identification of health facility personnel to serve as the data collectors' point of contact, a time table of when the visits will occur, the assignment of data collection teams to specific locations or areas, and the transportation and accommodation arrangements. Maintaining open communication among study team members and making sure that all team members know their respective responsibilities will help to minimize problems during the data collection process.

As a part of supervising the data collection process, study investigators should make sure that each person is familiar with and has enough copies of all the Prescribing Study data collection forms they will need for the site(s) each person is responsible for before sending data collectors into the field. Explicit, written instructions for using the data collection forms should be given to each data collector. Sample written instructions are included with the respective data collection forms in section L. Most importantly, however, supervised practice sessions for filling out the data forms and testing the data collection techniques should be included as part of the training process for data collectors.

Supplies such as pens, notebooks, bags for carrying forms, etc., should also be given to each data collector. Study investigators should also make sure that all the site visits have been approved and scheduled by the MOH central offices and each health facility manager of the selected sites. Data collectors should be given copies of letters of introduction that confirm their identity and authorization to survey the site.

Retrospective and Prospective Data Collection

In general, there are two options for collecting prescribing data: prospectively through observation and retrospectively through records. Prospective data collection through observational methods for morbidity-specific analysis is expensive and time-consuming because it is necessary to remain at one site until a sufficient number of cases for the target health problem have been observed. However, prospective methodologies can provide useful information about the diagnostic process and on the communication between health providers and patients. The retrospective method, through a review of facility registers, patient records, or dispensing records, is less time-consuming, less expensive, and can describe practices over a longer period of time. However, the information provided in records is often incomplete. **Therefore, an important objective of the Ecuador field test is to determine the overall feasibility of collecting such data from records and the best methods to use.**

Retrospective Data Collection in MOH Facilities

To gather information for Prescribing Study indicators 1-9, data collection will involve a retrospective review of patient records in MOH health facilities using the data collection forms listed above. The retrospective method of data collection requires that adequate sources of data exist. For the purposes of this study, the records must allow selection of a random sample of patient encounters within a defined period of time. The records must also include the specific names, strengths, and routes of administration of all drugs prescribed.

For each IMCI health problem studied through retrospective data collection, a minimum of 600 patient encounter records must be reviewed. This is achieved by randomly selecting 30 medical records for each IMCI problem in each of the 20 health facilities. Examples of patient encounter records include daily registers, medical records, or prescription slips. The IMCI health problems of ARI (which is separated into pneumonia and no-pneumonia [cough or cold]) and diarrhea will be studied for the Ecuador field test. Therefore, a total of 1,800 patient encounter records (30 randomly selected records from each facility for diarrhea, 30 for pneumonia, and 30 for no-pneumonia [cough or cold]) are needed.

For an encounter with multiple health problems, the encounter should only be counted once. For example, if an encounter record listed symptoms of loose stool, runny nose, and cough for the child, the case should be counted as one encounter for either no-pneumonia (cough or cold) or diarrhea. The encounter should not be double counted and used for both the ARI sample and the diarrhea sample.

Organizers should also discuss as a group, and reach consensus on, a list of local terms used to describe symptoms that may be listed in health facility records to denote cases of diarrhea, pneumonia, and no-pneumonia (cough or cold). This list can be used as a reference by data collectors.

Review of Data Collection Techniques for Retrospective Method

Records review will be the data collection technique used with the retrospective method for the Prescribing Study in health facilities. Health facility records include medical records, patient registries, and prescription slips if available. This technique can only be used if the facility retains on-site records documenting drug prescribing information. Based on experience in a number of countries, the following steps are suggested:

- Begin by extracting, from the facility's patient register, a list of names of at least 3 patients per month for the IMCI problem under study for the most recent 12 months prior to the time of the study. Start with the most recent full month and work backwards (i.e., October 1997, September 1997, August 1997, etc.)
- In rare cases, most or all of the data required may be found in the register. More commonly, however, it is necessary to consult the individual patient records and/or dispensary records. Make sure to check the quality of the records (in terms of completeness) first before selecting the record as an encounter to include in the data sample.

- In either case, the next step is to select from the list of names records that contain information (that is as complete as possible) for at least two patients per month during the low season and four patient records per month during the high season for the given health problem. For instance, in Paraguay, where the high season diarrhea months are from November to March, the data collectors will randomly choose four records (as described above), while for the months from April to October, the data collectors will randomly choose two records. If there is no seasonality involved in the occurrence of the IMCI problem, the data collectors will randomly choose three records per month, i.e., a total of 36 records.
- To use a random process for selecting names from the facility's patient register, follow the interval method of sampling described in chapter III, section G. To summarize, for each month (using the list of local terms the study team has developed to identify the particular health problem), group the encounters according to diarrhea, pneumonia, and no-pneumonia (cough or cold). For each month
 - Total the number of encounters for each health problem separately.
 - Select every n^{th} encounter, where n is determined by dividing the number of encounters identified for that month by three. For example, if 25 diarrhea encounters were identified for the month of October, divide 25 by three to equal 8.3. Then, select every eighth encounter to randomly identify the three encounters needed for diarrhea in the month of October.
 - Repeat this same process for pneumonia, and again for no-pneumonia (cough or cold) for the month of October. Finally, carry out this same process for each of the remaining 11 months. (Note: Pneumonia encounters may be difficult to identify at lower level facilities, such as rural health posts, as opposed to hospitals. This may be because the medical records at lower level facilities are incomplete or the practice is to refer severe pneumonia cases to the local hospital. For pneumonia, review four months of records; if fewer than five cases in total have been identified, abandon the process for pneumonia and focus on diarrhea and no-pneumonia (cough or cold). The time required to review 12 months of records for a probable data set of fewer than 15 cases is not efficient use of the limited time available.)
- Starting from the most recent case, the next step is to fill out the data collection forms, recording information until *complete data on all indicators* are collected for 30 outpatient contacts for each health problem studied at each site.

☞ **TIP** The reason for beginning with the larger list of names (36 rather than the required 30) is that very often the records do not contain complete data for every contact, so a certain number of names for which data are incomplete will have to be discarded.

Prospective Data Collection in MOH Facilities

To gather information for Prescribing Study indicators 10-12, a prospective method will be used. The prospective method for the Prescribing Study is modeled after the USAID/BASICS *Integrated Health Facilities Assessment Survey*. The BASICS *Integrated Health Facilities Assessment Survey* identifies children that will be observed on the basis of what the mother gives as a reason for bringing the child to the facility. These are identified as diarrhea/vomiting, fever/malaria, and difficulty breathing/cough/pneumonia. The study investigators should obtain a copy of the USAID/BASICS Health Facilities Survey (Annex 1, Section 1 Observation Checklist - Sick Child) for Ecuador to supplement information for the Prescribing Study data collection process.

The patient encounter sample size for observation only for indicators 10-12 is a special case. As discussed in the next section, a convenience sample of patients from zero to five years (those who happen to be available at the time of data collection) with any health problem within each health facility will serve as the sample. Data collectors should observe 10-15 patient encounters in each of the 20 health facility sites.

Review of Data Collection Techniques for Prospective Method

Structured observation will be the data collection technique used with the prospective method.⁶ This technique applies to Prescribing Study indicators 10-12. Observation requires the data collector to directly observe the behavior of the health care worker(s) with the purpose of describing particular prescribing practices. For this study, the data collector will conduct a non-participant observation because the data collector will observe the health care worker without interacting with the person being observed. The technique is considered structured because the observer, in this case the data collector, will observe events using a guide that has been planned in advance (i.e., based on the specific prescribing practices described in the indicators). The observer, or data collector, as inconspicuously as possible, will record whether or not the events take place during the session.

To work, this technique requires qualified and reliable data collectors to serve as observers, a clear and informative observational guide, and the cooperation of those being observed. One factor that limits the objectivity of the process is the presence of the "non-interacting" observer. This person's presence may influence the behaviors of the person or events being observed. Thus, there is a level of bias in the process on the part of both the observer (subjective judgment regarding events being recorded) and the health worker being observed (may alter their usual performance to impress the observer). Data collectors should be trained to be neutral and nonjudgmental toward the person being observed.

Prior to observing a consultation, the data collector must obtain permission to conduct these observations from the administration of the health facility, and develop a system of identifying the health problems of the patients. This can be done by asking each of the mothers directly about the nature of the complaint or ailment of the zero to five-year old child as they wait in the lobby. Another option would be for the data collector to develop a master patient list that identifies each patient's age and chief complaint from the patient register, and observe each of those consultations. Whatever the approach selected, it should first be discussed as a group among study team members and agreed upon, prior to the start of the actual observations, so that all data collectors will use the same process.

One of the challenges in using the prospective method in this setting is collecting data for a large enough sample size within the short time frame available for observation. As mentioned earlier, for this particular aspect of the study a convenience sample of patients will serve as the data set. This may make it difficult to identify a large enough sample of ARI and diarrhea cases. Therefore, the data collectors should include in the sample all patients from zero to five years old within each health facility. Although random selection would eliminate potential biases, given the limited data collection time period, using age as the only selection criteria is necessary to have a large enough sample size. Spending a half-day of observation in each health facility should provide a representative data set to review the prescribing practices of health workers for patients from zero to five years of age. While no firm rule exists, data collectors should try to observe 10-15 patient encounters in each of the 20 health facility sites to adequately describe the prescribing practices.

⁶ INRUD Social Scientists Working Group Working Draft *How to Use Qualitative Methods to Design Drug Use Interventions* December, 1996

Two data collectors should work as team. One data collector should be located in the examination room or area to observe and hear the health workers' interactions with patients. The data collector must be as unobtrusive as possible and not disrupt the consultation or bias the responses of the mother or the behavior of the health worker. A new observation questionnaire should be completed for each infant or child seen. The other data collector should be stationed outside of the facility to conduct exit poll interviews of patients as they leave.

To conduct the structured observations, follow these steps:

1. The study investigators, in collaboration with the data collectors, should develop the observation guide and exit poll interview guide. This should include a checklist of the specific prescribing practices to look for during the observation or to ask about during the exit poll interview.
2. Determine the encounter to be observed by identifying patients either in the health facility waiting area or as they are registered according to the description of the chief complaint and the age of the patient. The data collector should give each caregiver of the patient a slip of paper with a number and the chief complaint to carry with them as they proceed through the health care delivery process. The data collector should get permission from the health facility manager to "tag" the patient encounter in this way. This should facilitate tracking the patient through the facility's service delivery procedure. One of the observers should follow the patient (and caregiver) through the screening, examination, and treatment process until the patient leaves the health facility. As the patient leaves the facility, the other data collection team member should ask the caregiver for the paper and record the same number on the exit poll interview survey form, and proceed to conduct the exit poll interview. This process will allow data collectors to match the observation with the exit poll interview and assist in the comparison of what was said (or not said) to the caregiver by the health worker and what was understood by the caregiver.
3. Carefully select the data collectors who will serve as observers. To help ensure accurate data, observers should be familiar with the cultural background of the people being observed and have the ability to understand their language. They should also be familiar with pharmaceutical and general medical terms, and able to sit quietly and observe without interfering.
4. Train observers/interviewers and conduct a practice session to test the data collector's observation technique, exit poll interview skills, as well as the observation guide and exit poll interview survey. A sample observation guide and exit poll interview survey form is included in section L of this chapter.
5. Conduct the observations and exit poll interviews.
6. Analyze and interpret the observational findings.

C Prescribing Study in Drug Retail Outlets

Define Methods

The purpose of conducting the Prescribing Study in drug retail outlets is the same as described for MOH health facilities. Specifically, the purpose is to review prescribing practices for the treatment of ARI and diarrhea and to assess the implications of those specific practices. The same IMCI conditions of ARI and diarrhea used in the Prescribing Study in MOH health facilities will be used for the drug retail outlets. The only difference is that the setting and data collection techniques have been changed to target drug retail outlets.

For these two conditions, study investigators will gather data by conducting simulated purchases (see below) to calculate or derive results for Prescribing Study indicators 3-12 listed above and to answer the same questions. Again, the questions are

- 1 What are current prescribing practices of drug sellers in drug retail outlets for ARI and diarrhea?
- 2 Are the current prescribing practices clinically appropriate?
- 3 How does the drug cost of current practices for treating ARI and diarrhea compare to what the cost would be if IMCI treatment guidelines are followed?

The same Prescribing Study data collection instruments used in the MOH health facilities can be used for the drug retail outlets. Follow the same process outlined in section B above to adapt these forms to the drug retail outlet setting.

Sample Size

Chapter III, section G provides a detailed discussion of sampling. To summarize, the best approach, from the point of view of representative sampling, is random selection within each of the four geographic areas in the sample design. The best way to accomplish this is to apply the systematic interval sampling method to site lists, as described in chapter III. However, a simpler approach, from the logistical point of view, is to choose the site that is geographically closest to each randomly selected health facility visited. Sample 20 drug retail outlets and use the same 20 outlets for both diarrhea and ARI simulated purchases scenarios, but employ two different data collectors, one for each scenario.

Conduct Survey

The first step in conducting the survey is to review the work plan with the rest of the study team. Make sure each data collector is familiar with the specific drug retail outlets to be surveyed and has a time table of when the simulated purchases will occur. Each data collector should have enough money to make the purchases, and the transportation and accommodation arrangements. As part of the review, also make sure each person is familiar with and has enough copies of all the Prescribing Study data collection forms (and instructions) they need for each drug retail outlet to be surveyed.

Prospective Data Collection

For the purposes of the Ecuador field test, data on the prescribing practices in drug retail outlets will be collected prospectively. The data collection technique used will be simulated purchases. The simulated purchases technique is when data collectors pose as ordinary customers and attempt to purchase treatment for a certain condition. Simulated purchases are used rather than direct observation because, as mentioned before, observation requires the observer to stay at the site for a period of time. In a retail driven setting this may be disruptive to customer service and would probably cause the drug seller to modify their behavior. Also, if asked directly, drug sellers are likely to inaccurately report their practices. Experience in a number of countries shows that there are usually significant differences between drug sellers' reported and observed prescribing practices. Using simulated purchases should minimize both the problems of bias in the study and the inconvenience to the drug seller or drug store manager.

Review of Data Collection Technique

The first step is to recruit the data collectors for simulated purchases. They should be local people whose appearance and demeanor suggest that they are regularly employed, for example, as vehicle drivers or secretaries. The gender of the data collector may affect results, therefore, make sure that all data collectors are of the same gender. Normally, women are the best choice.

The trained data collectors will have the task of presenting two scenarios, that is, one for diarrhea and one for ARI. At each site, each scenario should be presented by different data collectors, and preferably on different days. If for logistics reasons these purchases cannot be arranged on different days, they should take place at least four hours apart. All data collectors should be trained to carry out both scenarios.

The simpler selection approach of choosing the site that is geographically closest to each randomly selected health facility visited should be used. The data collector will leave the study health facility, turn right and walk to the nearest drug retail outlet and simulate the purchase according to the standard scenario for diarrhea. Then, the data collector will return to the study health facility, and this time, turn left and walk to the nearest retail outlet, where he or she will simulate the purchase according to the standard scenario for pneumonia. Working in teams of two, the data collectors should decide in advance, the specific scenario (diarrhea or ARI) each will conduct for each specific drug retail outlet.

To use the simulated purchases data collection technique, proceed as follows:

- Use the *Diarrhea Scenario*, and train data collectors to follow it when visiting drug retail outlets
 - The data collector will present the case of a child with simple diarrhea for the past two days
 - The data collector is coached to say, if asked about symptoms, that there is no blood or mucus in the child's stool and that the child has about four to five loose, runny stools each day
 - The data collector requests to buy something to help the child get better
 - Upon hearing the response, the data collector buys the product or products, and exits the store
 - Upon leaving the store, the data collector records the results of the encounter on form PS-5
- Use the *ARI Scenario* and train data collectors to follow it when visiting drug retail outlets
 - The data collector will tell the salesperson that his or her one-year old child has been suffering from a simple cold for the last two days
 - If asked about symptoms, the data collector will then say that the child has a low fever, is eating and drinking as usual, has a runny nose with clear discharge, and a mild cough. The data collector should also say that the child has not received any other treatment
 - The data collector requests to buy something to help the child get better
 - The data collector buys what the drug seller recommends and exits the store
 - Upon leaving the store, the data collector records the results of the encounter on form PS-5

D Data Entry

When filling out the data collection forms it is important to remember the same points outlined in the Logistics Study. Following is a summary of those points:

- Instruct data collectors to write legibly with a pen (not pencil), and to use marks or phrases that indicate a complete thought or response. Depending on the data collection instrument, this may mean using a check mark, writing "yes" or "no," circling a response, or writing a phrase or sentence to explain a particular finding. This is important because the person completing the form may not be the same person who will enter the data or tabulate the results.
- Designate someone on the study team to review each data collection instrument when it is completed, to review the data for completeness and correctness. This process is useful because it will allow the identification of any problems early in the data collection phase and corrective interventions can be made in the process to avoid future mistakes.
- After the forms have been collected from each site, sort the forms according to the number of the indicator for which they will be needed. If a data collection form is needed for more than one indicator, make a copy of the form and include it with every indicator for which it is needed. Each sample data collection form (included at the end of this chapter in section L) is marked in the lower left hand corner with the number of the indicator for which it is intended.
- Collate and prepare data for analysis as they are collected. Study investigators should develop a system for collecting, grouping, and storing completed data collection forms.
- The most efficient approach for data entry is to identify specially trained data entry clerks to do the data entry. While this represents an additional expense, it is more cost-effective in the long run. The data entry person should be instructed to put his or her initials on each data collection form in a designated spot to indicate that data entry is completed for that form.

Completing the Data Collection Instruments

At the end of each site visit, every data collection form completed during the visit should be examined for incomplete data. The responsible data collector should make every attempt to collect the incomplete data before leaving the site. Each data collector should initial each completed form to ensure a means of backtracking to the specific data collector in case any problems arise in data entry or follow-up.

Before beginning the process to derive the specific indicators, a complete re-check and editing is necessary to clean the data. Data with missing or incomplete items should be eliminated. The number of eliminated items should be counted and discussed in the final report.

E Generate Reports from Software Program

To assist in the data analysis of prescribing practices, Management Sciences for Health (MSH) has developed a database program, called the Prescription Analysis Software System (PASS), to organize and tabulate the data. The PASS program allows the user to generate a standard set of reports that provide information describing current drug treatment practices, comparing the performance of regions or health facilities, monitoring specific drug use behaviors, and assessing the impact of interventions.

The PASS program can be used for Prescribing Study data collected from MOH health facilities as well as for data from drug retail outlets. The PASS User Manual serves as a training guide and a reference manual for anyone using the PASS program. Section M of this chapter provides the step-by-step instructions for entering data and generating reports with PASS. Encounter data is entered into PASS from the following forms: PS-1, PS-2, and DS-1.

PASS can also be used to conduct a morbidity-specific analysis of drug prescribing practices. For IMCI, this analysis is based on the IMCI treatment guidelines (or country-specific standard treatment guidelines) for specific health problems, the IMCI indicator drug list, and the Prescribing Study indicators. For a particular health problem or diagnosis, PASS will assist the user by generating reports that quantify (by cost and percentage of use) specific drugs prescribed. By comparing this drug use data with the standard recommended therapy for the same health problem, rational drug use can be measured and specific problems highlighted.

The PASS program is designed to generate a series of standard reports based on the prescribing data that is entered into the program. It is important to remember that the reports are only as good as the information put into the system; it is crucial that the information entered be accurate and up-to-date. The following briefly describes the PASS standard reports:

PA-1 Summary of Encounter Data

This report provides a summary of the prescribing practices for all encounters in the specified survey. The information in this report lists the total number of encounters, their age and sex distribution, the number of health problems per encounter, the average number of drugs per encounter, and the total number of drugs.

PA-2 Encounter Costs/Drugs by Diagnosis

This report generates the average cost of treatment and the average number of drugs prescribed for each health problem.

PA-3 ABC Analysis - Summary for Survey

This report generates a list of prescribed drugs according to their usage. Drugs used most frequently will be assigned as an A category, and drugs used the least assigned to the C category. The information in this report is based on quantities prescribed and the estimated cost of the drugs. The information also includes the drug code, generic name, strength, route of administration, drug form, cost per issue unit, quantity dispensed, and total cost. PASS calculates each drug's percent of the total cost, the cumulative percent of the total cost, and the number of items.

PA-4 Drug Use Indicators -Level 1

PA-5 Drug Use Indicators -Level 2

PA-6 Drug Use Indicators -Level 3

PA-7 Drug Use Indicators -Level 4

These reports generate a summary of prescribing practices at each level in the health system, such as the district or province level, type of health facility, and individual health facility.

PA-8 Rx by Generic and Brand Names

This report generates a list of all drugs prescribed in the survey, and the number of prescriptions written for each drug name. The information provided in this report includes the drug code, generic name, drug strength, route of administration, and dosage form. PASS calculates the number of prescriptions for each product, and the total generic products prescribed.

PA-9 Encounter Costs/Drugs by Provider Type

This report generates prescribing habits by type of prescriber and according to the age groups originally selected for the study.

PA-10 Number of Encounters by Diagnosis

This report generates the frequency of encounters for each health problem, according to the age groups originally selected for the study.

PA-11 Drug Costs/Class/Product and Age

This report generates the total percentage of drug cost by age groups. Each drug is listed according to its therapeutic category. In addition, the route of administration for each drug and the average cost per patient are provided.

PA-12 Data by Individual Encounter

This report groups all information by individual encounter, and provides a listing by encounter ID. The listing can be used by a clinically oriented analyst to report more detailed, morbidity-specific findings.

F Derive Indicators (Analyze PASS Reports)

Once the data from the data collection instruments are entered into PASS and the reports are produced, the process can begin to derive the indicators. Within the text of the specific indicator are specific instructions, with an example, on how to compute the indicator. Follow the steps below to derive the 12 Prescribing Study indicators.

- 1 Analyze PASS reports
- 2 Calculate averages and percentages of selected indicators
- 3 Draft tables of indicator data using spreadsheet or other presentations
- 4 Draw conclusions based on reported data.

For those who wish to use a manual process rather than the PASS program, calculate or develop the result for the specific indicator from the appropriate data collection instrument.

G Prepare Written Report

A written report should be prepared to document the data collection experience and the findings of the Prescribing Study. At a minimum, the report should include indicator tables, a list of drugs most often prescribed, observations made during data review, survey background, and the different methodologies used to collect the data. In general, the report should include the following sections:

- Introduction - To summarize the study objectives, the scope of the Logistics Study, and the outline of the way the report is presented
- Methods - To summarize the indicator-based approach, the data collection techniques, instruments, sites, the sampling process, personnel, field work organization and supervision, and mode of data analysis
- Findings - To tabulate and describe the study results that include identification of the strengths and weaknesses of the logistics system. Also discuss any assumptions, biases, inaccuracies, or inconsistencies that may exist, and what precautions are necessary in interpreting the data.
- Discussion - To address the problems encountered in conducting the study and possible underlying reasons and explanations for the main findings
- Conclusion - To present inferences, recommendations for corrective actions, and likely follow-up interventions

H Present Findings

A considerable amount of data will be collected as a result of conducting the Prescribing Study. Therefore, it is important to distill the large volume of data into a few key findings that summarize the study results. The PASS reports will help in this process. However, whether PASS or a manual process is used, deciding how to present the findings should take into consideration both the intended audience and what specific results the audience should understand by looking at the findings. The presentation can be descriptive or quantitative depending on the intended use of the results. In general, visual presentations of data in the form of tables, graphs, pie charts, etc., work best, supported by the written report to explain details.

I Provide Report to Health System Manager

A copy of the written report should be presented to the MOH IMCI health system manager. When developing presentations for health system managers and other policy makers, it is important to provide a very clear executive summary and to the extent possible, present key findings, recommendations, and projections of impact graphically, as well as in text or table form. The report, along with the recommendations for follow-up interventions, will provide the necessary documentation that can help to support the need for system improvements.

J Troubleshooting

The Prescribing Study requires the investigators to manage a number of different activities and, as such, there may be times when problems arise. Remind study team members to remain flexible, they must be ready and willing to adapt to new situations. Many of these problems may be unforeseen, but many of them can be minimized by good planning. Table Eleven, which follows, presents a few typical problems, along with suggested solutions, that can happen while conducting the Prescribing Study. These examples are only illustrative. Every country is different and can present the investigator with different, country-specific problems.

Table Eleven Illustrative Examples of Potential Problems and Possible Solutions

Potential Problems	Possible Solutions
There are not 30 medical records of diarrhea or ARI	Collect as many records as available and build in a process of either asking the team leader for advice or going to a predetermined back-up facility (See section B, <i>Retrospective Data Collection in MOH Facilities</i> , for the case of pneumonia.)
The specific diagnosis is not reported on the medical records	Prior to the start of reviewing the patient records, the study team should meet with health facility managers and health facility workers to define a list of locally used terms or symptoms that are equivalent to diarrhea or ARI. This should be part of the process for testing the data collection instruments and methodology. The team should develop (and reach consensus) on a master list of possible symptoms that can be used to describe a particular diagnosis. The list can then be used to help identify patient encounters for diarrhea, pneumonia, and no-pneumonia (cough or cold).
There are not enough drug retail outlets close to the sampled health facility in rural areas	Use proportional sampling, whereby a larger portion of the drug retail outlets sampled are concentrated in urban areas.
Health facility managers are skeptical or resistant to permitting someone to observe prescribing practices	Sometimes having an "official government letter of authorization" may not be enough to gain cooperation of managers. Try to gain support for the study from health professional groups such as associations for doctors or pharmacists. Also talk to the managers about the study and the ultimate benefit to the country. Assure the manager that neither the names of staff nor patients will be used on the data collection forms, and that all the information collected will be shared with them.

