Health Facility Survey

Tool to evaluate the quality of care delivered to sick children attending outpatients facilities

(using the Integrated Management of Childhood Illness clinical guidelines as best practices)

Department of Child and Adolescent Health and Development
Family and Community Health Cluster
WORLD HEALTH ORGANIZATION

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WHO Library Cataloguing-in-Publication Data

Health facility survey : tool to evaluate the quality of care delivered to sick children attending outpatient facilities.

1.Health care surveys – methods 2.Benchmarking – methods 3.Child health services – standards 4.Ambulatory care facilities – standards 5.Quality of health care 6.Manuals I.World Health Organization.

ISBN 92 4 154586 0 (NLM classification: W 84.6)

Photographs by Leslie Mgalula and Thierry Lambrechts
Designed by minimum graphics

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Acknowledgements

The development and field-tests of this manual have been coordinated by the Department of Child and Adolescent health and Development, Family and Community Cluster, World Health Organization.

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Introduction

This manual describes a survey method for evaluating the quality of care delivered to sick children at health facilities. It was developed by the Department of Child and Adolescent Health and Development (CAH), Family and Community Health Cluster (FCH), of the World Health Organization (WHO), in close collaboration with partners and child health programme managers in countries. This 'integrated' survey combines elements from surveys previous conducted separately for specific programme areas. The instruments and methods presented here build on experiences gained through the Control of Diarrhoeal Disease Programme (CDD), Acute Respiratory Infections' Programme (ARI), and the Global Programme for Vaccines and Immunization (GPV). Instruments and methods have been tested in different country settings and the manual has been reviewed by experts within and outside WHO.

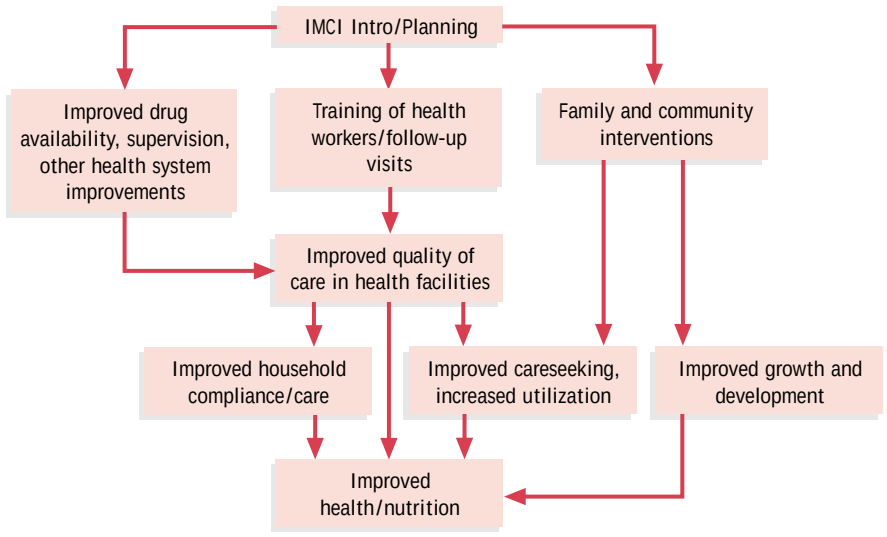
In this survey, the clinical guidelines for first-level health facilities developed for the Integrated Management of Childhood Illness (IMCI) are used as the clinical standard against which health worker practices are compared. The generic version of the IMCI clinical guidelines includes evidence-based case management standards for children with a number of very severe conditions needing referral, including: acute respiratory infections, diarrhoeal diseases, malaria and other diseases with fever, measles, ear problems, anemia, and malnutrition.

IMCI is a strategy to reduce child deaths and the frequency and severity of child illness and disability, and to promote healthy growth and development. IMCI includes interventions to improve: health worker skills (particularly case-management practices); key elements of the health system (to support case-management and preventive services); and family and community health practices (notably healthy growth and development, prevention of illness, home-care, and careseeking) [see Figure 1].

What does the survey measure?

The survey measures health worker practices in a number of areas, for example how well they assess, classify, treat sick children, and then counsel caretakers. These measures of health worker practice are called outcome measures. The periodic measurement of outcome measures is the most practical way to evaluate programmes over time. Outcomes are summarized as indicators that are used to track progress and to set targets. Larger-scale impact studies designed to determine whether programme activities have changed child mortality or morbidity are much more complicated, conducted less frequently, and require much larger sample sizes. This kind of study is not appropriate for routine programme evaluation.

Figure 1. Integrated Management of Childhood Illness (IMCI)



How are survey data used?

The method described in this manual was field-tested and used to collect information for a number of different purposes, including: 1) a baseline evaluation

before programme implementation begins; 2) a periodic evaluation of progress after two or three years of implementation of integrated child health programmes; 3) a research tool to compare quality of care in areas with integrated child health programming to areas without integrated programming.

The survey is designed to help identify the current quality of care provided to sick children. Many factors contribute to quality care for sick children and some of them, such as health worker salaries or the logistics of drug supply, may be difficult to change. Programmes can, however, improve and reinforce the quality of care through appropriate health worker training and supervision, more efficient organisation of services, the provision of essential equipment and supplies and other methods. It is hoped that health staff at all levels will be involved in the collecting data process, use these data to make programme decisions and then take action.

This manual will help those involved in the implementation of integrated child health programmes to plan for, and conduct, a health facility survey and analyse the findings. It assumes that the survey is part of an overall strategy for monitoring and evaluating child health services in the country.

CHAPTER 1

Evaluating the quality of care delivered to sick children attending first-level health facilities

1.1 Scope of the evaluation

Purpose of the survey

This survey is designed to evaluate the quality of care provided by outpatient health facilities. It is an evaluation method because it is:

- Periodic (done at periodic intervals to determine the quality of facility-based child care); and
- Used to assess progress towards programme objectives (outcomes are measured and presented as indicators).

Data are used to highlight problems and to encourage national and local staff to solve these problems. *Evaluation surveys* provide limited opportunities for on-the-job feedback and immediate problem solving, supervision activities and monitoring are normally used to achieve this. *Monitoring* is the continuous review of implementation to identify and solve problems. Monitoring activities usually put less emphasis on the collection of data and more emphasis on immediate problem solving. Supervision, routine monitoring, and periodic evaluations of progress, are important for developing and sustaining high-quality programmes.

Information collected

When the core survey instruments are used, this survey collects the following facility-based information:

- Descriptive information on sick children, their caretakers, and the health workers who attend them;

  Information collected includes the: age and sex of the child; reasons for attending the facility; gender of caretaker and relationship to the children; and gender, type, and training status of the health worker.

- The quality of case management received by sick children;

  Information is collected on case management practices for the most important causes of infant and child morbidity and mortality in developing countries, including severe diseases requiring referral, fever (malaria), acute respiratory infections, diarrhea, anemia, malnutrition, ear problems, and measles. The survey compares current quality of care received by sick children to the best practices described by the IMCI clinical guidelines to determine the degree of consistency between them.

- How well caretakers understand how to care for their children at home when they leave the facility.

- Information collected includes: knowledge of how to administer medications and provide other supportive care; and knowledge of danger signs.

- The availability of health system supports for quality care;

- Information collected includes: staffing of health facilities; staff training status; how supervision is provided; availability of drugs, equipment and supplies.

- The estimated daily attendance and/or caseload;

- Optional standard case scenarios for severe illness and other rare conditions.

- Information is collected on the ability of the health worker and facility to manage severely ill infants and children requiring immediate referral.

To improve child health services, managers need quantitative data in all these areas. In addition, by including local health staff in the data analysis and interpretation phases, it is hoped that qualitative information, based on field experience and circumstances, will be used to inform an understanding of the barriers to successful implementation and possible strategies for overcoming these barriers.

Data collected in the course of this survey can be used to compliment or validate other sets of information available to child health programme managers. Other important sources include:

- Facility-based routine reporting systems providing statistics on causes of death and disease in children under five years of age (who reach health facilities);
- Supervision or routine monitoring reports prepared by district or regional health staff (including follow-up after training data);
- Results of household surveys on child morbidity and home practices (including preventive practices, home treatment and care-seeking);
- Results of focused ethnographic studies and other qualitative data collection methods on knowledge, attitudes and practices in the area of child health; and
- Programme reviews.

Priority and supplemental indicators

Essential information needed by programme managers can be summarized as indicators. An indicator is a measurement that is repeated over time to track progress towards objectives. The use of standard indicators for all evaluation activities will help district and national managers collect comparable information in different set-

tings. Over time, the use of the standard indicators will also support regional and global efforts to document progress in integrated child health programmes.

An interagency team developed a set of priority indicators for IMCI using the following criteria:

- The total number of indicators should be limited in number, but still measure the effect of the intervention at all levels;
- Indicators should 'flag' problems and achievements, not provide a detailed and comprehensive picture of implementation;
- Indicators should be able to be measured in as many settings as possible, without country- or region-specific adaptations that would limit comparability;
- Indicators should be measurable with low-cost approaches that produce valid and reliable results; and
- Indicators should provide results that are meaningful and easy to interpret.

In many situations, it may be necessary to collect more information than that provided by the priority indicators. For this reason, a list of standard *supplemental measures* were developed to provide more detailed information on elements of case management practice and health facility supports. The supplemental measures can be used to compare survey results with previous disease-specific indicators, for example those indicators used in CDD and ARI programmes. It is hoped that the use of these standard supplemental measures will help promote comparability among different sets of results. However, this supplemental list is not exhaustive, and additional measures may need to be developed for specific purposes.

The set of core survey instruments allows the calculation of all priority indicators developed for IMCI, the standard supplemental measures, and many other existing child health indicators.

The priority indicators for IMCI implementation at first-level facilities are presented in **Annex D**. Detailed information on the numerators and denominators for each of these indicators is available in **Annex A** and **Chapter 5**. Supplementary measures are given in **Annex E**.

Methods

Survey methods include observing the case management of sick children attending first-level facilities the day of survey, conducting exit interviews with caretakers, the re-examination of sick-children by an experienced clinician (the 'gold standard'), and reviewing facility equipment and supplies and available attendance data. As an option, case scenarios can be administered to health workers managing sick children to assess their readiness to handle very severe cases not likely to be seen during the survey.

1.2 Objectives of the survey

The general objectives of the health facility survey are to determine:

- Current level of quality of care delivered to sick children at outpatient health facilities;
- Current quality of counselling given at outpatient health facilities and caretakers' understanding of home treatment for their sick child.
- Current availability of key health system supports that are required for the implementation of sick child services, such as drugs and vaccines, equipment and supervision; and
- Principal barriers to effective integrated case-management for sick children;

The purpose of the health facility survey is to use this information to:

- Calculate key indicators for evaluating progress towards programme targets;
- Prioritize and plan strategies for improving the quality of care at outpatient health facilities, including; case-management practices, drugs and supplies, supervisory practices, equipment needs, staffing and clinic organization;
- Plan and strengthen training for outpatient health workers;
- Improve or develop strategies for supervision and monitoring of outpatient health facilities; and
- Estimate utilization of outpatient health facilities by sick children.

The focus of the survey is the case-management of children presenting to outpatient health facilities with severe diseases, fever, diarrhea, cough or breathing difficulty, nutrition problems, or ear problems. IMCI clinical case-management guidelines are used as the 'gold standard'. Support elements in the health facilities contributing to effective case-management are included in the survey. Health facilities included in the survey are all facilities providing outpatient child health services, regardless of whether these facilities are outpatient departments of hospitals, health centers or health posts.

1.3 Deciding on when to conduct a health facility survey

Health facility surveys should be carried out when the results can be most useful in guiding efforts to improve the child health programme. The following conditions are desirable:

1. The survey should be conducted when there is a need for information

The survey can be conducted as a baseline evaluation (before programme implementation has begun), or as a follow-up evaluation (after programme implementation has begun).

Baseline evaluation

Before implementing new programme activities, managers may decide to do a baseline survey in order to identify the current quality of care for sick children, as well as barriers to effective practices. Baseline data allow managers to determine feasible programme objectives. Data can be used to help plan programme strategies and address barriers and problems in advance. The use of baseline data can make programme interventions more effective as they are tailored to gaps and problems identified in the survey area. In some situations, baseline surveys are required by donor organizations to document programme achievements over time.

Follow-up evaluation

Follow-up surveys are conducted after programme implementation has begun, and are designed to determine progress towards objectives. Follow-up surveys should be conducted when enough implementation has taken place to expect changes in the quality of care. For follow-up surveys to be most useful, therefore, certain minimum standards of implementation should have been met, including:

- A minimum proportion of health facilities in the target areas benefited from the intervention to improve child health services (for example 50% of the first-level health facilities). In the case of IMCI, a health facility capable of delivering integrated child care is often defined as a health facility with at least 60% of the health workers who manage children trained in IMCI;
- Data from routine monitoring and supervision suggest that trained health workers are implementing integrated case-management of sick children in outpatient health facilities and are seeing sick children regularly;
- The intervention has been in place at health facilities long enough to be incorporated into health workers' routine practice and for operational problems to have been addressed; and
- Essential supports (such as drugs, vaccines and equipment) are available in most facilities.

If minimum standards of implementation are not met, then it is unlikely that changes in the quality of care will be seen. In many countries it is necessary to wait two to three years between surveys conducted in the same area in order to see changes in practices and other conditions in health facilities.

2. The survey findings and recommendations can contribute to improvements in the planning and implementation of programme activities

The survey should stimulate action to correct problems. Therefore, it should occur when decision makers are committed to the principles of evaluation, and prepared to commit sufficient resources to address problems identified.

3. Evaluation activities are a priority in light of financial and other resources available to the programme

When resources are limited, other activities such as training, supervision, and communications activities should take a higher priority. In this situation, it is more important to implement programme activities, and to put off the survey evaluation until such time as resources become available.

1.4 What is in this manual

1.4.1 Steps in carrying out the survey

This manual provides guidance on all the stages of planning and conducting the survey, and using data for planning. The following steps are described in this manual:

Step 1: Planning the survey

Step 2: Preparing to conduct the survey

Step 3: Conducting and supervising the survey

Step 4: Entering and analysing the data

Step 5: Using the information collected

The tasks associated with each step of the survey are shown on the table on the schedule of survey tasks on the next page. An estimated time frame is shown in Figure 2. Instructions for each of these steps are provided in Chapters 2, 3, 4, 5, and 6.

Schedule of survey tasks

STEPS	SURVEY TASKS
1. Planning the survey: (see Chapter 2) (Often done concurrently with preparation tasks)	1. Select the survey coordinator 2. Identify and involve local counterparts 3. Identify the country-specific objectives 4. Decide on the geographic area and timing for the survey 5. Sample the health facilities to survey
2. Preparing to conduct the survey (see Chapter 3)	1. Identify supervisors and surveyors 2. Finalize and secure budget 3. Adapt and translate survey instruments 4. Pre-test survey instruments 5. Prepare a schedule for facility visits 6. Prepare for analysis and dissemination 7. Train supervisors and surveyors
3. Conducting and supervising the survey (see Chapter 4)	1. Conduct the survey 2. Supervise the survey
4. Entering and analysing data (see Chapter 5)	1. Enter data 2. Analyse data: develop data analysis plan
5. Using the information collected (see Chapter 6)	1. Discuss and interpret results 2. Write a summary report and present findings 3. Feedback and disseminate findings; present final report

1.4.2 Survey instruments and forms

For collecting survey data, the manual provides a set of survey instruments:

Instrument 1: Observation checklist of sick child of two months to five years old;

Instrument 2: Exit interview with the caretaker of the sick child;

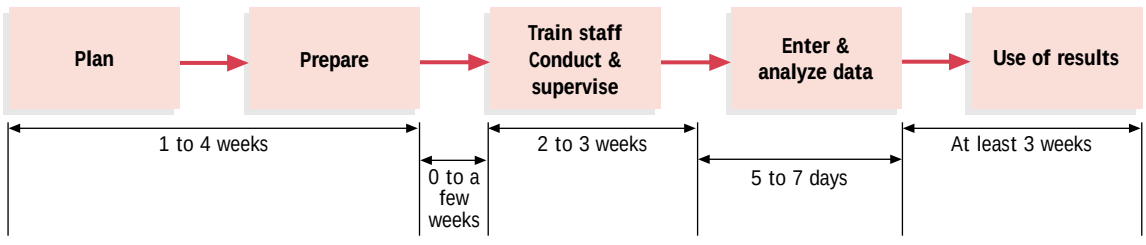
Instrument 3: Re-examination of the sick child; and

Instrument 4: Equipment and supply checklist.

A *sick child enrolment form* is provided with the instruments—each child identified for the survey at health facilities is given this form.

An *optional survey instrument (standard case scenarios)* is also provided. These case scenarios, used to determine practices for rare or unusual clinical events such as severe disease requiring referral, are available in Annex F.

Figure 2. Estimated time frame for a HFS



In addition, several survey forms that can be used for planning, sampling, training, and data tabulation are provided:

Form 1: List of all health facilities;

Form 2: Random number table;

Form 3: Survey schedule for team;

Form 4: Reliability checking form;

Form 5: Data summary tables—descriptive data; priority indicators; and

Form 6: Data summary tables for use with EpiInfo analysis programme.

A complete set of survey forms and instruments is contained in Annex A. A computer CD-ROM with all survey forms is available with this manual and may be used to adapt survey instruments to fit local case-management guidelines and survey objectives.

1.4.3 Additional information

Additional information to support the conduct of the survey is presented in the Annexes as presented below:

Annex A: Survey forms and instruments.

Annex B: Question by question explanations on how to complete the enrolment form and instruments.

Annex C: Training survey staff.

Annex D: Indicators for IMCI in first-level health facilities.

Annex E: Supplemental measures—and how they are calculated.

Annex F: Case scenarios for health worker interviews.

Annex G: EpiInfo and generic files for data entry and analysis.

CHAPTER 2

Planning the survey

Careful planning is essential for a successful survey. Planning needs to begin as soon as possible before the survey dates. The approximate time required to complete planning is one to four weeks. Additional time may be required to obtain data that will be used for sampling.

On the next page a **schedule of survey tasks** is shown giving all the main steps needed to complete the survey. The planning steps are shaded in the table. Deciding on survey objectives and then sampling health facilities are particularly important steps that will influence how survey data can be interpreted and used. It is recommended that the survey planning team consider these steps carefully.

Note: Survey planning is often done concurrently with other preparatory tasks for conducting the survey (outlined in Chapter 3). The separation between these Chapters is an arbitrary one, often both can be done most efficiently together.

2.1 Select survey coordinator

A coordinator is essential for planning and overseeing all survey activities. The coordinator will ensure that all survey tasks, from planning for the survey to follow-up activities, are completed in a timely manner. The survey coordinator is usually selected in collaboration with the Ministry of Health and works in close collaboration with the Ministry. No survey planning activities should begin before a competent survey coordinator has been selected. Desirable professional experience for the survey coordinator includes:

Essential

- Technical training in the areas of infant and child health, including IMCI, and supervisory experience;
- Previous survey experience;
- Experience in administrating, managing, and budgeting public health projects.

Highly desirable

- Residing in the country where the survey is taking place. Current or previous work experience in the health system or school of public health or university;
- Familiarity with the public health system, local and national staff, and good working relationship with staff in charge of implementing child health programmes, including IMCI;
- Knowledge of the geographic area where the survey will be conducted.

2.2 Identify and involve local staff who can contribute to the design and conduct of the survey

It is important that staff at all levels of the health system are involved in the different stages of planning, conducting and analysing the survey. This involvement is essential to build local capacity, and to ensure that survey results will be used at the appropriate levels for planning, programme improvement, policy development and advocacy. In the early stages of planning (deciding on objectives and the geographic area for the survey), national level staff will be involved. Once the geographic areas for the survey have been finalized, local staff from these areas should be involved.

Local counterparts may include:

- National level staff involved in planning and implementation of child health programmes (e.g. MoH staff, IMCI focal person, and IMCI trainer);
- Regional/district staff with primary health care responsibilities (e.g. District Medical Officer, district supervisor, head of district hospital, chief of drug distribution);
- Partners supporting child health programmes (e.g. UNICEF, local and international NGOs, bilateral cooperation agencies).

Topics to discuss with local counterparts could include:

With national level staff:

- Identification of, and agreement on, survey objectives;
- Decisions on the geographic area for the survey and the sampling method;

With national, regional and district staff:

- Selection of survey staff and agreement on the time they may spend away from their usual jobs;
- Identification of the procedures for obtaining the cooperation of administrative personnel in selected districts and facilities;
- Decisions on who should be involved with data analysis, and on a strategy for analysing survey data;
- Agreement on a plan for dissemination of survey results (a dissemination strategy might include: workshops with district health staff and selected health facility staff; distribution of survey reports; briefing of decision makers at MoH level);
- Agreement on responsibilities on any 'follow-up' activities needed to ensure that survey recommendations are implemented;

Schedule of survey tasks

STEP (AND APPROXIMATE TIME TO COMPLETE)	SURVEY TASK
1. Planning the survey Estimated duration for planning and preparing: One to four weeks	1. Select the survey coordinator 2. Identify and involve local counterparts 3. Identify the country-specific objectives 4. Decide on the geographic area and timing for the survey 5. Sample the health facilities to survey
2. Preparing to conduct the survey Estimated duration for planning and preparing: One to four weeks	1. Identify supervisors and surveyors 2. Finalize and secure budget 3. Adapt and translate survey instruments 4. Pre-test survey instruments 5. Prepare a schedule for facility visits 6. Prepare for analysis and dissemination 7. Train supervisors and surveyors
3. Conducting and supervising the survey Estimated duration: Five to seven days	1. Conduct the survey 2. Supervise the survey
4. Entering and analysing data Estimated duration: Five days entry (during data collection), two days analysis	1. Enter data 2. Analyse data: develop data analysis plan
5. Using the information collected Estimated duration: One to two days for discussion; one to two months for completion of feedback and report	1. Discuss and interpret results 2. Write a summary report and present findings 3. Feedback and disseminate findings; present final report

- Contributions to survey budget, including budget for analysis and dissemination of survey results.

2.3 Identify the country-specific objectives of the survey

The general objectives of the health facility survey are to determine:

- Current quality of care delivered to sick children at outpatient health facilities;
- Current quality of counselling given at outpatient health facilities and caretakers' understanding of home treatment for their sick child.
- Current availability of key health system supports that are required for the implementation of sick child services, such as drugs and vaccines, equipment and supervision;
- Principal barriers to effective integrated case-management for sick children;

Likewise, the general objectives of the health facility survey are to use this information to:

- Calculate key indicators for evaluating progress towards programme targets;
- Prioritize and plan strategies for improving the quality of care at outpatient health facilities, including case-management practices, drugs and supplies, supervisory practices, equipment needs, staffing and clinic organization;
- Improve or develop strategies for supervision and monitoring of outpatient health facilities;
- Estimate utilization of outpatient health facilities by sick children.