Potential Problems	Possible Solutions
Local drug retail outlet community has identified a data collector as a simulated purchaser	Data collectors should do the simulated purchases as quickly as possible once they arrive in a particular geographic area. However, if word still gets out that there are surveyors in town, change the time (or other logistics pattern) they make the purchase or switch the list of outlets they are responsible for with their team member
Data collectors do not have enough money to make the simulated purchases	As part of testing the data collection instruments and the simulated purchases scenarios, estimate the cost of local products in drug retail outlets and factor this into the local expenses that will be needed by data collectors. Build in a process of reimbursing data collectors for any purchases that exceed the estimate. Make sure that reimbursement is contingent upon returning with the products and the receipt
Drugs prescribed are recorded by brand names that are unfamiliar to the data collectors	All information should be recorded on the data collection forms exactly as written in the patient encounter record, even if unfamiliar to the data collector. Data collectors should be instructed to avoid any interpretation
Drugs prescribed are identified, but numbers of units are not	All of the data needed for a particular patient encounter may not be in the same source of records. Start with the patient register, then move to the medical records. If data is still missing on the drugs prescribed, check to see if the facility has pharmacy or dispensing records. If all else fails, ask facility staff how many units of each drug they would normally provide for a child of the same age, presenting with the symptom(s) indicated. Then record this information, but with a circle drawn around it. The circle indicates that the information was missing and has been filled in provisionally, based on an interview
Data collectors are not completing the data forms correctly and some are not legible	Make sure that the data collectors use pen, not pencil, to fill out the data collection forms. Conduct spot checks of the forms to catch any problems early in the process and make pay contingent upon receiving acceptable forms

K Prescribing Practices Study Indicators

Indicators Description Format

This section presents detailed descriptions for each prescribing practices study indicator. Each description follows exactly the same format, which is summarized below.

Indicator data can be collected at four different levels of the health care system. Each indicator in the descriptions that follow is coded according to the level at which it is measured, with the code appearing in parentheses after the indicator title. The health system level codes used are:

- C** Central level - under direct supervision of the central government
- R** Regional or district level - acts as the intermediary, provides supplies to the health facilities and not directly to patients
- F** Health facility level - provides direct care to the patient population
- D** Drug retail outlet level - usually serves as the patient's primary private sector source for drugs

Indicator Name	The name of the indicator, along with the different system levels that may be examined (for example, <i>C/R/F</i> signals that the indicator may be applied at the central, regional and health facility levels)
Rationale	The reason that the indicator is important.
Definition	The meaning of the indicator, and the terms used to describe this indicator
Data Collection	<p>The most likely source(s) of information are summarized in a table indicating <i>where</i> the data are to be collected, <i>who</i> to ask for assistance, and <i>what</i> documents and records to review</p> <p>Brief discussions of methods and issues related to data collection</p> <p>Citations of the data collection forms to be used, if any</p>
Computation & Example	Computations, if any are needed, are accompanied by an example using illustrative data.
Presentation	Brief example of how results may be presented
Notes	Suggestions for additional information or discussion required to put the indicator in proper context, or to provide more detail

- 1 Percentage of MOH health facilities visited with a copy of official standard treatment guidelines (STGs) for childhood illnesses, where IMCI has not been introduced (C/R/F)
- 2 Percentage of MOH health facilities visited with an official manual of treatment guidelines for childhood illnesses, based on WHO IMCI treatment guidelines (C/R/F)

Rationale The existence of a government produced or sanctioned manual or standard treatment guidelines (STGs) is a measure of the official awareness of the need for rational drug use and other treatment information to promote effective care and the rational use of drugs for the treatment of children. There are two options: indicator #1 is for situations where IMCI has not been introduced and thus, there is no reason to expect an IMCI manual, but other STGs may be present, and indicator #2 is for situations when IMCI has been introduced in the country. The manual or STGs should provide health workers with accurate, unbiased, and reasonably current information for the treatment of common childhood illnesses. The degree of distribution of a current edition of a manual or STGs, is a measure of the effort being made to effectively promote the appropriate management of sick children.

Definition To qualify as an official manual or STGs for the purposes of this indicator, a document must be intended as a clinical reference for health care providers who see and sometimes treat sick children, and it must present information on the treatment of the most common childhood illnesses for that particular country, including the examination, care and drug therapy, and follow-up of the sick child. This indicator measures the presence of the current edition of an official manual or STGs.

Data Collection

<i>Where to Go</i>	<i>Who to Ask</i>	<i>What to Get</i>
MOH	Director of Health Services	Most recent copy of manual or STGs
20 MOH health facilities	Health Officer/Director/Manager Facility Manager	Most recent copy of manual or STGs

Such a manual or STGs must officially exist for this indicator to be meaningful. If so, obtain the most recent copy of the manual or STGs that has been prepared to provide impartial information about how to care for a sick child with a common childhood illness. Evaluate whether the information in the manual or STGs meets all the following criteria, specified in the definition above:

- The document is intended as a clinical reference for health care providers
- The document presents information on the examination, treatment (including drug therapy), and follow-up care for common childhood health problems

Data for this indicator are collected by survey of a sample of 20 health facilities. At each site, staff are asked to produce a copy of a document that meets the above criteria.

See the "Prescribing Study Encounter Data Form, PS-1" in section L

Computation &

Example

This indicator is a percentage. It is computed as the number of facilities at which an official manual or STGs is found, divided by the total number of facilities in the sample, multiply this quotient by 100, to convert the decimal to a percentage.

$$\% \text{ Facilities with Official Manual or STGs} = \frac{\text{Number of Facilities with Official Manual or STGs}}{\text{Number of Facilities in Sample}} \times 100$$

$$\% \text{ Facilities with Official Manual or STGs} = \frac{9}{20} \times 100 = 45\%$$

Presentation

In country Y, a national manual exists. It was adapted in 1996 from the WHO IMCI treatment guidelines. The manual is intended for use by physicians, nurses, and other health care personnel who treat children. It contains information on examination, care (including drug therapy) and follow-up services for children zero to five years suffering from the five most common health problems in the country. An indicator study carried out in country Y revealed that in 45% of health facilities, or 9 health facilities out of a sample of 20 surveyed, staff could produce a copy of the 1996 edition of the manual.

- 3 Percentage of encounters diagnosed as no-pneumonia (cough or cold) that are prescribed antibiotics (F/D)
- 4 Percentage of encounters diagnosed as pneumonia that are prescribed appropriate antibiotics according to treatment guidelines (F/D)

Rationale These indicators attempt to measure the degree of compliance with IMCI treatment guidelines. They are listed here together because the two indicators represent the positive and negative outcome of the same area of prescribing practice, drug treatment for acute respiratory infection (ARI). For the purposes of this assessment study, ARI has been sub-divided into “pneumonia” and “no-pneumonia (cough or cold)”

No-pneumonia (cough or cold) represents more common, self-limiting infections like the common cold, which are caused by viruses and thus, should not be treated with antibiotics. Prescribing antibiotics for the common cold is a widely practiced inappropriate use of antibiotics. Using antibiotics when they are not needed is very costly, reduces availability for other, more serious health problems, and contributes to antibiotic resistance.

In developing countries, bacteria causes most cases of pneumonia. These cases need treatment with antibiotics. However, antibiotics are costly therapies and are frequently overused. Antibiotic resistance to common infections has rendered some formerly useful drugs ineffective. This is partly caused by indiscriminate, empirical and uninformed prescribing practices and other forms of overuse. This is especially serious when national capacity for laboratory monitoring of antimicrobial sensitivity is limited or nonexistent.

Definition Appropriate antibiotics include those antibiotics listed in the IMCI guidelines for treatment of pneumonia. The WHO IMCI treatment guidelines list co-trimoxazole, amoxicillin, or chloramphenicol as appropriate antibiotics for treatment of pneumonia. If country-specific treatment guidelines exist, use these guidelines to determine the list of appropriate antibiotics. Other antibiotics and antimicrobials should not be counted as appropriate.

Data Collection

<i>Where to Go</i>	<i>Who to Ask</i>	<i>What to Get</i>
20 MOH health facilities	Medical Records Officer Health Facility Manager Pharmacist	Identify a sample of 30 no-pneumonia encounters per health facility and determine the number prescribed antibiotics Identify another sample of 30 pneumonia encounters in each of the same 20 facilities and determine the number prescribed appropriate antibiotics Identify encounters by consulting daily registers, patient records, prescription slips, or through observation
20 Drug retail outlets	Data collected through simulated purchase	The number of no-pneumonia encounters prescribed antibiotics will be determined by the number of simulated purchases conducted The sample size for drug retail outlets is 20 sites, so 20 simulated purchases will be conducted

Before the study, organizers should develop a list of which medications are to be counted as antibiotics Organizers should also discuss, and reach consensus on, a list of local terms used to describe symptoms that may be listed in health facility records to denote cases of pneumonia and cases of no-pneumonia (cough or cold) This list can be used as a reference by data collectors Efforts should be made first to gather the data retrospectively from medical records If the data is not available from records, then as an alternative, the data can be collected prospectively from observation (See description of sampling methods in chapter III, section G, "Sample Design of Health Facilities and Drug Retail Outlets ")

For indicator #3, use the lists of local terms and antibiotics described above to select a sample of 30 patient encounters diagnosed as no-pneumonia (cough or cold) from each MOH health facility Count the number of encounters prescribed antibiotics (To avoid confusion or the need for interpretation by data collectors, all drugs prescribed should be transcribed on the data collection forms Identification of specific antibiotics can be carried out during data analysis) Count separately the number of patients that are prescribed one or more antibiotics If a patient receives two or more antibiotics, this counts as one instance for this purpose Include only patients zero to five years of age needing curative care

For indicator #4, use the lists of local terms and antibiotics described above to select another sample of 30 patient encounters diagnosed as pneumonia Count the number of encounters prescribed antibiotics (To avoid confusion or the need for interpretation by data collectors, all drugs prescribed should be transcribed on the data collection forms Identification of specific antibiotics can be carried out during data analysis) Include only patients zero to five years of age needing curative care

Note Pneumonia encounters may be difficult to identify at the health facility level For pneumonia, review four months of records, if fewer than five cases in total have been identified, abandon the process for pneumonia for that facility If more than five have been identified, continue the selection process for the 12-month period and stop, even if fewer than 30 encounters have been identified The time required to review 12 months of records for a probable data set of less than 15 cases is not efficient use of the limited time available

For drug retail outlets, follow the simulated purchases scenario for ARI outlined in this chapter This means that data will only be collected for indicator #3, since the simulation will only be based on symptoms of no-pneumonia (cough or cold) rather than pneumonia.

See the "PASS Report Encounter Costs/Drugs by Diagnosis, PA-2" in Annex __, page __, "PASS Report Data by Individual Encounter, PA-12" in Annex __, page __; "Prescribing Study Encounter Data Form, PS-1 in section L, and the "Prescribing Study Calculate Percentage of Encounters Prescribed Various Drugs, PS-3" section L

Computation &

Example

For each facility in a sample, both indicators are recorded as percentages, computed by dividing the number of patient encounters during which an antibiotic is prescribed for no-pneumonia (cough or cold) encounters or for which an appropriate antibiotic was prescribed for pneumonia encounters, by the total number of patient encounters surveyed, and multiplying by 100 The overall indicators are the averages of these facility-specific percentages Along with this average, provide range figures

$$\begin{array}{l} \text{\% of No-pneumonia} \\ \text{Encounters Prescribed =} \\ \text{Antibiotics} \end{array} = \frac{\text{Total \# of No-pneumonia Encounters} \\ \text{Prescribed Antibiotics}}{\text{Total \# of No-pneumonia Encounters Surveyed}} \times 100$$

$$\begin{array}{l} \text{\% of Pneumonia} \\ \text{Encounters Prescribed =} \\ \text{Appropriate Antibiotics} \end{array} = \frac{\text{Total \# of Pneumonia Encounters} \\ \text{Prescribed Appropriate Antibiotics}}{\text{Total \# of Pneumonia Encounters Surveyed}} \times 100$$

- For example, results from one health facility are calculated as follows

$$\begin{array}{l} \text{\% of No-pneumonia} \\ \text{Encounters Prescribed =} \\ \text{Antibiotics} \end{array} = \frac{8}{30} \times 100 = 26.6\%$$

$$\begin{array}{l} \text{\% of Pneumonia} \\ \text{Encounters Prescribed =} \\ \text{Appropriate Antibiotics} \end{array} = \frac{18}{24} \times 100 = 75\%$$

- If for 20 health facilities surveyed, data for a sample of 600 patient encounters for indicator #3 showed that a total of 253 patient encounters received antibiotics for treatment of no-pneumonia (cough or cold), then the average for all facilities would be

$$\begin{array}{l} \text{\% of No-pneumonia} \\ \text{Encounters Prescribed} \\ \text{Antibiotics for All} \\ \text{Facilities} \end{array} = \frac{253}{600} \times 100 = 42.2\%$$

- For the same 20 health facilities, data for a separate sample of 413 patient encounters for indicator #4 showed that a total of 329 patient encounters received appropriate antibiotics for treatment of pneumonia, then the average for all facilities would be

$$\begin{array}{l} \text{\% of Pneumonia} \\ \text{Encounters Prescribed} \\ \text{Appropriate Antibiotics} \\ \text{for All Facilities} \end{array} = \frac{329}{413} \times 100 = 79.6\%$$

- If for a sample of 20 drug retail outlets where ARI simulated purchases were conducted for indicator #3 showed that a total of 14 patient encounters received antibiotics for treatment of no-pneumonia (cough or cold), then the average for the 20 drug retail outlets would be

$$\begin{array}{l} \text{\% of No-pneumonia} \\ \text{Encounters Prescribed} = \\ \text{Antibiotics} \end{array} = \frac{\text{Total \# of No-pneumonia Encounters} \\ \text{Prescribed Antibiotics}}{\text{Total \# of Simulated Purchases}} \times 100$$

$$\begin{array}{l} \text{\% of No-pneumonia} \\ \text{Encounters Prescribed} = \\ \text{Antibiotics} \end{array} = \frac{14}{20} \times 100 = 70\%$$

Presentation In a survey of 20 health facilities in country Z, antibiotics were prescribed for the treatment of no-pneumonia (cough or cold) during 42% of all outpatient encounters, with a range of 8% to 73% among facilities. For the same 20 facilities, appropriate antibiotics were prescribed for the treatment of pneumonia during 79.6% of all outpatient encounters, with a range of 54% to 92% among facilities.

In a survey conducted through simulated purchases of 20 drug retail outlets in the same country Z, antibiotics were prescribed in 14 encounters, or 70% of those surveyed.

- 5 Percentage of encounters that are prescribed ORS for diarrhea (F/D)
- 6 Percentage of encounters that are prescribed antidiarrheals for diarrhea (F/D)
- 7 Percentage of encounters that are prescribed antibiotics for non-bacterial diarrhea (F/D)

Rationale These indicators attempt to measure the degree of compliance and non-compliance with IMCI treatment guidelines. They are listed here together because the three indicators represent positive and negative outcomes of the same area of prescribing practice, drug treatment for diarrhea.

Definition These indicators measure the percentage of diarrhea encounters that are prescribed ORS, antidiarrheals, or antibiotics. For the treatment of some dehydration due to diarrhea it is appropriate, according to WHO IMCI treatment guidelines, to prescribe ORS. In general, antidiarrheals are not recommended for treating childhood diarrhea. Antibiotics are only appropriate when the diarrhea is caused by cholera or dysentery.

Data Collection

<i>Where to Go</i>	<i>Who to Ask</i>	<i>What to Get</i>
20 MOH health facilities	Medical Records Officer Health facility manager Pharmacist	Determine the number of diarrhea encounters prescribed ORS, antidiarrheals, or antibiotics for a sample of 30 patients with diarrhea per facility by consulting daily registers, patient records, prescription slips, or through observation.
20 Retail drug outlets	Data collected through simulated purchase	The number of diarrhea encounters is determined by the number of simulated purchases conducted. The sample size for drug retail outlets is 20 sites per IMCI health problem, therefore, 20 diarrhea simulated purchases should be conducted.

Efforts should be made first to gather the data retrospectively from medical records. If the data is not available from records, then as an alternative, the data can be collected prospectively from observation. (See description of sampling methods in chapter III, section E, "Design a Survey of Health Facilities and Drug Retail Outlets.")

Select a sample of 30 patient encounters diagnosed as diarrhea from each facility. Organizers should discuss, and reach consensus on, a list of local terms used to describe symptoms that may be listed in health facility records to denote cases of diarrhea. For indicator #7, simple diarrhea will need to be distinguished from more complicated cases, such as dysentery and cholera, where prescribed antibiotics would be appropriate. This list can be used as a

reference by data collectors (To avoid confusion or the need for interpretation by data collectors, all drugs prescribed should be transcribed exactly as listed in the patient record to the data collection forms) Count the number of encounters prescribed ORS From the same sample, count separately the number of patients that are prescribed antidiarrheals Also as a separate number, count the number prescribed antibiotics Patients that are prescribed ORS and an antibiotic, for example, should be counted once for the ORS group, and once for the antibiotic group Only include encounters with children age zero to five years old

For drug retail outlets, follow the simulated purchases scenario for diarrhea outlined in this chapter

See the "PASS Report Data by Individual Encounter, PA-12" in Annex __, page __; and the "Prescribing Study Calculate Percentage of Encounters Prescribed Various Drugs, PS-3" in section L

Computation &

Example: For each facility in a sample, all three indicators are recorded as percentages, computed by dividing the number of patient encounters during which, for example, ORS is prescribed for dehydration caused by diarrhea, by the total number of patient encounters surveyed, and multiplying by 100 The overall indicators are the averages of these facility-specific percentages Along with this average, provide range figures

$$\begin{array}{l} \text{\% of Encounters} \\ \text{Prescribed ORS for} \\ \text{Diarrhea} \end{array} = \frac{\text{Total \# of Encounters Prescribed}}{\text{ORS for Diarrhea}} \times \frac{\text{Total \# of Diarrhea Encounters Surveyed}}{100}$$

$$\begin{array}{l} \text{\% of Encounters} \\ \text{Prescribed Antidiarrheals} \\ \text{for Diarrhea} \end{array} = \frac{\text{Total \# of Encounters Prescribed}}{\text{Antidiarrheals for Diarrhea}} \times \frac{\text{Total \# of Diarrhea Encounters Surveyed}}{100}$$

$$\begin{array}{l} \text{\% of Encounters} \\ \text{Prescribed Antibiotics} \\ \text{for Non-Bacterial Diarrhea} \end{array} = \frac{\text{Total \# of Encounters Prescribed}}{\text{Antibiotics for Diarrhea}} \times \frac{\text{Total \# of Non-Bacterial Diarrhea Encounters}}{100}$$

- For example, results from one health facility are calculated as follows

$$\begin{array}{l} \text{\% of Diarrhea} \\ \text{Encounters Prescribed} \\ \text{ORS} \end{array} = \frac{21}{30} \times 100 = 70\%$$

$$\begin{array}{l} \text{\% of Diarrhea Encounters} \\ \text{Prescribed Antidiarrheals} \end{array} = \frac{9}{30} \times 100 = 30\%$$

$$\begin{array}{l} \text{\% of Diarrhea Encounters} \\ \text{Prescribed Antibiotics} \end{array} = \frac{13}{30} \times 100 = 43.3\%$$

- If for 20 health facilities surveyed, data for a sample of 600 patient encounters showed that a total of 476 patient encounters received ORS for treatment of dehydration caused by diarrhea, then the average for all facilities would be

% of Diarrhea Encounters Prescribed ORS for All Facilities = $\frac{476}{600} \times 100 = 79.3\%$

- If for 20 health facilities surveyed, data for the same sample of 600 patient encounters showed that a total of 124 patient encounters received antidiarrheals for treatment of diarrhea, then the average for all facilities would be

% of Diarrhea Encounters Prescribed Antidiarrheals for All Facilities = $\frac{124}{600} \times 100 = 20.7\%$

- If for 20 health facilities surveyed, data for the same sample of 600 patient encounters showed that a total of 281 patient encounters received antibiotics for treatment of diarrhea, then the average for all facilities would be

% of Diarrhea Encounters Prescribed Antibiotics for All Facilities = $\frac{281}{600} \times 100 = 46.8\%$

- For a sample of 20 drug retail outlets where diarrhea simulated purchases were conducted, results are as follows

% of Diarrhea Encounters Prescribed ORS = $\frac{9}{20} \times 100 = 45\%$

% of Diarrhea Encounters Prescribed Antidiarrheals = $\frac{8}{20} \times 100 = 40\%$

% of Diarrhea Encounters Prescribed Antibiotics = $\frac{14}{20} \times 100 = 70\%$

Presentation In a survey of 20 health facilities in country Z, ORS was prescribed for the treatment of dehydration caused by diarrhea during 79.3% of all outpatient encounters, with a range of 53% to 94% among facilities. Antidiarrheals were prescribed for the treatment of diarrhea during 20.7% of encounters, with a range of 9% to 47%. Antibiotics were prescribed for treatment of diarrhea during 46.8% of encounters, with a range of 17% to 76% among facilities.

In a survey conducted through simulated purchases of 20 drug retail outlets in the same country Z, ORS was prescribed for the treatment of dehydration caused by diarrhea during 45% of encounters. Antidiarrheals were prescribed for the treatment of diarrhea during 40% of encounters. Antibiotics were prescribed for the treatment of diarrhea during 70% of encounters.

8 Average cost of drugs prescribed as a percentage of costs if IMCI norms of treatment were followed (F/D)

Rationale One of the basic tenets for promoting the IMCI strategy for caring for sick children is that the use of standardized treatment guidelines, if followed, will provide cost-effective, appropriate care that is likely to be cheaper than the cost of care if guidelines are not followed

Definition This indicator measures the average cost of drugs prescribed currently for an IMCI health problem and compares the average to what drug treatment would cost if IMCI treatment guidelines were followed. The comparison is depicted mathematically as a percentage

Data Collection

<i>Where to Go</i>	<i>Who to Ask</i>	<i>What to Get</i>
20 MOH health facilities	Medical Records Officer Health facility manager Pharmacist	Determine all drugs prescribed for an IMCI encounter for a sample of 30 patients per facility by consulting daily registers, patient records, prescription slips. Use the same sample of diarrhea, pneumonia, and no-pneumonia encounters identified for prescribing indicators 3-7
20 Drug retail outlets	Data collected through simulated purchase	Determine all drugs prescribed for an IMCI encounter for a sample of 20 simulated purchases for ARI and 20 simulated purchases for diarrhea

Before collecting the sample of encounters, organizers should meet with the data collectors to discuss the proper way to collect the data. All health problems and all drugs per encounter should be recorded. (To avoid confusion or the need for interpretation by data collectors, all drugs prescribed should be transcribed exactly as listed in the patient record to the data collection forms. In addition to the name of the drug, it is important to record the dosage strength, dosage form, and length of drug therapy or amount of drug dispensed. Verifying cost information can be carried out during data analysis.) Include only outpatients seeking curative care. Efforts should be made first to gather the data retrospectively from daily registers, medical records, or prescription slips. If the data are not available from records, then as an alternative, the data can be collected prospectively from observation. (See description of sampling methods in chapter III, section G, "Sample Design of Health Facilities and Drug Retail Outlets.") Encounters only include children zero to five years old with an IMCI problem.

See the "PASS Report Encounter Costs/Drugs by Diagnosis, PA-2" in Annex __, page __, and the "Prescribing Study Calculate Cost of IMCI Drugs, PS-4" in section L

**Computation &
Example**

This indicator is recorded as a percentage. First, for a sample of encounters, calculate the total cost of all drugs prescribed for a health problem. This should be divided by the total cost of drug treatment recommended in IMCI treatment guidelines for the same health problem. To determine the IMCI cost, all costs should be based on the MOH acquisition cost determined in the Logistics Study. Then, multiply the result by 100. This should be calculated for each health problem.

$$\begin{array}{l} \text{Percentage of Costs if} \\ \text{IMCI Norms of Treatment} \\ \text{Were Followed} \end{array} = \frac{\text{Total Cost of Drugs Prescribed} \\ \text{For the Health Problem}}{\text{Total Cost of IMCI Drugs Recommended} \\ \text{For the Same Health Problem}} \times 100$$

- For example, results from one health facility for treatment of pneumonia are as follows

$$\begin{array}{l} \text{Percentage of Costs if} \\ \text{IMCI Norms of Treatment} \\ \text{Were Followed} \end{array} = \frac{\$5.05}{\$2.07} \times 100 = 244\%$$

- Another example where results from one health facility for treatment of pneumonia were less than IMCI costs are as follows

$$\begin{array}{l} \text{Percentage of Costs if} \\ \text{IMCI Norms of Treatment} \\ \text{Were Followed} \end{array} = \frac{\$1.77}{\$2.07} \times 100 = 85.5\%$$

- If for 20 health facilities surveyed, data for a sample of 600 pneumonia patient encounters showed a total cost of \$3,412 for drug treatment, then the average for all facilities would be

$$\begin{array}{l} \text{Total Cost of Drugs} \\ \text{Prescribed for Pneumonia} \\ \text{Treatment for All Facilities} \end{array} = \frac{\$3,412}{\$1,242} \times 100 = 275\%$$

- If a survey of 20 drug retail outlets conducted through 20 simulated purchases for ARI showed a total cost of \$162 for drug treatment, then the average for the 20 drug retail outlets would be

$$\begin{array}{l} \text{Total Cost of Drugs} \\ \text{Prescribed for Pneumonia} \\ \text{Treatment for Drug Retail Outlets} \end{array} = \frac{\$162}{20} \times 100 = \$8.10$$

$$\begin{array}{l} \text{Percentage of Costs if} \\ \text{IMCI Norms of Treatment} \\ \text{Were Followed} \end{array} = \frac{\$8.10}{\$2.07} \times 100 = 391\%$$

Presentation In a survey of 20 health facilities in country T, the average cost of drugs prescribed for the treatment of pneumonia was \$5.69. This cost was almost three times, or 275% higher than the drug treatment recommended by the IMCI treatment guidelines. For 20 drug retail outlets in the same country, the cost was 391% higher.