The focus of the survey is the case-management of children presenting to outpatient health facilities with fever, diarrhea, cough or difficulty breathing, or ear problems. In this manual, the IMCI clinical guidelines for first-level health facilities are used as the 'gold standard'. The facility supports assessed in the course of the

survey are those elements required to allow IMCI case-management to be practiced effectively. Health facilities which should be considered for inclusion in the survey are all facilities providing outpatient child health services (outpatient departments of hospitals, health centres or health posts).

The national programme may also have **country-specific objectives** and these must be determined locally, based on local priorities and interests. Examples of country specific objectives are:

- To compare case-management practices between facilities with IMCI-trained health workers, and facilities with no IMCI-trained health workers;
- To compare the quality of care received by sick children managed by IMCI-trained health workers, and sick children managed by health workers who have not received IMCI training;
- To compare case-management practices between different categories of health facility (hospital outpatients, health clinics, and health posts);
- To compare case-management practices between different geographic regions;
- To identify facilities with gaps in supervision and to develop strategies for improving supervision to these facilities;
- To determine health facility readiness to manage severely ill children and identify strategies for improving case-management for this group.

Note: The objectives of the survey will help determine the geographic area for the survey and the sampling strategy (see Sections 2.4 and 2.5). Most of the survey objectives given above do not normally require changes in the basic survey instruments. The last example of country-specific objectives requires the use of an optional survey instrument contained in Annex F. This manual only provides guidance for surveys whose objectives can be achieved easily with data from the enclosed instruments. The existing instruments have been field-tested and work well in most settings. Additional questions that add complexity and require more time to complete may increase the chance of errors. Data processing and analysis also becomes more complex and time consuming.

2.4 Decide on the geographic area and timing for the survey

2.4.1 Geographic area for the survey

A decision must be made on whether to carry out a national survey (in which all eligible districts in the country are included), or to conduct the survey in a limited area. This decision usually depends on the size of the area and the resources available. In a smaller country, the survey may be able to sample from facilities throughout the country. In a larger country, however, it is often impossible to sample from the entire population of facilities because they are scattered too widely for it to be practical to survey them within the staffing and time limits of the survey. In this case, two options can be considered:

1. The survey could be restricted to one or two regions or other geographical areas, chosen because they are thought to be representative of the whole country;
2. A random sample of regions and/or districts from which to draw the sample of health facilities could be selected. If so, the method described in the sampling section (systematic random sampling) can be used to select a random sample of regions and/or districts to include in the survey area, before facilities are selected. This approach may need to exclude areas that are inaccessible because the roads are not usable, or if security is poor.

The *geographic area* for the survey contains all of the health facilities eligible for inclusion in the survey, and will be determined by the survey objectives. The geographic area often comprises particular administrative areas in a country. Survey areas could include:

All districts in a country

If logistically feasible, a sample of facilities from all districts in a country can be used to determine estimates of the quality of care delivered to sick children and availability of health system supports at a national-level. These results might be used to evaluate overall changes in quality of care over time in the country.

A random sample of all districts in a country

In a large country it may not be practical to perform the survey in every district. However, if a random sample of districts is selected for inclusion in the study it will still be possible to make statements about the national situation.

All districts that have begun implementation of an intervention such as IMCI or are target for the intervention

To determine national-level estimates of the quality of care delivered to sick children and availability of health system supports in areas that have begun implementation of an intervention such as IMCI or are target for the intervention (baseline survey). These results would be used to evaluate changes in quality of care in those areas that have begun IMCI implementation, and to plan programme interventions to improve performance.

A single district that has begun implementation of an intervention such as IMCI or is target for the intervention

To determine district-level estimates of the quality of case management delivered to sick children, and the availability of health system supports in a single district that began implementation of an intervention, such as IMCI, or is the target for the intervention (baseline survey). These data could be used by district-level planners to plan interventions in their own district.

The catchment area for specific projects or health organizations

To generate project-level estimates of sick child case-management practices and the availability of essential supports in areas managed by the project or organization. These data could be used by project staff to plan interventions in the project area.

A study area for operations research

To determine quality of sick child case-management practices and availability of essential supports in order to measure the cost, effectiveness, and impact of new or existing interventions. Survey findings can be shared with national and local health authorities to improve planning and management of child health programmes, but data will primarily be used for research purposes. Operations research methods are not discussed in this manual.

2.4.2 Timing of the survey

The issues to consider when deciding when to conduct the survey include:

Seasonal patterns of the major causes of infant and child morbidity and mortality

This survey recruits sick children with possible symptoms of fever, malaria, cough or difficulty breathing, diarrhea, and ear problems. To increase the number of cases of ARI or diarrhea in the sample, the assessment can be scheduled during periods when these conditions are more frequent. Similarly, the number of cases of malaria recruited would be increased by scheduling the survey during the malaria season. In addition, there may be times of the year when attendance at health facilities is increased by other factors, such as improved accessibility or availability of income.

Accessibility of facilities, availability of surveyors and transportation

All survey activities must take place when facilities are accessible, and this should be a primary consideration when deciding on survey timing. Surveys are often difficult during rainy periods. It is important to ensure that local staff are available and able to spend two to three weeks on survey activities. Transportation to health facilities must be available during the proposed survey dates.

Local holidays and festivals

It is important that the facility visits are not scheduled during local holidays and festivals when health workers are not working, and when caretakers and children are less likely to come to facilities. Similarly, certain days (such as market days) may mean that more children will be brought to health facilities, and scheduling facility visits on these days may therefore increase the number of children recruited.

Once survey dates have been established, the survey coordinator can plan all preparatory activities, select and notify surveyors, and plan dates for surveyor training.

2.5 Sample the health facilities to survey

A survey of all sick children presenting to all health facilities in the geographic target area of the survey provides the most precise description of the quality of care delivered at outpatient facilities and health system supports, and allows the calculation of precise programme indicators. This is a census of all health facilities, and does not therefore involve sampling of health facilities. A complete census of all health facilities might be possible where the geographic target area of the survey is very small, and the number of health facilities is limited, as would be the case in a small district, or a health project with a limited geographic scope.

A census of all facilities is usually not practical, however, nor is it necessary. The data collected from a randomly selected sample of facilities in the target area can provide valid information, with a high level of confidence, on what is happening in the target area as a whole and can be sufficient for identifying problems in the quality of case-management. Data from a random sample can be generalized to other similar health facilities, and can be used as a guide for improving programme activities. It is important that the facilities in the sample are representative of the facilities to which the results of the survey will be applied. Random sampling of facilities ensures that the results of the survey will also be generalisable to all the facilities in the target area. If the area includes different types of facilities, for example hospitals with many staff and large patient loads and small health centres with only one health worker and small patient loads, it will be important to include a random sample of each type of facility in the survey.

To ensure that the health facilities in the sample are representative of all health facilities in the target area, the survey coordinator, in collaboration with local counterparts, must use a rigorous sampling method to select the health facilities to be surveyed. To ensure that the survey results provide a precise estimate of case-management practices, it is important to select a sufficiently large number of facilities where a correspondingly large number of children will be seen. This is particularly important when the results are to be compared with other surveys to assess progress towards programme targets.

2.5.1 Decide whether to use a single sample or a stratified sample

Select a **single sample** of facilities from all the health facilities in the survey area if the programme is interested in the *overall results* of the survey. This means that the programme does not want to compare results between different areas or groups in the survey area.

Select a **stratified sample** when:

- *The country-specific objectives require a comparison of quality of care for sick children in different locations under different conditions*. For example, separate samples could be selected from facilities with one or more IMCI trained staff (or facilities implementing IMCI), and facilities with no trained staff at all (or facilities not implementing IMCI). Other types of objectives might require comparisons between facilities in different geographic areas, or between urban and rural facilities;
- *Important differences are expected between different groups of facilities*. A stratified sample may be taken because differences are expected in the severity of disease seen, or the quality of case management provided at different types of facilities. For example, in some countries, the patients who go to be treated in hospital outpatient departments may be very different from patients who go to health centres. For this reason, it may be helpful to select a separate, independent sample of hospitals.

Each group of facilities compared within the same survey is considered a sampling stratum, and a sample of facilities is drawn from each stratum.

There are important practical considerations when deciding whether or not to stratify the sample. With a stratified sample, the required sample of facilities must be drawn from *each* stratum, in order to be able to detect differences between strata. This increases the numbers of facilities required for the whole survey and the amount of time required to collect the data.

There are other important limitations to stratification of the sample. It is often difficult to collect a sufficient number of cases to demonstrate differences between case-management practices between different strata. Also, analysing the results of a stratified sample is more difficult. The sections that follow will focus on how to select a random sample of facilities when the primary interest of the survey is the overall results.

Note: Some objectives can be met by conducting mini surveys in one or a few facilities. For example, if the programme wants to look at the differences in case-management practices between IMCI-trained health workers and health workers who have not been trained in IMCI, then a few randomly selected facilities can be visited to describe the main differences in performance, as well as to identify gaps, identify problems and work on solutions to these problems. The *WHO Guidelines for Follow-up After Training* provide a rapid method for reviewing case-management practices, facility supports and solving problems locally. Data from a small numbers of facilities cannot be used to estimate indicators even if they may be programmatically useful and might answer some key questions. Similarly, if the programme is interested in the management of severely- ill children (infrequently seen during cross-sectional facility surveys), then standard case scenarios for severely-ill children could be presented to a small sample of health workers to assess their knowledge of how to manage severe illness and referral. Examples of standard case scenarios and guidance on how to use them are available in Appendix F.

2.5.2 List all the facilities in the sampling area

1. Obtain a complete list of facilities eligible for inclusion in the survey

A complete list of all eligible health facilities is required. This might include all facilities providing sick child outpatient services in the sampling area if the aim of the survey is to provide information on case management in all facilities. On the other hand, if the aim is to find out about case management after training, it might include only facilities with IMCI-trained staff. Health facilities might include health posts, health centres or the outpatient departments of hospitals. NGO and mission facilities that provide sick child services might be included in addition to government facilities, depending on the aims of the survey. National-level data on functional health facilities are often out of date and unreliable. It is therefore important to get these data from district-level staff who will know the status of local facilities as some may have closed and new ones may have opened. *A separate list is needed for each stratum if stratified sampling is to be conducted*.

2. Exclude facilities from the sampling frame, if necessary

Ideally, no health facilities should be excluded from the list from which the sample is drawn (the sampling frame). This will ensure that the sample is representative of all facilities in the survey area, and will therefore present the most accurate picture of current practices in the survey area.

It is sometimes necessary, however, to exclude some facilities for practical reasons. In order to determine whether exclusions are necessary, local health staff (usually district staff) should be consulted. The reasons to exclude a health facility could be because the facility:

- Does not provide sick child services;
- Is not functional;
- Is not open regularly;
- Is too geographically isolated to be reached during the survey period; and
- It sees too few sick children each day.

For this survey, it is assumed that 25 to 35 health facilities will be visited, and *that each facility sees each day at least four sick children under the age of five in order to be included in the sample*. If less than four sick children are seen on average then the numbers will be inadequate to calculate the indicators with reasonable precision.

In order to determine the average number of sick children under age five seen each day at the outpatient facilities, routine data on outpatient attendance are required. These data are often reported in monthly or quarterly returns to district or regional centres. The ideal method for estimating the number of sick children that are expected is to obtain the total number of sick children under age five are seen in the outpatient clinic for the same month as the survey in the previous year. The total number for the month can then be averaged to calculate the average number expected per day. By using data from the same month, seasonal differences in childhood illness will be controlled for. If routine data are not available by month, then the total number of sick children under age five are seen in the previous year at each facility can be averaged by month and then by day, to get a crude estimate of the expected number of sick children per day.

If no routine outpatient attendance data for sick children under the age of five are available, there may be other data on case numbers from other sources, such as supervisory visits and reports, that might allow the expected number of sick children to be estimated.

If no information on attendance data is available exclusions **cannot** be made on the basis of case numbers.

Note: Excluding facilities by using case number. As described above, this method excludes from the sampling frame all facilities that are documented as seeing, on average, three or fewer sick children per day. It is important, however, that the method does not end up excluding too many of the total sick child consultations in the target area. Before excluding facilities seeing an average of three or fewer sick children per day, determine the proportion of the total population of sick children coming to such facilities. If the proportion of all sick children seen by these facilities is greater than 25 to 30% of children seen in all facilities, they should be included in the sample. To get a representative measure of the quality of child care, these children should be included in the sample because a high proportion of all sick children are seen in these facilities, and they are therefore important contributors to the quality of care. The suggested 25–30% cutoff is an arbitrary one. Individual country programmes should discuss where they wish to draw their own cut-off point.

Example: The total number of sick children seen during the month of the survey in the previous year (from facility reports) is 2,000. The number of sick children seen by facilities that, on average, see less than four children per day is 670—which is 33.5% (670/2,000) of the total number of children seen during this period. Some of the facilities seeing fewer sick children should therefore be included in the sampling frame. If the exclusion criteria are modified to facilities seeing less than three children per day, then these facilities can be excluded (as they see less than 25–30% of all sick child consultations). This example is illustrated in Table 1 on the next page.

3. Order the list by facility type and geographic area

Systematic random sampling is used to select facilities to be included in the sample. To ensure that the sample is representative of all facilities in the sampling area, the list of facilities needs to be ordered. First, order the facilities by category or type. For example, at the top of the list you might begin with all the health posts, then include all the health centres, then all the hospital outpatient clinics. Second, within each of these categories, list the health facilities by geographic area. For example, within a district the facilities can be listed from the most remote to those that are closest to the district capital. Similarly, when several districts are to be included, facilities can be listed by each district in turn. By ordering the list in this way, it makes it more likely that the sample will include all types of facilities and all geographic areas, making it representative of the sampling. Form 1 is used both to list facilities (see next

Table 1. Example: Health facilities ordered by average number of sick children seen per day for the month of the survey, showing cumulative percentages of all sick children seen

Number of facilities	Average number of sick children seen/day/ facility	Average number of sick children seen/month/ facility	Cumulative total: Average number of sick children seen/month	Cumulative percentage of all sick children seen/month
Health post	0.5	10	10	0.5%
Health post	1	20	30	1.5%
Health post	1	20	50	2.5%
Health post	1.5	30	80	4%
Health post	1.5	30	110	5.5%
Health post	2	40	150	7.5%
Health post	2	40	190	9.5%
Health post	2.5	50	240	12%
Health post	3	60	300	15%
Health post	3	60	360	18%
Health centre	3	60	420	21%
Health post	3	60	480	24%
Health post	3	60	540	27%
Health post	3	60	600	30%
Health post	3.5	70	670	33.5%
Health centre	4	80	750	37.5%
Health centre	4	80	830	41.5%
Health post	4.5	90	920	46%
Health centre	7	140	1,060	53%
Health centre	8	160	1,220	61%
Health centre	9	180	1,400	70%
Health centre	9	180	1,580	79%
Health centre	10	200	1,780	89%
Hospital	11	220	2,000	100%

Note on table 1: In this table, facilities are listed by the average number of sick children under age five seen per day (using facility-based data averaged over the month of the survey from the previous year, and assuming 20 working days in a month). A total of 15 facilities see less than four sick children per day. The cumulative number of sick children seen by these facilities is 670—representing 33.5% of the total number of children seen at all facilities during this period (2,000). In this case, the exclusion criterion of health facilities seeing an average of less than four sick children a day should be changed to health facilities seeing less than three sick children a day, and the seven health facilities seeing an average of three sick children a day should be included in the sampling frame. In this example, if the exclusion cut-off was changed to all facilities seeing an average of less than three children per day, then the eight facilities in the top rows could be excluded from the sampling frame since their combined total number of cases (240) represents only 12% of all sick children seen.

Form 1. List of all health facilities

(used to select a systematic random sample)

Type of facility : **Health posts**			Number of facilities in the sample: N = Sampling interval: n =
District/ geographic area	Health facility name	Number	Selected facility
A			
B			
C			
D			
Type of facility : **Health centres**			Number of facilities in the sample: N = Sampling interval: n =
District/ geographic area	Health facility name	Number	Selected facility
A			
B			
C			
D			
Type of facility : **Hospital outpatient departments**			Number of facilities in the sample: N = Sampling interval: n =
District/ geographic area	Health facility name	Number	Selected facility
A			
B			
C			
D			

page), and for sampling facilities. It is included in Annex A.

2.5.3 Determine the sample size

For this survey, it is assumed that the minimum number of facilities that can be visited in each sampling area is between 25 and 35. This decision is based on field experience and logistics considerations. The following parameters were used to define this minimum sample size:

- Field activities to collect survey data will take a minimum of five to seven days (longer in case of stratified sample);
- One day is required to survey each health facility, including travel;
- Two surveyors and one supervisor is required to complete the survey at each facility;
- No more than 15 survey team members can be trained in a group. In larger groups it is difficult to achieve an acceptable level of reliability, or consistency, among the surveyors.

The more facilities surveyed and cases observed, the more precise the results will be. The results are never exact measurements, but provide *ranges* in which there is reasonable confidence that the actual rate lies. The upper and lower limits of the range are called the *limits of precision or confidence intervals*. The narrower the range, the more precise the results will be in describing what is happening in all the facilities similar to those selected in the survey.

If we assume that between 25 and 35 facilities will be sampled, then the limits of precision will depend on the total number of cases seen at each facility. The larger the number of cases seen, the more precise the results will be. For this reason, it is important that the facilities visited see a sufficient number of cases. The table below summarizes the limits of precision by the number of facilities included in the sample, and the number of sick children seen at each facility.

The shaded area in this table shows the estimated limits of precision for a sample size of between 25 and 35 facilities, for the different numbers of cases seen at each facility. Because the indicators calculated by the survey have different denominators (i.e. the definition of a 'case' is different for some indicators), the limits of precision will differ by indicator. Note that limits of precision improve (get smaller) as the number of facilities increases and as the number of children observed per facility increases. More detailed information on how data in this table were calculated are included at the end of this chapter in Section 2.6.

Five priority indicators use all sick children seen as the denominator. Six priority indicators are calculated using a subset of all sick children (children under two years of age; those needing antibiotics and antimalarials; those not needing these drugs; those needing referral; those needing immunizations; and those prescribed antimalarials, antibiotics or ORS). Six indicators are facility-based (the facility is the denominator). One indicator applies to the caretakers of sick children (sometimes the numbers of caretakers is slightly less than the total number of children seen because one caretaker may have more than one sick child).

Table 2. Limits of precision by sample size for a single survey

Number of cases expected to be observed at each facility	Number of facilities in the sample						
	10	**15**	**20**	**25**	**30**	**35**	**40**
2 (DE = 1.1)	±24%	±20%	±17%	±15%	±14%	±13%	±12%
3 (DE = 1.2)	22	18	15	14	12	11	11
4 (DE = 1.3)	20	16	14	13	12	11	10
5 (DE = 1.4)	19	16	14	12	11	10	10
6 (DE = 1.5)	19	15	13	12	11	10	9
7 (DE = 1.6)	19	15	13	12	11	10	9
8 (DE = 1.7)	19	15	13	12	11	10	9
9 (DE = 1.8)	19	15	13	12	11	10	9
10 (DE = 1.9)	19	15	13	12	11	10	9

DE = Design effect ($D = 1 + (m-1)\rho$, and assuming $\rho = 0.1$)

This means that the number of 'cases' seen at each facility will vary depending on the indicator that is being calculated. For this reason, the precision of each indicator will vary, and will be lower if fewer cases are seen. During the analysis the limits of precision can be calculated for each indicator, based on the actual number of facilities visited and children enrolled (using Csample feature in EpiInfo). This is discussed in more detail in Chapter 5.

Larger sample sizes may be feasible if a programme has additional resources, staff and time. As can be seen from the table, a sample size of 35–40 facilities improves precision, even if the number of sick children per facility remains constant. However, it is strongly recommended that the parameters outlined on the previous page are retained in order to ensure that high-quality survey data are collected. Biased, incomplete or inaccurate survey data are of no value. It is particularly important, if a larger sample size is proposed, that survey teams composed of one supervisor and two surveyors are retained, and that one facility per day is visited.

Notes on Table 2:

The limits of precision shown in Table 2 describe how close a proportion determined by the survey is to the true value for this proportion in the whole population, and represent 95% confidence intervals. This means that we are 95% confident that the real value will lie somewhere between the value measured by the survey and these upper and lower limits. Therefore, it is desirable to have low limits of precision—the lower the limits of precision the closer the survey results will be to the true value in the population. Limits of precision of ±10 or 11, for example, are closer to the real value for a measure than limits of precision of ±15 or 20.

Example: If 35 facilities are sampled, and an average of four sick children are seen at each facility, then the estimated limits of precision are ±11% (from Table 2). If the value calculated for a proportion from this sample is 50%, then we are 95% confident that the true proportion lies within 11% of our estimate (in this case between 39% and 61%).

Notes on sample size:

Design effect: Sampled facilities represent 'clusters' of sick children. Cluster sampling introduces a level imprecision called the 'design effect'. Sick children at each facility (or cluster) are more likely to be managed in the same way (because they are seen by the same group of health workers, under the same conditions), than if each sick child was observed at a different facility that was picked using random sampling. This introduces a new level of imprecision to the calculation of overall estimates—and this added level of imprecision is the design effect. The design effect can be calculated after a survey as the proportion of the sample variance due to clustering, over the variance of a non-clustered random sample. The median design effect for facility surveys is estimated to be approximately 1.5. The design effect must be taken into account when calculating sample sizes for comparing results between groups (see next page).

Comparing survey results: If the results of the initial survey are to be compared with a later follow-up survey, or if the purpose is to compare results between strata, the number of facilities in the sample (and in each stratum of a stratified sample) needs to be increased. To have a sample large enough to allow differences between groups to be detected the number of facilities included in the sample should be multiplied by the design effect. The design effect is assumed to be 1.5. If the original sample size was 25 facilities, then this number should be increased to 38 facilities. If the original sample size was 35 facilities, then this number should be increased to 53 facilities.

Number of sick children enrolled in the survey: A minimum sample of 100 sick children is desirable to achieve reasonable limits of precision. Ideally, therefore, an average of at least four sick children will be seen at each facility visited. Limits of precision are improved considerably if the number of sick children included in the sample approaches 150 and over. Table 2 indicates the limits of precision for different sample sizes.