9 Average cost of drug treatment for each encounter that includes an IMCI health problem studied (F/D)

Rationale One of the primary barriers of access to proper care is the cost of therapy. Drug therapy is one of the main contributors to the high cost. This indicator should identify costs associated with current prescribing behavior. As such, it represents an area where costs may be reduced without sacrificing the quality of care. Reducing costs may increase drug availability and provide greater access to drugs for more patients. This is a basic tenet of the IMCI strategy. Namely, that the use of standardized treatment guidelines, if followed, will provide cost-effective, appropriate care that is likely to be cheaper than the cost of care if guidelines are not followed.

Definition This indicator measures the average cost of drug treatment for each encounter that includes a designated IMCI health problem. Generally, a child will present to a health facility with more than one health problem, thus the cost of the encounter may represent more than the cost of treating one health problem.

Data Collection

<i>Where to go</i>	<i>Who to ask</i>	<i>What to get</i>
20 MOH health facilities	Medical Records Officer Health facility manager Pharmacist	Determine the drugs prescribed for an encounter that includes an IMCI health problem for a sample of 30 patients per facility by consulting daily registers, patient records, and prescription slips. Use the same sample of diarrhea, pneumonia, and no-pneumonia encounters identified for prescribing indicators 3-7.
20 Drug retail outlets	Data collected through simulated purchase	Determine all drugs prescribed for a sample of 20 simulated purchases for ARI and 20 simulated purchases for diarrhea.

Before collecting the sample of encounters, organizers should meet with the data collectors to discuss the proper way to collect the data. All health problems and all drugs per encounter should be recorded. (To avoid confusion or the need for interpretation by data collectors, all drugs prescribed should be transcribed exactly as listed in the patient record to the data collection forms. In addition to the name of the drug, it is important to record the dosage strength, dosage form, and length of drug therapy or amount of drug dispensed. Verifying cost information can be carried out during data analysis.) Include only outpatients seeking curative care. Efforts should be made first to gather the data retrospectively from daily registers, medical records, or prescription slips. If the data are not available from records, then as an alternative, the data can be collected prospectively from observation. (See description of sampling methods in chapter III, section G, "Sample Design of Health Facilities and Drug Retail Outlets.") Only include encounters where the patient is a child zero to five years old.

See the "PASS Report Encounter Costs/Drugs by Diagnosis, PA-2" in Annex ___, page

**Computation &
Example**

This indicator is calculated for a sample of encounters by identifying the total cost of all drugs prescribed for a patient encounter. Each encounter should include at least one of the IMCI health problems studied. In the case of the Ecuador field test, this is ARI (pneumonia and no-pneumonia [cough or cold]) or diarrhea. The total cost of the encounter is divided by the total number of encounters studied.

$$\begin{array}{l} \text{Average Cost of Drug} \\ \text{Treatment for Each Encounter} \\ \text{With an IMCI Problem} \end{array} = \frac{\text{Total Cost of Drug Treatment for All Encounters}}{\text{Total \# of Encounters Studied*}}$$

*Total number of diarrhea, pneumonia, and no-pneumonia encounters identified for a health facility

- For example, results from one health facility are calculated as follows

$$\begin{array}{l} \text{Average Cost of Drug Treatment} \\ \text{For Each Encounter} \\ \text{With an IMCI Health Problem} \end{array} = \frac{\$334.53}{81} = \$4.13$$

- If for 20 health facilities surveyed, data for a sample of 1450 patient encounters showed a total cost of \$7,598 for drug treatment, then the average for all facilities would be

$$\begin{array}{l} \text{Average Cost of Drug Treatment} \\ \text{For Each Encounter} \\ \text{for All Facilities} \end{array} = \frac{\$7,598}{1450} = \$5.24$$

Presentation In a survey of 20 health facilities in country Y, the average cost of drug treatment for a patient encounter with an IMCI health problem was \$5.24, with a range of \$2.11 to \$6.97 among facilities.

10 Percentage of encounters where health workers asked no clinical question from IMCI guidelines to determine severity of health problem (F/D)

Rationale The IMCI program was developed to address the leading five causes of morbidity and mortality of infants and children in health facilities: malaria, diarrheal disease, ARI, malnutrition, and measles. The IMCI approach requires that health workers assess and manage every sick child coming to the health facility in a comprehensive manner. The IMCI guidelines outline a series of screening questions concerning each child that promotes evaluation, classification, and treatment of infants and children for the five IMCI health problems. Observing whether health care workers ask clinical questions regarding the child's health problem will allow identification of areas where IMCI training should focus. This indicator can also be used to monitor progress of health workers.

Definition An encounter is defined as a session where the health worker is focusing on one child. If a mother consults a health care worker about each of her two children, the consultation regarding each child is considered a separate encounter.

This indicator is targeting instances where no clinical questions were asked. Clinical questions from IMCI guidelines include questions that assess whether the child is in critical condition, e.g., can the child breast-feed or drink, does the child vomit all he or she ingests, or has the child had convulsions, and questions that address the IMCI health problems regarding symptoms such as difficulty when breathing, episodes of diarrhea, fever, ear pain, malnutrition or anemia.

Data Collection:

<i>Where to Go</i>	<i>Who to Ask</i>	<i>What to Get</i>
20 MOH health facilities	Health facility supervisor for permission to observe	Observe ten to 15 encounters for children zero to five years for any health problem in each health facility
20 Drug retail outlets	Data collection is done as a simulation. Store managers should be unaware of the process so no permission is needed.	Determine the prescribing practice for a sample of 20 simulated purchases for ARI and 20 simulated purchases for diarrhea.

Working in teams of two, follow the procedures outlined in section B, *Prospective Data Collection in MOH Facilities*. The data collector as observer will be located in the examination room close enough to the health worker to be able to hear and observe the interaction clearly and accurately. The data collector must be as unobtrusive as possible and not disrupt the consultation. Any active role by the data collector during the consultation could bias the responses of the mother or the behavior of the health worker. If the data collector is engaged in any interaction during a consultation, that observation should not be considered part of the study and another consultation should be surveyed in its place. A new observation questionnaire should be completed for each infant or child seen.

The data collector should listen to ensure that the health worker asks at least one of the following questions (the wording of the questions may vary) ⁷

- Can the child drink or breast-feed?
- Does the child vomit all that he or she ingests?
- Has the child had seizures?
- Does the child have difficulty breathing?
- Does the child have diarrhea?
- Does the child have fever?
- Does the child have an ear problem?

If the data collector does not hear any of those questions or questions that are asking the same thing in different words, then that encounter can be counted as one with no clinical questions from the IMCI guidelines. A new form should be filled out for each encounter.

The USAID/BASICS *Integrated Health Facilities Assessment Survey* also observes health workers' interactions with patients. The observations note whether the health workers ask the patients' medical history of IMCI health problems and symptoms in questions seven to 15 of the BASICS *Observation Checklist - Sick Child Survey*. This data could be used to compute this indicator, as explained below.

See the "Prescribing Study Drug Information Data Form, PS-5" in section L.

Computation &

Example

This indicator is a percentage. It is computed by dividing the total number of practitioners asking no clinical questions by the total number of encounters and multiplying that quotient by 100, to convert the decimal to a percentage.

Percentage of Health Workers Who Ask No Clinical Questions From IMCI Guidelines = $\frac{\text{Total \# Practitioners Asking No Clinical Questions}}{\text{Total \# Encounters}} \times 100$

- For example, results from one health facility are calculated as follows:

Percentage of Health Workers Who Ask No Clinical Questions From IMCI Guidelines = $\frac{35}{600} \times 100 = 5.8\%$

If the data collection effort relies on the USAID/BASICS *Integrated Health Facilities Assessment Survey* data, then any encounter where questions seven to 15 from the *Observation Checklist - Sick Child Survey* were all negative would be counted as an encounter with no clinical questions.

⁷

WHO, *Integrated Management of Childhood Illness Process Course* September 1996, (OPS/HCP/HCT/ARI/CDD/96 4L), Assess and Classify the Sick Child

Presentation For example, in a survey of 600 encounters in 20 health facilities, 58% of encounters did not include any clinical questions from the IMCI guidelines. Furthermore, the encounters that did not include the clinical questions were all conducted by two persons that had not undergone any IMCI training.

11 Percentage of health workers who provided any information to patient on how to take the recommended drug (F/D)

Rationale IMCI programs have been established to ensure that health workers are assessing, diagnosing and treating patients in the most efficient and educated manner for the IMCI health problems. Other indicators address whether the standard treatment guidelines exist in each of the facilities, whether the health workers are prescribing appropriately for the conditions identified, and whether those drugs are available. This indicator measures whether health workers are able to communicate to patients how to take their medication. This component is important in gaining an understanding of patient use of medication and patient education.

Definition This indicator measures any information regarding the recommended drug that is given to the patient by the health worker. The definition for "any information" includes the dose, and the frequency of medication use, how to prepare the drug, any potential side effects or symptoms associated with the drug. If the health worker explains at least one of these aspects to the patient, then, for this indicator, it will be considered that the health worker has provided information regarding the prescribed drug. Failure to directly discuss these issues with the patient will be considered as not providing any information.

Data Collection

<i>Where to Go</i>	<i>Who to Ask</i>	<i>What to Get</i>
20 MOH health facilities	Health facility supervisor for permission to observe	Observe ten to 15 encounters for children zero to five years for any health problem in each health facility
20 Drug retail outlets	Data collection is done as a simulation. Store managers should be unaware of the process so no permission is needed.	Determine the prescribing practice for a sample of 20 simulated purchases for ARI and 20 simulated purchases for diarrhea.

Working in teams of two, follow the procedures outlined in section B, *Prospective Data Collection in MOH Facilities*. As with the previous indicator, the data collector will be located in the examination room close enough to the health worker to be able to hear and observe the interaction clearly and accurately. The data collector must be as unobtrusive as possible and not disrupt the consultation. Any active role by the data collector during the consultation could bias the responses of the mother or the behavior of the health worker. If the surveyor is engaged in any interaction during a consultation that observation should not be considered at all. A new observation questionnaire should be completed for each infant or child seen.

For each encounter observed, the data collector will note whether any information regarding the drug was given to the patient. The type of information the data collector should listen for is

- What the dose is
- How to measure the dose for a small child
- Frequency of the dose
- How long the child should take the drug
- Side effects
- Special instructions regarding the preparation of the drug

For example, if a child is diagnosed with diarrhea and ORS is prescribed, then the data collector should expect to hear about the preparation of the solution with boiled water and the frequency with which the solution should be administered. If the data collector does not hear any of these described, then he or she can consider that during that encounter the practitioner did not provide any information.

This information can also be obtained by looking at the USAID/BASICS *Integrated Health Facilities Assessment Survey* data from questions 49-52 from the *Observation Checklist - Sick Child*. Of these questions, 49-51 are specific to the use and preparation of ORS and should only be used to judge this indicator if the health concern is diarrhea. Question 52 is the most direct question regarding explaining how to administer medication. If that question is affirmative, then this indicator should also be considered affirmative. The other identified BASICS Survey questions 56 and 57, from the same form, provide the opportunity to check the extent of the information communicated to the patient by the health worker.

See the "Prescribing Study Drug Information Data Form, PS-5" in section L.

Computation & Example

The data collector should note whether the practitioner provides any information regarding the drug for each encounter. The indicator is a percentage. Therefore, the number of practitioners providing information is divided by total number of encounters, and should be multiplied by 100 to obtain a percentage.

Percentage of Health Workers Who Provided Any Information to Patient on How to Take Recommended Drug = $\frac{\text{Total \# Practitioners Providing Any Information}}{\text{Total \# Encounters}} \times 100$

- For example

Percentage of Health Workers Who Provided Any Information to Patient on How to Take Recommended Drug = $\frac{180}{200} \times 100 = 90\%$

When using the USAID/BASICS *Integrated Health Facilities Assessment Survey* data, an affirmative answer to any part of question 52 of the *Observation Checklist - Sick Child* will indicate that health worker has fulfilled the conditions of this indicator

Presentation For example, during the survey of 200 encounters, 90% of health workers provided some information regarding the drug recommended

12 Percentage of health workers who mentioned any signs of progressive illness and recommended a doctor or clinic visit if those signs appeared (F/D)

Rationale The IMCI guidelines recommend that all patients be evaluated, diagnosed, treated, and followed up. This process allows detection of both acute and chronic conditions. The ability of health workers to ensure follow-up care and patient education is an essential component of the IMCI process. Therefore, this indicator addresses continuity of care and focuses on whether the health worker is communicating to the patient signs of progressive illness and encouraging follow-up treatment. Rapid identification of acute cases of illness may improve the health facility's ability to treat children adequately and reduce child mortality.

Definition This indicator measures the health workers' ability to recommend or emphasize the importance of follow up with the patient. The IMCI guidelines provide examples of the types of signs of progressive illness for which to watch. The guidelines also provide routine follow up questions, as well as questions that focus on identification of progressive illness. The following signs of progressive illness and recommendations are outlined for each IMCI health concern in the guidelines.

Pneumonia If after two days the child is lethargic or unconscious, has convulsions, vomits or is not able to drink or breast-feed, or the child's chest is in drawing or stridor, then child should be referred urgently to the hospital. If the breathing rate, fever, and eating of the child are the same, then child should return to health facility to change to a second-line antibiotic. However, if the child is experiencing slower breathing, less fever, or eating better, then child should complete the antibiotic, but does not need to return to the health facility.

Diarrhea If after two days the number of stools, amount of blood in stools, fever, abdominal pain, or eating is the same or worse, then child should return to the health facility. In addition, if the child has persistent diarrhea (three or more loose stools per day) for five days without the other symptoms, then the child should return to a health facility.

Malaria If the fever persists after two days or returns within 14 days, the caretaker should follow up in a health facility. If signs of rigidity in the nape of the neck are also present, then the patients should be referred, to the hospital for assessment immediately.

Measles If after two days pus is still draining from the eye despite correct application of treatment, or if mouth ulcers are worse, or there is a very foul smell from the mouth, then refer child to a hospital. If pus is gone but redness remains in the eyes, or if mouth ulcers are the same or better, then treatment should be continued.

Ear Problem If after five days of antibiotics there is pain to the touch behind the ear or tender swelling or fever, then urgently refer to a hospital for suspected mastoiditis.

- Malnutrition** If after 30 days the child continues to have a very low weight for his or her age, then caregiver should be counseled on health feeding practices
- Anemia** If after 14 days the child still has visible severe wasting, or severe palmar pallor, or edema of both feet, then the child should be referred to a hospital

Data Collection

<i>Where to Go</i>	<i>Who to Ask</i>	<i>What to Get</i>
20 MOH health facilities	Health facility supervisor for permission to observe	Observe ten to 15 encounters for children zero to five years for any health problem in each health facility
20 Drug retail outlets	Data collection is done as a simulation. Store managers should be unaware of the process so no permission is needed	Determine the prescribing practice for a sample of 20 simulated purchases for ARI and 20 simulated purchases for diarrhea

Working in teams of two, follow the procedures outlined in section B, *Prospective Data Collection in MOH Facilities*. The data collector as observer, will be located in the examination room close enough to the health worker to be able to hear and observe the interaction clearly and accurately. The data collector must be as unobtrusive as possible and not disrupt the consultation. Any active role by the data collector during the consultation could bias the responses of the mother or the behavior of the health worker. If the data collector is engaged in any interaction during a consultation that observation should not be considered. A new observation questionnaire should be completed for each infant or child seen.

See the "Prescribing Study Drug Information Data Form, PS-5" in section L.

Computation &**Example**

The number of health workers explaining the signs of progressive illness that would merit follow up to patients should be divided by total number of encounters and multiplied by 100 to provide the percentage required for this indicator

$$\text{Percentage of Health Workers Who Mention Any Signs of Progressive Illness and Recommended a Doctor Or Clinic Visit If Those Signs Appear} = \frac{\text{Total \# Practitioners Mentioning Signs}}{\text{Total \# Encounters}} \times 100$$

- For example

Percentage of Health Workers
Who Mention Any Signs of Progressive = $\frac{18}{20} \times 100 = 90\%$
Illness and Recommended a Doctor
or Clinic Visit If Those Signs Appear

Presentation In country Z, 90% of health workers are communicating to parents or guardians about signs of progressive illness of the IMCI health concerns to watch for in their zero to five year old child. This education of parents/guardians is an important part of the IMCI program. Patient follow up will ensure that cases gain attention prior to becoming acute cases and gives the health facilities greater opportunity to reduce child mortality.

L Sample Data Collection Forms

PS-1 Prescribing Study Encounter Data Form

This form is used for the indicators listed below

- IV A 7 Percentage of MOH health facilities visited that have at least one working refrigerator with freezing compartment and thermometer
- IV A 8 Percentage of MOH storage and health facilities visited that have adequate cold packs and cold boxes
- IV A 9 Percentage of MOH health facilities with up-to-date refrigerator temperature charts
- V A 1 Percentage of MOH health facilities visited with a copy of official standard treatment guidelines (STGs) for childhood illnesses, where IMCI has not been introduced
- V A 2 Percentage of MOH health facilities visited with an official manual of treatment guidelines for childhood illnesses, based on WHO IMCI guidelines
- V A 9 Average cost of drug treatment for each encounter that includes an IMCI health problem studied

Data collection summary

Indicators IV A 7, IV A 8, and IV A 9 measure if the health facility is capable of maintaining the cold chain for storage and transportation of drugs and vaccines. Indicators V A 1 and V A 2 measure if standard treatment guidelines exist at the health facility level, whether they are officially adopted STGs of the health system or WHO IMCI guidelines. Ask to see a copy of both guidelines. The encounter data collected on this form are also used for entry into PASS software.

Instructions

- 1 **Date** Fill in the date on which the data are collected. If possible, these data should be collected on the same day.
- 2 **Facility Name** Fill in the name of the health facility or warehouse in which the data are being collected.
- 3 **Facility Type** Fill in the type of facility in which the data are being collected, for example, warehouse, district hospital, health center, health post.
- 4 **Location** Fill in the geographic location of the facility in which the data are being collected (usually the name of a region, district, city, or town).
- 5 **Data Collector** Fill in the name of the person collecting the data.

- 6 **Refrigerator/Freezer/Thermometer, YES NO** Circle *YES* if a working refrigerator with freezing compartment and thermometer exists at the health facility Circle *NO* if a working refrigerator with freezing compartment and thermometer does not exist at the health facility
- 7 **Cold packs/Cold boxes, YES NO** Circle *YES* if cold boxes or cold packs that could serve for storage and transportation of drugs and vaccines exist at the health facility Circle *NO* if adequate cold boxes or cold packs do not exist at the health facility
- 8 **Temperature Charts, YES NO** Circle *YES* if temperature charts for the refrigerator and freezer exist and are up-to-date at the health facility Circle *NO* if charts are not up-to-date or do not exist at the health facility
- 9 **Official STGs, YES NO.** Circle *YES* if staff are able to produce a copy of official STG guidelines approved by the health system Circle *NO* if staff cannot produce this document or if one does not exist.
- 10 **IMCI Guide, YES NO** Circle *YES* if staff are able to produce a copy of the WHO IMCI guidelines Circle *NO* if staff cannot produce this document.
- 11 **Currency Used and 1 US Dollar =** Record the currency used for the drug prices, and obtain the exchange rate for one US dollar on that date
- 12 **Patient No** If a numbering or identification system exists for patient records, record the number in the space provided If an identification system does not exist, simply number the patient records studied as 1, 2, 3, etc
- 13 **Age (M,Y)** Record the actual age of the patient, followed by an *M* or *Y*, to indicate if age is in months or years
- 14 **Gender (M,F)** Record if the patient is male or female by writing an *M* or *F*
- 15 **Diagnosis** Record the diagnosis as determined by the prescriber For clarity purposes, it is best to use a predetermined classification of diseases, such as ICD-9, to avoid symptoms being recorded as diagnoses
- 16 **Date** Record the date that the diagnosis was made by the prescriber
- 17 **Prescriber Id and Type** Record prescriber identification by name unless it is determined during the study design that names will not be used In that case, record a sequential number such as 1, 2, 3, for prescribers, always utilizing that number for that prescriber Record the type of prescriber, for example, physician, nurse, health care worker, or other job title, utilized by the health system
- 18 **Drug Generic Name and Strength** Record the generic name and strength of all prescribed drugs for all diagnoses of the individual patient, unless prescribed by *Brand Name*, in which case leave this space blank Use a new line for each drug recorded

- 19 **Drug Brand Name and Strength** Record the brand name and strength of all prescribed drugs for all diagnoses of the individual patient, unless prescribed by *Generic Name*, in which case leave this space blank Use a new line for each drug recorded
- 20 **Drug Dosage Form** Record the dosage form of each prescribed drug, for example, tablet, capsule, liquid, ampule, vial, inhaler, cream, ointment, etc
- 21 **Drug Quantity in a Dose** For each drug prescribed, record the amount in each dose, for example, 5 ml, 1 gm, 3 mcg, 2 capsules, 2 inhalations, 1 tablet, etc
- 22 **Drug No Times Dose Prescribed Per Day** For each drug prescribed, record the number of times the dose above was ordered for one day, for example, once daily, 2 times daily, 3 times weekly, every 4 hours, at bedtime, with breakfast, etc
- 23 **Drug No of Days Prescribed** For each drug, record the number of days the drug was prescribed to be taken for a full course of treatment, for example, 5 days, 10 days, 30 days, etc
- 24 **Drug Price Paid by Patient** Record the price of the drugs prescribed by order or dispensing unit For example, the drug ampicillin 250 mg tablets was ordered to be taken by the patient as follows 1 tablet 4 times daily for 10 days, therefore the price paid would be for 40 (1 x 4 x 10) tablets

For further instructions and examples on how to use the data collected on these forms, and how to compute and present the indicator, refer to the individual indicator description section of this manual

Note All blanks should be filled in on this data collection form Enter "N/A" if data for a particular item are not available

PS-1 PRESCRIBING STUDY. ENCOUNTER DATA FORM

Date	
Facility Name	
Facility Type	
Location	
Data Collector	

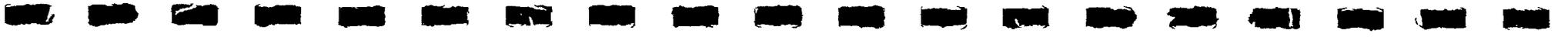
Refrigerator/Freezer/Thermometer	YES	NO
Cold packs/Cold boxes	YES	NO
Temperature Charts	YES	NO

Official STGs	YES	NO
IMCI Guide	YES	NO
Currency Used		
1 US Dollar =		

Patient No.	Age (M,Y)	Gender (M,F)	Diagnosis	Date	Prescriber Id. and Type	Drug: Generic Name and Strength	Drug: Brand Name and Strength	Drug: Dosage Form	Drug: Quantity in a Dose	Drug: No. Times Dose Prescribed Per Day	Drug: No. of Days Prescribed	Drug: Price Paid by Patient

PS-1 Use with indicators IV A 7, IV A 8, IV A 9, V A 1, V A 2, V A 9

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PS-2 Prescribing Study Drug Price Data Form

This form is used for the indicator listed below

V A 9 Average cost of drug treatment for each encounter that includes an IMCI health problem studied

Data collection summary

Indicator V A 9 measures the average cost of drug treatment for an IMCI health problem. Data collectors need not collect these data if drug prices were collected on form, *PS-1 Prescribing Study Encounter Data Form*

Instructions

- 1 **Date** Fill in the date on which the data are collected. If possible, these data should be collected on the same day
- 2 **Facility Name** Fill in the name of the health facility or warehouse in which the data are being collected
- 3 **Location** Fill in the geographic location of the facility in which the data are being collected (usually the name of a region, district, city, or town)
- 4 **Data Collector** Fill in the name of the person collecting the data.
- 5 **Currency Used and 1 US Dollar =** Record the currency used for the drug prices, and obtain the exchange rate for one US dollar on that date
- 6 **Drug Generic Name** Record the generic name for all prescribed drugs collected in the study, unless prescribed by *Brand Name*, in which case leave this space blank
- 7 **Drug Brand Name** Record the brand name for all prescribed drugs collected in the study, unless prescribed by *Generic Name*, in which case leave this space blank
- 8 **Drug Description** Record the strength and dosage form of each prescribed drug, for example, 500 mg tablet, 150 mg capsule, 125 mg/5 ml liquid, 25 mg/ml ampule, 50 mg/ml vial, 300 mcg/dose inhaler, 25% cream or ointment, etc
- 9 **Prescribed Unit Size** For each prescribed drug in the study, record the size of the prescribed unit, for example, 10 tablet strip, 200 dose inhaler, 50 ml vial, 100 ml bottle, 15 gm tube, etc
- 10 **Price Per Prescribed Drug** Record the price of the order unit as indicated above, for example, \$2 30/strip, \$4 53/inhaler, \$1 78/vial, \$3 44/bottle, \$2 22/tube, etc. Make sure that the price given is for the size described, e g , \$2 22 for a 15 gm tube. If this form is being used for a prescribing study in government health facilities, use the median MOH price. If the form is being used for a prescribing study in retail outlets, use the median retail outlet price

For further instructions and examples on how to use the data collected on these forms, and how to compute and present the indicator, refer to the individual indicator description section of this manual

Note All blanks should be filled in on this data collection form Enter "N/A" if data for a particular item are not available

PS-3 Prescribing Study Calculate Percentage of Encounters Prescribed Various Drugs

This form is used for the indicators listed below

- V A 3 Percentage of encounters diagnosed as no-pneumonia (cough or cold) that are prescribed antibiotics
- V A 4 Percentage of encounters diagnosed as pneumonia that are prescribed appropriate antibiotics according to treatment guidelines
- V A 5 Percentage of encounters that are prescribed ORS for diarrhea
- V A 6 Percentage of encounters that are prescribed antidiarrheals for diarrhea
- V A 7 Percentage of encounters that are prescribed antibiotics for diarrhea

Data collection summary

Indicators V A 3, V A 6, and V A 7 demonstrate the degree of prescriber non-compliance with IMCI guidelines. Indicators V A 4 and V A.5 demonstrate the degree of prescriber compliance with IMCI guidelines.