Looking for differences between subgroups of children: On occasion, it may be interesting to look for differences in quality care between subgroups, for example by gender or age. In this situation, an increased total number of children will need to be included in the sample to allow comparisons, ideally a sample size of 150 children will be included in each subgroup. To increase the number of children in each subgroup, the number of facilities included will need to be increased. Estimates of the number of facilities that will be needed can be made according to the estimates of the expected proportion of all children presenting to facilities in each subgroup. Increasing the number of facilities is logistically difficult and is not recommended.

2.5.4 Select a sample of health facilities

In this step, health facilities are selected by **systematic random sampling**. The final list of facilities compiled in section 2.5.2 represents all the facilities eligible for sampling and is called the sampling frame. The *sampling frame* should include every type of facility in the geographic area that have been identified as eligible for

inclusion in the survey. It is from this list that the final sample of facilities is selected.

Step 1: Decide on the number of health facilities of each type to include in the sample

The sampling method is designed to ensure that some facilities from each type of health facility (e.g. health posts, health centres and hospital outpatient departments) are included in the sample. The reason this is done is to ensure that the larger facilities (health centres and hospital outpatient departments) are not missed by chance. These facilities usually see more sick children than smaller facilities, and are therefore important contributors to the overall quality of care. Likewise, as they usually represent a minority of all facilities, it is possible that they will not be included by chance alone when unstratified random sampling is conducted.

In different settings, the categories of health facility will differ. This manual assumes that all facilities can be grouped into three broad categories:

- Lowest level health facilities (health stations or health posts). These represent the majority of all health facilities in most sampling frames;
- Intermediate-level health facilities (health centres). These constitute a minority of all health facilities in most sampling frames (often two to four per district);
- Highest-level facilities (hospital outpatient departments). Most sampling frames contain only one hospital, or perhaps no hospital at all.

In order to decide on the total number of each type of facility to select, the following steps should be followed:

1. Take the total number of health facilities listed in the sampling area (section 2.5.2).

   Example: Assume that a total of 50 facilities have been listed in the sampling area.

2. Identify the proportion of all health facilities that are represented by each type of facility (health posts, health centres, hospital outpatient departments).

   Example: Assume that there are one hospital, four health centres, and 45 health posts. The proportion represented by each type is as follows: hospital 1/50 = 2%, health centres 4/50 = 8%, health posts 45/50 = 90%.

3. Apply the proportion of each type of health facility in the total sample to the sample size required for the survey.

   Example: Assume that the required sample size is 30. The number of hospitals to be included in this sample will be 0.6 (i.e. 0.02 x 30) which is rounded up to 1, the number of health centres 2.4 (i.e. 0.08 x 30) which is rounded down to 2, and the number of health posts 27 (i.e. 0.9 x 30) Note: never round down to zero. You should sample a minimum of 1 of each type of facility.

Note: This selection method means that each type of facility will usually have an unequal probability of selection. This must be adjusted for by weighting the results from each type of facility. The weights are the inverse of the probability that the facility was selected. This is discussed in the analysis section.

Step 2: Select the sample of health facilities to be visited using systematic random sampling

1. Number all the facilities in each category in the sampling frame sequentially. Give each facility a unique number. Write the health facility number in the space provided in Form 1 (see example in Table 3).

2. Select a sampling interval (*n*) for each category of facility. The sampling interval is the total number of facilities in the sampling frame divided by the required sample size for that category.

   Example: There are 45 health posts in the sampling frame. The required sample size for health posts is 27. The sampling interval is 45/27 = 1.67 (2). The total sampling frame for health centres is 4. The required sample for health centres is 2. The sampling interval is 4/2 = 2. The sampling frame for hospitals is 1. This hospital must be selected.

3. Sample each type of health facility separately. For each type of facility use a random number table to decide on a starting point (see Table 3). To obtain a systematic random sample.

   - Select a number at random, for example by touching the random number table with the tip of a pencil with your eyes closed. Use the first digit of the random number if the number of facilities in the same category (e.g. health posts) is less than 10. Use two digits if the number of facilities is between 10 and 99.
   - If the random number you have chosen is within the range you need, take it. If not, continue to the next number down the random table until you reach a number that is within the range you need (a random number table is provided in Annex A).
   - Identify the corresponding facility number on the list of all facilities of that type and mark this facility as a selected facility.

- The first selected facility is the starting point for the sample. Count down the list by the sampling interval (n). If you reach the end of the list start again from the top. The nth facility on the list is the next selected facility. Repeat this process until the total number of facilities selected is equal to the sample size for that type of health facility.
- Repeat this process for each type of health facility. Put together the selected facilities from each to get the total sample.

4. If the sample is stratified, the above steps need to be completed for each stratum separately.

Table 3. Example: Systematic sample of health posts

Type of facility : **Health posts**			Number of facilities in the sample: N = 25 Sampling interval: n = 3
District/ geographic area	Health facility name	Number	Selected facility
Manya-Krobo District	Akuse	1	
	Anyaboni	2	√ Random start
	Odumase	3	
	Sekesua	4	
	Djama	5	√
	Oborpa	6	
	Akateny	7	
	Kpong	8	√
	Acuse	9	
	Asesewa	10	
Atwima District	Barekese	11	√
	Abuakwa	12	
	Nkawie	13	
	Asuofua	14	√
	Gyereso	15	
	Ntoboroso	16	
	Nyhinahin	17	√

This table shows the selection of the first six facilities from a list of health posts ordered by district. The random number selected was two, so the second facility on the list was selected as the starting point. The sampling interval was three and every third facility was selected. This process is repeated, down the list, until the desired sample size of health posts (in this case 25) is obtained.

A survey team will go to each of the selected facilities. This sampling method requires that surveyors enroll all sick children presenting to the facility during a fixed period of time—usually the morning clinic session, which lasts until 12:00 or 12:30. The period of time should be the same in all health facilities and will be agreed upon during surveyor training.

Note: Occasionally, sampled facilities may have closed or may not be operating on the day of the survey visit. In this situation, it is important to plan a strategy for replacing the selected facility with another facility nearby. The selection of a replacement will depend on the number of facilities of a similar category that are accessible. All accessible facilities should be listed by supervisors and then one facility chosen by simple random sampling. Supervisors can be trained to select replacement facilities as a part of their training (see Annex C). Alternatively, a few 'replacement facilities' could be randomly selected when sampling the health facilities to be visited.

2.6 Calculating sample size in cluster sampling: more statistical detail

1. Design effect

The *design effect* should be considered when a complex sample survey is proposed. The design effect, also known as the *variance inflation factor (D)*, is an estimate of the amount by which the variance obtained by ignoring clustering needs to be inflated to obtain the correct variance.[1] The design effect is a measure of the efficiency of the design, and can theoretically be defined as the ratio between the estimate of variance under a particular complex sample design to the variance assuming a simple random sample,

$$D = 1 + (m-1)\,\rho$$

where m is the number of elements in each cluster and ρ is the intraclass (or intra-cluster) correlation coefficient, defined as $\rho = \sigma_c^2 / (\sigma^2 + \sigma_c^2)$ (or the ratio of between-cluster variability to total variability)

When conducting a survey using **cluster sampling**, the factor (m-1)ρ gives a measure of the relative change in the sampling variance due to sampling clusters instead of sampling the elementary units directly. In general, ρ is positive and decreases with the cluster size *m*, but the factor (m-1)ρ increases with increasing cluster size, so that cluster sampling becomes less efficient than simple random sampling as the cluster size increases.[2]

Example: if clusters of m = 10 persons each are sampled and ρ = 0.1 then 1 + (m-1)ρ = 1.9, so that the variance of cluster sampling is approximately twice that of simple random sampling of individuals. Thus, even a small value of the intra-cluster correlation coefficient, multiplied by the size of the cluster, could lead to a substantial increase in variance.

2. Sample size in cluster sampling

As cluster sampling is generally less efficient than a simple random sample of the same size, a larger number of units have to be included in a cluster sample in order to obtain the same degree of precision as that of an unrestricted simple random sample of the elementary units.[3]

The required sample size due to sampling clusters is approximately

$$n_c = nD$$

$$= n(1+(m-1)\,\rho)$$

where m is the number of elements in each cluster and n is the sample size required for the given precision had the ultimate units been sampled directly.

Estimation of *n*:

To measure a proportion (p) with a precision of 95%,

$$n = p(1-p)/e^2$$

where e^2 is the required size of the standard error.

3. Assumptions used for estimating confidence intervals in Table 2

a. Limits of precision represent 95% confidence intervals (estimated using +/- 1.96θρ(1-p)/m;

b. The value of the indicator is assumed to be 50% (or p=0.5). Using p=0.5 will result in the maximum sample size;

c. Limits of precision are adjusted for the design effect which is estimated from D = 1+(m-1)ρ where m = expected cases observed at each facility and ρ = 0.1.

[1] Stroup DF, Teutsch SM (1998). *Statistics in public health. Qualitative approaches to public health problems*. Oxford University Press.

[2] Som, RK (1973). A manual of sampling techniques. London, Heinemann Educational Books Ltd.

[3] Som RK, *ibid*.

CHAPTER 3

Preparing to conduct the survey

Schedule of survey tasks

STEP (AND APPROXIMATE TIME TO COMPLETE)	SURVEY TASK
1. Planning the survey Estimated duration for planning and preparing: One to four weeks	1. Select the survey coordinator 2. Identify and involve local counterparts 3. Identify the country-specific objectives 4. Decide on the geographic area and timing for the survey 5. Sample the health facilities to survey
2. Preparing to conduct the survey Estimated duration for planning and preparing: One to four weeks	1. Identify supervisors and surveyors 2. Finalize and secure budget 3. Adapt and translate survey instruments 4. Pre-test survey instruments 5. Prepare a schedule for facility visits 6. Prepare for analysis and dissemination 7. Train supervisors and surveyors
3. Conducting and supervising the survey Estimated duration: Five to seven days	1. Conduct the survey 2. Supervise the survey
4. Entering and analysing data Estimated duration: Five days entry (during data collection), two days analysis	1. Enter data 2. Analyse data: develop data analysis plan
5. Using the information collected Estimated duration: One to two days for discussion; one to two months for completion of feedback and report	1. Discuss and interpret results 2. Write a summary report and present findings 3. Feedback and disseminate findings; present final report

3.1 Identify supervisors and surveyors for the survey

Well-trained, competent and motivated supervisors and surveyors are the key to the completion of a valid and reliable facility survey. For this reason, teams should be selected with care, and with the close collaboration of local counterparts.

The number of facilities to be surveyed determines the number of surveyors and supervisors needed. One survey team can usually visit one health facility per day, including travel time between facilities. Considerable travel time may be necessary to reach very remote facilities. In some cases, it may be possible to travel to more distant areas on the weekend.

To ensure that the quality of fieldwork is kept at a high standard this manual proposes that each survey team is made up of three people—one supervisor and two surveyors.

3.1.1 Determine the number of surveyors and supervisors needed

Calculate the number of surveyors or supervisors needed with the following formula:

$$\frac{\text{(number of health facilities}}{\text{number of working days)}} \times \text{number of surveyors or supervisors per team} = \text{number of surveyors or supervisors needed}$$

Calculating the numbers of people for the survey team

- If 30 facilities are selected to be surveyed in six days, and each survey team has two surveyors:

  (30/6) x 2 surveyors = 10 surveyors needed

- If 30 facilities are selected to be surveyed in six days, and each survey team has one supervisor:

  (30/6) x 1 supervisor = 5 supervisors needed

Therefore, the total number of staff needed = 15

Note: If the result is a fraction, round the number up to ensure that enough surveyors are selected to complete the desired number for a team

It is recommended that a minimum of between 25 and 35 facilities are included in the sample. Data collection is usually planned for five to seven working days (usually Monday to Friday, or Monday to Monday). This is desirable because it can be difficult for surveyors to be away from their routine responsibilities for longer than about two weeks (one week of training, and five to seven days of data collection). In this situation the number of data collection teams (of three people—two surveyors and one supervisor) will be five and the total number of survey staff needed will be 15 (10 surveyors and 5 supervisors).

Some staff may need to be excluded during the training or during the fieldwork for a variety of reasons ranging from low skills, illness or scheduling conflicts. Therefore, it is useful to add two or three extra staff in addition to the minimum number needed.

If there are more than 15 to 18 supervisors and surveyors the task of training and achieving reliability between surveyors become difficult.

3.1.2 Select supervisors and surveyors

Survey staff should be selected by the survey coordinator in collaboration with national and district supervisors. As soon as candidates have been identified, they should be notified and given the dates for the survey.

Essential characteristics of surveyors

- Clinical experience of working in health facilities in maternal and child health. Knowledge of the national child health recommendations and IMCI Clinical Guidelines;
- Ability to speak the local language at sites to be visited;
- Available for the duration of the survey.

Surveyors may include physicians, nurses, health assistants, or other health staff with clinical experience. Surveyors conducting re-examinations of sick children are more likely to be physicians, nurses or health assistants with clinical experience.

The surveyor conducting the exit interview and re-examination of each sick child must have received training in IMCI, and be able to conduct a sick child examination using the patient recording form.

Essential characteristics of supervisors

In addition to the characteristics suggested for surveyors, ideally supervisors should have the following skills:

- A good understanding of how health facilities operate;
- Experience in district supervision activities, or in follow-up visits to IMCI-trained health workers or in IMCI facilitator training;
- Previous survey experience.

Supervisors may include district supervisors, programme managers, regional or district public health programme staff, or experienced health care workers. In some situations it is useful to identify supervisors in advance to ensure that an adequate number of individuals with appropriate skills is selected. In other situations it may be possible to identify supervisors from the best participants during the training. Specific survey tasks and responsibilities for team supervisors are described in Chapter 4. It is often helpful to include selected surveyors or supervisors in the data analysis. Supervisors must be available for at least two weeks, this period is extended to three weeks if they are to be involved in the data analysis stage.

Assignment of survey teams

Teams are often best assigned during the survey training when the individual strengths, weaknesses, and personal preferences of the surveyors are known.

3.2 Finalize and secure the budget

Once the health facilities to be visited have been identified (Chapter 2), and the number of surveyors and supervisors determined, it is possible to finalize the budget. Cross-sectional surveys of this type can be expensive, and it is important that a clear and detailed budget is prepared and agreed upon before initiating activities.

All survey activities should be included in the budget, including those related to analysis, feedback and dissemination of results. If the budget available is limited, it is important not to cut out the analysis, feedback and dissemination components. It may, instead, be possible to reduce the sample size, in some cases, it may even be necessary to delay the survey until resources are available. A detailed example of a budget is included at the end of this section. Key components of the budget are outlined below:

- Preparatory meetings to plan the survey (including deciding on objectives, geographic area, sampling, survey methods), and prepare the survey (including

identifying supervisors and surveyors, adapting and translating instruments, and planning field work and training);

- Adaptation and translation of survey instruments and selected sections of the survey manual (if necessary);
- Pre-testing of survey instruments at health facilities not included in the sample;
- Training of survey staff (numbering approximately 15 survey staff plus facilitators for one week);
- Preparing copies of all survey instruments;
- Field work (surveyors, supervisors, vehicles, fuel, drivers and accommodation);
- Analysis and follow-up (count at least five days for five to ten people), in addition to organising a venue, computers, production of reports and trips to disseminate results, workshops or meetings.

It is the responsibility of the survey coordinator, in collaboration with local counterparts, to identify and secure funding for the full budget. Survey costs are often shared between the Ministry of Health (national or local funds), and national or international partners.

3.3 Adapt and translate survey instruments

Adaptation of instruments

Some questions in the survey instruments need to be adapted for local use according to local policies, guidelines and practices. Adaptation needs to be conducted in close collaboration with local programme managers and health staff. Locally available IMCI clinical guidelines will provide information for many of these adaptations. For example, in some countries, IMCI clinical guidelines may include additional conditions (such as dengue haemorragic fever, HIV/AIDS, or throat problems) or exclude some conditions (such as malaria, or measles). Questions that usually need to be reviewed for local adaptation are summarized in Table 4.

Changes made in the survey forms may require that corresponding changes are made in the instructions for each question, and in the training guidelines for surveyors and supervisors. Case scenarios used during training may also need to reflect country specific conditions.

Note: To ensure that all surveys and indicators are consistent adaptations should not change the meaning of the existing questions. Questions can be deleted if they are not considered relevant for the programme. Questions can be added if they are considered important to the programme. If questions are added or deleted, it is critical not to change the existing numbering of the questions—since this will mean that the question by question explanations and EpiInfo files will need to be changed. If additional questions are added, consider adding sub-numbers (for example 22a, 22b) so that the overall numbering stays the same. In addition, 'gaps' in the question numbers have been included in the instruments—these provide space for adding additional questions. For example, in instrument 1, the first question has the number 3.

Note on adaptation of classification steps: If survey objectives include the collection of baseline information on case-management practices prior to the implementation of IMCI, then IMCI classifications cannot be used for recording the health worker diagnosis. In these cases the survey coordinator, in collaboration with local clinicians and Ministry of Health officials, needs to develop a list of classifications usually used by health workers in outpatient health facilities. Criteria for determining whether or not the health worker diagnosis is consistent with IMCI standards then need to be developed. This will make it possible to check whether or not the health worker's diagnosis was correct.

Translate survey instruments

Observation and exit interview instruments must be administered in the principal local language. The use of accurate local terms is particularly important when administering the exit interview, which is conducted directly with caretakers as they leave the health facilities with their children. Translators should work closely with the survey coordinator and local health staff to ensure that the appropriate terms are used. In many countries, it has been useful to produce survey forms with questions written in both the national language and the local language. This makes it easier for surveyors to convey the correct meaning in the local language.

The initial translation of instruments into the local language should always be followed by a back-translation into the national language to check whether the translation is appropriate; local counterparts may be able to assist with back-translation (this should be done by staff who are not familiar with the original version of the instrument). Even good local translations often need to be further modified during surveyor training to ensure that all questions are clear and consistent. In areas with many local languages or dialects, caretakers may not understand the principal local language and a single translation may not be adequate for all areas. In these circumstances, translation of the exit interview instrument into many different local dialects can be both expensive and time consuming and is not recommended. A

Table 4. Survey instrument questions for possible adaptation

Instruments	Decision needed	Action required
ALL INSTRUMENTS		
Summary information at the beginning of the instrument	What are the administrative divisions in the sampling area that will be important in the analysis? (e.g. zone, region, district)	Modify options for administrative divisions
	What are the main categories of health workers?	Modify options for health worker category
INSTRUMENT 1. OBSERVATION CHECKLIST		
Questions C05-C61	Do classifications match national IMCI guidelines?	Modify classifications to be consistent with IMCI guidelines
Questions T7a-T7n.	What first- and second-line antibiotics and antimalarials are used locally?	Add the names of first- and second-line antibiotics and antimalarials
INSTRUMENT 3. RE-EXAMINATION OF THE SICK CHILD		
Assessment and classification	Are assessment and classification steps consistent with national IMCI guidelines? guidelines	Modify assessment and classification steps to be consistent with IMCI
	Are there other routine vaccines that need to be screened?	Add vaccinations that are not currently screened
INSTRUMENT 4. EQUIPMENT AND SUPPLY CHECKLIST		
Table 1: Health workers assigned to the facility	Are the categories of health workers consistent with national standards?	Modify categories of health workers
E1a. Equipment and materials	Should other essential equipment or material be included?	Add any other essential equipment or material
E6. Vaccine stock	Are there other routine vaccines that are not listed?	Add any other routine vaccines
D1. Essential drugs	What first and second-line antibiotics and antimalarials are used locally?	Add the names of first- and second-line antibiotics and antimalarials
R1-5. Facility records	What is the type of information expected to be available in first-level facility records	Adapt accordingly

more practical solution is to use local interpreters to ask exit interview questions in these areas. It is important for the survey coordinator to allow sufficient time for the translation, review, and modification of the instruments (a minimum of two weeks should be allowed to complete this process).

3.4 Pre-test survey instruments

The adapted and translated instruments should be pre-tested in local health facilities that are not included in the survey sample. Pre-testing does not require a large number of facilities and can be done at one or two sites. Each instrument should be administered a few times at these sites. The survey coordinator can conduct a pre-test in collaboration with one or two local health staff. The purpose of the pretest is to:

- Check the clarity of the questions and modify the wording of questions if necessary;
- Check the comprehension of the translated questions and modify if necessary;
- Check that the adaptation accurately reflects local conditions and make corrections if required.
- Check the design of the form to ensure that there is enough space for answers to be written, and that the format is not confusing or difficult to manage.

Once corrections have been made, the instruments are ready for copying and can be used to train surveyors.

3.5 Prepare a schedule for facility visits

Using the final sample of health facilities, the survey coordinator, in collaboration with local counterparts, should prepare in advance an itinerary of facility visits for each survey team, including overnight stops. As each team will visit one health facility per day, it is important to choose facilities that can be reached each day. Teams should plan to visit health facilities in the morning and early afternoon and to travel to the next location in the afternoon. It is important that each survey team get to each health facility before the child health clinic opens; the overnight stop should be close enough to allow this to occur. It is also important that each survey team stays at the facility the number of hours agreed upon during the training.

Arrangements for reaching one health facility each day will depend on the condition of roads and on the availability of lodging. In more remote areas, lodging may be scarce and arrangements may need to be made for survey teams to stay with local health staff. The itinerary will be further discussed with the survey teams at the end of training activities and modified if necessary.

Form 3 (see Annex A) is used for recording the survey schedule for each team, an example is shown on the next page. It is useful to have maps of the survey area available for planning the schedule of visits.

Note: During the surveyor training, decisions will be made on how to ensure that all sick children coming to facilities on the day of the survey visit can be seen. In smaller facilities this is easy because the number of cases is relatively low. In larger facilities, for example large health centres or hospital outpatient clinics, this can sometimes be difficult. In these kinds of facilities, it may be necessary to assign two survey teams to attend the clinic on the same day—this will have implications for the survey schedule as it may add an additional day of fieldwork for these two teams.

3.6 Prepare for analysis and dissemination

Code each sampled health facility

In order to facilitate data collection and analysis, each facility included in the sample needs a unique identification or code number. Survey coordinators should give each facility in the sample a different two-digit code number. The easiest way to do this is to number all sampled facilities sequentially from 1 to *x* (with *x* being the last facility in the sample). Survey coordinators will have already done this at the sampling stage (see section 2.5.2).

This code number is written in the box provided in the survey schedule for each survey team. Surveyors then write this number on their survey forms in the space where the facility code is requested.

Note: If stratified sampling is being used, the same principle applies—each facility needs a unique identification number. Facilities in the second stratum can be given numbers that continue sequentially from facilities in the first stratum. In addition, a variable will be needed which identifies each stratum.

Form 3: Survey schedule for team

Day	Date	Location	Health facility		Overnight location
			Code no.	Name, type	
1					
2					
3					
4					
5					
6					
7					

Develop data entry and analysis plan

It is useful to plan strategies for analysing and using this information with counterparts before the survey begins. An approach to data analysis is summarized in Chapter 5. During the preparatory phase, the survey coordinator can:

- Ensure that enough time and budget have been allocated for the data entry, analysis, and dissemination of survey findings
- Ensure that a data entry and analysis coordinator has been identified and find staff for data entry.

  The data entry and analysis coordinator are often the same person. At the end of the fieldwork, data will need to be coded, cleaned, and entered. Decisions need to be made about who will be responsible for each of these steps. Additional staff may be required for data entry. The analysis coordinator should be familiar with simple EpiInfo analysis, the survey instruments, the rules to fill in the instruments agreed upon during the training of surveyors, as well as the indicators.
- Prepare for data analysis and discussion of findings following the field work.

  The data analysis team needs to be identified. Members of this team could include; selected supervisors and surveyors; training facilitators; district and regional programme managers; national programme planners. In some cases a few sessions to practice EpiInfo would help team members feel comfortable with the software before the data analysis. If changes are needed to survey instruments the EpiInfo files for data entry and analysis may need to be adapted and tested. Survey forms used by surveyors during the training may be used to test EpiInfo files. **The analysis plan, including tables and indicators, should be reviewed and discussed.** The data analysis plan is presented in Chapter 5.
- Schedule dates for the analysis (the week immediately after the field trip is recommended).

  Scheduling for data analysis will depend on the expected time required to code, clean and enter all the field data. If time permits, double data entry is highly recommended as the two datasets are compared to screen for data entry errors.
- Identify at least three portable or desktop computers to use for data analysis and install software for analysis (EpiInfo version 6.04, or later). Participants often work in teams of three and one computer per team is ideal.
- Identify a venue for data analysis activities. As there are usually fewer participants than for the training, this venue need not be large.

Prepare data dissemination plan

In addition, the survey coordinator can plan for feedback and dissemination of results, and discuss possible approaches with local counterparts. Possible approaches to feedback could include:

1. Production and distribution of a summary report of the survey, highlighting the major findings. A distribution plan for the summary report can be developed and should include lower-level health workers.
2. Feedback and planning meetings with local health facility staff in order to highlight achievements, prioritize problems, and develop possible strategies for strengthening achievements and addressing problems (it is proposed that feedback meetings follow data analysis. Feedback can be conducted in small or large groups).
3. Feedback and planning meetings with regional- and district-level health staff and supervisors to highlight achievements, prioritize problems and develop strategies for strengthening achievements and addressing problems through existing public health programmes and resources.
4. Feedback and planning meetings with national health staff and donor organizations.
5. Short editorials in local newspapers or other media highlighting selected survey findings and recommendations. This may help raise awareness in communities about the evaluation and actions to be taken. Seminars for local medical associations or groups may strengthen commitment and support to quality child health programmes.

Note: Follow-up meetings should be arranged in advance to ensure that all relevant staff are available. Meetings with local health facility and district staff are often very useful because they can provide opportunities to better understand the survey findings and to generate practical recommendations for addressing problems. These meetings should take place as soon as possible after the completion of survey activities, and the outcomes of such meetings should be incorporated in the final survey report.

3.7 Preparing for training

Training of supervisors and surveyors is outlined in detail in Annex C. There are a number of preparatory tasks required to prepare for the training and these are summarized here:

Identify facilitators

A facilitator to participant ratio of 1:6 is ideal. A total of two or three facilitators will be required. Before training begins facilitators should become familiar with the survey instruments, the conduct of the survey section of this manual, the question by question instructions for the instruments, and the training schedule. Roles and responsibilities for each facilitator need to be decided in advance. Facilitators should be familiar with national clinical guidelines and have received IMCI clinical training.

Select an administrative assistant/secretary

The administrative assistant can assume responsibility for coordinating all administrative arrangements, including accommodations, distribution of per diems, management of vehicles, and procurement of materials and supplies. In addition, this person will be responsible for ordering and typing the rules agreed upon by the training group at the end of each day. These rules and guidelines need to be updated daily and circulated to all participants at the end of the training session.

Select a venue

The venue for training activities will need to be large enough to hold all participants and to allow work in small groups. Lighting and ventilation should be adequate and the venue should be accessible for participants. Coffee and tea breaks are often provided in the morning and afternoon.

Procure materials

Surveyors will need to be provided with a copy of the national clinical guidelines or IMCI Clinical Guidelines being used in the survey area, along with paper, pens, pencils, erasers, pencil sharpeners, and clipboards. If necessary, watches for timing the start and end of observations and interviews will also need to be provided. Flipcharts or blackboards will be required for presenting information to the group. Adapted, translated, and pre-tested instruments will be required for training activities.

Arrange training visits to health facilities

In collaboration with local counterparts, the survey coordinator will need to select two or three local health facilities with outpatient child health clinics for field practice sessions. None of these facilities should be included in the final sample for the survey. The chief of each facility should be contacted and informed on survey activities. The proposed days of visits by trainees and the expected number of trainees need to be decided with the facility staff.

3.8 Train supervisors and surveyors

Training of supervisors and surveyors is organized the week before the survey field work. A minimum of *five days* is required for training. A detailed training outline, including a day-by-day summary of activities, is presented in Annex C.

3.8.1 Training objectives

The objectives of the training are to prepare supervisors and surveyors to:

1. Perform all survey tasks, including using the survey instruments, managing survey activities at a health facility, and identifying solutions to problems;
2. Establish rules with other surveyors on how to interpret questions or words in the survey instruments;
3. Reach agreement and consistency with other surveyors in following the survey procedures and completing the survey forms (inter-surveyor reliability).

Training and rigorous practice in the use of forms is necessary order to increase reliability, reduce errors, and increase efficiency in doing survey tasks. A five-day training schedule is recommended in order to have enough time to make supervisors and surveyors comfortable with the survey procedures and instruments. Clinical practice is critical; a minimum of two to three half-days of practice in busy facilities is recommended.

In addition to the training schedule for surveyors, team supervisors will require some specific training. Team supervisor training is often done at the end of each training day. In some countries, one or two extra hours are added at the end of each day, starting on the second day. In addition, the last afternoon before fieldwork begins also provides time to brief supervisors.

3.8.2 Key training tasks

Training of supervisors and surveyors is critical to obtaining valid and reliable survey results and for this reason, a great deal of emphasis is placed on the training process. The key tasks that are accomplished during the training week include:

- Identification of surveyors and supervisors and formation of survey teams;

- Finalization of the survey itinerary;
- Agreement on how to conduct the survey at each health facility in a way that is consistent and allows all sick children to be observed;
- Inter- and intra-surveyor reliability for completing all key survey instruments of at least 85–90% so that there is reasonable confidence that all surveyors are asking or interpreting the questions in the same way (a method for assessing surveyor reliability is discussed in Annex C. Training Survey Staff);
- Supervisors understand how to check survey instruments;
- Supervisors and surveyors have an understanding of how to solve common problems encountered, including how to manage re-examined children who have been misclassified or mistreated; and
- Practical arrangements are made that allow data to be collected efficiently from all survey teams and transported back to the centre.

Example survey budget

Note: this is an example that needs to be carefully reviewed and adapted by countries when budgeting for a survey (# = number of)

Expense type	Rate/unit	#Units	Amount
GENERAL SURVEY STAFF			
Survey coordinator	Rate/day	#days	
Secretary/administrator	Rate/day	#days	
Accountant	Rate/day	#days	
Transport	Rate/day	#days	
Other (specify)	Rate/day	#days	
SURVEY PREPARATION AND PRE-TEST OF MATERIALS			
1. Planning and sampling			
Meeting venue	Rate/day	#days	
Transport for participants	Cost of fares		
Per diem for participants	Rate/day	#days	
2. Field test			
Driver	Rate/day	#days	
Fuel	Cost of fuel/litre x avg #litres/day	#days	
Fares (specify)	Cost of fares	#fares	
3. Per diem			
Survey staff (specify)	Rate/day	#days	
Driver	Rate/day	#days	
4. Photocopies			
Instruments 1–4	Cost/page	#pages	
Enrolment card	Cost/page	#pages	
Optional survey instrument	Cost/page	#pages	
Manual chapters (specify)	Cost/page	#pages	
Itinerary	Cost/page	#pages	
Other (specify)	Cost/page	#pages	

Expense type	Rate/unit	#Units	Amount
5. Translation			
Instruments (specify)	Cost/page or cost/day	#pages or #days	
Survey manual (specify sections)	Cost/page or cost/day	#pages or #days	
6. Other (specify)			
7. Supplies (specify)	Cost/unit	#units	
TRAINING			
1. Trainers and survey staff			
Facilitators	Rate/day/#facilitators	#days	
Drivers	Rate/day/#drivers	#days	
Secretary	Rate/day	#days	
Accommodations for participants	Cost/day	#days	
Other (specify)	Rate/day	#days	
2. Transport (including field practice)			
Fuel	Cost of fuel/litre x avg #litres/day	#days	
Fares (specify)	Cost of fares	#fares	
3. Per diem			
Trainees	Cost/day	#days	
Trainers	Cost/day	#days	
Drivers	Cost/day	#days	
Others (specify)	Cost/day	#days	
4. Training venue			
Rent	Rate/day	#days	
Equipment rental (e.g. overhead projector)	Rental rate/day	#days	
5. Tea and snacks			
(specify)	Rate/day or rate/person	#days or #persons	
6. Photocopies (training and field practice)			
Instruments 1–4	Cost/page x no. pages/ estimated # for training and practice	#participants	
Enrolment card	Cost/page x no. pages/ estimated # for training and practice	#participants	
Optional survey instrument	Cost/page x no. pages/ estimated # for training and practice	#participants	
Manual chapters (specify)	Cost/page x no. pages	#participants	
Rule list	Cost/page x no. pages	#participants	
Survey forms (reliability checking forms)	Cost/page x no. pages	#participants	
Itinerary for field practice	Cost/page x no. pages	#participants	
Other (specify)	Cost/page x no. pages	#participants	

Expense type	Rate/unit	#Units	Amount
7. Supplies			
White/black board (flipcharts)	Cost/unit	#units	
Pens, pencils	Cost/unit	#units	
Paper, stationary	Cost/unit	#units	
IMCI chart booklets	Cost/booklet	#participants	
Bags	Cost/bag	#bags	
Other (specify)	Cost/unit	#units	
FIELD WORK			
1. Personnel			
Surveyors and supervisors	Rate/day	#days	
Drivers	Rate/day	#days	
Local guides/translators	Rate/day	#days	
Other (specify)	Rate/day	#days	
2. Transport			
Fuel	Cost of fuel/litre x avg #litres/day	#days	
Fares (specify types)	Cost of fares	#fares	
3. Per diem			
Survey staff	Cost/day	#days	
Drivers	Cost/day	#days	
Others (specify)	Cost/day	#days	
4. Photocopies			
Instruments 1–4	Cost/page x no. pages	Estimated # of observations (1–3) plus10% extras Estimated # of facilities (4)	
Enrolment card	Cost/page	Estimated # of observations	
Optional survey instrument (6)	Cost/page x no. pages	Estimated number of health workers	
Survey forms (list of facilities, survey schedule, health facility, summary form)	Cost/page x no. pages/ #forms	#participants	
Itinerary for field practice	Cost/page x no. pages	#participants	
Other (specify)	Cost/page x no. pages	#participants	
5. Supplies			
Envelopes/plastic bags for completed survey instruments	Cost/unit	# health facilities	
Mosquito nets	Cost/net	#nets	
Emergency kits	Cost/unit	#units	
IM medicines for treating severely ill children, if necessary			
Supplies for hand washing			

Expense type	Rate/unit	#Units	Amount
Other (specify)			
Cost of regular communications with survey coordinator	Estimated costs	# survey teams	
ANALYSIS AND DISSEMINATION			
1. Personnel			
Data Entry staff	Rate/day	#days	
Selected survey staff	Rate/day	#days	
Driver	Rate/day	#days	
Others (specify)	Rate/day	#days	
2. Transport			
Fuel	Cost of fuel/litre x avg #litres/day	#days	
Fares (specify)	Cost of fares	#fares	
3. Per diem			
Data entry staff	Cost/day	#days	
Selected survey staff	Cost/day	#days	
Driver	Cost/day	#days	
Others (specify)	Cost/day	#days	
4. Analysis venue, equipment and supplies			
Analysis venue	Cost/day	#days	
Computers	Cost/computer	#computers	
Printers	Cost/printer	#printers	
Computer/printer supplies	Est. cost	Est. cost	
Computer repair/maintenance	Cost/service	#services	
Flip chart/stationary for analysis	Cost/unit	#units	
5. Photocopies			
Indicator definitions	Cost/page	#pages	
Variable list/plan for analysis	Cost/page	#pages	
Summaries of survey findings	Cost/summary	#summaries	
Meeting reports	Cost/summary	#reports	
Other (specify)	Cost/page	#pages	
6. Dissemination			
Hall (venue)	Cost/day	#days	
Tea and snacks	Cost/unit	#units	
Travel to districts	Cost of fares	#fares	
Per diem for travel to districts	Rate/day	#days	
Equipment rental	Est. cost/day	#days	
Other (specify)			
7. Other dissemination costs (specify)			
TOTAL			

CHAPTER 4

Conducting and supervising the survey

Schedule of survey tasks

STEP (AND APPROXIMATE TIME TO COMPLETE)	SURVEY TASK
1. Planning the survey Estimated duration for planning and preparing: One to four weeks	1. Select the survey coordinator 2. Identify and involve local counterparts 3. Identify the country-specific objectives 4. Decide on the geographic area and timing for the survey 5. Sample the health facilities to survey
2. Preparing to conduct the survey Estimated duration for planning and preparing: One to four weeks	1. Identify supervisors and surveyors 2. Finalize and secure budget 3. Adapt and translate survey instruments 4. Pre-test survey instruments 5. Prepare a schedule for facility visits 6. Prepare for analysis and dissemination 7. Train supervisors and surveyors
3. Conducting and supervising the survey Estimated duration: Five to seven days	1. Conduct the survey 2. Supervise the survey
4. Entering and analysing data Estimated duration: Five days entry (during data collection), two days analysis	1. Enter data 2. Analyse data: develop data analysis plan
5. Using the information collected Estimated duration: One to two days for discussion; one to two months for completion of feedback and report	1. Discuss and interpret results 2. Write a summary report and present findings 3. Feedback and disseminate findings; present final report

4.1 Conducting the survey

At the end of the training, the survey coordinator assigns the survey teams facilities to survey. A survey team consists of two surveyors and a team leader or supervisor. Each member of the survey team will administer the same instruments at each health facility to improve the reliability of the results, for example one surveyor will always conduct health worker observations, the second will always conduct the exit interview and re-examination. During field activities supervisors accompany the surveyors to check their performance and help solve problems. Usually each survey team visits one facility per day.

All survey material should be made available when the field activities begin as each survey team works independently (see the list of materials and supplies at the end of this section). Surveyors should have access to transport (usually assigned vehicles) to each sampled health facility, and have a per diem for meals and accommodation.

The survey teams should arrive at the assigned health facility about half an hour before it opens in the morning. By arriving early, survey teams can introduce themselves to health workers, explain the purpose of the visit, and prepare for the survey work. To arrive early, surveyors may need to travel in the afternoon or evening after facility visits, and spend the night close to the next facility to be surveyed.

4.1.1 Begin work at the health facility

The supervisor is responsible for introducing the survey team to the health worker in charge and explaining the purpose of the visit. It is important that health workers understand that they should not change their routine activities. It is also important for them to understand that surveyors are there to collect information, not to judge practices, and that all health workers are anonymous in the survey. Once health staff are familiar with the purpose of the visit, the following tasks can be completed:

- **Identify health worker (s) who are responsible for seeing sick children.**

  In most facilities there is only one health worker responsible for seeing sick children all clinical observations will be conducted with this health worker. In larger facilities, there may be two or more health workers seeing sick children. In this situation, surveyors conducting the observations of clinical practice will follow each sick child to the health worker who sees them, and are therefore likely to observe clinical visits with more than one health worker. It is important that health workers keep working normally, and do not change their routine activities because of the presence of the survey team.

- **Obtain permission from health worker(s) seeing sick children.**

  Health workers seeing sick children need to give permission for surveyors to observe their clinical practice. This is usually not a problem. It is best done before the clinic session begins, when there is time to explain the purpose of the clinical observation and to answer questions. A letter from the district or regional MoH is sometimes helpful to explain the purpose of the survey and indicate that it has official support.

Obtaining the permission of health workers

It is important to assure the health worker that you are not evaluating his/her competence. This is an example of how you can introduce yourself:

"I am _____ from the Ministry of Health. I am here to do a study about children with common illnesses, and how they are routinely managed in health facilities. My colleagues and I would like to observe the case management of sick children. Please proceed as you usually do. Please be aware that we are not supervisors and that we are not here to judge you or your work. We will not be able to give any opinions, advice, or participate at all in the consultations. Please proceed as you usually do."

The most appropriate way for surveyors to introduce themselves will be discussed and agreed upon during the surveyor training.

- **Decide how and where sick children for the survey can be identified for inclusion in the survey.**

  Convenient areas to screen children for the presenting complaint before they see the health worker are at the point of registration or at a common waiting area.

- **Select a suitable place where caretakers can be interviewed and where children can be re-examined after the sick child consultation.**

  Two chairs are required. It is better that the interview be conducted away from other caretakers and from health workers seeing sick children so they do not hear the questions or responses. If available, another room is ideal for this purpose.

- **Decide which health worker will assist the supervisor to assess the equipment, materials and supplies, and staffing issues.**

  Most sections of the equipment and supply checklist can be completed by the supervisor during the clinic session. Some areas require assistance, particularly those that collect information on staffing and supervision.

4.1.2 Selecting and enrolling children

The supervisor is responsible for selecting sick children to include in the survey as they present to the health facility. All caretakers and children waiting to be seen before the clinic session begins can be screened as they wait. All new caretakers and children are screened as they arrive. *All sick children meeting the criteria for entry into the survey who present to the facility during the morning clinic session will be included in the survey*.

Children to include in the survey:

- Between two months and five years (59 months) of age;
- Described as sick by the caretaker. Sick children must have at least one of the following complaints: signs or symptoms of severe illness (change in consciousness/lethargy, convulsions, vomiting everything, not eating or drinking); fever/malaria; cough, fast/difficulty breathing, pneumonia; diarrhea/vomiting; ear problem; measles; nutrition or feeding problems;
- First visit to *this* health facility for *the current* problem. The child may, however, have visited another public or private health provider for the same symptoms.
- Arriving at the facility for the morning clinic session; usually before 12:00 or 12:30 pm. Children arriving after the morning clinic session are considered to be a part of the afternoon clinic session, and therefore form a different group. It is usually not practical to survey children coming to both the morning and afternoon clinic sessions because of time constraints.

All children arriving for the morning clinic session should have an equal probability of selection.

Supervisors can ask caretakers three screening questions on the children:

1. How old is this child?
3. What is wrong with this child?
4. Is this your first visit to this health facility for this illness?

Note: If a caretaker has more than one sick child, then each child is treated as a separate child and screened separately. A caretaker can have more than one child included in the survey.

Obtain caretaker consent

When children who meet the case-definition for inclusion on the survey are identified, supervisors need to obtain consent from the caretaker. Caretakers need to be told that the survey involves an observation in the clinic room, a re-examination and an exit interview at the end. They are then asked if they are willing to participate. Any questions caretakers have can be answered. An example of a standard greeting and informed consent statement is shown in the box below. This is prepared and practiced during the training. After the statement has been read, the supervisor records whether the caretaker agrees to participate on the enrolment card (see the section below).

Example of an informed consent statement to be read to caretakers:

"Hello. I am _____ from the Ministry of Health. I am here with my colleagues to do a study about children with common illnesses, and how they are routinely assessed and treated in health facilities. A member of our team would like to observe the consultation between your child and health worker. Following your consultation another member of our team would like to ask you some questions about your experience during the consultation, and to have another look at the child. There are no risks or direct benefits to you from participating in the survey, but your participation will contribute to improving health services in this and other facilities. Your child will still be seen and treated if you do choose to participate. Please be assured that the information will be confidential and you may end your participation at any time or refrain from answering any questions."

"At this time, do you want to ask me anything about this survey?"

"Do I have your agreement to participate?"

Complete a survey enrolment form

The caretakers of all sick children meeting the case-definition for inclusion in the survey, and who consent to taking part, should be given an enrolment form (Annex A). The enrolment form is carried by the caretaker through the facility and identifies them to the surveyors so that they can be included in the survey. In addition, the basic descriptive information on the card (age, presenting complaint, sex, ID number) can be used by surveyors for completing the first section of the instruments. The enrolment form will be collected when the caretaker leaves the facility. A detailed description of how to complete the enrolment form is provided in Annex B.

All children included in the survey should have an enrolment form. If a caretaker has more than one child included in the survey, then an enrolment form should be completed for each child.

4.1.3 Completing survey instruments

Each member of the survey team administers the same instrument (s) at each facility to improve the reliability of results. The protocol for completing each instrument is given in Annex B.

Surveyor number 1: Observation of the consultation between the health worker and sick child and caretaker

Identifying children for observation

If there is only one health worker seeing sick children at the clinic, then all observations will be conducted with the same health worker. If there is more than one health worker seeing sick children, the surveyor comes back to the waiting area after each observation, then identifies the next child included in the survey from the enrolment form, and follows that child to the health worker who will be taking care of him/her. This health worker could be the same, or a different health worker. The procedure for identifying children for observation will be practiced during surveyor training.

Method for completing the instrument

The surveyor should be located in the examination room close enough to the health worker to be able to hear and observe the consultation clearly and accurately. It is important that surveyors are as unobtrusive as possi-

ble and that they do not disrupt the consultation session. A new observation checklist is completed for each infant or child that is seen. If a caretaker has more than one sick child, then an observation checklist is completed for each child with an enrolment form. At the end of the observation, the surveyor must ensure that the observation instrument is completed (e.g. that all 'yes' and 'no' responses are circled) before the next observation. In addition, at the end of each consultation, the surveyor must ensure that the caretaker waits to have an exit interview and that the re-examination is completed.