Instructions

- 1 **Date Calculated** Fill in the date on which the data were compiled and calculated
- 2 **Facility Name** Fill in the name of the health facility or warehouse where data were collected
- 3 **Location** Fill in the geographic location of the facility in which the data were collected (usually the name of a region, district, city, or town)
- 4 **Calculated by** Fill in the name of the person performing the compilation and calculation of data.
- 5 **Tally Sheet 1, Instructions** Data can be compiled manually for each health facility from forms PS-1 and DS-1 and entered in this table. However, if PASS software is available, the data from forms PS-1 and DS-1 are first entered into the software, and then Reports PA-2 and PA-12 are generated, from which the data for *Tally Sheet 1* can be obtained
- 6 **Tally Sheet 2, Instructions** Data are calculated for this table using the *Number Encounters Prescribed*, and *Total Number Encounters* data, from Tally Sheet 1 (see *Tally Sheet 1, Instructions* above)

- 7 To calculate **% Encounters Prescribed** various drugs for all facilities, obtain a blank copy of form PS-3, and do the following
- **Date Calculated** Fill in the date on which combined data for all facilities in the study are compiled and calculated
 - **Facility Name** Write “composite,” or “consolidated ”
 - **Location** Fill in a name that best represents where all the facilities are located, for example, the name of a region, district, city, or town
 - **Calculated by** Fill in the name of the person consolidating the data.
 - **Tally Sheet 1, Instructions** Fill in the composite data and record in this table as follows Data can be compiled manually from all the health facility PS-3 forms, or if PASS software were used, the information can be compiled from Reports PA-2 and PA-12
 - **Tally Sheet 2, Instructions** Data are calculated for this table using the *Number Encounters Prescribed*, and *Total Number Encounters* data, from Tally Sheet 1 (see directly above)

For further instructions and examples on how to use the data collected on these forms, and how to compute and present the indicator, refer to the individual indicator description section of this manual

**PS-3 PRESCRIBING STUDY CALCULATE PERCENTAGE OF ENCOUNTERS
PRESCRIBED VARIOUS DRUGS**

Date Calculated	
Facility Name	
Location	
Calculated by	

Tally Sheet 1. Instructions Count the number of drugs listed below per health problem from PS-1, DS-1, or PA-12, and place in the appropriate row and column From forms PS-1, or PA-2, place the total number of encounters for the health problem at the bottom of Columns A, B, and C

Row No.	For:	DIARRHEA (Column A)	PNEUMONIA (Column B)	NO-PNEUMONIA (Column C)
	NUMBER ENCOUNTERS PRESCRIBED:			
1	Antibiotics *			
2	ORS			
3	Paracetamol			
4	Medicinal Cough Syrups/Expectorants			
5	Antidiarrheals			
6	Other Antipyretics			
7	All Other Drugs			
Total Number Encounters:				

Tally Sheet 2. Instructions Using numbers from the table above, multiply the number of encounters in each corresponding row and column by 100, divide by the *Total Number Encounters* at the bottom of the column, place result in the appropriate column below For example

No Enc. Pres from Row 2 Col A X 100 – Tot. No Enc. Col A = % Diarrhea Encounters Prescribed ORS

% ENCOUNTERS PRESCRIBED	For:	DIARRHEA	PNEUMONIA	NO-PNEUMONIA
Antibiotics *				
ORS				
Paracetamol				
Medicinal Cough Syrups/Expectorants				
Antidiarrheals				
Other Antipyretics				
All Other Drugs				

* For purposes of this activity, antibiotics include antibiotics and sulfa drugs

PS-3 Use with Indicators V A.3, V A 4, V A 5, V A 6, V A 7

PS-4 Prescribing Study Calculate Cost of IMCI Drugs

This form is used for the indicators listed below

- V A 8 Average cost of drugs prescribed as a percentage of costs if IMCI norms for treatment were followed
- VI A 6 Average cost of drugs dispensed as a percentage of costs if IMCI norms were followed

Data collection summary

This form is used to calculate the cost for IMCI drug treatment in the geographic region where the study takes place, for later comparison with actual cost data for prescribed drug treatment. Indicators VI A 6 and V A 8 are the same indicator, and compare the differences between the actual drug treatment cost as determined by the study, with the cost of IMCI drug treatment, for dispensing and prescribing studies

Instructions

- 1 **Date Calculated** Fill in the date on which the data were compiled and calculated
- 2 **Facility Name** Fill in the name of the health facility, warehouse, or organization where price data were collected
- 3 **Location** Fill in the geographic location of the facility in which the data were collected (usually the name of a region, district, city, or town)
- 4 **Calculated by** Fill in the name of the person performing the compilation and calculation of data.
- 5 **Currency Used, and 1 US Dollar =** Record the currency in which the drug prices are obtained, record the currency rate for one US dollar on the day the prices were obtained
- 6 **Instructions** Follow the steps as outlined on the form. Drug costs are those recorded on forms PS-1, PS-2, or DS-1. See the following for clarification
 - *MOH Unit Cost* is the cost for the dosage form of each drug as listed in this table. For example, *MOH Unit Cost* of ORS would be the cost for 1 packet, *MOH Unit Cost* for Paracetamol 100 mg would be the cost for 1 tablet, and *MOH Unit Cost* for *Soothing Cough Syrup* would be the cost for 1 bottle. The price used for a bottle of cough syrup must be for the same size as is issued to the patient.
 - If *Co-trimoxazole 100/20*, *Amoxicillin 250 mg*, or *Paracetamol 100 mg* tablets are not available in the health system, but other strengths are available and prescribed for children, such as *Co-trimoxazole 400/80*, *Ampicillin 250 mg*, *Amoxicillin 500 mg*, or *Paracetamol 500 mg*, so indicate in the table. Record the *MOH Unit Cost* for the drug, strength, and dosage form that is actually used.

- Since IMCI recommends only one drug for the treatment of diarrhea, instead of putting the cost in the column, *Cost For Each IMCI Drug*, place it directly in the *Cost For IMCI Drug Treatment*, since there is no need to add
- Since IMCI recommends either *Co-trimoxazole* or *Amoxicillin* for treating pneumonia, both scenarios are represented in the table. Add the cost for each pneumonia drug treatment scenario, divide by 2, and place the result in the space where the *Pneumonia Total* row and the *Cost For IMCI Drug Treatment* column converge. This provides an average cost for pneumonia treatment.

For further instructions and examples on how to use the data collected on these forms, and how to compute and present the indicator, refer to the individual indicator description section of this manual.

PS-4 PRESCRIBING STUDY CALCULATE COST OF IMCI DRUGS

Date Calculated	
Facility Name	
Location	
Calculated by	

Currency Used	
1 US Dollar =	

Instructions

- 1 Obtain the *MOH Unit Cost* for each of the IMCI drug dosage forms listed below from form LS-4
- 2 Calculate cost of each drug Multiply *MOH Unit Cost* x *IMCI Quantity* of each drug and place in the *Cost for Each IMCI Drug* column
- 3 For each health problem, add the costs in the *Cost for Each IMCI Drug* column, and place in the *Cost for IMCI Drug Treatment* column
- 4 However, for Pneumonia, add together the costs for both co-trimoxazole and ampicillin scenarios in the *Cost for Each IMCI Drug* column, divide by 2, and place result in the *Avg Sum* → space

CALCULATE COST FOR EACH HEALTH PROBLEM	DRUG and DOSAGE FORM	MOH UNIT COST	(X) IMCI QUANTITY	(=) COST FOR EACH IMCI DRUG	(=) COST FOR IMCI DRUG TREATMENT
Diarrhea	(1) ORS: packets		3	Sum →:	
Pneumonia (If Co-trimoxazole is prescribed)	(1) Co-trimoxazole 100/20: tablets		10		
	(2) Paracetamol 100: tablets		10		
	(3) Soothing Cough Syrup: bottle		1		
	Sum				
Pneumonia (If Amoxicillin is prescribed)	(1) Amoxicillin 250 mg: tablets		15		
	(2) Paracetamol 100: tablets		10		
	(3) Soothing Cough Syrup: bottle		1		
	Sum				
Pneumonia Total				Avg. Sum →:	
No-pneumonia	(1) Paracetamol 100 tablets		10		
	(2) Soothing Cough Syrup: bottle		1		
	Sum →:				

PS-4 Use with indicators V A 8, VI A 6

PS-5 Prescribing Study Drug Information Data Form

This form is used for the indicators listed below

- V A 10 Percentage of encounters where health workers asked no clinical question from IMCI guidelines to determine severity of health problem
- V A 11 Percentage of health workers who provided any information to patients on how to take the recommended drug
- V A 12 Percentage of health workers who mentioned any signs of progressive illness and recommended a doctor or clinic visit if those signs appeared

Data collection summary

Indicators V A 10, V A 11, and V A 12 measure to what extent basic clinical information is given to -or requested from- patients by health workers in sample health facilities. Depending on study design, this data could be collected during data collection activities for form PS-1

Instructions:

- 1 **Date** Fill in the date on which the data are collected. If possible, these data should be collected on the same day
- 2 **Facility Name.** Fill in the name of the health facility or warehouse in which the data are being collected
- 3 **Facility Type** Fill in the type of facility in which the data are being collected, for example, warehouse, district hospital, health center, health post
- 4 **Location** Fill in the geographic location of the facility in which the data are being collected (usually the name of a region, district, city, or town)
- 5 **Data Collector** Fill in the name of the person collecting the data.
- 6 **Health Problem** Add any health problem studied other than those listed on the form. For each health problem, record the information requested in the header of each column
- 7 **No Encounters Diagnosed With** In the sample studied, record the total number of encounters diagnosed with each of the health problems. This column is only used in the final compilation of data. Do not fill it in during data collection
- 8 **Prescriber Asked No Clinical Question About Severity of Problem** Place a check mark (✓) in the column if no clinical questions were asked to determine severity of health problem during prescribing
- 9 **Prescriber Provided Any Information on Recommended Drugs** Place a check mark (✓) in the column if any information was provided on received drugs, such as how to take them, or possible side effects

- 10 **Prescriber Mentioned Any Signs of Progressive Illness** Place a check mark (✓) in the column if prescribers alerted patients to possible signs of worsening illness, such as high fever or skin rash
- 11 To consolidate drug information data for all facilities, obtain a blank copy of form PS-5, and do the following
- **Date** Fill in the date on which combined data for all facilities in the study were consolidated
 - **Facility Name** Write “composite” or “consolidated”
 - **Location** Fill in a name that best represents where the facilities are located, for example, the name of a region, district, city, or town
 - **Data Collector** Fill in the name of the person consolidating the data.
 - Gather PS-5 forms from all health facilities you wish to consolidate
 - **Health Problem** Add any health problems studied other than those listed on the form For each health problem record the information requested in the header of each column
 - Add the numbers from all health facilities and place in the corresponding columns
 - **No Encounters Diagnosed With** (health problem)
 - **Prescribers Asked No Clinical Questions About Severity of Problem** Record the total number of prescribers who asked *NO* clinical questions from IMCI guidelines to determine the severity of the health problem for each of the health problems listed in the first column
 - **Prescribers Provided Any Information on Recommended Drug(s)** Record the total number of prescribers who provided *ANY* information at all concerning how to take the drugs he/she recommended for treating each of the health problems listed in the first column
 - **Prescribers Mentioned Any Signs of Progressive Illness** Record the total number of physicians for each of the health problems who mentioned *ANY* information at all concerning how the illness may progress, and recommended a doctor or clinic visit should those signs appear

For further instructions and examples on how to use the data collected on these forms, and how to compute and present the indicator, refer to the individual indicator description section of this manual

Note All blanks should be filled in on this data collection form Enter “N/A” if data for a particular item are not available

PS-5 PRESCRIBING STUDY: DRUG INFORMATION DATA FORM

Date	
Facility Name	
Facility Type	
Location	
Data Collector	

No.	HEALTH PROBLEM:	NO. ENCOUNTERS DIAGNOSED WITH:	Prescribers Asked <i>NO</i> Clinical Questions about Severity of Problem	Prescribers Provided <i>ANY</i> Information on Recommended Drug(s)	Prescribers Mentioned <i>ANY</i> Signs of Progressive Illness.
1	DIARRHEA				
2	PNEUMONIA				
3	NO-PNEUMONIA				
4					
5					
6					
7					
8					

PS-5 Use with indicators V A 10, V A 11, V A.12

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GUIDE FOR OBSERVATIONAL DATA COLLECTION AND EXIT POLLS

Introduction

The success of the IMCI strategy is based on the adequate assessment, treatment, and follow-up of children ages zero to five suffering from IMCI health problems, the five leading childhood diseases, which include measles, diarrheal disease, malnutrition, malaria, and ARI. Failure to adequately assess and diagnose patients may lead to inaccurate treatment and irrational use of IMCI medication. Therefore, the quality of diagnosis, prescribing, and instructions given to the caregiver will be assessed by observing the interactions between the caregiver and the health care workers. Within the health facility, as with the drug retail outlets, it is equally important that IMCI medications are dispensed accurately and that appropriate instructions on how to take medication are communicated to caregiver(s) of the sick children. The exit poll of caregivers as they are about to leave the health facility will measure how well each caregiver understood the instructions for the medication prescribed and whether they have obtained the required medication. The purpose of the following protocols is to ensure that the observations are carried out and recorded in a consistent fashion.

Flow of Data Collection

To assess the quality of patient information regarding medications and the quality of dispensing in a health facility, a two-step process has been developed to monitor the interactions of the health care worker and caregiver within the health care system. Both data collectors in a health facility will need to participate in this data collection process.

Data collector #1 will observe the health workers and caregivers' interactions. To get a sense of the information exchange between caregivers and health workers, the data collector will follow the caregiver as he or she moves to different health stations. Some of the information of interest may be provided at different health stations, observing only one interaction might lead to an inaccurate assessment of the health care process within the clinic.

Data collector #2 will wait near the facility exit and follow up with caregivers after they have visited the dispensing area or pharmacy of the health facility. Each data collector will have different data collection forms and should seek to follow up on the same patient or child. To ensure follow up on the same patient or child, a patient identification system, explained in more detail in the next section, will be used to track the patients.

Sampling

As discussed previously in chapter V, one of the challenges of prospective sampling is identifying enough cases in the allotted data collection time period. To complete the data collection for the study in the expected time frame of one week, the observational and exit poll data collection exercises should be completed in approximately half a day. Therefore, to obtain enough cases by which to assess the methodology in the field test, any childhood illnesses of patients zero to five years will be included in the study sample. Children presented in the clinic for immunizations will not be included in the sample. The data collectors should seek to observe 10-15 patient encounters and interview the caregivers in an exit poll.

The sample selection process will be conducted in the waiting room by the first data collector. The first data collector will identify children that are being seen for therapeutic reasons, explained in detail in the next section, and give each caregiver an identification slip immediately prior to observing the interactions with the health worker. The identification slip will denote what observation number they are, facility identification information, date, chief complaint, age, gender. The data for the observation number, facility identification information, and date should be filled out for 10-15 forms prior to beginning observing at a health facility in order to make the interactions go more quickly.

For example, a sample blank identification slip could look like this

Patient No <u>1</u> Facility <u>Health Facility One</u> Date <u>19/11/97</u> Chief Complaint _____ Age _____ Gender _____
--

DATA COLLECTOR #1 GUIDE

The first data collector should approach the caregiver of the first child seen in the clinic at the beginning of the data collection process and explain to the caregiver the point of the study. If the child is in the health facility for a therapeutic reason, then the child is included in the sample.

The data collector should say

"Hello, what is the problem with your child today?"

If any therapeutic complaint is given, the child can be included in the study sample.

If the child is there to receive immunizations, the data collector should move on to the next patient in line.

Once a child with a therapeutic complaint is found, the data collector should address the caregiver as follows:

"I am a part of a study looking into the quality of care for children. How old is your child?"

The data collector should fill out the age and gender of the child and the chief complaint on the identification slip and give it to the mother or caregiver. The health facility information, date, and number of observation should already be recorded on the slips. The data collector should inform the caregiver that he or she will be asked a few questions by another data collector before they leave the health facility, as follows:

"Before you leave the health facility, the second data collector will ask for this form [hand over the patient identification form] and ask you a few questions."

For example, a sample completed identification slip could look like this

Patient No <u>1</u> Facility <u>Health Facility One</u> Date <u>19/11/97</u>
Chief Complaint <u>diarrhea</u> Age <u>12 mos</u> Gender <u>F</u>
Observation <u>Data collector's initials</u> DS Interview _____

The caregiver should return the identification tag to the second data collector. Printing the identification slips in a special or obvious color may serve as a way to ensure that data collectors recognize all patients, however, that may also change both the caregiver's and health worker's behavior.

Observation

The data collector should then follow the caregiver and child as they interact with health workers. The rationale for having the data collector follow the caregiver and child is the assumption that there are several health workers who will provide IMCI guideline-relevant health information and this method best captures this information. A stationary surveyor may miss pertinent information. That said, the data collector must be as inconspicuous as possible. The surveyor should remain close enough to hear and see the interactions between the caregiver and health workers, but not to interact with the session. The surveyor must be as unobtrusive as possible and not disrupt the consultation or bias the responses of the caregiver or the behavior of the health worker.

To facilitate the observation of these interactions, data collectors should use the structured worksheet (Worksheet PS-6) provided. The worksheet is designed to record specific information about the process and content of the encounter. The observer is also asked to record any other factors of interest that would give insight into the reasons for the behavior observed. This worksheet is meant to facilitate the completion of Prescribing Study Data Form PS-5.

PS-6: PRESCRIBING STUDY: OBSERVATION OF HEALTH WORKER FORM
(to be used along with Form PS-5)

Instructions

- 1 A new observation worksheet should be completed for each infant or child seen
- 2 Place a check mark (✓) where appropriate for all items on this form

ASSESSMENT OF THE CHILD (ZERO TO FIVE YEARS OF AGE)

1 Did the health worker ask the caregiver questions about the child regarding any of the following (check all those that apply)?

Category: (CHECK ALL THOSE THAT APPLY)	Asked	Not Asked
a. Difficulty drinking or eating		
b. Difficulty breast-feeding		
c. Occurrence of seizures or convulsions		
d. Presence of vomiting/stomach pains		
e. Change in consciousness/laziness/sleepiness		
f. Difficulty breathing		
g. Presence of cough		
h. Diarrhea		
- Presence of blood in stool		
- Duration of diarrhea		
i. Presence of fever		
j. Presence of ear problems		

Instructions

- 1 If there is ANY check mark in the *Asked* column from question 1 above, the answer to the following question is YES
- 2 Otherwise, the answer to the following is NO

2 Did the prescriber ask the caregiver ANY clinical questions about the severity of the problem?

	Yes	No
Did prescriber ask any clinical questions about the severity of problem?		

TREATMENT

3 Did the health workers provide ANY information to patient on how to take the recommended drug? Check all that apply

Information provided on how to take the recommended drug (Check all that apply)	Yes	No
Name of drug		
Dosage		
Frequency of dosage		
How to administer medications		
Demonstrate how to administer oral medications		
Asked open-ended questions to verify the comprehension of how to administer medication		

Instructions 1 If the response to ANY of the above categories was YES, then the answer to the following question is YES
 2 If the response to ALL of the above categories was NO, then the answer to the question is NO

	Yes	No
Did the health workers provide ANY information to patient on how to take the recommended drug?		

FOLLOW-UP

4 Did the health workers mention ANY signs of progressive illness, and recommend that the caregiver take the patient to see a doctor or visit a clinic if those signs appeared?

Progressive Illness Signs	Mentioned	Not Mentioned
Child is not able to drink or drinking poorly		
Child is not able to breast-feed		
Child's symptoms get worse		
Child continues with a persistent fever or develops a fever		
Child develops difficulty breathing		
Child develops blood in stool		
Child has pain to touch behind the ear or tender swelling		
Child continues to have paleness in their palms after two months or edema of both feet		

Instructions 1 If the response to ANY of the above categories was "mentioned," then the answer to the following question is YES
 2 If the response to ALL of the above categories was "not mentioned," then the answer to the question is NO

	Mentioned	Not Mentioned
Did the health workers mention ANY signs of progressive illness, and recommend that the caregiver take the patient to see a doctor or visit a clinic if those signs appeared?		

PS-6 Use with indicators V.A.10, V.A 11, V A 12

DATA COLLECTOR #2 GUIDE

Data collector #2 should place him- or herself near the health facility exit or by the dispensary pharmacy. The data collector will interview 10-15 caregivers of children under five years of age that were identified by data collector #1. To poll all cases identified by the first data collector, the second data collector should look for caregivers holding the patient identification forms, and ask all caregivers of children under five whether they were given a piece of paper. The data collector should tell the caregiver that the poll will only take a few minutes and they should proceed as follows using form PS-7 for recording the data.

The data collector should collect the patient identification forms and verify the information listed there. Therefore, the data collector should ask the caregiver what the chief complaint was, and the age and gender of the child. The data collector should use form PS-7 for this data collection process.

The data collector will first ask the caregiver about the drugs his or her child was prescribed, and then look at the medication the caregiver was given in the health facility dispensary or pharmacy. The data collector will also ask the caregiver if he or she is planning to purchase the drug elsewhere, why, and where.

PS-7 Prescribing Study Encounter Data Form

This form is used for the indicators listed below

- V A 9 Percentage of health workers who provided any information to patient on how to take the recommended drug(s)
- VI A 1 Percentage of prescribed drugs that are actually dispensed
- VLA 2 For a specified IMCI health problem, the percentage of prescribed drugs dispensed with the correct drug and dosage strength
- VLA 3 Percentage of prescribed IMCI drugs dispensed with the correct quantity of medicines to complete the standard course of therapy
- VI A 4 Percentage of prescribed brand name drugs dispensed with a generic substitute
- VI A 5 Percentage of drugs dispensed with adequate labeling (i e , patient's name, drug name, dose, and frequency)
- VLA 6 Average cost of drugs dispensed per IMCI encounter as a percentage of costs if IMCI norms of treatment were followed

Instructions

- 12 **Date** Fill in the date on which the data are collected. If possible, these data should be collected on the same day
- 13 **Facility Name** Fill in the name of the health facility in which the data are being collected
- 14 **Facility Type** Fill in the type of facility in which the data are being collected, for example, district hospital, health center, health post.
- 15 **Location** Fill in the geographic location of the facility in which the data are being collected (usually the name of a region, district, city, or town)
- 16 **Data Collector** Fill in the name of the person collecting the data.
- 17 **Patient No** This number should match the number from the patient identification form
- 18 **Age (M,Y)** Record the actual age of the patient, followed by an *M* or *Y*, to indicate if age is in months or years
- 19 **Gender (M,F)** Record if the patient is male or female by writing an *M* or *F*

- 20 **Chief Complaint** Record all the complaints that the caregiver reports. More than one complaint can be entered. This will be verified with what is reported in the patient identification form.

For items 10-16, the data collector will ask the caregiver the questions on this form and record the responses in the "Response Given by Caregiver" row of data collection form PS-7. Items 17-20 pertain to the last section. The data collector will also fill in the drug name (generic or brand) and strength, dosage form, quantity in a dose, number of times dose prescribed per day, and number of days prescribed by looking at the drug the caregiver was dispensed at the health facility dispensary or health facility pharmacy. This data collector-observed information will go in the "Data Based on Looking at the Drug Dispensed" section.