In crowded facilities, more than one health worker may be stationed in the same room. In this situation, it is important that other health workers do not watch the clinical observation. This may bias the practice of the health worker being observed, and may also disturb the health workers who are observing.

Surveyor number 2: Exit interview with caretakers of sick children and re-examination of each sick child.

Identifying children for exit interview and re-examination

All children with a completed observation instrument should have an exit interview and re-examination. These children will all have an enrolment form and should be accompanied by the first surveyor or the supervisor to the site of the exit interview and re-examination.

Method for completing the instruments

The exit interview and re-examination should be conducted away from waiting caretakers and children. This is done to make sure they do not hear the questions and answers in advance, and to dissuade them from participating in the interview as a group may bias the results. If needed, there should be a place for caretakers to wait with their children. In some areas, it may be necessary for an interpreter to ask questions in the local language. The supervisor at each health facility should identify a local interpreter as there may be need for his or her services.

After completing the exit interview, the surveyor re-examines the sick child following the IMCI clinical guidelines and records the findings on the sick child reporting form (Survey Form 3). If necessary, caretakers are given additional information on the treatment or home case-management of the child. At the end of the clinic session, the supervisor copies the re-examination classifications in the appropriate box on the observation checklist (Survey Form 1), completes the coding boxes on the observation checklist (Survey Form 1), and completes the coding boxes on the exit interview (Survey Form 2).

Note: During surveyor training, a protocol is developed for managing; 1) children who are identified at the re-examination as inadequately or incorrectly treated; and 2) children who are identified at the re-examination as being severely ill and in need of urgent referral. Children identified as severely ill can be transported to the nearest referral facility in the survey vehicle, for example.

Supervisor: Equipment and supplies checklist

The supervisor is responsible for completing the equipment and supplies checklist. Proper completion of this form requires direct observation which can be done during the consultation session. Some sections must be asked directly to clinic staff (staffing, training status of staff, supervision, and the location of drugs).

4.1.4 Checking and reviewing instruments

The responsibility of surveyors

Surveyors check and complete each instrument after it has been administered to ensure that all responses have been circled. Immediate review of instruments makes it easier for surveyors to remember and complete the information that may have been missed or skipped. Missing information can be obtained from the health worker or the caretaker.

The responsibility of supervisors

During the clinic session, supervisors periodically review instruments for completeness. They should also observe surveyors as they complete the instruments, to look for errors or problems. They can also complete instruments themselves and compare their findings with those of the surveyors. Before leaving the health facility at the end of the session supervisors should sit with surveyors and review all instruments completed that day. Any problems or questions encountered by surveyors in the course of the day can be discussed, and possible solutions identified. Important issues faced and solutions identified can be summarized as very short notes. The final set of completed forms (enrolment card, Forms 1, 2 and 3) is stapled together for each child, and stored with the completed Form 4 (facility equipment and supplies) to be transported back to the data entry site.

4.1.5 Leaving the health facility: providing feedback to staff

Before leaving the health facility supervisors and surveyors should thank the person in charge and the health

workers who participated in the survey. If time allows, surveyors may also give some immediate feedback to health workers. The focus of any feedback should be to improve the quality of case-management practices. Positive findings should be emphasized. Areas that can be improved should be explained tactfully. Supervisors and surveyors should not comment on areas in which they do not feel professionally competent and/or experienced. Feedback in the following areas may be useful:

- The quality of case management, particularly assessment, classification, and treatment of sick children. Classification and treatment errors can be noted;
- Quality of home-care advice and communication with caretakers, and the opinions of caretakers on the quality of services provided;
- Inappropriate use of medications;
- Drugs, vaccine supply, or storage;
- Record keeping;
- Elements of clinic organization, such as screening activities, health education and drug prescription, that may impact the quality of care provided;
- Information on how survey findings will be used by the Ministry of Health;
- Clarification on how the feedback will be provided by the Ministry of Health.

4.1.6 Managing completed forms

Whenever possible, completed and checked survey instruments should be returned to the central coordination point for final checking and data entry each day. The survey coordinator and data entry staff will conduct a final review of the instruments for completeness and consistency—although small data recording errors can be corrected at this stage, larger errors (such as missing data) cannot. The quality of the data is therefore highly dependent on the process of review and completion in the field, conducted routinely by surveyors and supervisors. Data are then entered into the EpiInfo database and cleaned. Return of instruments during the data collection period, will allow data entry to begin early, so that the analysis phase can proceed as soon as possible.

The frequency of return for completed instruments will depend on the logistics and itinerary of each survey team; some teams will visit facilities that are more accessible to the central coordination point and some will visit remote facilities. Arrangements should be made in advance with team supervisors for the return of completed instruments.

4.2 Supervise the survey

Supervisors play a key role in ensuring that high quality data are collected at health facilities. Each survey team has one supervisor. Supervisors may be identified prior to the survey training, or may be selected from the best participants during the training.

Supervisors are responsible for managing logistical and administrative arrangements in the field, so that all facilities are visited as scheduled. Once fieldwork begins, each team supervisor oversees the process of data collection by his or her team, and ensures that data are accurate and complete. The supervisor must also reinforce the lessons the surveyors learned in training, and continue this training while in the field. Supervisors are responsible for multiple tasks, including those listed below:

4.2.1 Before getting to health facilities

- Review and complete a survey itinerary for the team, describing facilities that will be visited each day of the fieldwork, and overnight stops.
- Plan and agree on a schedule for returning completed instruments for data entry and for regular feedback to the survey coordinator. In some countries it is possible for the cell phone network to be used for regular communication between the survey coordinator and supervisors;
- Ensure that the team has an adequate supply of survey instruments and other forms and stationary supplies;
- Manage all practical arrangements for the fieldwork, including: per diems for surveyors, accommodation, driver and vehicle (including fuel and maintenance), and food availability;
- Ensure that local government/health authorities and, where appropriate, community leaders, are informed of the survey objectives and activities prior to arrival of survey team (health facilities should not be notified of the visit in advance);
- Ensure that the survey team arrives at each health facility on time (before clinic work begins);
- Be able to select an alternative facility, using random sampling, if the selected facility is closed or non-functional. This facility should be selected randomly from a list of facilities that is accessible from the team's location at that time. Alternatively, a list of replacement facilities may have been prepared in advance by the survey coordinator.

4.2.2 Field work at health facilities

- Introduce the survey team to the health facility manager and health workers and explain the purpose of the survey;
- Prepare for work at the facility by: 1) obtaining consent for the survey from health workers seeing sick children; 2) identifying where sick children can be enrolled in the survey; 3) looking for a place where exit interviews and re-examination of sick children can be conducted; and 4) finding health worker(s) who will assist with the completion of the equipment and supply checklist;
- Enroll all children eligible for inclusion in the survey, obtain consent from each caretaker, and complete an enrolment form for each child included;
- Observe the performance of each surveyor as they complete their instruments.

  This is particularly important during the first days of the survey, when mistakes are more common. Supervisors should watch whether surveyors interpret and record answers correctly, and whether they ask questions correctly. In addition, supervisors can complete each form independently with the surveyor, and later compare the two sets of forms to identify errors (reliability checks). Errors can be discussed and corrected. If important mistakes are identified during an observation, they should be corrected immediately. Forms used by supervisors for reliability checks should be kept and clearly labeled 'reliability check' to prevent double data entry.
- Help solve any problems interviewers have in understanding concepts in the instrument, or in dealing with difficult caretakers or health workers. Examples of problems and how they might be solved are shown in Table 5;
- Review each completed instrument with surveyors to look for missing or incorrect entries, and inconsistencies. This should include checking dates of birth, dates, ID numbers, and ensuring that skip patterns are respected;
- Complete the equipment and supply checklist;
- Give appropriate feedback to health facility staff at the end of the visit;
- Copy classifications made by the surveyor who re-examined the child into the appropriate box on instrument 1;
- Collect and organize all survey forms at the end of each day.

4.2.3 After each health facility visit

- Meet with team members each day to discuss performance, issues encountered during the day, and plan for the next day. If appropriate, prepare a short summary of major issues and solutions identified;
- Return completed and checked instruments to the central coordination point, according to the prearranged schedule;
- Give regular feedback on progress and problems to the survey coordinator;
- Ensure appropriate feedback is given to local health authorities before leaving a district, if necessary.

Table 5. Examples of possible problems and solutions

Problems	Possible Causes	Possible Solutions
Surveyors are falsifying data.	Surveyors want to rush their job to finish early.	Throw out the false data. Review the visit schedule with surveyors. Supervise the surveyors more closely.
	Surveyors do not realize the importance of valid data, or wish to demonstrate more positive results.	Throw out the false data. Discuss with surveyors the purpose of the survey and the need for valid data to identify programme needs.
One surveyor consistently finds better than average case-management practices or higher levels of knowledge.	The surveyor influences the practice of health workers by suggesting how to manage the child, or asks leading questions during interviews.	Monitor the surveyor and teach him/her not to interfere with the case management and interview responses of the health worker.

CHECKLIST FOR FIELD WORK

- ❑ Introductory letter for district and local health authorities.
- ❑ Introductory letter for health facility manager, where needed.
- ❑ Per diem for surveyors, supervisors, drivers and other possible survey staff (e.g. local translators).
- ❑ Additional money for local costs when needed (e.g. fuel).
- ❑ Accommodations arranged.
- ❑ Adequate number of copies of survey instruments.
- ❑ Copies of Chapter 4 and Annex B for each surveyor.
- ❑ Survey rule list for each surveyor.
- ❑ IMCI clinical guidelines; if the survey is conducted in an area without IMCI, table for conversion of health workers classifications into standard IMCI classification (for use by supervisors).
- ❑ List of name of drugs commonly used in the area if appropriate.
- ❑ List of health facilities identified for survey and their code.
- ❑ List of additional facilities selected for replacement if needed or procedure for selecting replacement facilities.
- ❑ Itineraries and arrangements for transportation.
- ❑ Timetable and procedures for reporting regularly to survey coordinator (contact addresses, phone numbers, etc.).
- ❑ Procedures for sending completed forms to central level.
- ❑ Clinical supplies: Watches, IM medications (for severely ill children), thermometer, weighing scale, hand washing supplies.
- ❑ Pens, pencils, pencil sharpeners, erasers, and clipboard for each participant.
- ❑ Case/pack for each participant for supplies.
- ❑ Stapler and supply of staples for each team.
- ❑ Envelopes to store completed forms for each facility.
- ❑ Mosquito nets if appropriate.
- ❑ Emergency kits if appropriate.

CHAPTER 5

Entering and analysing data

Schedule of survey tasks

STEP (AND APPROXIMATE TIME TO COMPLETE)	SURVEY TASK
1. Planning the survey Estimated duration for planning and preparing: One to four weeks	1. Select the survey coordinator 2. Identify and involve local counterparts 3. Identify the country-specific objectives 4. Decide on the geographic area and timing for the survey 5. Sample the health facilities to survey
2. Preparing to conduct the survey Estimated duration for planning and preparing: One to four weeks	1. Identify supervisors and surveyors 2. Finalize and secure budget 3. Adapt and translate survey instruments 4. Pre-test survey instruments 5. Prepare a schedule for facility visits 6. Prepare for analysis and dissemination 7. Train supervisors and surveyors
3. Conducting and supervising the survey Estimated duration: Five to seven days	1. Conduct the survey 2. Supervise the survey
4. Entering and analysing data Estimated duration: Five days entry (during data collection), two days analysis	1. Enter data 2. Analyse data: develop data analysis plan
5. Using the information collected Estimated duration: One to two days for discussion; one to two months for completion of feedback and report	1. Discuss and interpret results 2. Write a summary report and present findings 3. Feedback and disseminate findings; present final report

5.1 Data entry

Survey data are compiled and analysed using EpiInfo software. Data entry files for the generic survey forms are available on the CD-ROM provided with this manual (EpiInfo version 6.04). EpiInfo will also be used to calculate summary statistics and programme indicators. This section will present the steps that need to be followed to prepare for and carry out data entry.

EpiInfo software (version 6.04) was chosen for this manual for its simplicity and wide availability. Databases created with EpiInfo can be used with later version of EpiInfo software (version 2000) or other data analysis software if required.

Note: In some areas it may not be possible to use computers for data analysis due to the unavailability of computer hardware, trained staff, or a regular supply of electricity. In these situations, it may be necessary to conduct a hand tally of the survey results. It is possible to manually count the survey instrument questions in order to calculate summary statistics and key indicators. For this purpose a summary tally sheet is needed. The analysis section gives an overview on how each key indicator is calculated, this can be used to identify how to hand tally each measure. The hand-tally method is not recommended as it is time consuming, and increases the chances of simple counting errors. In addition to this, this method is inflexible because only a few key measures can be calculated, and it makes data storage and re-analysis much more difficult. In most areas, computer-based data entry and analysis is now possible.

5.1.1 Steps to be conducted in advance of the survey

Step 1. Identify a data entry and analysis manager

This is done in the preparation phase for the survey (see Chapter 3). The data manager should be familiar with the use of EpiInfo to analyse and manage survey data. In addition, the data manager should be familiar with the survey forms, rules for completing the questions,

and key indicators, and should have an understanding of the IMCI approach and the data analysis plan. Ideally, the data entry and analysis manager will participate in the surveyor training.

Possible candidates for the data entry and analysis manager include:

- The survey coordinator;
- The local (district) IMCI programme manager or other local programme staff;
- National-level programme staff; and
- An external consultant.

If possible, local programme staff should be trained to conduct data entry and analysis in advance, so that they can be responsible for managing their own survey data.

Step 2. Prepare for data entry

A number of preparatory steps need to be conducted in advance by the data manager.

1. Adapt data entry files for survey forms

In EpiInfo, questionnaire (.QES), checking (.CHK) and record (.REC) files should be created for survey forms 1 on the observation of the sick child, forms 2 and 3 on the exit interview with the caretaker of the sick child and the re-examination of the child, and form 4 on facility equipment and supply checklist). Survey form 3 on the re-examination of the sick child is not entered as a separate file; and data on vaccination status from this instrument are entered in the same EpiInfo files as survey form 2. Data entry files for the generic survey forms are available on the CD-ROM provided with the survey manual. These data entry files will need to be modified so that they match the forms that have been adapted for local use. Sometimes data entry files will need to be further modified after the surveyor training, if further changes have been made. Each checking file should specify the valid variables for each question, as well as question skip patterns. Information at the top of each instrument, such as the province/district, facility name, type and status, can be coded in advance using the checking file—this will help reduce errors during data entry. During the adaptation of the data entry files, it is strongly recommended that the question numbers and variable names are not modified as these names and questions numbers are used by the data analysis programme to calculate the priority indicators.

2. Test data entry programme

The data entry programme for each instrument should be tested by entering fictitious data into each data entry file. Each file should be tested several times to ensure that a number of different possibilities have been reviewed and to ensure that the check (.CHK) programme is working. Data collected during the training field sessions could also be used to test the data entry programme.

3. Identify and train data entry personnel

Two people are required to enter the data into the EpiInfo files for each computer. If two computers are used, then a total of four people are required for data entry. If the data manager can enter data, then three additional staff will be needed. Ideally, data entry staff should have data entry and computer experience, although they need not have EpiInfo experience. Training data entry staff to enter data for each instrument can usually be completed in a few hours and should be conducted by the data manager. Data entry personnel will be responsible for entering data every day during the week of data collection. It is suggested that one team enter survey form 1 on the observation of the sick child, and that the other team enter forms 2 and 4 on the exit interview with the caretaker and the facility checklist because this will help reduce errors.

Step 3. Decide on a strategy for returning completed survey forms

If possible, completed and checked survey forms should be returned to the central coordination point for coding and data entry each day. The frequency of instrument return will depend on the logistics and itinerary for each survey team; some teams will visit facilities that are accessible to the central coordination point; while others will visit remote facilities. Arrangements should be made in advance with team supervisors for the return of completed forms, possible arrangements may include:

- The survey team returning the forms at the end of each day if the itinerary allows;
- The survey team returning the forms every two or three days if the itinerary allows;
- The survey coordinator collects the forms every two or three days when visiting survey teams in the field.

Ideally, data entry should begin before the end of the data collection week. This will make it possible for the bulk of the survey data to be entered by the end of this week. At the end of data collection, therefore, the entry of the remaining forms should not take more than one or two days. This will allow data analysis to begin quickly.

5.1.2 Steps to be conducted during the survey

Step 4: Review of completed forms as they are received

The survey coordinator or the data manager should verify completeness and consistency of all completed forms. Corrections should be made, if necessary. This step is the final quality control for the survey data from the field.

Step 5. Code completed survey forms 1 and 2

Forms 1 and 2 require coding after the forms have been received. It is important that all coding be done using the same rules. For this reason, it is recommended that coding is carried out by one or two senior staff, for example the survey coordinator or the IMCI programme manager. If two staff are used, they should be able to discuss problems together during the coding to ensure that they both apply the same rules. This is particularly important for coding treatment as it can sometimes be difficult to interpret. Coding staff need a copy of the national treatment guidelines, a list of the name and dosage of the drugs commonly used in the area, and the local IMCI guidelines where they are used. The coding boxes are at the end of the forms, and guidelines for completing each coding box are given on the forms.

A summary of the coding procedure for form 1 is presented below:

1. Classification coding (numbers 105 to 170)
The classification made by the surveyor who re-examined the sick child using instrument 3 (the sick child recording form) is circled in this coding box. This classification is considered a 'gold standard' classification. During the analysis, the classification of the health worker is compared to the 'gold standard' classification to determine whether or not the health worker classified the child correctly.

2. Coding boxes A–D
The purpose of the coding box A is to determine whether the health worker prescribed an antibiotic for a reason other than one of the major symptoms for which the child has been enrolled in the survey (e.g. impetigo).

The codes B–D measure whether or not the drugs given to the child were prescribed correctly or not, independently of whether the child needed the drugs. Several questions on instrument 1 need to be reviewed in order to complete the coding boxes; this information is compared to the national treatment guidelines. Supervisors need a copy of the national treatment recommendations for the drugs most frequently used in first level facilities. A 'yes' or 'no' response is then circled in each coding box. 'Not applicable' is circled if the child did not receive the drug. In the analysis phase, it is determined whether or not the child actually needed the drug they received.

Form 2: Codes A–C
These codes all measure whether or not the caretaker has correct knowledge of how to give the treatment prescribed (antibiotic, antimalarial, ORS). Responses from caretakers on the doses of various agents that they will give at home (from form 2) are compared to the national treatment guidelines for children. All supervisors need a copy of the national treatment guidelines. A 'yes', 'no' or 'not applicable' response is then circled in each coding box.

Step 6. Conduct data entry

It is important to observe the following principles during data entry.

- Data entry personnel should work in teams of two, with one person responsible for entering data into EpiInfo, and the other responsible for reading data from completed forms. Data entry personnel keep the same roles for the duration of the survey to maximize reliability and reduce errors;
- Data entry personnel should not rush the entry of data. If data entry is carried out too quickly, then simple errors will be made. Ideally, the person reading information from the completed instrument will specify the number of each question before giving the specified answer. If there is any doubt about the quality of data entry for an instrument, the data entry personnel should go back and repeat that instrument again to check for errors;
- It is most efficient to enter information from all forms of the same type sequentially. The data entry programme can then be changed and all forms of another type entered together;
- Data entry personnel should enter all forms as they are received after they have been checked and coded by the survey coordinator. It is important that data entry personnel keep pace because as much data as possible should be entered during the data collection week. If forms are not being received frequently enough to allow this to occur, the survey coordinator may need to consider additional site visits to collect completed forms;
- All data files should be backed up regularly, both during data entry and at the end of the day;

- Following entry of data from each instrument, the initials of the data entry team and the record number given by EpiInfo should be written on the top of the form. The EpiInfo record number appears on the bottom right corner of the data entry screen. Forms should be filed by type of instrument and in the order in which they were entered;
- The survey coordinator or data manager should closely supervise data entry, especially at the beginning of the survey, in order to ensure that simple mistakes are not being made. The supervisors should periodically check the quality of data entry for randomly selected forms by comparing what is written on the form with what is entered on the computer forms. In addition, supervisors may choose to periodically run frequencies of selected variables to look for internal consistency; inconsistencies may reflect data entry mistakes or errors on the forms themselves. The source of each error needs to be identified and corrected.

5.2 Data analysis

Information collected

Data analysis focuses on calculating key programme indicators. Priority child health indicators have been developed and tested in a variety of settings and are recommended for evaluating programmes and tracking progress over time (see Annex D). Use of these priority indicators will also allow different country programmes to be compared. Individual programmes may require additional information, and additional data needs can be identified during data analysis and then calculated to supplement key indicators. An emphasis is placed on collecting only essential data for evaluating programme performance and making programme decisions.

Data analysis team

It is proposed that the data analysis be conducted in teams made up of health staff from different levels, including staff with field responsibilities. Not all participants will need to understand or use EpiInfo during the data analysis; instead, key members of the group will be led through the analysis steps so that they can understand and calculate the indicators themselves. The discussion of findings should involve all staff. The survey coordinator and the data manager oversee the process of data analysis. It is recommended that data analysis take place immediately after the fieldwork is completed.

Using data

When indicators have been calculated, the group discusses the results and possible solutions to any problems, and how the data will be disseminated. It is hoped that the practical experience of field staff will contribute to the development of practical and realistic solutions. An outline for conducting the discussion of results, using the data for programme planning, and then disseminating the findings, is presented in Chapter 6.

5.2.1 Steps to be conducted in advance of the survey

These are completed in the preparation phase for the survey (see Chapter 3).

Step 1: Identify the data analysis team.

This team should include lower-level staff who have experience working in the field, for example health workers and district staff, as well as higher-level programme staff. The team has responsibility for analysing, discussing and interpreting the data—and then using the data for making programme decisions. *In many settings, surveyors and supervisors who conducted the fieldwork are also used to conduct data analysis as they are already familiar with the survey forms, and often work at the district level*. A team of 9–12 people has been found to be an optimal number for EpiInfo training, and then following that the analysis and discussion of results.

Members of the data analysis team could include:

- supervisors and surveyors from the survey teams;
- training facilitators;
- district and regional programme managers; and
- national programme planners.

Step 2. Prepare for data analysis

- Schedule dates for the analysis. The week immediately following the return from the field is suggested. It is important to complete the analysis as quickly as possible so that findings can be used to make programme decisions. and then fed back to staff at all levels. For this reason, data entry should begin during the fieldwork. Scheduling for data analysis will depend on the expected time required to code, clean and enter all the field data.
- Identify at least three computers to use for data analysis. Participants often work in teams and one computer per team is ideal. Each computer should have EpiInfo software installed and a copy of all of the data (.REC) files, as well as the questionnaire (.QES) and checking (.CHK) files for each instrument.
- Identify a venue for data analysis activities. The training venue is often used for this purpose.

- Decide on a strategy for the analysis. There are two possible approaches:

  1. Manual calculation of descriptive data and priority indicators with some assistance from EpiInfo. Simple analyses of each variable are performed to obtain the frequency distribution of each. Numerators and denominators for the priority indicators are calculated for each indicator in turn. The advantage of this approach is that participants learn how summary measures are calculated, and get a better understanding of their meaning. The disadvantage of this approach is that it is more time consuming.

  2. Automatic calculation of indicators using an EpiInfo data analysis programme. The data analysis programme automatically generates all priority indicators. If this method is to be used then the EpiInfo analysis files need to be modified in advance according to the changes that have been made to the data entry files. This is done using the formulas given in section 5.3.2 of this chapter (priority indicators) and in Annex E (supplemental measures). The analysis files should be checked with fictitious data before use. Generic EpiInfo analysis files are available on the CD-ROM provided with this manual. A list of all the variables used in the data entry and analysis files is also provided. This approach has the advantage of making rapid data analysis possible, but it also disadvantages as participants do not learn as much about the indicators and how they are calculated. Clear explanations on how indicators are calculated should therefore be given during the data analysis.

5.2.2 Steps to be conducted at the end of the survey

Step 3. Clean entered data for each instrument

The data manager should review the final .REC files for each of the survey forms by calculating frequencies for all variables and producing cross-tabulations of related variables. A simple descriptive analysis of this type will allow most inconsistencies to be identified and corrected. If necessary, the original forms will need to be identified to check data directly. Each instrument has a unique identification number which can be used to find the original instrument after data entry has been completed.

Step 4. Analyse and discuss data

The proposed analysis provides information on key IMCI indicators. Additional indicators (supplemental indicators), tailored to local circumstances, can be selected for the analysis if necessary. In addition, during the analysis, it is likely that other questions will be raised; a further analysis can be conducted to investigate specific questions. The numerators and denominators required to calculate each key indicator are described in the next section. Simple descriptive information about the population of health facilities, sick children sampled, and health workers observed during the survey is also given. *It is useful if participants have a printed copy of the .QES file of each instrument, which specifies the variable names for each question*. The time proposed for the analysis and discussion of results is three to four days; the first two days are for working through the analysis plan, and the remaining days for discussing possible approaches and strategies for using data to improve programme performance. The proposed steps for the conduct of the analysis are:

1. Introduce the survey team to EpiInfo (first half of Day 1)

At the beginning of the analysis session, it may be appropriate to introduce participants to the basic functions and commands of EpiInfo. They do not need to have an extensive knowledge of the programme in order to calculate and discuss the key indicators. An introduction to EpiInfo is presented in Annex H.

2. Calculate and discuss indicators (second half of Day 1 and all of Day 2)

The following steps are useful for planning the analysis:

Review the survey objectives

Survey objectives have been determined in advance. The key indicators collect information on the core objectives (outlined in Chapter 2). The survey may have other objectives that require specific information. For example, if the survey objectives include the assessment of sick children or counselling practices, then additional measures may be required in these areas. If the survey collected stratified data (by geographic area, or type of health facility, for example), then indicators need to be calculated for each stratum separately.

Review the data analysis plan

The data analysis plan is presented in Section 5.3. Information is collected in the following areas:

- Descriptive information on the population of children, facilities and health workers seen for the survey;
- Priority indicators for evaluating the quality of sick child care (including case-management practice and health facility supports);
- Supplemental information for each of the key indica-

tors (more specific information to explain the key indicators).

The data analysis plan should be reviewed and decisions made about which measures and indicators will be calculated. If there are any additional data needs, then these can be added. A summary table for recording the data should be prepared (see Annex A). It is recommended that the priority indicators be calculated first.

Conduct data analysis

Using the data analysis plan, descriptive information and indicators are calculated. Raw data for each measure are summarized on a data tally sheet by type of facility (see Annex A, forms 5 and 6). These data are used to discuss survey results.

3. Discuss survey results and develop a data dissemination plan (Day 3–4)

Survey data on descriptive information and key indicators are discussed. Possible reasons for low indicators are reviewed and strategies for improving programme discussed. Additional data needs may be identified, and these data can be calculated at the same time, or later by the data manager or survey coordinator. A data dissemination plan has been discussed and budgeted when planning for the survey. A more detailed plan may need to be developed to ensure that results are fed back to all stakeholders, and to ensure input on strategies for improving programme performance. Use of data is discussed in Chapter 6.

5.3 Data analysis plan

5.3.1 Describe the sample

Descriptive data are important for presenting an overview of the population of health facilities, sick children sampled, and health workers who managed these sick children. An example of a summary of descriptive information is presented below. If a stratified sample was selected, then descriptive information should be calculated for each stratum.

Number of health facilities visited: breakdown by facility type and number of sick children observed.

Facilities visited and number of case-management observations conducted

General data at the top of on instrument 1: Frequency of facility type and children seen

Facility type		Geographic area				
		Area A	Area B	Area C	Area D	Total
Health Posts	Visited					
	Cases observed					
Health Centres	Visited					
	Cases observed					
Hospitals outpatient departments	Visited					
	Cases observed					
Overall total	Visited					
	Cases observed					

Summary statistics

- Total number of health facilities visited;
- Total number of cases seen;
- Proportion of each type of facility in the total sample of facilities;
- Proportion of all cases seen by type of facility.

Number of children observed: by age, sex and geographic area.

Number of children observed by age, sex and geographic area

General data at the top of instrument 1: Frequency of child's age and sex

	Geographic area				
Age	**Area A**	**Area B**	**Area C**	**Area D**	**Total**
Under 1 year					
1 year					
2 years					
3 years					
4 years					
Total: All ages					
Gender Boys Girls					

Summary statistics

- Mean and median ages of children observed for the whole sample

Number of case-management observations by category and breakdown by training status.

Number of case-management observations by category and training status of health workers, and geographic area

General data at the top of instrument 1: Frequency of health worker category and training status

Category of health worker who manage sick children	Geographic area				
	Area A	**Area B**	**Area C**	**Area D**	**Total**
Medical assistant IMCI trained Un-trained					
Nurse IMCI trained Un-trained					
Doctor IMCI trained Un-trained					
Other IMCI trained Un-trained					
Total: All case management observations IMCI trained Un-trained					

Summary statistics

- Total number of case-management observations;
- Proportion of sick children managed by each category of health worker in the total sample of sick children enrolled in the survey;
- Proportion of sick children managed by health workers who have received IMCI training;
- Breakdown of sick children managed by trained health workers by year the training was received.

Distribution of the caretakers' reasons for visiting the health facility with the child.

Reasons given by caretaker for bringing the child to the health facility on the day of the survey

Question A5 on instrument 1: Frequency

	District/province				
Presenting complaint	**Area A**	**Area B**	**Area C**	**Area D**	**Total**
Fever/malaria					
Diarrhoea/vomiting					
Cough/fast or difficult breathing/pneumonia					
Ear problem					
Measles					
Total: All problems					

Summary statistics:

- Proportion of all children presenting with each complaint

Note: Children may have more than one presenting complaint

Number of 'gold standard' sick child classifications: Breakdown by geographic area.

Number of sick child classifications based on 'gold standard' re-examination

Coding questions 105–165 on instrument 1: Frequency of key classifications

	District/province				
Child classification	**A**	**B**	**C**	**D**	**All**
Child needing referral					
Pneumonia					
Diarrhea with Severe dehydration					
Diarrhea with Some dehydration					
Diarrhea Without dehydration					
Dysentery					
Malaria					
Fever malaria unlikely and fever no malaria					
Measles					
Acute ear infection					
Chronic ear infection					
Low weight					
Anaemia					
Total: All classifications					

Summary statistics

- Average number of classifications per sick child.

Note: Children may have more than one 'gold standard' classification.

5.3.2 Calculate priority indicators

The survey provides data for estimating indicators. The indicators describe the most important elements of the quality of case management at health facilities, as well as the essential facility supports that are required to allow effective case-management. Indicators have been developed by WHO along with a number of partners, in collaboration with country programme staff, and are summarized in Annex D.

Indicators were selected to have the following characteristics:

- To measure important programme elements;
- To measure 'integrated' programme performance;
- To be measurable in a valid and reliable fashion;
- To be relatively sensitive to change.

Indicators provide summary measures of the quality of case management and of facility supports. If the indicators show that there is a problem in a particular area, then data may need to be further analysed to identify the nature of the problem. The supplemental indicators provided in Annex E provide more detailed information, and can be used in addition to the priority indicators to describe elements of case management. The priority indicators, and how they are calculated, are presented in this section.

A. Assessment of the sick child

Priority indicator 1: Child checked for three danger signs

Definition	Numerator/Denominator	Source of information	Formula
Proportion of children checked for three general danger signs	Number of sick children observed who are checked for three danger signs	Instrument 1	Number of sick children observed with 'Yes' in A6, A7, and A8
	Number of sick children observed		Number of sick children observed

Priority indicator 2: Child checked for the presence of cough, diarrhoea, and fever

Definition	Numerator/Denominator	Source of information	Formula
Proportion of children checked for the presence of cough, diarrhoea, and fever	Number of sick children observed whose caretakers were asked for the presence of diarrhoea, cough, and fever	Instrument 1	Number of sick children observed with 'Yes' in A11, A12, and A13
	Number of sick children observed		Number of sick children observed

Priority indicator 3: Child's weight checked against a growth chart

Definition	Numerator/Denominator	Source of information	Formula
Proportion of children who had been weighed the same day and had their weight checked against a recommended growth chart	Number of sick children observed who had been weighed the same day and had their weight checked against a recommended growth chart	Instrument 1	Number of sick children observed with 'Yes' in A3 and A17
	Number of sick children observed		Number of sick children observed

Priority indicator 4: Child vaccination status checked

Definition	Numerator/Denominator	Source of information	Formula
Proportion of children who have their vaccination status checked	Number of sick children observed who have their vaccination card or vaccination history checked	Instrument 1	Number of sick children observed with 'Yes' in A18 and A19 **OR** at least one 'Yes' in A20
	Number of sick children observed		Number of sick children observed

Priority indicator 5: Index of integrated assessment

Definition	Numerator/Denominator	Source of information	Formula
Arithmetic mean of 10 assessment tasks performed *for each child*	Number of the following assessment tasks that were performed: check for three danger signs, check for the three main symptoms, child weighed and weight checked against a growth chart, check for palmar pallor, and check for vaccination	Instrument 1	For each child sum all 'Yes' responses in A6, A7, A8, A11, A12, A13, A3, A17, A15, and A18
	10		10

Priority indicator 6: Child under two years of age assessed for feeding practices

Definition	Numerator/Denominator	Source of information	Formula
Proportion of children under two years of age whose caretakers were asked about breastfeeding, complementary foods, and feeding practices during this episode of illness.	Number of sick children under 2 years whose caretakers were asked if they breastfeed this child, whether the child takes any other food or fluids other than breastmilk, and if during this illness the child feeding has changed	Instrument 1	Number of sick children observed, with age >1m and <24m and with 'Yes' in A21 and A22 and A23
	Number of sick children under two observed		Number of sick children observed, with age >1m and <24m

B. Classification and treatment of the sick child

Priority indicator 7: Child needing an oral antibiotic and/or who are correctly prescribed an oral antimalarial drug correctly

Definition	Numerator/Denominator	Source of information	Formula
Proportion of children who do not need urgent referral, who need an oral antibiotic and/or antimalarial who are prescribed the drug(s) correctly	Number of sick children observed, with validated classifications, who do not need urgent referral, who need an oral antibiotic and/or antimalarial (pneumonia, and/or dysentery, and/or malaria, and/or acute ear infection, and/or anemia in high malaria risk areas) who are correctly prescribed them, including dose, number of times per day, and number of days	Instrument 1 questions 105 to 170 (gold standard classification) and questions B and C (coding boxes)	Number of sick children observed with **NO** circle around 105, 110, 120a, 121, 130, 134, 140, 150a, and 150b **AND** at least one circle around 111, 123, 131, 141, 151a (if 170 = high), 'Yes' in code A and 'Yes' answer to codes B and C
	Number of sick children observed with validated classifications who do not need urgent referral, who need an oral antibiotic and/or an antimalarial	Note: validated classifications for the child can also be found in instrument 3	Number of sick children observed with **NO** circle around 105, 110, 120a, 121, 130, 134, 140, 150a, and 150b **AND** at least one circle around 111, 123, 131, 141, and 151a (if 170 = high), 'Yes' in code A

Priority indicator 8: Child not needing antibiotic and who leaves the facility without antibiotic

Definition	Numerator/Denominator	Source of information	Formula
Proportion of children, who do not need urgent referral, and who do not need antibiotic for one or more IMCI classifications, who leave the facility without having received or been prescribed antibiotics	Number of children observed with validated classification who do not need urgent referral and do not need an antibiotic for one or more IMCI classifications* who leave the facility without receiving antibiotics or a prescription for antibiotics for those validated classifications	Instrument 1	Number of sick children observed with **NO** circle around 105, 110, 120a, 121, 130, 134, 140, 150a, and 150b **AND NO** circle around 111, 123, and 141, **AND** with 'NO' to question T8 **AND** 'No' in T2b
	Number of children observed with validated classification who do not need urgent referral and do not need an antibiotic for one or more IMCI classifications*		Number of sick children observed with **NO** circle around 105, 110, 120a, 121, 130, 134, 140, 150a and 150b **AND NO** circle around 111, 123, and 141

* Children having no other classifications than one or more of the following IMCI classifications should not receive antibiotics: no pneumonia, cough or cold; diarrhoea with or without dehydration; persistent diarrhoea; malaria; fever-malaria unlikely; measles; chronic ear infection; no ear infection; anemia or very low weight; no anemia and not very low weight.

C. Vaccination and counselling of the sick child

Priority indicator 9: Caretaker of sick child is advised to give extra fluids and continue feeding

Definition	Numerator/Denominator	Source of information	Formula
Proportion of sick children whose caretakers are advised to give extra fluid and continue feeding	Number of sick children observed with validated classifications who do not need urgent referral, whose caretakers are advised to give extra fluid and continue feeding.	Instrument 1	Number of sick children observed with **NO** circle around 105, 110, 120a, 121, 130, 134, 140, 150a, and 150b **AND** 'Yes' to questions CM7 and CM8
	Number of sick children observed with validated classifications who do not need urgent referral		Number of sick children observed with **NO** circle around 105, 110, 120a, 121, 130, 134, 140, 150a, and 150b

Priority indicator 10: Child needing vaccinations leaves the facility with all needed vaccinations

Definition	Numerator/Denominator	Source of information	Formula
Proportion of sick children needing vaccinations (based on vaccination card or history) who leave the health facility with all needed vaccinations	Number of sick children observed who need vaccinations (based on vaccination card or history) who leave the health facility with all needed vaccinations	Instrument 3	Number of sick children observed with 'No' in question 6
	Number of sick children observed who need vaccinations (based on vaccination card or history)		Number of sick children with 'Yes' in question 6 or 'Yes' in question 01

Priority indicator 11: Caretaker of a child who is prescribed ORS, and/or an oral antibiotic, and/or an oral antimalarial who knows how to give the treatment

Definition	Numerator/Denominator	Source of information	Formula
Proportion of children prescribed ORS, and/or oral antibiotic and/or an oral antimalarial whose caretaker can describe correctly how to give the treatment	Number of sick children prescribed ORS, and/or an antibiotic, and/or an anti-malarial whose caretaker can describe how to give the correct treatment including the amount, number of times per day, and number of days	Instrument 2	Number of sick children with 'Yes' in questions 4, and/or 8 and/or 12 and/or 16 **AND** 'Yes' or 'not applicable' in A and B and C (coding boxes)
	Number of sick children prescribed ORS, and/or an antibiotic, and/or an anti-malarial		Number of sick children with 'Yes' in questions 4, and/or 8 and/or 12 and/or 16

Notes:

- If the health worker prescribed the wrong dose and the mother repeats during the exit interview exactly what the health worker told her, the mother will be considered as not knowing how to administer the treatment. The indicator looks at whether a child who has been prescribed a drug is likely to receive that drug at the appropriate dose, frequency and duration.

Priority indicator 12: Child needing referral who is referred to a higher level of the health system

Definition	Numerator/Denominator	Source of information	Formula
Proportion of children needing referral who are referred by the health worker to a higher level of the health system	Number of sick children observed with a validated classification of severe disease needing referral* who were referred by the health worker	Instrument 1	Number of sick children with 'Yes' in T5 and at least one of the following classifications circled: 105, 110, 121, 130, 134, 140, 150a, 150b
	Number of sick children observed with a validated classification of severe disease needing referral		Number of sick children with the following classifications circled: 105 and/or 110 and/or 121 and/or 130 and/or 134 and/or 140 and/or 150a and/or 150b

* Validated classifications needing referral include: presence of one or more danger signs; severe pneumonia or very severe disease; severe dehydration with any other severe classification; severe persistent diarrhoea; very severe febrile disease; severe complicated measles; mastoiditis; and severe malnutrition or severe anemia.

Note: This indicator considers only IMCI conditions as possible reasons for referral. Children with a validated classification needing referral for a 'non-IMCI-condition' should be excluded from the analysis.

D. Availability of health facility supports

Priority indicator 13: Health facility received at least one supervisory visit that included observation of case management during the previous six months

Definition	Numerator/Denominator	Source of information	Formula
Proportion of health facilities that received at least one routine supervisory visit that included the observation of case management during the previous six months	Number of health facilities visited that received at least one routine supervisory visit* that included the observation of case management during the previous six months	Instrument 4	Number of facilities visited with answer to S5>0 and S5>S6 and S7 = 'Yes'
	Number of health facilities visited		Number of facilities visited

* Supervisory visits do not include follow-up visits to health workers immediately after IMCI training

Priority indicator 14: Index of availability of essential oral treatments

Definition	Numerator/Denominator	Source of information	Formula
Essential oral drugs for home treatment of sick children present at the facility the day of visit (arithmetic mean of indices for each facility)	Number of the following first-line oral treatments available the day of visit: ORS, recommended AB for pneumonia, recommended AB for dysentery, recommended antimalarial, vitamin A, iron, mebendazol, paracetamol/aspirin	Instrument 4	For each facility, sum all the 'Yes' responses in D1a, D1b, D1d, D1f, D1h, D1i, D1j, D1k
	8		8

Programme managers are sometimes also interested in knowing the proportion of health facilities that had all the essential oral treatments available the day of visit, and this can be calculated easily in addition to indicator 14.

Priority indicator 15: Index of availability of injectable drugs for pre-referral treatment

Definition	Numerator/Denominator	Source of information	Formula
Injectable antibiotics and antimalarials for pre-referral treatment of severely ill children and young infants present at the facility on the day of visit (arithmetic mean of indices for each facility)	Number of the following injectable drugs for pre-referral treatment available the day of visit: recommended IM antibiotic, quinine, gentamycin, benzylpenicillin	Instrument 4	For each facility, sum all the 'Yes' responses in D2a, D2b, D2c, D2d
	4		4

Sometimes programme managers are also interested in knowing the proportion of health facilities that had all the injectable drugs for pre-referral treatment available the day of visit and this can be calculated easily in addition to indicator 15.

Priority indicator 16: Health facility has the equipment and supplies to support full vaccination services

Definition	Numerator/Denominator	Source of information	Formula
Proportion of health facilities that have the equipment and supplies to provide full vaccination services on the day of survey	Number of health facilities that have the equipment and supplies to support full vaccination services* on the day of survey.	Instrument 4	Number of health facilities with 'Yes' in E2 and 'Yes' in E3 and 'Yes' in E4 and 'Yes' in E5
	Number of health facilities visited		Number of health facilities

* Functioning refrigerator or cold chain, and functioning sterilizer (unless disposable needles and syringes are being used) and needles/syringes.

Note: In some programmes a 'functional cold box' is also considered an essential piece of cold chain equipment and is included in the definition. To be functional a cold box must be intact, have a fitting lid, and a complete rubber seal.

Priority indicator 17: Index of availability of four vaccines

Definition	Numerator/Denominator	Source of information	Formula
Mean of four recommended antigens available at each facility the day of visit (arithmetic mean of indices from all health facilities)	Number of the following recommended vaccines available the day of visit: BCG, Polio, DPT, Measles	Instrument 4	For each facility, sum all the 'Yes' responses in E6a, E6b, E6c, E6d
	4		4

Programme managers are sometimes also interested in knowing the proportion of health facilities that had all the four vaccines available the day of visit and this can be calculated easily in addition to indicator 17.

Priority indicator 18: Health facilities with at least 60% of workers managing children trained in IMCI

Definition	Numerator/Denominator	Source of information	Formula
Proportion of health facilities with at least 60% of health workers managing children trained in IMCI	Number of health facilities visited with at least 60% of health workers managing children who are trained in IMCI	Instrument 4	Number of health facilities in which the total number of staff managing children trained in IMCI divided by the total number of staff assigned to case management of children (Table 1) and multiplied by 100 is ≥60
	Number of health facilities visited		Number of health facilities visited

5.4 Calculating limits of precision for programme indicators which correctly account for the sampling method used

The method for sampling health facilities and children proposed in this manual takes into account the limited time and budget often available for programme evaluation and feasibility factors. From a statistical point of view however, the proposed method is quite complicated (see chapter 2, section 2.5).

First, hospitals, health centres, and health posts may have different probabilities of being included in the survey sample. For example, if there is only one hospital in the area for survey, it is very likely to be included as suggested in Section 2.5 of this manual. The hospital has therefore a probability of one of being included, while if there are four health centres and only two are to be included in the survey, each health centre only has a probability of 0.5 of being included. Thus, children who go to the hospital are more likely to be included than children who go to a health centre. If we want the survey results to be perfectly accurate, and to make the best use of the data, we need to take this into account when combining the data from the hospital with those from the health centres. We do this by giving a different weight to the data from the hospital to that from the health centres.

Second, several children are seen in each health facility, often by the same health worker. The extent to which the quality of care delivered to one sick child to the next differs is likely to be less than the extent to which the quality of care delivered to sick children by one health worker differs from that delivered by another health worker. We have what statisticians refer to as a cluster sample, with children seen in the same health facility forming a 'cluster'. When we calculate the limits of precision (confidence intervals) for our programme indicators we need to take this clustering into account. If we don't, our limits will be too narrow (we shall think our estimates are more precise than they really are).