- 21 **Drug Generic Name and Strength** Record the generic name and strength of all prescribed drugs for all diagnoses of the individual patient, unless prescribed by *Brand Name*, in which case leave this space blank. Use a new line for each drug recorded.
- 22 **Drug Brand Name and Strength** Record the brand name and strength of all prescribed drugs for all diagnoses of the individual patient, unless prescribed by *Generic Name*, in which case leave this space blank. Use a new line for each drug recorded.
- 23 **Drug Dosage Form** Record the dosage form of each prescribed drug, for example, tablet, capsule, liquid, ampule, vial, inhaler, cream, ointment, etc.
- 24 **Drug Quantity in a Dose** For each drug prescribed, record the amount in each dose, for example, 5 ml, 1 gm, 3 mcg, 2 capsules, 2 inhalations, 1 tablet, etc.
- 25 **Drug No Times Dose Prescribed Per Day** For each drug prescribed, record the number of times the dose above was ordered for one day, for example, once daily, 2 times daily, 3 times weekly, every 4 hours, at bedtime, with breakfast, etc.
- 26 **Drug No of Days Prescribed** For each drug, record the number of days the drug was prescribed to be taken for a full course of treatment, for example, 5 days, 10 days, 30 days, etc.
- 27 **Drug Price Paid by Patient** Record the price of the drugs prescribed by order or dispensing unit. For example, the drug ampicillin 250 mg tablets was ordered to be taken by the patient as follows: 1 tablet 4 times daily for 10 days, therefore the price paid would be for 40 (1 x 4 x 10) tablets.
- 28 **Quantities Purchased Did you buy all of the drugs prescribed?** Circle whether the caregiver did or did not purchase ALL drugs that were prescribed for the child.
- 29 **Quantities Purchased Did you buy the entire prescribed quantity of each drug?** Circle whether the caregiver purchased the whole quantity of each drug prescribed.
- 30 **If NO, why?** Record the reason for not purchasing all drugs prescribed. There are four possible responses caregivers may give, circle the response of the caregiver. If the response given is not listed, add it under *Other*. If the response given is #4 *Not available*, fill in the blank with the name of the unavailable drug.
- 31 **Will you buy the drug elsewhere?** Circle whether the patient intends to purchase the drug elsewhere.

- 32 **Where?** Record the type of facility where the caregiver says he or she will purchase the drug. For example, at a private pharmacy, drug retail outlet, or supermarket.

For further instructions and examples on how to use the data collected on these forms, and how to compute and present the indicator, refer to the individual indicator description section of this manual.

Note All blanks should be filled in on this data collection form. Enter "N/A" if data for a particular item are not available.

PS-7 PRESCRIBING STUDY· EXIT POLL DATA FORM

Date	
Facility Name	
Facility Type	
Location	
Data Collector	

Patient Number	
Age (M, Y)	
Gender (M, F)	

Chief Complaint	

Data Source	Drug: Generic Name and Strength	Drug: Brand Name and Strength	Drug: Dosage Form	Drug: Quantity in a Dose	Drug: No. Times Dose Prescribed Per Day	Drug: No. of Days Prescribed	Drug: Price Paid by Patient
Response Given by Caregiver							
Data Based on Looking at the Drug Dispensed							

Quantities Purchased	If NO, why? (Circle answer)	Will you buy the drug elsewhere?		Where?
Did you buy all of the drugs prescribed? YES NO	1 Too expensive 2 Less expensive elsewhere 3 Don't have money	YES	NO	
Did you buy the entire prescribed quantity of each drug? YES NO	4 Not available _____ 5 Other _____			

PS-7 Use with indicators V A 9, V A 9, VIA 1, VIA 2, VIA 3, VIA 4, VIA 5, VIA 6

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M Entering Data into the Prescription Analysis Software System (PASS)**1 Set up databases in PASS software under the *FILES* menu**

- ***PROVIDERS*** codes press <Enter> and <Insert>, type provider ID code, press <Enter> to *Category* field, press <Enter> and select the prescriber's category, name, specialty, and education are optional
- ***LOCATIONS*** codes for health facility press <Enter> and <Insert>, for *Level 1* type province code, for *Level 2* type district code, for *Level 3* enter type of facility code, for *Location* type next numerical number, and for name, type facility name
- ***DRUGS*** codes for each drug likely to be prescribed in health sector press <Enter> and <Insert>, type unique drug code and press <Enter>, type *Generic* name, and appropriate units for *Form, Route, Basic, Strength, Dispensing, Ordering*, type *Strength* of drug and average *Cost/Order* unit, type <Y> if *Generic* form is being entered, and <Y> if drug is *Injectable* or on *Formulary* or essential drug list, select appropriate *Therapeutic Class* of the drug based on system of classification provided or by a specific one adopted by the health system

2 Set up databases under the *VALIDATION* menu

- ***PROBLEMS CLASSIFICATION*** either use the default ICD-9 disease classification, or enter different codes for the diseases to be used for the study

3 Set up new survey

- Select ***SURVEY*** on the main menu, then ***SURVEY DATA*** by pressing <Enter> and <Insert>, or select an existing survey by pressing <Enter>, highlighting desired survey title and pressing <Enter> again
- ***CODE*** type survey identification code and press <Enter>
- ***TITLE*** type name of survey and press <Enter>
- ***CONSTANTS*** press <Enter> until you reach, *Data Entry for the Current Survey*, and type <Y> for *Diagnosed Problems, Reported Symptoms, Amount Prescribed, Prescribing Frequency*, and *Number of Treatment Days*, type <N> for *Cost/Price Information*, and press <Enter>
- ***AGE GROUPS STUDIED*** type <5> in *GROUP A*, and press <Enter>, unless you intend to study age groups different from <5> years of age
- At the *Notes* window, press <Esc>
- At the *Display Currency* field, press <Enter>, and select the currency to be used for price data in the study
- At the *Exchange Rate* field, press <Enter>, and type the rate of the selected currency for 1 US Dollar, press <Enter>, choose <Accept>, press <Enter>, then <Esc>
- At the *Do You Want to Create/Edit the Drug's Criteria Value*, select <NO> and press <Enter>

4 Enter data for each encounter

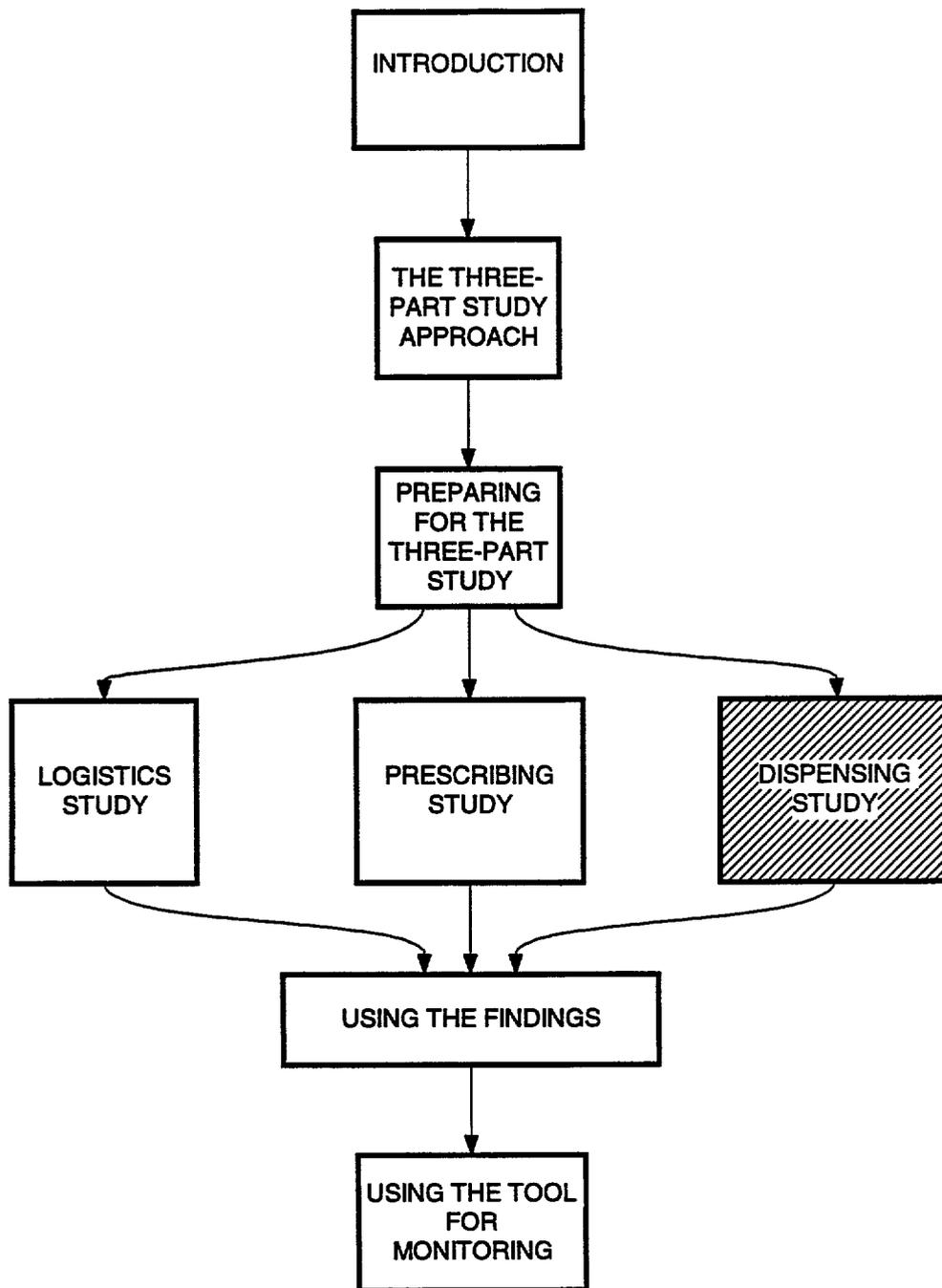
- Move cursor to *Encounters Details*, and press <Enter>
- To edit existing encounter data, highlight desired encounter code and press <Enter>
- To enter data for a new encounter, press <Insert>
 - ▶ *Encounter ID* Type next consecutive number (or patient chart number if desired)
 - ▶ *Date* enter date, such as mm/dd/yyyy or dd/mm/yyyy
 - ▶ *Location Code* press <Enter>, select code for facility where patient attended and press <Enter>
 - ▶ *Provider ID* press <Enter>, select code for provider who attended the patient, press <Enter>
 - ▶ *Encounter Age* type age of patient and indicate if years or months, for example 045Y = 45 years old and 018M = 18 months old (*Note PASS will calculate erroneously if age is not entered correctly*)
 - ▶ *Sex* type M, F or leave blank
 - ▶ Choose *Accept* if patient information is correct, or retry if some of the data needs editing
 - ▶ *Diagnosed Problems* press <Enter> and <Insert>, highlight the diagnosed problem from the database list and press <Enter>
 - ▶ *Encounter Drug Data* window press <Enter> to access the list of drugs in database, highlight the prescribed drug and press <Enter>
 - ▶ *Amount of Dispensing Unit Prescribed* type amount of drug prescribed
 - ▶ *Treatment Intervals* type how many of the dispensing units were prescribed and how frequently during the day (for example *1 ml 3 times/day* or *2 tablets 2 times/day*, or *0.5 mg 1 time/daily*)
 - ▶ *Treatment Duration* type how many days the drug is prescribed to be taken
 - ▶ Press <Enter> to select another drug prescribed for the same health problem, or,
 - ▶ Press <Esc>, <Enter> and <Esc> to return to the *ENCOUNTER* window
 - ▶ To enter the next encounter data, press <Insert> and repeat the procedure outlined above

5 Generate reports using PASS reports function

- When all encounter data is entered go to the *REPORTS* menu and press <Enter>
- Select the survey you wish to report by pressing <Enter>, then, either enter the survey code or clear the field and press <Enter> to see a list of the survey titles, highlight desired survey name and press <Enter>
- Select *Survey Reports* and press <Enter> to get a list of standard PASS reports
- Highlight the report you wish to print and press <Enter>
- To display the report, press <Enter> several times until the dialog box asks to *Accept, Retry, or Cancel*, highlight *Accept* and press <Enter>, report will be displayed on the computer screen
- To print the report, press <Enter>, at the *Destination* window, highlight your printer and press <Enter> until *Accept, Retry, or Cancel* dialog box appears, highlight *Accept* and press <Enter>, report will be printed

- You may print each of the reports on the PASS menu for expanded reporting of the data, or only the ones which are required in meeting objectives of the study
 - ▶ PA-1 *Summary of Encounter Data*
 - ▶ PA-2 *Encounter Costs/Drugs by Diagnosis*
 - ▶ PA-3 *ABC Analysis*
 - ▶ PA-4 *Drug Use Indicators - Level 1*
 - ▶ PA-5 *Drug Use Indicators - Level 2*
 - ▶ PA-6 *Drug Use Indicators - Level 3*
 - ▶ PA-7 *Drug Use Indicators - Level 4*
 - ▶ PA-12 *Data by Individual Encounter*

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VI DESIGN FOR DISPENSING PRACTICES STUDY (DISPENSING STUDY)

NOTE THIS STUDY WILL NOT BE PERFORMED FOR THE ECUADOR FIELD TEST

Dispensing the correct and most cost-efficient drug is a critical part of the IMCI treatment process. In addition to public sector health facilities, private sector drug retail outlets provide an important point of access for patients who either leave a health facility with a prescription that needs to be filled or who bypass the health facility and go directly to the retail outlet for advice and/or treatment. Dispensing practices among drug sellers in drug retail outlets may have clinical and cost implications that need to be considered when counseling the caregivers of sick children. The Dispensing Study in retail outlets is particularly important if shortages of IMCI drugs in MOH health facilities are frequent and consumers, either by choice or necessity, buy drugs from drug retail outlets.

By conducting this study, the user will be able to develop a profile of current practices for dispensing drugs to treat selected childhood illnesses. The information gathered can be used as a basis for 1) identifying factors that influence particular behaviors and 2) designing interventions for bringing about improvements.

List of Dispensing Indicators

Following is the list of six indicators that can be used to assess dispensing practices for drugs used to treat the IMCI health problems.

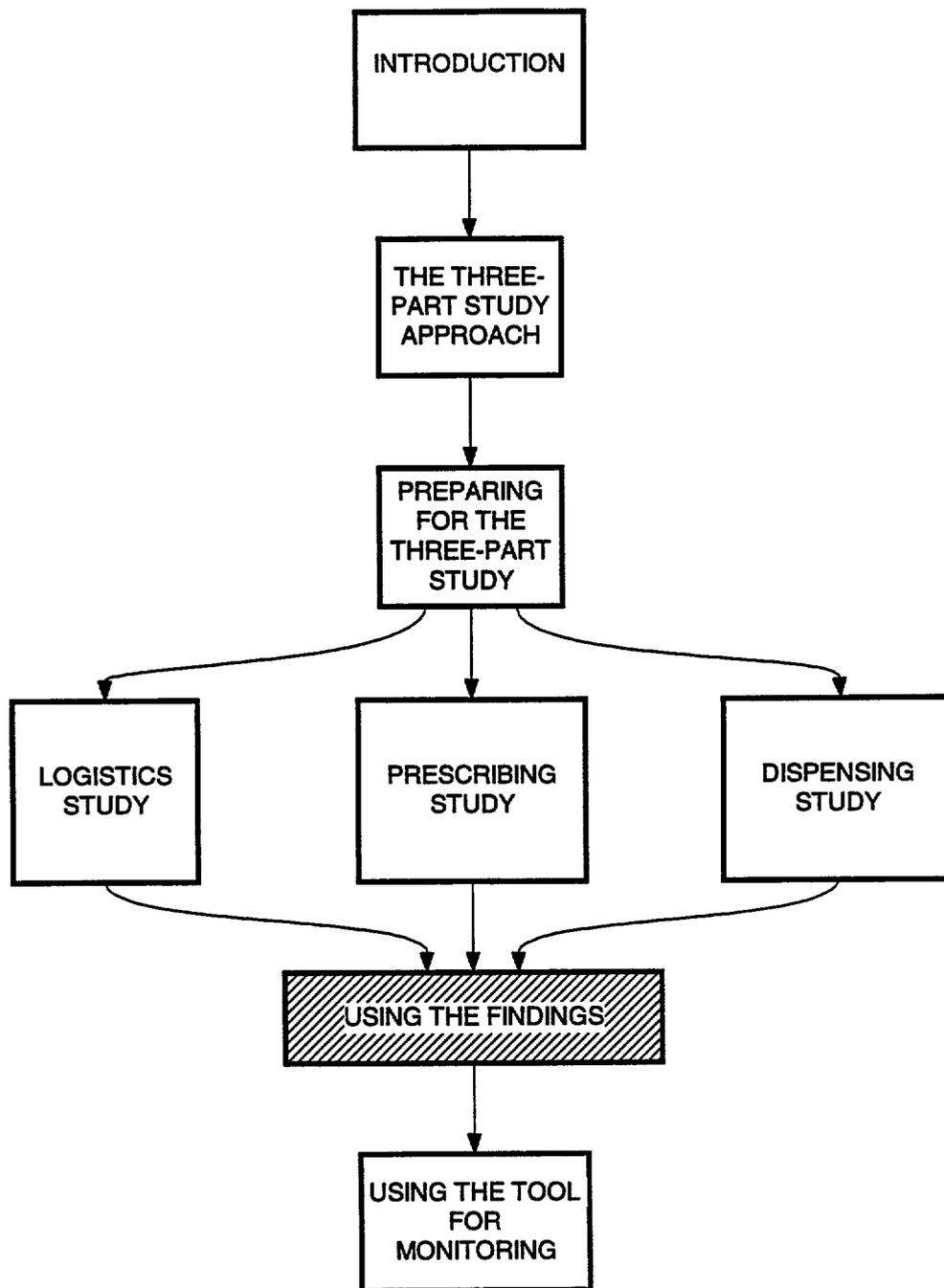
- 1 Percentage of prescribed drugs that are actually dispensed
- 2 For a specified IMCI problem, the percentage of prescribed drugs dispensed with the correct drug and dosage strength
- 3 Percentage of prescribed IMCI drugs dispensed with the correct quantity of medication to complete the standard course of therapy
- 4 Percentage of prescribed brand name drugs dispensed with a generic substitute
- 5 Percentage of IMCI drugs dispensed with adequate labeling (i.e., patient's name, drug name, dose, and frequency)
- 6 Average cost of drugs dispensed per IMCI encounter as a percentage of costs if IMCI norms of treatment were followed

The purpose of conducting the Dispensing Study is to evaluate the quality of dispensing practices and of the information about drug therapy provided to consumers for the treatment of childhood health problems. For each particular health problem, study investigators will gather data by conducting exit poll interviews in MOH facilities and simulated purchases in drug retail outlets to calculate or derive results for the indicators listed above and to answer the following questions:

- 6 Are caregivers of sick children offered the most cost-effective drug treatment by dispensing generic products?
- 7 Are drugs being dispensed using good dispensing practices?

By completing the indicator-based study and seeking answers to these questions, the investigators will identify problem dispensing behaviors that might hinder rational drug use and IMCI implementation. This information may help in understanding why the problem exists and may point to appropriate follow up activities.

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VII USING THE FINDINGS

NOTE Chapters VII and VIII are intended to help consolidate the information collected during the data collection phases of the three-part assessment. Then, based on the results of the assessment, identify the most appropriate use of the findings. Therefore, these chapters have not been completed in detail because their usefulness is dependent on the data gathered in the Ecuador field test. However, a brief overview of each chapter is included to provide the reader with the general approach that can be used once the data collection process is complete.

A Overview

Several data collection methods and techniques have been used together to provide an assessment of the current issues affecting IMCI drug availability and use in a country. The assessment should provide a comprehensive understanding of the factors causing drug availability and rational use problems and the potential barriers that may hinder their improvement.

Combining the findings of the three studies gives the most complete understanding of the problems and their causes. Also, collecting data on system problems from various levels of the system, and from the perspective of the health facility workers, private sector drug sellers, and the consumers as recipients of these services, will increase the appropriateness and potential impact of any changes designed to address identified problems.

One of the challenges of such an assessment is managing the volume of data that must be accumulated to complete the full assessment. It can be difficult to sort through, combine, and summarize data from individual methods in order to draw conclusions about which intervention is the most appropriate in response to a given problem. The study investigators must take into account all the available data, but stay focused on the implications of the data for future interventions.

To help summarize the data, it is important to remember the original eight questions required to conduct a systematic assessment. To recap, the questions are as follows:

Logistics

- 1 Are the drugs and medical supplies required to treat children zero-five years old available in public health facilities?
- 2 If not available, are they available and affordable in the private sector?
- 3 What are the determinants of product availability in the public sector and what can be done to bring about improvement?

Prescribing

- 4 What are current prescribing practices for important childhood illnesses?
- 5 Are the current prescribing practices clinically appropriate?
- 6 How does the drug cost of current practices for treating IMCI health problems compare to what the cost would be if IMCI treatment guidelines are followed?

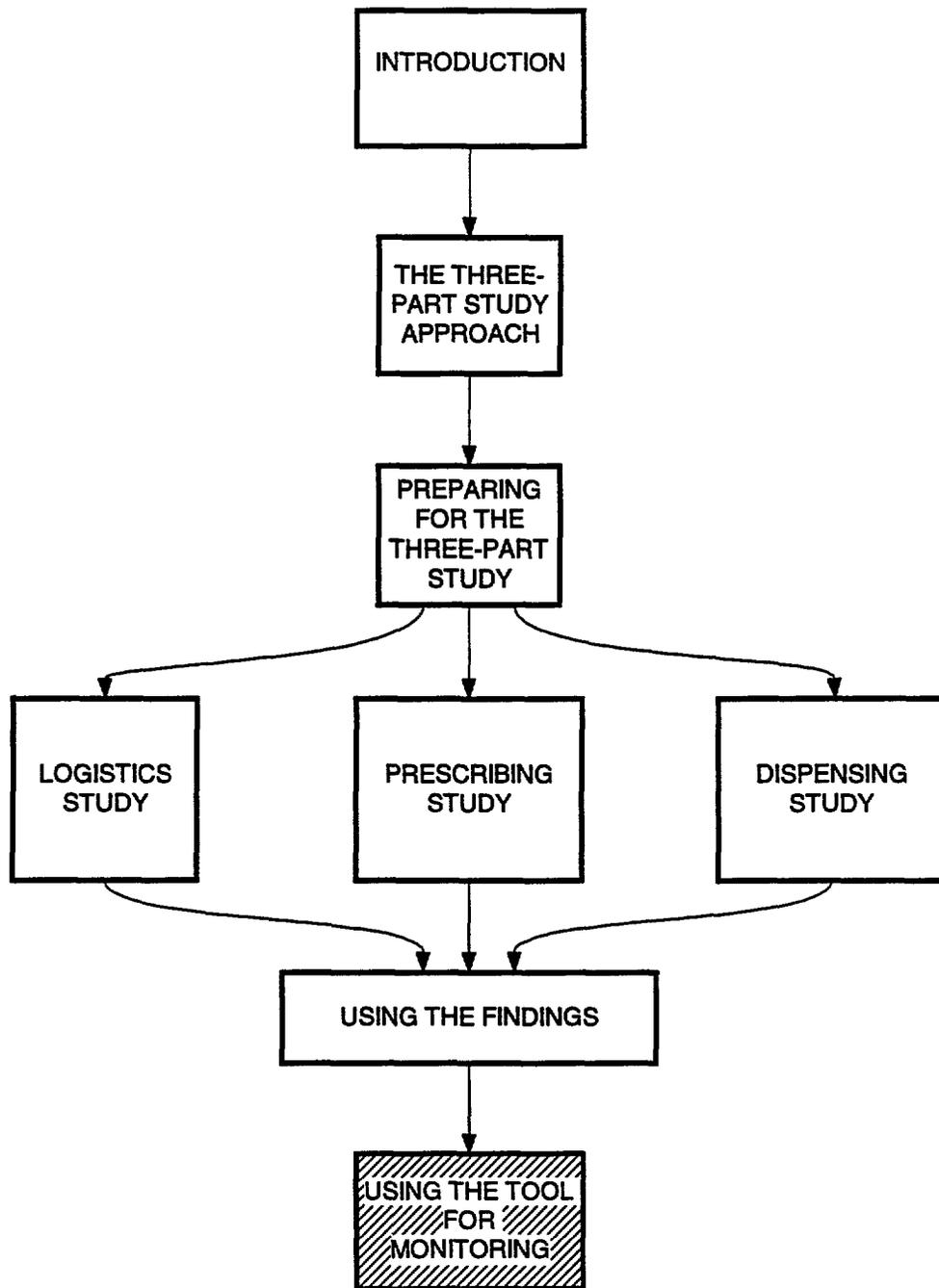
Dispensing

- 7 Are caregivers of sick children offered the most cost-effective drug treatment by dispensing generic products?
- 8 Are drugs being dispensed using good dispensing practices?

Once the data have been collected and sorted, and the indicators calculated, the investigators should coordinate a structured meeting of all the individuals who have been involved in the planning and implementation of the assessment. The meeting should be structured around the set of questions (listed above) for each study

Once the findings have been summarized and discussed, and it is agreed that they reflect what is actually taking place, it is then time to select and design interventions to address the problems. This will be influenced by what is known about the effectiveness of an intervention together with what is learned about the specific problems that need to be addressed and the context in which the problems occur

The IMCI Drug Management Tool



VIII USING THE TOOL FOR MONITORING

A Overview

Once the assessment has been completed and the data analyzed, the findings will help to prioritize which problems need to be addressed first. The data collected can also represent a source of quantifiable baseline measures. Having baseline measures is critical to monitoring the impact, negative or positive, of any intervention.

Several of the three-study assessment indicators can serve as monitoring indicators to assess problem improvements once interventions have been implemented. Collecting data on a few specific indicators on a quarterly or semi-annual basis should be a key management strategy to measure progress toward improvements in IMCI drug availability and rational use.