An illustration of how to obtain correct estimates and limits of precision is provided below using a fictitious dataset containing observations of 80 children made in 18 health facilities. This fictitious dataset contains only a limited number of data from survey instrument 1 and is available on the CD-ROM accompanying this manual (file name: 'FicF1.rec').

First, a new variable that indicates the sampling probabilities for each type of facility has to be created in the dataset. In this dataset, there were three types of health facilities: hospitals (coded as **f1ftype** = 1), health centres (coded as **f1ftype** = 2), and health posts (coded as **f1ftype** = 3). There was only one hospital in the area selected for survey and it was included in the sample. This hospital had therefore a probability of 1 of being sampled. Health centres had a probability of 0.5 of being sampled (there were two health centres but only one was sampled), while health posts had a probability of 0.8 of being sampled (16 out of 20 health posts were sampled). We can do this in EpiInfo using the Analysis utility with the following commands.

```
define probsamp #.##
probsamp=0.5
if f1ftype=1 then probsamp=1
if f1ftype=3 then probsamp=0.8
```

Now, a variable **weight** which contains the correct weights to use for each type of facility can be created:

```
define weight ##.##
weight=1/probsamp
```

You can practice these commands using the dataset on the CD-ROM. To visualize what has been done you can try typing the following commands:

```
tables f1ftype probsamp
tables f1ftype weight
```

If automatic calculations of indicators have been performed during the analysis using the EpiInfo analysis (.PGM) files, then variable names have been generated automatically for each indicator. For example, the priority indicator 1 (child checked for three danger signs) has the variable name '**f1b**', and the priority indicator 6 (child under two years of age checked for feeding practice) has the variable name '**f1o**'.

If the EpiInfo analysis files were not used by the data analysis team, then variables identifying each indicator need to be created and indicators need to be calculated following formulas described in the data analysis plan (see section 5.3.2 for priority indicators and Annex E for supplemental measures).

For example, a variable '**indic1**' can be created for priority indicator 1 (child checked for three danger signs), and a variable '**indic6**' for priority indicator 6 (child under two years of age checked for feeding practice).

```
define indic1 #
indic1=2
if f1a06=1 and f1a07=1 and f1a08=1 then
   indic1=1
```

These commands produce a variable **indic1** which takes the value 1 when the health worker checked for the three danger signs and a value 2 otherwise. The following commands produce a variable **indic6** which takes the value 1 when the health worker assesses a child aged under two for feeding practices, a value 2 when the health

worker does not check, and leaves the variable as 8 = 'not applicable' when the child is aged over 2 years.

```
define indic6 #
indic6=2
if f1chage<24 and f1a22=1 and f1a23=1 and
   f1a24=1 then indic6=1
if f1chage>23 then indic6=8
```

Similar variables will need to be created for each of the indicators included in the analysis plan.

The following command will provide a summary for the variable indic1

```
freq indic1.
```

The output indicates that, of the 80 children observed in the survey, on 62 occasions the children were checked for the three danger signs (77.5%). This estimate does not take account of the different sampling probabilities for hospitals, health centres, and health posts. A 95% confidence interval calculated on this output and the formula '(2-the mean) ± 1.96 x standard error' would be narrower than it should be because it does not take into account the cluster sampling procedure which has been used.[1]

Similar procedure applied to **indic6** gives results based on only 54 children because only 54 of the 80 children were in the age range (one month to two years) covered by this indicator.

To obtain the correct estimates and confidence intervals, we need to save the new variables we have created. We do this with the following sequence of commands:

```
route <specify folder and name of file to be
   saved>
write recfile
```

Note that EpiInfo requires specifying where the file needs to be saved and what it needs to be called. The suffix .REC needs to be added to the name to make it possible for this file to use the newly created variables as the dataset for further analysis.

The next step is to choose the CSAMPLE option from EpiInfo's main menu (see below).

You will be asked which .REC file you want to use. When EpiInfo is told where to find the file previously saved the screen shown below will appear. To perform the analysis of **indic1**, only four of the fields shown on the screen need to be filled:

Main: enter the name of the variable to be analysed (**indic1** in this example or **f1b** if the programme for automatic calculation of indicators was used).

Strata: enter the name of the variable which indicates the type of health facility (**f1ftype** in this example).

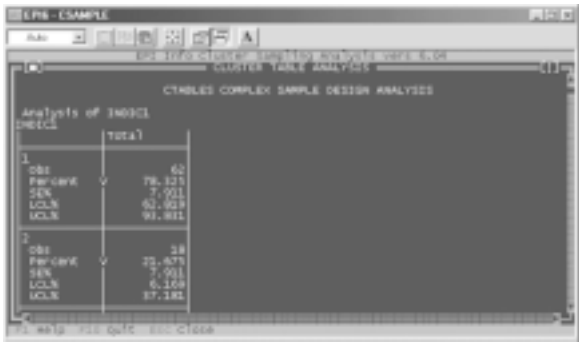
PSU (primary sampling unit): enter the name of the variable which contains the code number for each health facility (**f1fid** in this example).

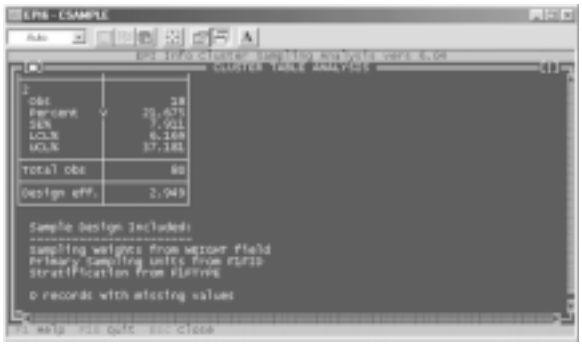
Weight: enter the name of the variable which contains the weights to be used (**weight** in this example).

Move from one field to the next using the TAB key. When the four variable names have been entered, the screen should look as shown below.

[1] This manual recommends to use 1 = yes and 2 = no to code variables in EpiInfo. If other codes are used, for example 0 = no and 1 = yes, then the formula for calculating 95% confidence interval would be: the mean ±1.96 x standard error.

To perform the analysis, first move down and click on Sort (or press ENTER) then move to Tables and click or press ENTER. The following result screens will appear:





This indicates that the estimated percentage of children for whom the three three danger signs have been checked is 78.32% (shown next to percent). This is slightly different (higher in this case) than our previous estimate because we have now given more weight to the data from the health centres and health posts. The 95% confidence interval (LCL%, UCL%) for this estimate is from 62.82 to 93.83%, which is a bit wider than the confidence interval we would have obtained using the previously described formula because we have now taken account of the clustering.

The interpretation of these results is as follows:

- In the region surveyed we estimate that about a three quarter of sick children (78%) seen in health facilities are checked for the three danger signs.
- We know that this estimate is obtained from a sample and that the true proportion might be somewhat higher or lower than this; we are pretty confident that the true proportion is not less than 63% and not greater than 94%.

A similar procedure applied to **indic6** gives an estimate of 30.54% with 95% confidence interval from 20.85% to 40.23%.

5.5 Stratified samples: Weighting results to calculate survey totals

If stratified sampling has been conducted (see section 2.5.1 of this manual), separate samples have been taken for each stratum and data from each stratum will be analysed separately. For the purposes of reporting survey results, it is sometimes useful to combine stratified data into single summary indicators that can be reported as the 'survey total'.

Example 1: Data from a stratified sample needing no special weighting

In this example, the proportion of facilities sampled in each stratum is the same as shown in Table 6 below.

Table 6. Distribution of facilities by stratum (example 1)

Facilities	Stratum 1	Stratum 2
Facilities (proportion) sampled	20 (50%)	40 (50%)
Total facilities in the survey population	40 (100%)	80 (100%)

Therefore, the results from the two strata (stratum 1 and stratum 2) do not need special weighting when they are combined for the survey total. Table 7 below gives an example of how priority indicators can be presented by stratum, and as a single summary statistic.

Table 7. Priority indicators 1 and 2 by stratum (example 1)

Indicator	Stratum 1	Stratum 2	Survey Total
Proportion of children checked for three danger signs	80 of 150 (53%)	100 of 177 (57%)	180 of 327 (55%)
Proportion of children checked for cough, fever and diarrhoea	100 of 149* (67%)	140 of 177 (79%)	240 of 326 (74%)

* one missing data

Example 2: data from a stratified sample needing weighting

In this example, the proportion of facilities sampled in each stratum are not equal. As shown in Table 8, the same number of facilities was selected for the sample from each stratum, even though stratum 1 had fewer facilities in the survey population than stratum 2.

Table 8. Distribution of facilities stratum (example 2)

Facilities	Stratum 1	Stratum 2
Facilities (proportion) selected for the survey sample	30 (75%)	30 (37.5%)
Total facilities in the survey population	40 (100%)	80 (100%)

Therefore, when combining the results from each stratum to obtain overall results, the stratum results will need to be weighted. Otherwise, the results from the smaller, over-sampled stratum 1 will be given undue weight in the survey total. To obtain the appropriate overall results:

1. Calculate the programme indicators for each stratum separately. See the data analysis plan for a summary of priority indicators (supplementary indicators are included in Annex E).

2 Weight the indicator results from each stratum based on the proportion of facilities sampled in the stratum.

   Identify the proportion of facilities included in the sample in each stratum. In our example these proportions are 0.75 for stratum 1 and 0.375 for stratum 2.

   Calculate the weights for each stratum as the reciprocal of these proportions (i.e. 1/the proportion of facilities sampled in the area):

   Weight for stratum 1 = 1 ÷ 0.75 = 1.333

   Weight for stratum 2 = 1 ÷ 0.375 = 2.667

   (Note that stratum 2 has greater weight than stratum 1 because a smaller proportion of facilities was sampled in stratum 2. To compensate for this we give the results from stratum 2 more 'weight' when calculating the overall result.)

   Identify the numerator and denominator of the indicators for each stratum. For example, suppose that in stratum 1, 80/150 (53%) children were checked for three danger signs while in stratum 2, 100/140 (71%) children were checked for three danger signs.

   To calculate an **unweighted** summary indicator, add the numerators and denominators from each stratum together (see example 1, Table 7), and then divide the total numerator by the total denominator. To calculate the weighted summary indicator multiply the numerators and denominators for each stratum by that stratum's weight before adding them together as shown in Table 9.

In this case, the weights need to add up to one to give a proper average. So, we first calculate the total of the weights:

Table 9. Calculation of weighted summary indicators (example 2)

Indicators	Stratum 1	Stratum 2	Survey Total (weighted total)
Proportion of children checked for three danger signs	80/150 (53%)	100/140 (71%)	(80 x 1.33) + (100 x 2.67) = 373.67 / (150 x 1.33) + (140 x 2.67) = 573.3 (65%)
Proportion of children checked for cough, fever and diarrhoea	100/150 (67%)	120/140 (86%)	(100 x 1.33) + (120 x 2.67) = 453.4 / (150 x 1.33) + (140 x 2.67) = 573.3 (79%)

Notes:

1. Both unweighted (60%) and weighted (62%) summary indicators lie between the values found for the two strata (53% and 67%). This must always be true because the summary indicator is an average of the indicator values in each stratum.

2. The weighted summary indicator (62%) is closer than the unweighted summary indicator (60%) to the value of the indicator in stratum 2 (67%). This is due to the fact that the weighted summary indicator gives more weight to the data from stratum 2 because a smaller proportion of health facilities was sampled there.

3. A slightly different method should be used when the indicator is not a proportion, for example priority indicator 5 (index of integrated assessment, which is the arithmetic mean of 10 assessment tasks performed). In this case, if stratum 1 has a mean of 6 and stratum 2 has a mean of 3 just using the weights as described would produce a result of 6 x 1.333 + 3 x 2.667 = 16. This clearly cannot be right as the possible range for this indicator is from 0 to 10.

3.1.1. + 2.667 = 4

then we need to divide this answer (or the original weights) by the total of the weights (4) which leads to a result of 4 (16/4 = 4). This value of 4 lies between the mean calculated for stratum 1 (6) and the mean calculated for stratum 2 (3), and is closer to the value calculated for stratum 2 because more weight has been given to stratum 2.

The reason that this does not cause a problem with proportions is because the numerator and denominator for each indicator are both inflated in the same factor, which then cancels out.

CHAPTER 6

Using the information collected

Schedule of survey tasks

STEP (AND APPROXIMATE TIME TO COMPLETE)	SURVEY TASK
1. Planning the survey Estimated duration for planning and preparing: One to four weeks	1. Select the survey coordinator 2. Identify and involve local counterparts 3. Identify the country-specific objectives 4. Decide on the geographic area and timing for the survey 5. Sample the health facilities to survey
2. Preparing to conduct the survey Estimated duration for planning and preparing: One to four weeks	1. Identify supervisors and surveyors 2. Finalize and secure budget 3. Adapt and translate survey instruments 4. Pre-test survey instruments 5. Prepare a schedule for facility visits 6. Prepare for analysis and dissemination 7. Train supervisors and surveyors
3. Conducting and supervising the survey Estimated duration: Five to seven days	1. Conduct the survey 2. Supervise the survey
4. Entering and analysing data Estimated duration: Five days entry (during data collection), two days analysis	1. Enter data 2. Analyse data: develop data analysis plan
5. Using the information collected Estimated duration: One to two days for discussion; one to two months for completion of feedback and report	1. Discuss and interpret results 2. Write a summary report and present findings 3. Feedback and disseminate findings; present final report

6.1 Using quantitative and qualitative data

Two types of data are collected in the field: quantitative and qualitative. Both are necessary for a complete picture of case-management practices, and a clearer understanding of what district and national programme managers can do to improve the quality of care.

Quantitative data are presented as numbers, for example the numbers of cases or the numbers of health facilities. Quantitative data describe practices of health workers and knowledge of caretakers, and the conditions associated with good and bad case management. Observations of practice and interviews using structured survey instruments are used to obtain these data. Quantitative survey data are usually summarized as indicators.

Qualitative data are expressed, not as numbers, but as the observations and impressions of survey team members, and other staff working in the field. These data include observations about the difficulties health workers face in trying to provide good case management. These data help explain barriers to improving the quality of case management. They may also provide ideas for improving practices. Qualitative data are essential for understanding the meaning of quantitative findings and for explaining the problems highlighted by programme indicators.

Both quantitative and qualitative data can help the programme:

- Describe the overall *quality of case management* provided for sick children, and the quality of specific assessment, treatment and counselling tasks;
- Identify *where problems in case management are more frequently encountered* (for example, in particular regions or types of health facilities); and
- Explore possible *reasons for incorrect case management* and *solutions to these problems*.

6.2 Common errors in using survey data

The data that are discussed and reported must be selected carefully in order to be useful for programme planning. For this reason, it is recommended that the priority indicators be used for summarising survey data (see Chapter 5 and Annex E). Common errors when using survey data, particularly quantitative data, are:

- Conducting too much analysis or reporting too many figures because there is no logical structure or data analysis plan for selecting which survey results to present;
- Failing to use and interpret the data to address problems identified in case management practices;
- Separating the data that describe the quality of case management (instruments 1 and 2) from the data that identify possible reasons for incorrect case management (instrument 4);
- Repeating the data displayed on tables in the text of the report, rather than discussing the meaning of the results for the district or national programme;
- Failing to use qualitative data from the observations and impressions of surveyors and field staff to clarify and interpret quantitative results.
- Failing to take into account external factors likely to have an effect on the use and quality of health services. External factors include immunization policies and other child health policies, changed national treatment guidelines, changed user fees, and problems with security.

Note: When many results are generated, it is important to have a data analysis plan to identify which data will be used to describe the most important elements of the quality of case management. For this reason, it is recommended that the data analysis team: 1) *Review the survey objectives* to identify what data are needed to meet the objectives; and 2) *Review the data analysis plan* to identify what descriptive data, priority indicators and supplementary indicators will be calculated. The analysis is then conducted using a limited set of key measures that are focused on the survey objectives. Summary tables of all key data are to be prepared, and these are used for the discussion of results. Preparing for data analysis and the data analysis plan are discussed in Chapter 5.

6.3 Discuss and interpret the results

Timing: Immediately following data analysis

Participants: Data analysis team

As discussed in Chapter 5, it is recommended that the discussion and interpretation of results be conducted by the data analysis team as soon as the data analysis is completed. Two days is suggested for the initial data analysis, and at least two further days for the discussion, interpretation of results and development of a dissemination plan. This schedule will need to be adapted for local circumstances.

The data analysis team should include lower-level staff who have field experience, for example health workers and district staff, as well as higher-level programme staff. The team has responsibility for discussing and interpreting the data, and then using it for programme decisions. *In many settings, surveyors and supervisors who conducted the fieldwork are used to conducting data analysis and interpreting the results* as they are already familiar with the survey instruments, and often work at the district level. Additional data needs may be identified during the discussion and interpretation of results. These data can be calculated by the data manager or survey coordinator at the same time, or at a later date.

6.3.1 Display the survey results in tables

Quantitative data are to be presented in tables in the same manner as they are calculated in the analysis phase. Tables make the data easier to review and interpret. There are two types of quantitative data generated:

Descriptive data

These data describe the population of sick children, health workers and health facilities sampled. An example of tables used to summarize these data are presented in Section 5.3.1 of Chapter 5, and included in Annex A. These tables stratify the data by geographic area (Province or District). If other strata have been used to sample the data, such as health worker category or type of health facility, then the data should be displayed in the tables by these strata. If stratified sampling has not been conducted, the differences between strata need to be interpreted with caution because results are usually presented as overall total results.

Indicators

Priority indicators reflect the quality of case management, and are presented in Section 5.3.2. in Chapter 5. If more detail is required, then supplemental measures may be added. A summary sheet for recording priority indicators is included in Annex A. The supplemental measures are described in Annex E. Summary indicators for the whole sample are usually reported, unless stratified sampling has been conducted. If a stratified sample was drawn, then indicators can be presented by stratum.

Facilitating the interpretation of survey results

The steps used to interpret the results described below may be difficult for persons with no experience of reading and interpreting tables. To help participants get started, lead the group in a discussion on the results of a few indicators and how to interpret them. It is useful to write each step on a flipchart as it is presented.

1. Present **step 1**, *review of descriptive data*. Summarize the sample that has been drawn and highlight how this will influence the results.
2. Present **step 2**, *describe the indicators*. Select an indicator or a group of indicators that pertain to an element of case-management practice. Present these data in table format. Ask the group to identify results that are high and low, and to describe how they made these judgments. Record the group's ideas on a flipchart.
3. Present **step 3**, *describe the meaning of the indicators*. Encourage the group to discuss the importance of the indicator, factors that might have contributed to the result, and possible strategies for improving the indicator. Data can be further analysed to identify case-management steps that were not done well. Encourage participants to use their own field experience when thinking about case management practice. Record the group's ideas on a flipchart.

Draw conclusions on the group's findings for each indicator. When the team has gained confidence, consider having them work in teams of two or three people, to review all of the survey data. Findings can be discussed in a large group to reach consensus on the overall interpretation of the results.

6.3.2 Interpret the results

The programme manager, surveyors and supervisors and other members of the data analysis team should work with the survey coordinator in the process of interpreting the results and making recommendations based on these results. The participation of this group is essential to ensuring that the conclusions and recommendations are practical in nature, and based on field experience. In addition, involvement of staff at all levels will strengthen their understanding of the survey data, and their commitment to take action based on the recommendations. In some cases it may be appropriate to invite staff from other MoH departments to address specific issues, such as drug distribution or cold chain logistics.

During the interpretation of the tables, the data analysis team searches to address the following question:

"What do the survey results mean?"

Quantitative and qualitative data from the survey and other sources (such as, supervision reports or previous surveys) are used to help answer the evaluation questions.

In order to interpret the results follow the **steps** below:

1. Review descriptive data

These data summarize the number of sick children and health facilities visited, the clinical presentations of the cases seen, and the types of health workers seeing sick children. Characteristics of the sample are reviewed, including:

- The number of sick children seen by category of health facility;
- The most common presenting complaints, and 'gold standard' classifications;
- The types of health worker seeing sick children and their training status;
- Disease categories that are underrepresented in the sample (such as severe illness, or ear problems);
- Overall numbers of sick children seen, and what this means for the precision of the survey results; and the categories of health facilities that saw the least sick children.

2. Describe the survey indicators

Define which results are high and low, and explain how high or low results are determined by comparing them to something else, for example:

- A previous health facility survey;
- What the programme manager or others in the programme expected to find;
- The results of other surveys;
- What has been found through routine monitoring, health information system, or supervision;
- Health facility survey's from other countries; and
- National/local programme targets.

3. Describe the meaning of the survey indicators

Each indicator is discussed in turn. There are three suggested elements to this discussion:

a. Describe the importance of the indicator—what does it mean?

This discussion might include why the indicator is an important element of case management practice, and what it says about the strengths or weaknesses of the programme. The implications for the quality of childcare can be discussed.

Example 1: The proportion of sick children who have their vaccination status checked. Every sick child visit is an opportunity to vaccinate children. If all sick children needing vaccination were vaccinated at each visit, vaccination coverage could be significantly increased.

Example 2: The proportion of sick children checked for the presence of cough, diarrhoea and fever. Health workers should screen all sick children for these frequent signs, as well as key symptoms as they are found in sick children. If all sick children are screened for these symptoms, then all cases of severe illness, malaria, diarrhea and pneumonia should be detected and treated.

b. Describe the factors that might have contributed to the indicator result

Qualitative information from the survey or field experience is essential to identifying these factors. In addition, it may be necessary to look again at other results to help clarify the reasons for a particular indicator result. The availability of adequate facility equipment, supplies or staffing can sometimes influence the quality of case management practice. Another important factor may be whether or not health workers received IMCI training or how long ago they were trained.

Example 1: Immunization cards may not be checked because health workers: (1) are not aware of the importance of vaccinating all children; (2) know that vaccines are not available and do not check; or (3) believe that sick children need not be vaccinated. Other barriers to checking vaccination status might include: caretakers never bring vaccination cards with them; vaccination cards are not available; or because immunization clinics are not conducted every day.

Example 2: Sick children might not be checked for the presence of all main symptoms because health workers lack awareness of the importance of screening, or because health workers expect caretakers to report all symptoms without being asked.

c. Describe strategies for improving the indicator

It is useful to consider strategies according to the resources and inputs required to implement them. Proposed strategies should be **realistic**, **practical** and **specific**. Strategies that are too general ('organize training', or 'get more health staff', for example), are often not useful for programme planning.

Consider strategies for improving indicators in three categories:

- *Short-term options*

These include strategies that require minimal additional resources, and which can be implemented with existing staff.