Systematic monitoring depends on having performance standards or targets. A performance target is a desirable and, in principle, attainable standard of practice. For example, the impact indicator may be the percentage of ten IMCI indicator drugs in stock, and the performance target may be 80% availability at each level for this list of indicator drugs. Performance targets should be set for each monitoring indicator.

For all the outcomes of interest, indicators that are meaningful, reliable, and measurable must be selected. When choosing the most useful outcomes to measure, consider the following:

- Select outcomes that can be clearly and explicitly defined,
- Select outcomes that can be reliably measured, preferably using routinely collected data,
- Focus on a few important outcomes rather than measuring all possible changes,
- Select the key behaviors targeted by the intervention and the most likely substitute behaviors, and
- Measure more than one dimension of success, especially if some changes are secondary—for example, changes in prescribing that follow changes in knowledge about specific drugs.

Selecting the specific indicators for monitoring is dependent on the findings of the assessment. In selecting indicators for monitoring, it is important to consider how the data will be collected. Data for some indicators may be routinely available from standard recording and reporting systems (such as percentage of IMCI indicator drugs available), whereas data for other indicators may require a special survey (percentage of health units using stock cards correctly). Thus, the sources and the costs of collecting and processing these data must be carefully considered in selecting indicators.

There are a few potential problems that can develop when using indicators. Such problems include failure to take action based on findings, over-ambitiousness (using too many indicators), failure to focus on key questions, selecting indicators that are too complex, lack of integration with work plan, failure to build on existing information, and lack of objectivity.

It is important to monitor drug availability and use as a way to evaluate the efficacy of an intervention. To determine if adequate progress is being achieved, it is necessary to know what is expected. Interventions should be evaluated by looking for both intended and unintended changes in specific outcomes. For example, an intervention for banning antidiarrheals may lead to an increased use of antibiotics. Indicators help measure changes directly or indirectly to assess the extent to which the targets and objectives of an intervention are being attained.

ANNEXES

ANNEX ONE LIST OF ACRONYMS

ARI	Acute Respiratory Infection
BASICS	Basic Support for Institutionalizing Child Survival
CHD	Child Health and Development
CIF	Cost, Insurance, and Freight
CMS	Central Medical Stores
DPT	Diphtheria, Pertussis, and Tetanus
DS	Dispensing Study
EDP	Essential Drug Programme
EPI	Extended Program on Immunizations
FOB	Free On Board
ICD-9	International Classification of Diseases
IM	Intramuscular
IMCI	Integrated Management of Childhood Illness
IV	Intravenous
LAC	Latin America and the Caribbean
LS	Logistics Study
MOH	Ministry of Health
MSH	Management Sciences for Health
NDFL	National Drug Formulary List
NEDL	National Essential Drugs List
NGO	Non-Governmental Organization
ORS	Oral Rehydration Salts
OTC	Over-The-Counter
PAHO	Pan American Health Organization
PASS	Prescription Analysis Software System
PS	Prescribing Study
RMS	Regional Medical Stores
RPM	Rational Pharmaceutical Management
SC	Sub-cutaneous
STG	Standard Treatment Guidelines
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
VVM	Vaccine Vial Monitor
WHO	World Health Organization

ANNEX TWO IMCI GUIDELINES

MANAGEMENT OF CHILDHOOD ILLNESS



World Health Organization
Division of Diarrhoeal and
Acute Respiratory Disease Control



SICK CHILD AGE 2 MONTHS UP TO 5 YEARS

ASSESS AND CLASSIFY THE SICK CHILD

Assess Classify and Identify Treatment

Check for General Danger Signs	2
Then Ask About Main Symptoms	
Does the child have cough or difficult breathing?	2
Does the child have diarrhoea?	3
Does the child have fever?	4
Classify malaria	4
Classify measles	4
Does the child have an ear problem?	5
Then Check for Malnutrition and Anaemia	6
Then Check the Child's Immunization Status	6
Assess Other Problems	6

TREAT THE CHILD

Teach the Mother to Give Oral Drugs at Home

Oral Antibiotic	7
Oral Antimalarial	8
Paracetamol	8
Vitamin A	8
Iron	8
Mebendazole	8

Teach the Mother to Treat Local Infections at Home

Treat Eye Infection with	
Tetracycline Eye Ointment	9
Dry the Ear by Wicking	9
Treat Mouth Ulcers with Gentian Violet	9
Soothe the Throat Relieve the Cough with a Safe Remedy	9

Give These Treatments in Clinic Only

Intramuscular Antibiotic	10
Quinine for Severe Malaria	10
Prevent Low Blood Sugar	11

TREAT THE CHILD, continued

Give Extra Fluid for Diarrhoea and Continue Feeding

Plan A Treat Diarrhoea at Home	12
Plan B Treat Some Dehydration with ORS	12
Plan C Treat Severe Dehydration Quickly	13

Immunize Every Sick Child As Needed

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Give Follow up Care

Pneumonia	14
Persistent Diarrhoea	14
Dysentery	14
Malaria (Low or High Malaria Risk)	15
Fever Malaria Unlikely (Low Malaria Risk)	15
Measles with Eye or Mouth Complications	15
Ear Infection	16
Pallor	16
Very Low Weight	16

COUNSEL THE MOTHER

Food

Assess the Child's Feeding	17
Feeding Recommendations	18
Counsel About Feeding Problems	19

Fluid

Increase Fluid During Illness	20
-------------------------------	----

When to Return

Advise the Mother When to Return to Health Worker	20
--	----

Counsel the Mother About Her Own Health

21

SICK YOUNG INFANT AGE 1 WEEK UP TO 2 MONTHS

ASSESS, CLASSIFY AND TREAT THE SICK YOUNG INFANT

Assess Classify and Identify Treatment

Check for Possible Bacterial Infection	22
Then ask Does the young infant have diarrhoea?	23
Then Check for Feeding Problem or Low Weight	24
Then Check the Young Infant's Immunization Status	25
Assess Other Problems	25

Treat the Young Infant and Counsel the Mother

Oral Antibiotic	26
Intramuscular Antibiotics	26
To Treat Diarrhoea See <i>TREAT THE CHILD</i> Chart	12 13
Immunize Every Sick Young Infant	27
Treat Local Infections at Home	27
Correct Positioning and Attachment for Breastfeeding	28
Home Care for Young Infant	28

Give Follow up Care for the Sick Young Infant

Local Bacterial Infection	29
Dysentery	29
Feeding Problem	30
Low Weight	30
Thrush	30

RECORDING FORMS

SICK YOUNG INFANT	31
SICK CHILD	33

WEIGHT FOR AGE CHART

on back cover

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ASSESS AND CLASSIFY THE SICK CHILD AGE 2 MONTHS UP TO 5 YEARS



ASSESS

CLASSIFY

IDENTIFY TREATMENT

ASK THE MOTHER WHAT THE CHILD'S PROBLEMS ARE

- Determine if this is an initial or follow up visit for this problem
If follow up visit use the follow up instructions on *TREAT THE CHILD* chart
If initial visit assess the child as follows

CHECK FOR GENERAL DANGER SIGNS

ASK

- Is the child able to drink or breastfeed?
- Does the child vomit everything?
- Has the child had convulsions?

LOOK

See if the child is lethargic or unconscious

A child with any general danger sign needs **URGENT** attention complete the assessment and any pre-referral treatment immediately so referral is not delayed

USE ALL BOXES THAT MATCH THE CHILD'S SYMPTOMS AND PROBLEMS TO CLASSIFY THE ILLNESS

THEN ASK ABOUT MAIN SYMPTOMS:

Does the child have cough or difficult breathing?

IF YES, ASK

For how long?

LOOK, LISTEN, FEEL

- Count the breaths in one minute
- Look for chest indrawing
- Look and listen for stridor

CHILD MUST BE CALM

Classify
**COUGH or
DIFFICULT
BREATHING**

If the child is 2 months up to 12 months	Fast breathing is 50 breaths per minute or more
12 months up to 5 years	40 breaths per minute or more

SIGNS

CLASSIFY AS

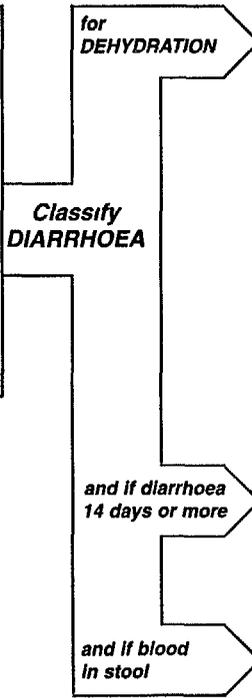
TREATMENT

(Urgent pre-referral treatments are in bold print.)

<ul style="list-style-type: none"> • Any general danger sign or • Chest indrawing or • Stridor in calm child 	<p>SEVERE PNEUMONIA OR VERY SEVERE DISEASE</p>	<ul style="list-style-type: none"> ▶ Give first dose of an appropriate antibiotic. ▶ Refer URGENTLY to hospital *
Fast breathing	PNEUMONIA	<ul style="list-style-type: none"> ▶ Give an appropriate antibiotic for 5 days ▶ Soothe the throat and relieve the cough with a safe remedy ▶ Advise mother when to return immediately ▶ Follow up in 2 days
No signs of pneumonia or very severe disease	NO PNEUMONIA COUGH OR COLD	<ul style="list-style-type: none"> ▶ If coughing more than 30 days refer for assessment. ▶ Soothe the throat and relieve the cough with a safe remedy ▶ Advise mother when to return immediately ▶ Follow-up in 5 days if not improving

Does the child have diarrhoea?

IF YES, ASK	LOOK AND FEEL
For how long? Is there blood in the stool?	Look at the child's general condition Is the child Lethargic or unconscious? Restless and irritable? Look for sunken eyes Offer the child fluid Is the child Not able to drink or drinking poorly? Drinking eagerly thirsty? Pinch the skin of the abdomen Does it go back Very slowly (longer than 2 seconds)? Slowly?



Two of the following signs Lethargic or unconscious • Sunken eyes Not able to drink or drinking poorly • Skin pinch goes back very slowly	SEVERE DEHYDRATION	<ul style="list-style-type: none"> ▶ If child has no other severe classification Give fluid for severe dehydration (Plan C) OR ▶ <i>If child also has another severe classification Refer URGENTLY to hospital with mother giving frequent sips of ORS on the way Advise the mother to continue breastfeeding</i> ▶ <i>If child is 2 years or older and there is cholera in your area, give antibiotic for cholera.</i>
Two of the following signs Restless irritable Sunken eyes Drinks eagerly thirsty Skin pinch goes back slowly	SOME DEHYDRATION	<ul style="list-style-type: none"> ▶ Give fluid and food for some dehydration (Plan B) ▶ <i>If child also has a severe classification Refer URGENTLY to hospital with mother giving frequent sips of ORS on the way Advise mother to continue breastfeeding</i> ▶ Advise mother when to return immediately ▶ Follow up in 5 days if not improving
Not enough signs to classify as some or severe dehydration	NO DEHYDRATION	<ul style="list-style-type: none"> ▶ Give fluid and food to treat diarrhoea at home (Plan A) ▶ Advise mother when to return immediately ▶ Follow up in 5 days if not improving
Dehydration present	SEVERE PERSISTENT DIARRHOEA	<ul style="list-style-type: none"> ▶ Treat dehydration before referral unless the child has another severe classification ▶ Refer to hospital
No dehydration	PERSISTENT DIARRHOEA	<ul style="list-style-type: none"> ▶ Advise the mother on feeding a child who has PERSISTENT DIARRHOEA ▶ Follow up in 5 days
Blood in the stool	DYSENTERY	<ul style="list-style-type: none"> ▶ <i>Treat for 5 days with an oral antibiotic recommended for Shigella in your area</i> ▶ Follow up in 2 days

If referral is not possible manage the child as described in Management of Childhood Illness Treat the Child Annex Where Referral Is Not Possible and WHO guidelines for inpatient care

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Does the child have fever?

(by history or feels hot or temperature 37.5 C ° or above)

IF YES
Decide Malaria Risk high or low

THEN ASK

For how long?
If more than 7 days has fever been present every day?
Has the child had measles within the last 3 months?

LOOK AND FEEL

Look or feel for stiff neck
Look for runny nose
Look for signs of MEASLES
Generalized rash and
One of these cough runny nose or red eyes

If the child has measles now or within the last 3 months

Look for mouth ulcers
Are they deep and extensive?
Look for pus draining from the eye
Look for clouding of the cornea

Classify FEVER

High Malaria Risk

Any general danger sign or Stiff neck	VERY SEVERE FEBRILE DISEASE	<ul style="list-style-type: none"> ▶ Give quinine for severe malaria (first dose). ▶ Give first dose of an appropriate antibiotic. ▶ Treat the child to prevent low blood sugar ▶ Give one dose of paracetamol in clinic for high fever (38.5 C or above). ▶ Refer URGENTLY to hospital
Fever (by history or feels hot or temperature 37.5 C or above)	MALARIA	<ul style="list-style-type: none"> ▶ If NO cough with fast breathing treat with oral antimalarial OR ▶ If cough with fast breathing treat with cotrimoxazole for 5 days ▶ Give one dose of paracetamol in clinic for high fever (38.5 C or above) ▶ Advise mother when to return immediately ▶ Follow up in 2 days if fever persists ▶ If fever is present every day for more than 7 days refer for assessment.

Low Malaria Risk

Any general danger sign or Stiff neck	VERY SEVERE FEBRILE DISEASE	<ul style="list-style-type: none"> ▶ Give quinine for severe malaria (first dose) unless no malaria risk. ▶ Give first dose of an appropriate antibiotic. ▶ Treat the child to prevent low blood sugar ▶ Give one dose of paracetamol in clinic for high fever (38.5 C or above) ▶ Refer URGENTLY to hospital
NO runny nose and NO measles and NO other cause of fever	MALARIA	<ul style="list-style-type: none"> ▶ If NO cough with fast breathing treat with oral antimalarial OR ▶ If cough with fast breathing treat with cotrimoxazole for 5 days ▶ Give one dose of paracetamol in clinic for high fever (38.5 C or above) ▶ Advise mother when to return immediately ▶ Follow up in 2 days if fever persists ▶ If fever is present every day for more than 7 days refer for assessment
Runny nose PRESENT or Measles PRESENT or Other cause of fever PRESENT	FEVER MALARIA UNLIKELY	<ul style="list-style-type: none"> ▶ Give one dose of paracetamol in clinic for high fever (38.5 C or above). ▶ Advise mother when to return immediately ▶ Follow up in 2 days if fever persists ▶ If fever is present every day for more than 7 days refer for assessment.

If MEASLES now or within last 3 months Classify

Any general danger sign or Clouding of cornea or Deep or extensive mouth ulcers	SEVERE COMPLICATED MEASLES***	<ul style="list-style-type: none"> ▶ Give Vitamin A. ▶ Give first dose of an appropriate antibiotic. ▶ If clouding of the cornea or pus draining from the eye apply tetracycline eye ointment. ▶ Refer URGENTLY to hospital
Pus draining from the eye or Mouth ulcers	MEASLES WITH EYE OR MOUTH COMPLICATIONS***	<ul style="list-style-type: none"> ▶ Give Vitamin A ▶ If pus draining from the eye treat eye infection with tetracycline eye ointment. ▶ If mouth ulcers treat with gentian violet ▶ Follow up in 2 days
Measles now or within the last 3 months	MEASLES	<ul style="list-style-type: none"> ▶ Give Vitamin A.

These temperatures are based on axillary temperature Rectal temperature readings are approximately 0.5 C higher
Other important complications of measles pneumonia stndor diarrhoea ear infection and malnutrition are classified in other tables

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Does the child have an ear problem?

IF YES, ASK

Is there ear pain?
Is there ear discharge?
If yes for how long?

LOOK AND FEEL

Look for pus draining from the ear
Feel for tender swelling behind the ear

Classify EAR PROBLEM

<ul style="list-style-type: none"> • Tender swelling behind the ear 	MASTOIDITIS	<ul style="list-style-type: none"> ▶ Give first dose of an appropriate antibiotic ▶ Give first dose of paracetamol for pain ▶ Refer URGENTLY to hospital
Pus is seen draining from the ear and discharge is reported for less than 14 days or Ear pain	ACUTE EAR INFECTION	<ul style="list-style-type: none"> ▶ Give an antibiotic for 5 days ▶ Give paracetamol for pain ▶ Dry the ear by wicking ▶ Follow up in 5 days
Pus is seen draining from the ear and discharge is reported for 14 days or more	CHRONIC EAR INFECTION	<ul style="list-style-type: none"> ▶ Dry the ear by wicking ▶ Follow up in 5 days
No ear pain and No pus seen draining from the ear	NO EAR INFECTION	No additional treatment

THEN CHECK FOR MALNUTRITION AND ANAEMIA

<p>LOOK AND FEEL</p> <p>Look for visible severe wasting</p> <p>Look for palmar pallor Is it</p> <p>Severe palmar pallor? Some palmar pallor?</p> <p>Look for oedema of both feet</p> <p>Determine weight for age</p>	<p>Classify NUTRITIONAL STATUS</p>	<ul style="list-style-type: none"> Visible severe wasting or Severe palmar pallor or Oedema of both feet 	<p>SEVERE MALNUTRITION OR SEVERE ANAEMIA</p>	<ul style="list-style-type: none"> Give Vitamin A. Refer URGENTLY to hospital
		<ul style="list-style-type: none"> Some palmar pallor or Very low weight for age 	<p>ANAEMIA OR VERY LOW WEIGHT</p>	<ul style="list-style-type: none"> Assess the child's feeding and counsel the mother on feeding according to the FOOD box on the <i>COUNSEL THE MOTHER</i> chart. If feeding problem follow up in 5 days If pallor Give iron Give oral antimalarial if high malaria risk. Give mebendazole if child is 2 years or older and has not had a dose in the previous 6 months Advise mother when to return immediately If pallor follow up in 14 days. If very low weight for age follow up in 30 days
		<ul style="list-style-type: none"> Not very low weight for age and no other signs of malnutrition 	<p>NO ANAEMIA AND NOT VERY LOW WEIGHT</p>	<ul style="list-style-type: none"> If child is less than 2 years old assess the child's feeding and counsel the mother on feeding according to the FOOD box on the <i>COUNSEL THE MOTHER</i> chart. If feeding problem follow-up in 5 days Advise mother when to return immediately

THEN CHECK THE CHILD'S IMMUNIZATION STATUS

IMMUNIZATION SCHEDULE	AGE	VACCINE
	Birth	BCG OPV 0
	6 weeks	DPT 1 OPV 1
	10 weeks	DPT 2 OPV 2
	14 weeks	DPT 3 OPV 3
	9 months	Measles

ASSESS OTHER PROBLEMS

MAKE SURE CHILD WITH ANY GENERAL DANGER SIGN IS REFERRED after first dose of an appropriate antibiotic and other urgent treatments

Exception Rehydration of the child according to Plan C may resolve danger signs so that referral is no longer needed

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TREAT THE CHILD



CARRY OUT THE TREATMENT STEPS IDENTIFIED ON
THE ASSESS AND CLASSIFY CHART

TEACH THE MOTHER TO GIVE ORAL DRUGS AT HOME

Follow the instructions below for every oral drug to be given at home
Also follow the instructions listed with each drug's dosage table

- ▶ Determine the appropriate drugs and dosage for the child's age or weight
- ▶ Tell the mother the reason for giving the drug to the child
- ▶ Demonstrate how to measure a dose
- ▶ Watch the mother practice measuring a dose by herself
- ▶ Ask the mother to give the first dose to her child
- ▶ Explain carefully how to give the drug then label and package the drug
- ▶ If more than one drug will be given, collect, count and package each drug separately
- ▶ Explain that all the oral drug tablets or syrups must be used to finish the course of treatment, even if the child gets better
- ▶ Check the mother's understanding before she leaves the clinic

▶ Give an Appropriate Oral Antibiotic

▶ FOR PNEUMONIA ACUTE EAR INFECTION OR VERY SEVERE DISEASE

FIRST LINE ANTIBIOTIC

SECOND LINE ANTIBIOTIC

AGE or WEIGHT	COTRIMOXAZOLE (trimethoprim + sulphamethoxazole) ▶ Give two times daily for 5 days			AMOXICILLIN ▶ Give three times daily for 5 days	
	ADULT TABLET 80 mg trimethoprim + 400 mg sulphamethoxazole	PEDIATRIC TABLET 20 mg trimethoprim 100 mg sulphamethoxazole	SYRUP 40 mg trimethoprim 200 mg sulphamethoxazole per 5 ml	TABLET 250 mg	SYRUP 125 mg per 5 ml
2 months up to 12 months (4 < 10 kg)	1/2	2	5.0 ml	1/2	5 ml
12 months up to 5 years (10 - 19 kg)	1	3	7.5 ml	1	10 ml

▶ FOR DYSENTERY

Give antibiotic recommended for Shigella in your area for 5 days

FIRST LINE ANTIBIOTIC FOR SHIGELLA

SECOND LINE ANTIBIOTIC FOR SHIGELLA

AGE or WEIGHT	COTRIMOXAZOLE (trimethoprim + sulphamethoxazole) ▶ Give two times daily for 5 days	NALIDIXIC ACID ▶ Give four times daily for 5 days
	See doses above	TABLET 250 mg
2 months up to 4 months (4 < 6 kg)		1/4
4 months up to 12 months (6 < 10 kg)		1/2
12 months up to 5 years (10 - 19 kg)		1

▶ FOR CHOLERA

Give antibiotic recommended for Cholera in your area for 5 days

FIRST LINE ANTIBIOTIC FOR CHOLERA

SECOND LINE ANTIBIOTIC FOR CHOLERA

AGE or WEIGHT	TETRACYCLINE ▶ Give four times daily for 3 days	COTRIMOXAZOLE (trimethoprim + sulphamethoxazole) ▶ Give two times daily for 3 days	ERYTHROMYCIN ▶ Give four times daily for 3 days	FURAZOLIDONE ▶ Give four times daily for 3 days
	TABLET 250 mg	See doses above	TABLET 250 mg	TABLET 100 mg
2 months up to 4 months (4 < 6 kg)			1/4	
4 months up to 12 months (6 < 10 kg)	1/2		1/2	
12 months up to 5 years (10 - 19 kg)	1		1	1/4

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ANTIBIOTICS

MALNUTRITION and ANAEMIA
IMMUNIZATION STATUS

TREAT

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TEACH THE MOTHER TO GIVE ORAL DRUGS AT HOME

Follow the instructions below for every oral drug to be given at home
Also follow the instructions listed with each drug's dosage table

► Give an Oral Antimalarial

FIRST LINE ANTIMALARIAL

SECOND LINE ANTIMALARIAL

► IF CHLOROQUINE

Explain to the mother that she should watch her child carefully for 30 minutes after giving a dose of chloroquine. If the child vomits within 30 minutes she should repeat the dose and return to the clinic for additional tablets.

Explain that itching is a possible side effect of the drug but is not dangerous.

► IF SULFADOXINE + PYRIMETHAMINE Give single dose in clinic

CHLOROQUINE ► Give for 3 days									SULFADOXINE + PYRIMETHAMINE ► Give single dose in clinic	
AGE or WEIGHT	TABLET (150 mg base)			TABLET (100 mg base)			SYRUP (50 mg base per 5 ml)			TABLET (500 mg sulfadoxine + 25 mg pyrimethamine)
	DAY 1	DAY 2	DAY 3	DAY 1	DAY 2	DAY 3	DAY 1	DAY 2	DAY 3	
2 months up to 12 months (4 < 10 kg)	1/2	1/2	1/2	1	1	1/2	7.5 ml	7.5 ml	5.0 ml	1/2
12 months up to 3 years (10 < 14 kg)	1	1	1/2	1 1/2	1 1/2	1/2	15.0 ml	15.0 ml	5.0 ml	1
3 years up to 5 years (14 - 19 kg)	1 1/2	1 1/2	1/2	2	2	1				1

► Give Paracetamol for High Fever (> 38.5°C) or Ear Pain

► Give paracetamol every 6 hours until high fever or ear pain is gone

PARACETAMOL		
AGE or WEIGHT	TABLET (100 mg)	TABLET (500 mg)
2 months up to 3 years (4 - 14 kg)	1	1/4
3 years up to 5 years (14 - 19 kg)	1 1/2	1/2

► Give Vitamin A

► Give two doses

Give first dose in clinic

• Give mother one dose to give at home the next day

AGE	VITAMIN A CAPSULES			VITAMIN A SYRUP
	200 000 IU	100 000 IU	50 000 IU	Concentration _____
Up to 6 months		1/2 capsule	1 capsule	
6 months up to 12 months	1/2 capsule	1 capsule	2 capsules	
12 months up to 5 years	1 capsule	2 capsules	4 capsules	

► Give Iron

► Give one dose daily for 14 days

AGE or WEIGHT	IRON/FOLATE TABLET	IRON SYRUP
	Ferrous sulfate 200 mg + 250 mcg Folate (60 mg elemental iron)	Ferrous fumarate 100 mg per 5 ml (20 mg elemental iron per ml)
2 months up to 4 months (4 < 6 kg)		1.00 ml (< 1/4 tsp)
4 months up to 12 months (6 - 10 kg)		1.25 ml (1/4 tsp)
12 months up to 3 years (10 < 14 kg)	1/2 tablet	2.00 ml (< 1/2 tsp)
3 years up to 5 years (14 - 19 kg)	1/2 tablet	2.5 ml (1/2 tsp)

► Give Mebendazole

► Give 500 mg mebendazole as a single dose in clinic if hookworm/whipworm are a problem in children in your area and the child is 2 years of age or older and the child has not had a dose in the previous 6 months

TEACH THE MOTHER TO TREAT LOCAL INFECTIONS AT HOME

- ▶ Explain to the mother what the treatment is and why it should be given
- ▶ Describe the treatment steps listed in the appropriate box
- ▶ Watch the mother as she does the first treatment in the clinic (except remedy for cough or sore throat)
- ▶ Tell her how often to do the treatment at home
- ▶ If needed for treatment at home, give mother the tube of tetracycline ointment or a small bottle of gentian violet
- ▶ Check the mother's understanding before she leaves the clinic

▶ *Treat Eye Infection with Tetracycline Eye Ointment*

- ▶ Clean both eyes 3 times daily
 - Wash hands
 - Ask child to close the eye
 - Use clean cloth and water to gently wipe away pus
- ▶ Then apply tetracycline eye ointment in both eyes 3 times daily
 - Ask the child to look up
 - Squirt a small amount of ointment on the inside of the lower lid
 - Wash hands again
- ▶ Treat until redness is gone
- ▶ Do not use other eye ointments or drops or put anything else in the eye

▶ *Dry the Ear by Wicking*

- ▶ Dry the ear at least 3 times daily
 - Roll clean absorbent cloth or soft strong tissue paper into a wick
 - Place the wick in the child's ear
 - Remove the wick when wet
 - Replace the wick with a clean one and repeat these steps until the ear is dry

▶ *Treat Mouth Ulcers with Gentian Violet*

- ▶ Treat the mouth ulcers twice daily
 - Wash hands
 - Wash the child's mouth with clean soft cloth wrapped around the finger and wet with salt water
 - Paint the mouth with half strength gentian violet
 - Wash hands again

▶ *Soothe the Throat, Relieve the Cough with a Safe Remedy*

Safe remedies to recommend
Breastmilk for exclusively breastfed infant

- Harmful remedies to discourage _____

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GIVE THESE TREATMENTS IN CLINIC ONLY

- ▶ Explain to the mother why the drug is given
- ▶ Determine the dose appropriate for the child's weight (or age)
- ▶ Use a sterile needle and sterile syringe Measure the dose accurately
- ▶ Give the drug as an intramuscular injection
- ▶ If child cannot be referred, follow the instructions provided

▶ Give An Intramuscular Antibiotic

FOR CHILDREN BEING REFERRED URGENTLY WHO CANNOT TAKE AN ORAL ANTIBIOTIC

- ▶ Give first dose of intramuscular chloramphenicol and refer child urgently to hospital

IF REFERRAL IS NOT POSSIBLE

- ▶ Repeat the chloramphenicol injection every 12 hours for 5 days
- ▶ Then change to an appropriate oral antibiotic to complete 10 days of treatment

AGE or WEIGHT	CHLORAMPHENICOL Dose 40 mg per kg Add 5.0 ml sterile water to vial containing 1000 mg = 5.6 ml at 180 mg/ml
2 months up to 4 months (4 < 6 kg)	1.0 ml = 180 mg
4 months up to 9 months (6 < 8 kg)	1.5 ml = 270 mg
9 months up to 12 months (8 < 10 kg)	2.0 ml = 360 mg
12 months up to 3 years (10 < 14 kg)	2.5 ml = 450 mg
3 years up to 5 years (14 - 19 kg)	3.5 ml = 630 mg

▶ Give Quinine for Severe Malaria

FOR CHILDREN BEING REFERRED WITH VERY SEVERE FEBRILE DISEASE

- ▶ Check which quinine formulation is available in your clinic
- ▶ Give first dose of intramuscular quinine and refer child urgently to hospital

IF REFERRAL IS NOT POSSIBLE

- ▶ Give first dose of intramuscular quinine
- ▶ The child should remain lying down for one hour
- ▶ Repeat the quinine injection at 4 and 8 hours later and then every 12 hours until the child is able to take an oral antimalarial. Do not continue quinine injections for more than 1 week
- ▶ If low risk of malaria do not give quinine to a child less than 4 months of age

AGE or WEIGHT	INTRAMUSCULAR QUININE	
	150 mg/ml (in 2 ml ampoules)	300 mg/ml (in 2 ml ampoules)
2 months up to 4 months (4 < 6 kg)	0.4 ml	0.2 ml
4 months up to 12 months (6 < 10 kg)	0.6 ml	0.3 ml
12 months up to 2 years (10 < 12 kg)	0.8 ml	0.4 ml
2 years up to 3 years (12 < 14 kg)	1.0 ml	0.5 ml
3 years up to 5 years (14 - 19 kg)	1.2 ml	0.6 ml

quinine salt

▶ ***Treat the Child
to Prevent Low Blood Sugar***

▶ ***If the child is able to breastfeed***

Ask the mother to breastfeed the child

▶ ***If the child is not able to breastfeed but is able to swallow***

Give expressed breastmilk or a breastmilk substitute

If neither of these is available give sugar water

Give 30-50 ml of milk or sugar water before departure

**To make sugar water Dissolve 4 level teaspoons of sugar
(20 grams) in a 200 ml cup of clean water**

▶ ***If the child is not able to swallow***

Give 50 ml of milk or sugar water by nasogastric tube

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GIVE EXTRA FLUID FOR DIARRHOEA AND CONTINUE FEEDING

(See FOOD advice on COUNSEL THE MOTHER chart)

► Plan A. Treat Diarrhoea at Home

Counsel the mother on the 3 Rules of Home Treatment
Give Extra Fluid, Continue Feeding, When to Return

1 GIVE EXTRA FLUID (as much as the child will take)

► TELL THE MOTHER

Breastfeed frequently and for longer at each feed
 If the child is exclusively breastfed give ORS or clean water in addition to breastmilk

If the child is not exclusively breastfed give one or more of the following ORS solution food based fluids (such as soup rice water and yoghurt drinks) or clean water

It is especially important to give ORS at home when
the child has been treated with Plan B or Plan C during this visit
the child cannot return to a clinic if the diarrhoea gets worse

► TEACH THE MOTHER HOW TO MIX AND GIVE ORS GIVE THE MOTHER 2 PACKETS OF ORS TO USE AT HOME

► SHOW THE MOTHER HOW MUCH FLUID TO GIVE IN ADDITION TO THE USUAL FLUID INTAKE

Up to 2 years 50 to 100 ml after each loose stool
 2 years or more 100 to 200 ml after each loose stool

Tell the mother to

Give frequent small sips from a cup
 If the child vomits wait 10 minutes Then continue but more slowly
Continue giving extra fluid until the diarrhoea stops.

2 CONTINUE FEEDING

3 WHEN TO RETURN

} See COUNSEL THE MOTHER chart

► Plan B: Treat Some Dehydration with ORS

Give in clinic recommended amount of ORS over 4-hour period

► DETERMINE AMOUNT OF ORS TO GIVE DURING FIRST 4 HOURS

AGE	Up to 4 months	4 months up to 12 months	12 months up to 2 years	2 years up to 5 years
WEIGHT	< 6 kg	6 - 10 kg	10 - 12 kg	12 - 19 kg
In ml	200 400	400 700	700 900	900 1400

Use the child's age only when you do not know the weight The approximate amount of ORS required (in ml) can also be calculated by multiplying the child's weight (in kg) times 75

- If the child wants more ORS than shown give more
- For infants under 6 months who are not breastfed also give 100 200 ml clean water during this period

► SHOW THE MOTHER HOW TO GIVE ORS SOLUTION

- Give frequent small sips from a cup
 If the child vomits wait 10 minutes Then continue but more slowly
- Continue breastfeeding whenever the child wants

► AFTER 4 HOURS

- Reassess the child and classify the child for dehydration
- Select the appropriate plan to continue treatment
 Begin feeding the child in clinic

► IF THE MOTHER MUST LEAVE BEFORE COMPLETING TREATMENT

- Show her how to prepare ORS solution at home
- Show her how much ORS to give to finish the 4 hour treatment at home
- Give her enough ORS packets to complete rehydration Also give her 2 packets as recommended in Plan A
- Explain the 3 Rules of Home Treatment

1 GIVE EXTRA FLUID

2 CONTINUE FEEDING

3 WHEN TO RETURN

} See Plan A for recommended fluids
 and
 See COUNSEL THE MOTHER chart

GIVE EXTRA FLUID FOR DIARRHOEA AND CONTINUE FEEDING

(See FOOD advice on COUNSEL THE MOTHER chart)

► Plan C Treat Severe Dehydration Quickly

► FOLLOW THE ARROWS IF ANSWER IS YES, GO ACROSS IF NO, GO DOWN

START HERE

Can you give intravenous (IV) fluid immediately?

YES →

Start IV fluid immediately. If the child can drink, give ORS by mouth while the drip is set up. Give 100 ml/kg Ringer's Lactate Solution (or if not available, normal saline) divided as follows:

AGE	First give 30 ml/kg in	Then give 70 ml/kg in
Infants (under 12 months)	1 hour	5 hours
Children (12 months up to 5 years)	30 minutes	2 1/2 hours

Repeat once if radial pulse is still very weak or not detectable

Reassess the child every 1-2 hours. If hydration status is not improving, give the IV drip more rapidly. Also give ORS (about 5 ml/kg/hour) as soon as the child can drink, usually after 3-4 hours (infants) or 1-2 hours (children). Reassess an infant after 6 hours and a child after 3 hours. Classify dehydration. Then choose the appropriate plan (A, B, or C) to continue treatment.

NO ↓

Is IV treatment available nearby (within 30 minutes)?

YES →

Refer URGENTLY to hospital for IV treatment. If the child can drink, provide the mother with ORS solution and show her how to give frequent sips during the trip.

NO ↓

Are you trained to use a naso-gastric (NG) tube for rehydration?

YES →

Start rehydration by tube (or mouth) with ORS solution, give 20 ml/kg/hour for 6 hours (total of 120 ml/kg). Reassess the child every 1-2 hours. If there is repeated vomiting or increasing abdominal distension, give the fluid more slowly. If hydration status is not improving after 3 hours, send the child for IV therapy. After 6 hours, reassess the child. Classify dehydration. Then choose the appropriate plan (A, B, or C) to continue treatment.

NO ↓

Can the child drink?

NO ↓

Refer URGENTLY to hospital for IV or NG treatment

NOTE

If possible, observe the child at least 6 hours after rehydration to be sure the mother can maintain hydration giving the child ORS solution by mouth.

IMMUNIZE EVERY SICK CHILD, AS NEEDED

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GIVE FOLLOW-UP CARE

- ▶ Care for the child who returns for follow up using all the boxes that match the child's previous classifications
- ▶ If the child has any new problem, assess, classify and treat the new problem as on the **ASSESS AND CLASSIFY** chart

▶ PNEUMONIA

After 2 days

Check the child for general danger signs
Assess the child for cough or difficult breathing } See **ASSESS & CLASSIFY** chart
Ask

- Is the child breathing slower?
- Is there less fever?
- Is the child eating better?

Treatment

- ▶ If **chest indrawing or a general danger sign** give a dose of second line antibiotic or intramuscular chloramphenicol. Then refer **URGENTLY** to hospital
- ▶ If **breathing rate, fever and eating are the same** change to the second line antibiotic and advise the mother to return in 2 days or refer (If this child had measles within the last 3 months refer)
- ▶ If **breathing slower less fever or eating better** complete the 5 days of antibiotic

▶ PERSISTENT DIARRHOEA

After 5 days

Ask

- Has the diarrhoea stopped?
- How many loose stools is the child having per day?

Treatment

- ▶ If **the diarrhoea has not stopped (child is still having 3 or more loose stools per day)** do a full reassessment of the child. Give any treatment needed. Then refer to hospital
- ▶ If **the diarrhoea has stopped (child having less than 3 loose stools per day)** tell the mother to follow the usual feeding recommendations for the child's age

▶ DYSENTERY

After 2 days

Assess the child for diarrhoea > See **ASSESS & CLASSIFY** chart
Ask

- Are there fewer stools?
- Is there less blood in the stool?
- Is there less fever?
- Is there less abdominal pain?
- Is the child eating better?

Treatment

- ▶ If the child is **dehydrated** treat dehydration
- ▶ If **number of stools, amount of blood in stools fever abdominal pain or eating is the same or worse**

Change to second line oral antibiotic recommended for Shigella in your area. Give it for 5 days. Advise the mother to return in 2 days

Exceptions if the child is less than 12 months old or was dehydrated on the first visit or had measles within the last 3 months } Refer to hospital

- ▶ If **fewer stools less blood in the stools less fever less abdominal pain and eating better** continue giving the same antibiotic until finished

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GIVE FOLLOW-UP CARE

- ▶ Care for the child who returns for follow-up using all the boxes that match the child's previous classifications
- ▶ If the child has any new problem, assess, classify and treat the new problem as on the **ASSESS AND CLASSIFY** chart.

▶ MALARIA (Low or High Malaria Risk)

If fever persists after 2 days or returns within 14 days

Do a full reassessment of the child > See **ASSESS & CLASSIFY** chart
Assess for other causes of fever

Treatment

- ▶ If the child has **any general danger sign or stiff neck** treat as VERY SEVERE FEBRILE DISEASE
- ▶ If the child has any **cause of fever other than malaria** provide treatment
- ▶ If **malaria is the only apparent cause of fever**

Treat with the second line oral antimalarial (If no second line antimalarial is available refer to hospital) Advise the mother to return again in 2 days if the fever persists

If fever has been present for 7 days refer for assessment

▶ FEVER-MALARIA UNLIKELY (Low Malaria Risk)

If fever persists after 2 days

Do a full reassessment of the child > See **ASSESS & CLASSIFY** chart
Assess for other causes of fever

Treatment

- ▶ If the child has **any general danger sign or stiff neck** treat as VERY SEVERE FEBRILE DISEASE
- ▶ If the child has any **cause of fever other than malaria** provide treatment
- ▶ If **malaria is the only apparent cause of fever**

Treat with first line oral antimalarial Advise the mother to return again in 2 days if the fever persists

If fever has been present for 7 days refer for assessment

▶ MEASLES WITH EYE OR MOUTH COMPLICATIONS

After 2 days

Look for red eyes and pus draining from the eyes
Look at mouth ulcers
Smell the mouth

Treatment for Eye Infection

- ▶ If **pus is still draining from the eye** ask the mother to describe how she has treated the eye infection If treatment has been correct refer to hospital If treatment has not been correct teach the mother correct treatment
- ▶ If **the pus is gone but redness remains** continue the treatment
- ▶ If **no pus or redness** stop the treatment

Treatment for Mouth Ulcers

- ▶ If **mouth ulcers are worse or there is a very foul smell from the mouth** refer to hospital
- ▶ If **mouth ulcers are the same or better** continue using half strength gentian violet for a total of 5 days

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GIVE FOLLOW-UP CARE

► **Care for the child who returns for follow up using all the boxes that match the child's previous classifications**

► **If the child has any new problem, assess, classify and treat the new problem as on the *ASSESS AND CLASSIFY* chart**

► EAR INFECTION

After 5 days

Reassess for ear problem > *See ASSESS & CLASSIFY chart*
Measure the child's temperature

Treatment

- If there is **tender swelling behind the ear or high fever (38.5 C or above)** refer **URGENTLY** to hospital
- **Acute ear infection** If **ear pain or discharge** persists treat with 5 more days of the same antibiotic Continue wicking to dry the ear Follow up in 5 days
- **Chronic ear infection** Check that the mother is wicking the ear correctly Encourage her to continue
- If **no ear pain or discharge** praise the mother for her careful treatment If she has not yet finished the 5 days of antibiotic tell her to use all of it before stopping

► FEEDING PROBLEM

After 5 days

Reassess feeding > *See questions at the top of the COUNSEL chart*
Ask about any feeding problems found on the initial visit

- Counsel the mother about any new or continuing feeding problems If you counsel the mother to make significant changes in feeding ask her to bring the child back again
- If the child is very low weight for age ask the mother to return 30 days after the initial visit to measure the child's weight gain

► PALLOR

After 14 days

- Give iron Advise mother to return in 14 days for more iron
- Continue giving iron every 14 days for 2 months
- If the child has palmar pallor after 2 months *refer for assessment*

► VERY LOW WEIGHT

After 30 days

Weigh the child and determine if the child is still very low weight for age
Reassess feeding > *See questions at the top of the COUNSEL chart*

Treatment

- If the child is **no longer very low weight for age** praise the mother and encourage her to continue
- If the child is still **very low weight for age** counsel the mother about any feeding problem found Ask the mother to return again in one month Continue to see the child monthly until the child is feeding well and gaining weight regularly or is no longer very low weight for age

Exception

If you do not think that feeding will improve or if the child has **lost weight** refer the child

**IF ANY MORE FOLLOW-UP VISITS ARE NEEDED
BASED ON THE INITIAL VISIT OR THIS VISIT,
ADVISE THE MOTHER OF THE
NEXT FOLLOW-UP VISIT**

**ALSO, ADVISE THE MOTHER
WHEN TO RETURN IMMEDIATELY
(SEE COUNSEL CHART)**

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COUNSEL THE MOTHER



FOOD

▶ *Assess the Child's Feeding*

Ask questions about the child's usual feeding and feeding during this illness. Compare the mother's answers to the *Feeding Recommendations* for the child's age in the box below.

ASK -

- ▶ Do you breastfeed your child?
 - How many times during the day?
 - Do you also breastfeed during the night?

- ▶ Does the child take any other food or fluids?
 - What food or fluids?
 - How many times per day?
 - What do you use to feed the child?
 - If very low weight for age: How large are servings? Does the child receive his own serving? Who feeds the child and how?

- ▶ During this illness, has the child's feeding changed? If yes, how?

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► **Feeding Recommendations During Sickness and Health**

Up to 4 Months of Age



- Breastfeed as often as the child wants day and night, at least 8 times in 24 hours
- Do not give other foods or fluids

4 Months up to 6 Months



- Breastfeed as often as the child wants day and night at least 8 times in 24 hours
- Only if the child shows interest in semisolid foods or appears hungry after breastfeeding or is not gaining weight adequately,

add complementary foods (listed under 6 months up to 12 months)

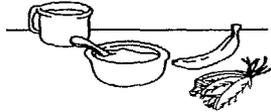
Give these foods 1 or 2 times per day after breastfeeding

6 Months up to 12 Months



- Breastfeed as often as the child wants
- Give adequate servings of

3 times per day if breastfed
- 5 times per day if not breastfed

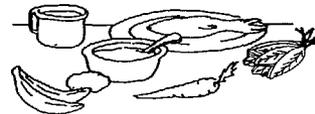


12 Months up to 2 Years



- Breastfeed as often as the child wants
- Give adequate servings of

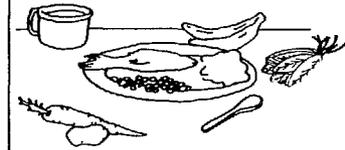
or family foods 5 times per day



2 Years and Older



- Give family foods at 3 meals each day Also twice daily give nutritious food between meals such as



A good daily diet should be adequate in quantity and include an energy rich food (for example thick cereal with added oil) meat fish eggs or pulses and fruits and vegetables

Feeding Recommendations For a Child Who Has PERSISTENT DIARRHOEA

- If still breastfeeding give more frequent longer breastfeeds day and night
- If taking other milk
replace with increased breastfeeding OR
replace with fermented milk products such as yoghurt OR
replace half the milk with nutrient rich semisolid food
- For other foods follow feeding recommendations for the child's age

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► Counsel the Mother About Feeding Problems

If the child is not being fed as described in the above recommendations, counsel the mother accordingly. In addition:



- If the mother reports difficulty with breastfeeding, assess breastfeeding (See *YOUNG INFANT* chart). As needed, show the mother correct positioning and attachment for breastfeeding.

- If the child is less than 4 months old and is taking other milk or foods:

Build mother's confidence that she can produce all the breastmilk that the child needs.
Suggest giving more frequent, longer breastfeeds, day and night, and gradually reducing other milk or foods.

If other milk needs to be continued, counsel the mother to:

Breastfeed as much as possible, including at night.
Make sure that other milk is a locally appropriate breastmilk substitute.
Make sure other milk is correctly and hygienically prepared and given in adequate amounts.
Finish prepared milk within an hour.



- If the mother is using a bottle to feed the child:

Recommend substituting a cup for bottle.
Show the mother how to feed the child with a cup.

- If the child is not being fed actively, counsel the mother to:

Sit with the child and encourage eating.
Give the child an adequate serving in a separate plate or bowl.



- If the child is not feeding well during illness, counsel the mother to:

Breastfeed more frequently and for longer if possible.
Use soft, varied, appetizing, favourite foods to encourage the child to eat as much as possible and offer frequent small feedings.
Clear a blocked nose if it interferes with feeding.
Expect that appetite will improve as child gets better.

- Follow-up any feeding problem in 5 days.

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FLUID

► Advise the Mother to Increase Fluid During Illness

FOR ANY SICK CHILD

- Breastfeed more frequently and for longer at each feed
- Increase fluid For example give soup rice water yoghurt drinks or clean water

FOR CHILD WITH DIARRHOEA

- Giving extra fluid can be lifesaving Give fluid according to Plan A or Plan B on *TREAT THE CHILD* chart

WHEN TO RETURN

► Advise the Mother When to Return to Health Worker

FOLLOW UP VISIT

Advise the mother to come for follow up at the earliest time listed for the child's problems

If the child has	Return for follow up in
PNEUMONIA DYSENTERY MALARIA if fever persists FEVER MALARIA UNLIKELY if fever persists MEASLES WITH EYE OR MOUTH COMPLICATIONS	2 days
PERSISTENT DIARRHOEA ACUTE EAR INFECTION CHRONIC EAR INFECTION FEEDING PROBLEM ANY OTHER ILLNESS if not improving	5 days
PALLOR	14 days
VERY LOW WEIGHT FOR AGE	30 days

NEXT WELL CHILD VISIT

Advise mother when to return for next immunization according to immunization schedule



WHEN TO RETURN IMMEDIATELY

Advise mother to return immediately if the child has any of these signs	
Any sick child	<ul style="list-style-type: none"> • Not able to drink or breastfeed • Becomes sicker • Develops a fever
If child has NO PNEUMONIA COUGH OR COLD also return if	<ul style="list-style-type: none"> • Fast breathing • Difficult breathing
If child has Diarrhoea also return if	<ul style="list-style-type: none"> • Blood in stool • Drinking poorly

bbr

▶ ***Counsel the Mother About Her Own Health***

- ▶ If the mother is sick, provide care for her, or refer her for help
- ▶ If she has a breast problem (such as engorgement, sore nipples, breast infection), provide care for her or refer her for help
- ▶ Advise her to eat well to keep up her own strength and health
- ▶ Check the mother's immunization status and give her tetanus toxoid if needed
- ▶ Make sure she has access to
 - Family planning
 - Counselling on STD and AIDS prevention



ASSESS, CLASSIFY AND TREAT THE SICK YOUNG INFANT AGE 1 WEEK UP TO 2 MONTHS

ASSESS

CLASSIFY

IDENTIFY TREATMENT

ASK THE MOTHER WHAT THE YOUNG INFANT S PROBLEMS ARE

- Determine if this is an initial or follow up visit for this problem
If follow up visit use the follow up instructions on the bottom of this chart
If initial visit assess the young infant as follows

USE ALL BOXES THAT MATCH INFANT S SYMPTOMS AND PROBLEMS TO CLASSIFY THE ILLNESS

CHECK FOR POSSIBLE BACTERIAL INFECTION		SIGNS	CLASSIFY AS	TREATMENT <small>(Urgent pre-referral treatments are in bold print.)</small>
<p>ASK</p> <p>Has the infant had convulsions?</p>	<p>LOOK, LISTEN, FEEL</p> <p>Count the breaths in one minute Repeat the count if elevated Look for severe chest indrawing Look for nasal flaring Look and listen for grunting</p> <p>• Look and feel for bulging fontanelle Look for pus draining from the ear Look at the umbilicus Is it red or draining pus? Does the redness extend to the skin? Measure temperature (or feel for fever or low body temperature) Look for skin pustules Are there many or severe pustules? See if the young infant is lethargic or unconscious Look at the young infant s movements Are they less than normal?</p>	<p>Classify ALL YOUNG INFANTS</p>	<p>POSSIBLE SERIOUS BACTERIAL INFECTION</p>	<p>▶ Give first dose of intramuscular antibiotics</p> <p>▶ Treat to prevent low blood sugar</p> <p>▶ Advise mother how to keep the infant warm on the way to the hospital</p> <p>▶ Refer URGENTLY to hospital **</p>
				<p>Red umbilicus or draining pus or Skin pustules</p>

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THEN ASK

Does the young infant have diarrhoea?

IF YES, ASK	LOOK AND FEEL
<ul style="list-style-type: none"> For how long? Is there blood in the stool? 	<p>Look at the young infant's general condition. Is the infant</p> <ul style="list-style-type: none"> Lethargic or unconscious? Restless and irritable?
<ul style="list-style-type: none"> Look for sunken eyes 	<p>Pinch the skin of the abdomen. Does it go back</p> <ul style="list-style-type: none"> Very slowly (longer than 2 seconds)? Slowly?

Classify DIARRHOEA

for DEHYDRATION

Two of the following signs <ul style="list-style-type: none"> Lethargic or unconscious Sunken eyes Skin pinch goes back very slowly 	SEVERE DEHYDRATION	<ul style="list-style-type: none"> If infant does not have POSSIBLE SERIOUS BACTERIAL INFECTION. Give fluid for severe dehydration (Plan C) OR If infant also has POSSIBLE SERIOUS BACTERIAL INFECTION. Refer URGENTLY to hospital with mother giving frequent sips of ORS on the way. Advise mother to continue breastfeeding.
Two of the following signs <ul style="list-style-type: none"> Restless irritable Sunken eyes Skin pinch goes back slowly 	SOME DEHYDRATION	<ul style="list-style-type: none"> Give fluid and food for some dehydration (Plan B) If infant also has POSSIBLE SERIOUS BACTERIAL INFECTION. Refer URGENTLY to hospital with mother giving frequent sips of ORS on the way. Advise mother to continue breastfeeding.
<ul style="list-style-type: none"> Not enough signs to classify as some or severe dehydration 	NO DEHYDRATION	<ul style="list-style-type: none"> Give fluids to treat diarrhoea at home (Plan A)

and if diarrhoea 14 days or more

<ul style="list-style-type: none"> Diarrhoea lasting 14 days or more 	SEVERE PERSISTENT DIARRHOEA	<ul style="list-style-type: none"> If the young infant is dehydrated treat dehydration before referral unless the infant has also POSSIBLE SERIOUS BACTERIAL INFECTION Refer to hospital
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and if blood in stool

<ul style="list-style-type: none"> Blood in the stool 	DYSENTERY	<ul style="list-style-type: none"> Treat for 5 days with an oral antibiotic recommended for Shigella in your area Follow up in 2 days
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These thresholds are based on axillary temperature. The thresholds for rectal temperature readings are approximately 0.5 C higher.

If referral is not possible see Management of Childhood Illness: Treat the Child Annex: Where Referral Is Not Possible.

THEN CHECK FOR FEEDING PROBLEM OR LOW WEIGHT.

<p>ASK</p> <ul style="list-style-type: none"> Is there any difficulty feeding? Is the infant breastfed? If yes how many times in 24 hours? Does the infant usually receive any other foods or drinks? If yes how often? What do you use to feed the infant? 	<p>LOOK, LISTEN, FEEL</p> <p>Determine weight for age</p>	<p>Classify FEEDING</p>	<ul style="list-style-type: none"> Not able to feed or No attachment at all or Not suckling at all 	<p>NOT ABLE TO FEED - POSSIBLE SERIOUS BACTERIAL INFECTION</p>	<ul style="list-style-type: none"> Give first dose of Intramuscular antibiotics Treat to prevent low blood sugar Advise the mother how to keep the young infant warm on the way to the hospital Refer URGENTLY to hospital
<p>IF AN INFANT Has any difficulty feeding Is breastfeeding less than 8 times in 24 hours Is taking any other foods or drinks, or Is low weight for age</p> <p>AND</p> <p>Has no indications to refer urgently to hospital</p>			<ul style="list-style-type: none"> Not well attached to breast or Not suckling effectively or Less than 8 breastfeeds in 24 hours or Receives other foods or drinks or Low weight for age or Thrush (ulcers or white patches in mouth) 	<p>FEEDING PROBLEM OR LOW WEIGHT</p>	<ul style="list-style-type: none"> Advise the mother to breastfeed as often and for as long as the infant wants day and night <ul style="list-style-type: none"> If not well attached or not suckling effectively teach correct positioning and attachment If breastfeeding less than 8 times in 24 hours advise to increase frequency of feeding If receiving other foods or drinks counsel mother about breastfeeding more reducing other foods or drinks and using a cup <ul style="list-style-type: none"> If not breastfeeding at all Refer for breastfeeding counselling and possible relactation Advise about correctly prepare breastmilk substitutes and using a cup If thrush teach the mother to treat thrush at home Advise mother to give home care for the young infant Follow up any feeding problem or thrush in 2 days Follow up low weight for age in 14 days
<p>ASSESS BREASTFEEDING</p> <p>Has the infant breastfed in the previous hour?</p> <p>If the infant has not fed in the previous hour ask the mother to put her infant to the breast Observe the breastfeed for 4 minutes (If the infant was fed during the last hour ask the mother if she can wait and tell you when the infant is willing to feed again)</p> <p>Is the infant able to attach? no attachment at all not well attached good attachment</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <p>TO CHECK ATTACHMENT LOOK FOR</p> <ul style="list-style-type: none"> Chin touching breast Mouth wide open Lower lip turned outward More areola visible above than below the mouth <p>(All of these signs should be present if the attachment is good)</p> </div> <p>Is the infant suckling effectively (that is slow deep sucks sometimes pausing)? not suckling at all not suckling effectively suckling effectively</p> <p>Clear a blocked nose if it interferes with breastfeeding</p> <p>Look for ulcers or white patches in the mouth (thrush)</p>		<ul style="list-style-type: none"> Not low weight for age and no other signs of inadequate feeding 	<p>NO FEEDING PROBLEM</p>	<ul style="list-style-type: none"> Advise mother to give home care for the young infant Praise the mother for feeding the infant well 	

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THEN CHECK THE YOUNG INFANT'S IMMUNIZATION STATUS:

IMMUNIZATION SCHEDULE		AGE	VACCINE
		Birth	BCG
		6 weeks	DPT 1
		10 weeks	DPT 2
			OPV 0
			OPV 1
			OPV 2

ASSESS OTHER PROBLEMS

TREAT THE YOUNG INFANT AND COUNSEL THE MOTHER

► Give an Appropriate Oral Antibiotic

For local bacterial infection

First line antibiotic _____

Second line antibiotic _____

AGE or WEIGHT	COTRIMOXAZOLE trimethoprim + sulphamethoxazole ► Give 2 times daily for 5 days			AMOXYCILLIN ► Give 3 times daily for 5 days	
	Adult Tablet single strength (80 mg trimethoprim + 400 mg sulphamethoxazole)	Pediatric Tablet (20 mg trimethoprim +100 mg sulphamethoxazole)	Syrup (40 mg trimethoprim +200 mg sulphamethoxazole)	Tablet 250 mg	Syrup 125 mg in 5 ml
Birth to 1 month (< 3 kg)		1/2	1.25 ml		1.25 ml
1 month to 2 months (3-4 kg)	1/4	1	2.5 ml	1/4	2.5 ml

Avoid cotrimoxazole in infants less than 1 month of age who are premature or jaundiced

For dysentery

Give antibiotic recommended for Shigella in your area for 5 days

First line antibiotic for Shigella _____

Second line antibiotic for Shigella _____

► Give First Dose of Intramuscular Antibiotics

► Give first dose of both benzylpenicillin and gentamicin intramuscular

WEIGHT	GENTAMICIN Dose 2.5 mg per kg		BENZYLPENICILLIN Dose 50 000 units per kg	
	Undiluted 2 ml vial containing 20 mg = 2 ml at 10 mg/ml	OR Add 6 ml sterile water to 2 ml vial containing 80 mg = 8 ml at 10 mg/ml	To a vial of 600 mg (1 000 000 units) Add 2.1 ml sterile water = 2.5 ml at 400 000 units/ml	OR Add 3.6 ml sterile water = 4.0 ml at 250 000 units/ml
1 kg		0.25 ml	0.1 ml	0.2 ml
2 kg		0.50 ml	0.2 ml	0.4 ml
3 kg		0.75 ml	0.4 ml	0.6 ml
4 kg		1.00 ml	0.5 ml	0.8 ml
5 kg		1.25 ml	0.6 ml	1.0 ml

Avoid using undiluted 40mg/ml gentamicin. The dose is 1/4 of that listed

► Referral is the best option for a young infant classified with POSSIBLE SERIOUS BACTERIAL INFECTION. If referral is not possible, give benzylpenicillin and gentamicin for at least 5 days. Give benzylpenicillin every 6 hours plus gentamicin every 8 hours. For infants in the first week of life, give gentamicin every 12 hours.

TREAT THE YOUNG INFANT AND COUNSEL THE MOTHER

▶ **To Treat Diarrhoea, See TREAT THE CHILD Chart**

▶ **Immunize Every Sick Young Infant, as Needed**

▶ **Teach the Mother to Treat Local Infections at Home**

- ▶ Explain how the treatment is given
- ▶ Watch her as she does the first treatment in the clinic
- ▶ Tell her to do the treatment twice daily She should return to the clinic if the infection worsens

To Treat Skin Pustules or Umbilical Infection

The mother should

- ▶ Wash hands
- ▶ Gently wash off pus and crusts with soap and water
- ▶ Dry the area
- ▶ Paint with gentian violet
- ▶ Wash hands

To Treat Thrush (ulcers or white patches in mouth)

The mother should

- ▶ Wash hands
- ▶ Wash mouth with clean soft cloth wrapped around the finger and wet with salt water
- ▶ Paint the mouth with half strength gentian violet
- ▶ Wash hands

TREAT THE YOUNG INFANT AND COUNSEL THE MOTHER

► Teach Correct Positioning and Attachment for Breastfeeding

- ▶ Show the mother how to hold her infant with the infant's head and body straight facing her breast with infant's nose opposite her nipple with infant's body close to her body supporting infant's whole body not just neck and shoulders
- ▶ Show her how to help the infant to attach She should touch her infant's lips with her nipple wait until her infant's mouth is opening wide move her infant quickly onto her breast aiming the infant's lower lip well below the nipple
- ▶ Look for signs of good attachment and effective suckling If the attachment or suckling is not good try again

► Advise Mother to Give Home Care for the Young Infant

- ▶ FOOD } Breastfeed frequently as often and for as long as the infant wants day and night during sickness and health
- FLUIDS }
- ▶ WHEN TO RETURN

Follow Up Visit

If the infant has	Return for follow up in
LOCAL BACTERIAL INFECTION DYSENTERY ANY FEEDING PROBLEM THRUSH	2 days
LOW WEIGHT FOR AGE	14 days

When to Return Immediately

Advise the mother to return immediately if the young infant has any of these signs

Breastfeeding or drinking poorly
Becomes sicker
Develops a fever
Fast breathing
Difficult breathing
Blood in stool

- ▶ MAKE SURE THE YOUNG INFANT STAYS WARM AT ALL TIMES

In cool weather cover the infant's head and feet and dress the infant with extra clothing

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GIVE FOLLOW-UP CARE FOR THE SICK YOUNG INFANT

▶ LOCAL BACTERIAL INFECTION

After 2 days

Look at the umbilicus Is it red or draining pus? Does redness extend to the skin?

Look at the skin pustules Are there many or severe pustules?

Treatment

- ▶ If **pus or redness remains or is worse** refer to hospital
- ▶ If **pus and redness are improved** tell the mother to continue giving the 5 days of antibiotic and continue treating the local infection at home

▶ DYSENTERY

After 2 days

Assess the young infant for diarrhoea > See Does the Young Infant Have Diarrhoea? above

Ask

Are there fewer stools?

Is there less blood in the stool?

Is there less abdominal pain?

Is the young infant eating better?

Has fever developed?

Treatment

- ▶ If the young infant is **dehydrated** treat dehydration
- ▶ If **number of stools amount of blood in stools, abdominal pain, and eating are the same or worse or fever develops** refer to hospital If fever give first dose of intramuscular antibiotics before referral
- ▶ If **fewer stools, less blood in the stools, less abdominal pain, and eating better** continue giving the same antibiotic until finished

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GIVE FOLLOW-UP CARE FOR THE SICK YOUNG INFANT

► FEEDING PROBLEM

After 2 days

Reassess feeding > See 'Then Check for Feeding Problem or Low Weight' above

Ask about any feeding problems found on the initial visit

- Counsel the mother about any new or continuing feeding problems. If you counsel the mother to make significant changes in feeding, ask her to bring the young infant back again.
- If the young infant is low weight for age, ask the mother to return 14 days after the initial visit to measure the young infant's weight gain.

Exception

If you do not think that feeding will improve or if the young infant has **lost weight**, refer the child.

► LOW WEIGHT

After 14 days

Weigh the young infant and determine if the infant is still low weight for age

Reassess feeding > See 'Then Check for Feeding Problem or Low Weight' above

- If the infant is **no longer low weight for age**, praise the mother and encourage her to continue.
- If the infant is **still low weight for age, but is feeding well**, praise the mother. Ask her to have her infant weighed again within a month or when she returns for immunization.
- If the infant is **still low weight for age and still has a feeding problem**, counsel the mother about the feeding problem. Ask the mother to return again in 14 days (or when she returns for immunization, if this is within 2 weeks). Continue to see the young infant every few weeks until the infant is feeding well and gaining weight regularly or is no longer low weight for age.

Exception

If you do not think that feeding will improve or if the young infant has **lost weight**, refer to hospital.

► THRUSH

After 2 days

Look for ulcers or white patches in the mouth (thrush)

Reassess feeding > See 'Then Check for Feeding Problem or Low Weight' above

- If **thrush is worse** or if the infant has **problems with attachment or suckling**, refer to hospital.
- If **thrush is the same or better** and if the infant is **feeding well**, continue half strength gentian violet for a total of 5 days.

MANAGEMENT OF THE SICK YOUNG INFANT AGE 1 WEEK UP TO 2 MONTHS

Name _____ Age _____ Weight _____ kg Temperature _____ °C

ASK What are the infant's problems? _____ Initial Visit? Follow up Visit?

ASSESS (Circle all signs present)

CLASSIFY

CHECK FOR POSSIBLE BACTERIAL INFECTION

- Has the infant had convulsions?
 - Count the breaths in one minute _____ breaths per minute
Repeat if elevated _____ Fast breathing?
 - Look for severe chest indrawing
 - Look for nasal flaring
 - Look and listen for grunting
 - Look and feel for bulging fontanelle
 - Look for pus draining from the ear
 - Look at the umbilicus Is it red or draining pus?
Does the redness extend to the skin?
 - Fever (temperature 37.5°C or above or feels hot) or low body temperature (below 35.5°C or feels cool)
 - Look for skin pustules Are there many or severe pustules?
 - See if the young infant is lethargic or unconscious
 - Look at young infant's movements Less than normal?

DOES THE YOUNG INFANT HAVE DIARRHOEA? Yes ___ No ___

- For how long? _____ Days
- Is there blood in the stool?
- Look at the young infant's general condition Is the infant Lethargic or unconscious? Restless and irritable?
- Look for sunken eyes
- Pinch the skin of the abdomen Does it go back Very slowly (longer than 2 seconds)? Slowly?

THEN CHECK FOR FEEDING PROBLEM OR LOW WEIGHT

- Is there any difficulty feeding? Yes ___ No ___
 - Is the infant breastfed? Yes ___ No ___
If Yes how many times in 24 hours? _____ times
 - Does the infant usually receive any other foods or drinks? Yes ___ No ___
If Yes how often?
 - What do you use to feed the child?
 - Determine weight for age Low ___ Not Low ___
- If the infant has any difficulty feeding is feeding less than 8 times in 24 hours is taking any other food or drinks or is low weight for age AND has no indications to refer urgently to hospital

ASSESS BREASTFEEDING

- Has the infant breastfed in the previous hour?
If infant has not fed in the previous hour ask the mother to put her infant to the breast Observe the breastfeed for 4 minutes
- Is the infant able to attach? To check attachment look for

Chin touching breast	Yes ___ No ___
Mouth wide open	Yes ___ No ___
Lower lip turned outward	Yes ___ No ___
More areola above than below the mouth	Yes ___ No ___

no attachment at all not well attached good attachment
- Is the infant suckling effectively (that is slow deep sucks sometimes pausing)?
not suckling at all not suckling effectively suckling effectively
- Look for ulcers or white patches in the mouth (thrush)

CHECK THE YOUNG INFANT'S IMMUNIZATION STATUS Circle immunizations needed today

BCG _____ DPT 1 _____ DPT 2 _____
OPV 0 _____ OPV 1 _____ OPV 2 _____

Return for next immunization on _____

(Date)

ASSESS OTHER PROBLEMS

FEEDING PROBLEM
LOW WEIGHT THRU

RECORDING FORM

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MANAGEMENT OF THE SICK CHILD AGE 2 MONTHS UP TO 5 YEARS

Child's Name _____ Age _____ Weight _____ kg Temperature _____ °C

ASK What are the child's problems? _____ Initial Visit? ___ Follow up Visit? ___

ASSESS (Circle all signs present)

CLASSIFY

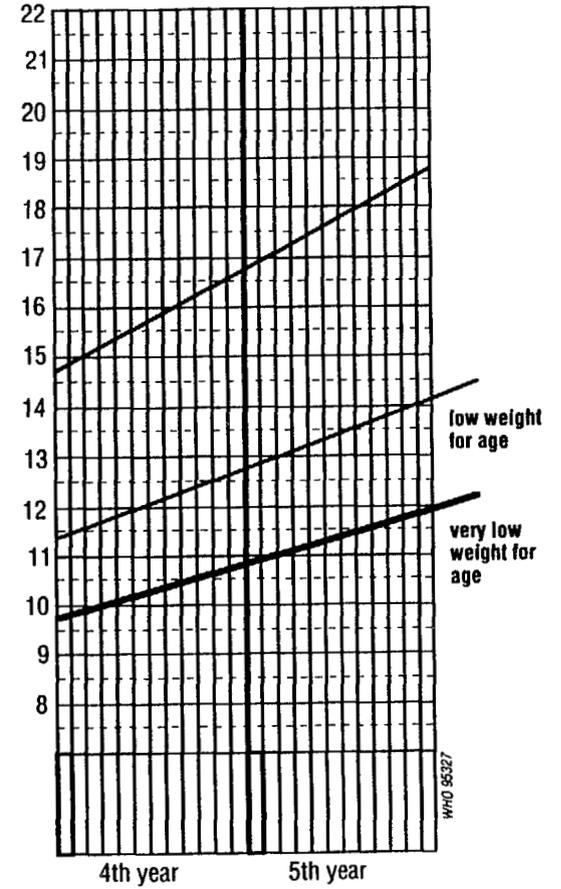
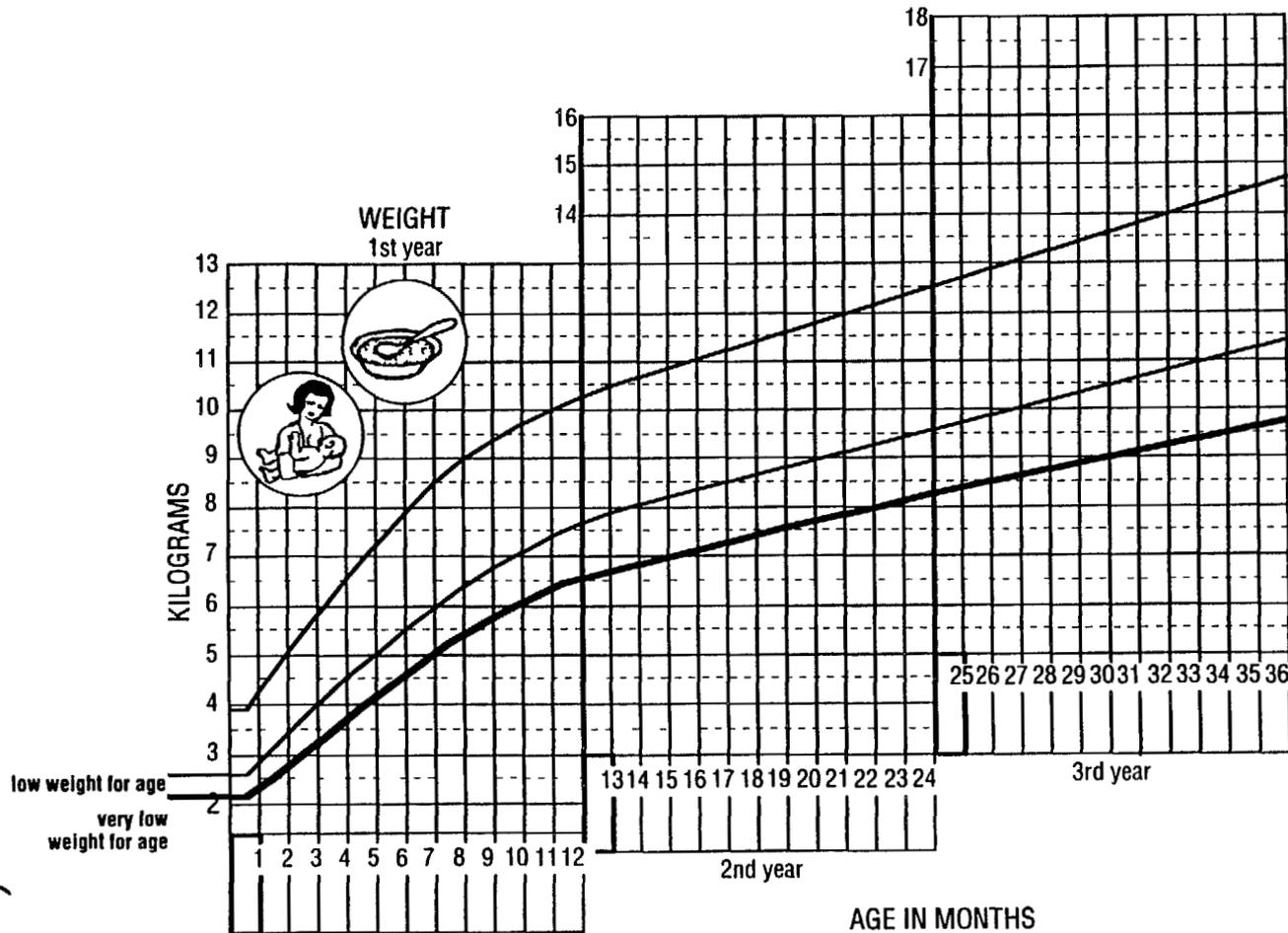
<p>CHECK FOR GENERAL DANGER SIGNS</p> <p>NOT ABLE TO DRINK OR BREASTFEED LETHARGIC OR UNCONSCIOUS</p> <p>VOMITS EVERYTHING</p> <p>CONVULSIONS</p>	<p>General danger sign present? Yes ___ No ___</p> <p>Remember to use danger sign when selecting classifications</p>
<p>DOES THE CHILD HAVE COUGH OR DIFFICULT BREATHING? Yes ___ No ___</p> <p>• For how long? ___ Days</p> <p>• Count the breaths in one minute _____ breaths per minute Fast breathing?</p> <p>• Look for chest indrawing</p> <p>• Look and listen for stridor</p>	
<p>DOES THE CHILD HAVE DIARRHOEA? Yes ___ No ___</p> <p>• For how long? ___ Days</p> <p>• Is there blood in the stool?</p> <p>• Look at the child's general condition Is the child Lethargic or unconscious? Restless and irritable?</p> <p>• Look for sunken eyes</p> <p>• Offer the child fluid Is the child Not able to drink or drinking poorly? Drinking eagerly thirsty?</p> <p>• Pinch the skin of the abdomen Does it go back Very slowly (longer than 2 seconds)? Slowly?</p>	
<p>DOES THE CHILD HAVE FEVER? (by history/feels hot/temperature 37.5 °C or above) Yes ___ No ___</p> <p>Decide Malaria Risk High Low</p> <p>• For how long? ___ Days</p> <p>• If more than 7 days has fever been present every day?</p> <p>• Has child had measles within the last 3 months?</p> <p>• Look or feel for stiff neck</p> <p>• Look for runny nose</p> <p>Look for signs of MEASLES</p> <p>• Generalized rash and</p> <p>• One of these cough runny nose or red eyes</p>	
<p>If the child has measles now or within the last 3 months</p> <p>• Look for mouth ulcers If Yes are they deep and extensive?</p> <p>• Look for pus draining from the eye</p> <p>• Look for clouding of the cornea</p>	
<p>DOES THE CHILD HAVE AN EAR PROBLEM? Yes ___ No ___</p> <p>• Is there ear pain?</p> <p>• Is there ear discharge? If Yes for how long? ___ Days</p> <p>• Look for pus draining from the ear</p> <p>• Feel for tender swelling behind the ear</p>	
<p>THEN CHECK FOR MALNUTRITION AND ANAEMIA</p> <p>• Look for visible severe wasting</p> <p>• Look for palmar pallor Severe palmar pallor? Some palmar pallor?</p> <p>• Look for oedema of both feet</p> <p>• Determine weight for age Very Low ___ Not Very Low ___</p>	
<p>CHECK THE CHILD'S IMMUNIZATION STATUS Circle immunizations needed today</p> <p>BCG DPT 1 DPT 2 DPT 3</p> <p>OPV 0 OPV 1 OPV 2 OPV 3 Measles</p>	<p>Return for next immunization on _____</p> <p>(Date)</p>
<p>ASSESS CHILD'S FEEDING if child has ANAEMIA OR VERY LOW WEIGHT or is less than 2 years old</p> <p>• Do you breastfeed your child? Yes ___ No ___ If Yes how many times in 24 hours? ___ times Do you breastfeed during the night? Yes ___ No ___</p> <p>• Does the child take any other food or fluids? Yes ___ No ___ If Yes what food or fluids? _____</p> <p>How many times per day? ___ times What do you use to feed the child? _____</p> <p>If very low weight for age How large are servings? _____</p> <p>Does the child receive his own serving? ___ Who feeds the child and how? _____</p> <p>• During this illness has the child's feeding changed? Yes ___ No ___ If Yes how? _____</p>	<p>Feeding Problems</p>

ASSESS OTHER PROBLEMS

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NOTES

WEIGHT FOR AGE CHART



WHO 96327

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