Example 1: Health staff can be taught to ask for, and look at, children's vaccination cards, and be made aware that most sick children do not have any contraindications to vaccination. Children can be referred to the next vaccination session if vaccinations are not given every day.

Example 2: Health workers can be given the IMCI chart booklet or a laminated IMCI patient recording form and encouraged to use them for all children. This can be used to reinforce the systematic assessment of all children for all of the main symptoms.

- *Medium-term options*

These include strategies that require additional resources and more input from existing staff to implement.

Example 1: Posters telling mothers to bring their child immunization card at each visit could be displayed in health facilities. Health workers could also encourage caretakers to bring their cards at every visit. Supervisory systems and methods can be improved to include observation of case-management practice, and vaccination screening can be reinforced.

Example 2: Supervisory systems and methods can be improved to include observation of case-management practice. The need to screen each sick child for all the main symptoms can be reinforced. Copies of the IMCI patient recording forms could be introduced and used as a patient chart by IMCI-trained health workers to support systematic assessment.

- *Longer-term options*

These include strategies that require considerable additional resources and more staff to implement. Longer-term options are more likely to involve strategies that address system problems, or recognition of illness and careseeking practices at the home and community levels. They may require high-level decisions to be made; these decisions could, for example, include increasing staff at health facilities or improving the storage and management of drugs at the national and regional levels.

Example 1: Health facilities can conduct vaccination clinics every day. A single vial policy might be adopted whereby a vaccine vial is opened even if only one child needs a vaccination. Behaviour change strategies could be used to increase community demand for daily vaccination services.

Example 2: Pre-service training programmes can be developed that teach trainee health workers an IMCI approach—this will include an emphasis on the importance of screening all sick children for all the main symptoms. Changes could be introduced in health facility logbooks to ensure that health workers report all major symptoms for each child.

6.3.3 Make conclusions and recommendations

Once all the summarized data have been discussed and interpreted by the data analysis team, conclusions and recommendations should be obtained. Obtaining consensus on the most important conclusions and recommendations for each indicator or group of indicators is often best done by the team. Suggestions can be documented on a flipchart and then summarized to get a final list.

The **conclusions** include summary statements about:

- The strengths and weaknesses of the indicator or group of indicators, and the implications they have on the quality of case management for sick children in the health facilities surveyed; and
- The contributing factors to the quality of case management in the health facilities surveyed.

The **recommendations** are based on the conclusions of the data analysis and are stated in terms of:

- actions to be taken;
- who will be carrying them out; and
- when, where, and how they will be done.

The recommendations guide programme staff at all levels in making a more detailed action plan, including a schedule of activities to implement each recommendation. It

Example: Conclusions and recommendations for vaccination practices

Conclusions: Vaccination practices

Programme strengths: Most facilities have all essential equipment and supplies needed to provide vaccine services (a priority indicator 16 is high).

Programme weaknesses: A high proportion of sick children are not being screened for vaccination status (priority indicator 4: Sick children screened for vaccination status is low). Children who need vaccinations are not receiving them (priority indicator 10: Sick children needing vaccination who leave the facility with all needed vaccinations is low).

Overall conclusion: There is a high proportion of missed opportunities to vaccinate. This population of children is at higher risk of mortality.

Contributing factors: The health facility does not vaccinate every day, vaccinations are only offered one day a week. A high proportion of health facilities sampled did not have all essential vaccines available (priority indicator 17: The index of vaccine availability is low).

Recommendations: Vaccination practices

1. Short term (one to two months). All health workers are informed by district supervisors: 1) screen all children for their vaccination status whenever they come to the facility; 2) most sick children can receive a vaccination; 3) if there is no vaccination clinic on the day of the visit, refer the child to the next vaccination clinic. Supervisors ensure that health workers have a copy of the national vaccination schedule, and that they receive a summary of the survey results.
2. Medium term (three to six months). Routine supervisory practice at the district-level should be modified to include an observation of health worker practice, and to provide an immediate feedback to the health worker. Vaccination screening practice should be included in this observation. Health workers should be encouraged to ask the caretakers of young children to bring their child's vaccination card with them every time they come to the facility and posters should be displayed in health facilities to reinforce this message.
3. Longer term (six to twelve months). National and district programme managers should identify reasons for stock-outs of vaccines at the health facility and district level. Options for improving vaccine supply should be investigated and discussed with National programme planners. National/local programme managers should investigate why vaccinations are not provided every day in order to determine whether this policy decision is rational, or whether it should be modified.

is recommended that the data analysis team, in collaboration with the survey coordinator draft the survey recommendations. It is important to reach consensus on the recommendations to be included in the draft report. Recommendations are often guided by the strategies identified for improving programme indicators (short-, medium- and longer-term) that were discussed in the previous section.

6.3.4 Identify the limitations to the conclusions

It is important to consider how the limitations of the survey might affect the degree of confidence in generalising the conclusions to other health facilities in the area surveyed, or in other areas in the country.

For example, some limitations might be due to:

- The survey procedures. For example, some important factors that might influence case-management practices were not recorded because they were not included on the survey instruments;
- The low number of facilities sampled. For example, if low numbers of facilities were sampled in different strata, comparisons of results between strata must be made with caution;
- The low number of cases found during the survey. For example, if a low number of severe illness, ear infections or pneumonia were included, then it is difficult to make conclusions about how well these cases are managed by health workers;
- The health facilities sampled. For example, for logistical reasons, more remote facilities, or facilities that saw fewer cases might not have been included, this might mean that the final sample was not representative of the entire population of facilities.

6.4 Write a summary report and present findings

Summary report

Timing: Day after completion of the data analysis and interpretation phase

Participants: Survey coordinator and surveyors

The summary report should be brief and present a background to the survey (objectives, sampling and methods used), as well as descriptive information, priority indicators and the major conclusions and recommendations. The summary report is designed to provide immediate information to health staff at all levels (national, regional and district, as well as health facility staff).

The summary report can be written quickly, and it is often most efficient to write it immediately after the data analysis and interpretation; the sections on the objectives, methods and sampling can be written in advance. The survey coordinator may choose to write it in collaboration with one or two members of the data analysis team. The report can help programme managers at all levels begin to think about the major problems identified by the survey and possible solutions; for example, the relative importance of training, supervision, communication and logistical support to correct the problems identified. In addition, other interested parties such as national authorities, NGOs, multilateral organizations, and other potential sources of financial support for the recommended actions, should receive a summary as they may be asked to contribute staff or resources for follow-up actions. It is also important to distribute the summary results to field staff. In some cases, surveyors may be able to take copies of the summary back to their survey areas with them. District managers may be able to distribute the findings to health staff in their own districts. By giving all stakeholders the survey results in a timely fashion, it is more likely that these results will be used for programme planning.

Presentation of survey findings

Timing: As soon as possible after the completion of the summary report.

Participants: National, regional and district health staff

This summary presentation is designed to update higher-level health staff on the outcomes of the survey. The presentation does not need to present more than the key findings, conclusions and recommendations. Sometimes the data analysis team presents this summary as a group. In addition to Ministry of Health staff, other interested parties often include UNICEF, the local WHO Regional Office, bilateral aid organizations, and NGOs. A preliminary oral report can stimulate support for the child health programme.

6.5 Feedback and disseminate findings

Timing: One to three months following the completion of the survey

Participants: National, regional and district health staff

As discussed in Chapter 3, the survey coordinator needs to plan for feedback and dissemination of results in advance in collaboration with local counterparts. The focus of feedback is on the use of the survey data to develop local action plans to improve facility-based child health services. Wherever possible, local staff are encouraged

to use the data to solve local problems. Strategies for conducting feedback should be included in the overall survey budget, the latter can be used by local staff for conducting their own feedback sessions. The survey coordinator should allocate staff to conduct feedback at each level. If necessary the coordinator should visit districts to plan a feedback strategy with district staff. The survey coordinator should discuss the outcomes of feedback sessions with programme staff in order to identify approaches and strategies that have been identified to improve child health services; these can be incorporated in the final survey report.

Options for conducting feedback and dissemination of survey findings include:

1. Feedback and planning meetings with local health facility staff. District staff may choose to conduct workshops with facility staff in their own areas, or to present results to health staff individually during supervision visits. These workshops are places where achievements and problems can be discussed. The principle purpose of these meetings is to prioritize problems, develop possible strategies for addressing problems, and encourage national/district authorities to commit themselves to certain follow-up actions in collaboration with lower level staff. Local staff are encouraged to develop approaches to improving case management practice using local resources. A local action plan should be realistic and specific. Responsibilities for staff from each level (facility and district) should be outlined.
2. Feedback and planning meetings with regional- and district-level heath staff and supervisors. Achievements are highlighted and problems discussed. Strategies for addressing problems are discussed and an action plan is developed. Responsibilities for staff from each level should be articulated (national, district, facility). Possible budget sources for activities should be discussed.
3. Feedback and planning meetings with national health staff, and donor organizations. Ideally the Ministry of Health and donor groups will meet together in order to discuss areas where donors may be able to provide assistance.
4. Information dissemination through other media. This might include short editorials in local newspapers or other media highlighting selected survey findings and recommendations; seminars for local medical associations or groups; or local meetings with community leaders. These activities may help to raise awareness in the community of the importance of the child health programme, as well as strengthen commitment and support to quality child health programmes.

Note: Follow-up meetings should be arranged in advance to ensure that all relevant staff are available. Meetings with local health facility and district staff are often very useful as they can provide opportunities to better understand the survey findings, and to generate practical recommendations for addressing problems. These meetings should occur as soon as possible after the completion of survey activities; and, if possible, the outcomes of these meetings should be incorporated in the final survey report.

6.6 Complete a final survey report

Timing: One to three months after the end of the survey, following planning meetings with health staff.

Participants: Survey coordinator, child health programme manager.

The final survey report should present survey objectives, methods, final results, conclusions and recommendations. It should also incorporate as many of the suggestions and strategies that were discussed and developed by local staff. Sections that were not completed for the summary report, such as the executive summary, are incorporated. The coordinator is usually responsible for submitting the report to officials who must approve it before it is distributed. A distribution list for the final report is needed Since the summary report has already been distributed to low level staff, the full report may only be needed by higher level staff. An outline for a survey report is shown on page 60.

The survey report

Executive summary (one to two pages)

a. Brief description of the survey.

b. Summary of the conclusions and recommendations.

1. Introduction

a. Objectives of the survey.

b. Dates and location.

2. Methods

a. Design and study population.

b. Sampling method.

c. Data collected.

d. Surveyors and their qualifications.

e. Training of surveyors.

f. Conduct of the survey at facilities.

3. Results

a. Descriptive information (on facilities, health workers, sick children and caretakers observed and interviewed).

b. Programme indicators. Priority and supplemental.

c. Analysis and interpretation of results.

d. Conclusions and recommendations.

e. Summary and conclusions from feedback meetings to districts.

f. Limitations of the survey.

g. Plans for monitoring implementation of survey recommendations.

Annexes

Survey participants.

Survey schedule.

Survey forms.

Tables of survey results (the annex may include tables of data not included in Section 3, results).

Dissemination plan and feedback meeting schedule.

ANNEX A

Part 1: Forms

Form 1. List of all health facilities

(for selecting a systematic random sample)

Type of facility			Number of facilities in the sample: N = Sampling interval: N =
District/ geographic area	Health facility name	Number	Selected facility
A			
B			
C			
D			
E			
F			
G			
H			
I			
J			
K			
L			
M			
N			
O			
P			
Q			
R			

(Photocopy several blank forms to have space to list facilities)

Form 2: Random number table

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
1	8	0	9	4	2	5	2	5	8	2	4	7	1	3	4	7	7	4	3	3	3	6	2	0	1	8	9	7	2	1	3	4
2	3	5	6	3	2	1	9	8	8	2	1	1	9	0	4	5	2	6	1	8	2	7	5	1	2	6	2	7	1	0	9	5
3	1	3	3	0	6	3	3	1	3	7	5	3	9	6	9	3	8	7	3	8	6	8	1	5	1	5	3	8	8	5	4	3
4	3	5	6	5	0	0	1	6	2	2	4	3	6	4	3	2	4	7	9	6	6	0	9	5	5	2	8	3	1	6	2	0
5	7	8	5	0	5	9	2	5	5	5	8	8	7	3	1	1	2	1	9	2	4	5	4	5	3	5	3	0	5	5	8	9
6	4	4	9	0	5	4	1	7	9	7	2	7	6	1	5	3	5	9	0	1	4	8	7	8	9	9	8	0	9	8	7	7
7	6	5	4	5	9	1	0	4	9	3	1	8	8	8	1	9	7	5	3	7	2	7	8	5	9	3	7	3	2	4	4	5
8	3	6	2	6	5	9	9	5	1	2	1	5	9	7	5	3	9	2	2	3	5	6	5	8	2	9	4	4	2	8	9	9
9	4	6	6	5	4	8	2	0	7	5	5	4	0	6	1	2	9	6	8	3	4	2	5	1	9	1	3	8	1	7	0	9
10	6	4	9	8	7	5	1	9	0	4	7	4	7	8	1	8	6	8	3	2	9	6	8	3	9	8	7	2	4	0	9	0
11	6	7	2	2	9	8	6	9	9	3	6	1	7	8	7	5	4	8	8	3	1	3	1	5	9	6	7	9	8	8	3	4
12	9	7	4	8	5	9	3	2	5	1	1	5	2	7	2	1	0	0	3	3	9	3	0	3	9	7	1	3	4	0	1	2
13	5	6	4	1	1	4	1	7	1	4	1	9	7	4	3	4	8	1	6	5	7	3	6	8	1	2	1	8	5	0	3	9
14	7	4	4	4	9	2	0	0	8	8	4	0	5	8	8	2	4	3	9	8	3	9	0	4	9	1	9	9	9	3	3	6
15	8	2	7	9	3	0	1	9	4	6	7	2	3	7	4	3	3	9	7	9	4	6	8	9	9	0	2	1	6	9	9	0
16	0	1	6	1	7	6	1	7	1	0	2	4	2	3	8	7	2	8	9	1	6	6	7	7	1	5	8	5	2	4	8	2
17	7	3	8	8	9	7	5	9	7	5	5	5	6	6	2	4	9	9	7	7	2	0	0	8	5	5	9	6	9	7	4	0
18	7	8	3	0	4	7	1	4	3	6	9	5	2	9	1	9	1	8	0	4	4	0	4	4	1	0	3	4	2	5	9	7
19	9	8	8	7	4	2	1	6	6	5	2	6	4	5	3	5	8	4	3	0	5	2	7	0	9	6	0	5	0	7	6	8
20	1	2	6	1	2	5	1	6	8	5	6	9	2	3	1	0	3	9	3	9	8	7	0	3	9	8	4	1	0	3	5	3
21	3	9	4	7	4	9	3	7	7	6	3	4	2	5	4	3	6	2	3	9	7	4	5	5	2	0	5	5	7	7	9	5
22	4	5	5	0	8	1	0	3	1	2	5	0	2	3	0	4	1	1	3	8	9	7	8	8	9	1	4	4	4	5	2	6
23	1	3	4	4	9	6	9	7	2	3	8	3	6	9	7	6	6	2	5	1	4	2	0	1	2	0	3	8	6	5	5	2
24	8	9	7	6	5	8	2	3	8	4	8	7	0	4	5	0	3	1	0	6	9	1	6	6	2	7	1	7	7	6	0	1
25	7	7	1	0	9	9	4	3	6	9	7	8	8	2	7	3	9	7	1	4	9	7	0	0	1	5	6	6	2	8	8	9
26	6	9	5	9	6	0	0	8	8	4	4	2	2	2	8	2	1	5	2	4	2	5	1	7	5	8	1	8	0	0	8	1
27	7	9	4	1	2	3	1	2	2	4	3	1	6	7	0	2	9	9	8	4	3	4	6	9	3	0	8	5	4	7	6	2
28	2	2	8	4	0	8	9	6	9	1	0	7	5	5	4	2	7	3	1	9	3	7	8	2	1	0	6	8	9	5	7	4
29	9	5	9	4	7	4	1	6	9	3	6	5	6	0	4	5	1	1	8	3	5	9	1	6	9	5	9	9	1	1	4	3
30	4	6	1	3	8	5	4	9	6	3	6	9	3	2	0	8	5	1	0	9	9	6	8	0	1	1	6	8	6	1	3	3

From Hill, A.B. *A short textbook of medical statistics*. Hodder and Stoughton, London, UK, 1977.

Form 3: Survey schedule for team _____

Day	Date	Location	Health facility		Overnight location
			Code no.	Name, type	
1					
2					
3					
4					
5					
6					
7					
8					

Form 4. Reliability checking form

Instrument number _____ Training day _____

Question number	Gold standard	Surveyor name or number															Percentage agreement
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Intra-observer reliability																	
Total Inter-Observer Reliability (average percentage agreement for the group)																	

Form 5. Data summary tables

Facilities visited and number of case-management observations conducted

Facility type		District/province				
		Area A	Area B	Area C	Area D	Total
Health Posts	Visited					
	Cases observed					
Health Centres	Visited					
	Cases observed					
Hospitals	Visited					
	Cases observed					
Overall total	Visited					
	Cases observed					

Number of children observed by age, sex and geographic area

Age	District/province				
	Area A	Area B	Area C	Area D	Total
Under 1 year					
1 year					
2 years					
3 years					
4 years					
Total: All ages					
Gender Boys Girls					

Number of case management observations by category and training status of health workers, and geographic area

Category of health worker who manage sick children	District/province				
	Area A	Area B	Area C	Area D	Total
Medical assistant					
IMCI trained					
Un-trained					
Nurse					
IMCI trained					
Un-trained					
Doctor					
IMCI trained					
Un-trained					
Other					
IMCI trained					
Un-trained					
Total: All case management observations					
IMCI trained					
Un-trained					

Caretaker reasons for bringing the child to the health facility on the day of the survey

Presenting complaint	District/province				
	Area A	Area B	Area C	Area D	Total
Fever/malaria					
Diarrhoea/vomiting					
Cough/fast or difficult breathing/pneumonia					
Ear problem					
Measles					
Total: All problems					

Number of sick child classifications based on gold standard re-examination

Child classification	District/province				
	A	B	C	D	All
Child needing referral					
Pneumonia					
Diarrhea with Severe dehydration					
Diarrhea with Some dehydration					
Diarrhea Without dehydration					
Dysentery					
Malaria					
Fever malaria unlikely and fever no malaria					
Measles					
Acute ear infection					
Chronic ear infection					
Low weight					
Anaemia					
Total: All classifications					

Priority Indicators: Summary Table

Indicator	Stratum 1	Stratum 2	Stratum 3	Overall Result
1. Proportion of children checked for three general danger signs	Numerator = Denominator = Percentage =	Numerator = Denominator = Percentage =	Numerator = Denominator = Percentage =	Numerator = Denominator = Percentage =
2. Proportion of children checked for the presence of cough, diarrhoea, and fever				
3. Proportion of children who have been weighed the same day and have their weight checked against a recommended growth chart				
4. Proportion of children who have their vaccination status checked				
5. Index of integrated assessment				
6. Proportion of children under two years of age whose caretakers are asked about breastfeeding, complementary foods, and feeding practices during this episode of illness				
7. Proportion of children who do not need urgent referral, who need an oral antibiotic and/or antimalarial who are prescribed the drug(s) correctly				
8. Proportion of children, who do not need urgent referral and who do not need antibiotic for one or more IMCI classifications, who leave the facility without having received or been prescribed antibiotics				
9. Proportion of sick children whose caretakers are advised to give extra fluid and continue feeding				
10. Proportion of sick children needing vaccinations (based on vaccination card or history) who leave the health facility with all needed vaccinations				
11. Proportion of children prescribed ORS, and/or oral antibiotic and/or an oral antimalarial whose care-taker can describe correctly how to give the treatment				

Indicator	Stratum 1	Stratum 2	Stratum 3	Overall Result
12. Proportion of children needing referral who are referred by the health worker to a higher level of the health system	Numerator = Denominator = Percentage =	Numerator = Denominator = Percentage =	Numerator = Denominator = Percentage =	Numerator = Denominator = Percentage =
13. Proportion of health facilities that received at least one routine supervisory visit that included the observation of case management during the previous six months				
14. Index of the availability of essential oral drugs				
15. Index of availability of injectable antibiotics and antimalarials for pre-referral treatment of severely ill children				
16. Proportion of health facilities that have the equipment and supplies to provide full vaccination services on the day of survey				
17. Mean of four recommended antigens available at each facility the day of visit (arithmetic mean of indices from all health facilities)				
18. Proportion of health facilities with at least 60% of health workers managing children trained in IMCI				

Form 6. Data summary tables for use with epiinfo analysis programme

Priority Indicators Summary Table with reference to EpiInfo variable name (indicators are calculated running frequencies of the appropriate variable)

Indicator	Result	Variable name
1. Proportion of children checked for three general danger signs		F1B
2. Proportion of children checked for the presence of cough, diarrhoea, and fever		F1D
3. Proportion of children who have been weighed the same day and have their weight checked against a recommended growth chart		F1E
4. Proportion of children who have their vaccination status checked		F1G
5. Index of integrated assessment (mean of 10 tasks performed)		F1INDEXA
6. Proportion of children under two years of age whose caretakers are asked about breastfeeding, complementary foods, and feeding practices during this episode of illness		F1O
7. Proportion of children who do not need urgent referral, who need an oral antibiotic and/or antimalarial who are prescribed the drug(s) correctly		F1AM
8. Proportion of children, who do not need urgent referral and who do not need antibiotic for one or more IMCI classifications, who leave the facility without having received or been prescribed antibiotics		F1W
9. Proportion of sick children whose caretakers are advised to give extra fluid and continue feeding		F1AA
10. Child needing vaccinations leaves the facility with all needed vaccinations (based on vaccination card or history)		F3E
(10a). Child needing vaccinations leaves the facility with all needed vaccinations (based on vaccination card only)		F3D
11. Proportion of children prescribed ORS, and/or oral antibiotic and/or an oral antimalarial whose caretaker can describe correctly how to give the treatment		F2D
12. Proportion of children needing referral who are referred by the health worker to a higher level of the health system		F1R

Indicator	Result	Variable name
13. Proportion of health facilities received at least one supervisory visit *that included observation of case management* during the previous six months (excluding follow-up after training visits)		F4I
14. Index of availability of 8 essential oral treatments (mean)		F4f (mean)
(14a). HF having all 8 essential oral treatment available		F4f
15. Index of availability of injectable antibiotics and antimalarials for pre-referral treatment of severely ill children		F4g
(15a). HF having all injectable drugs for pre-referral treatment available		F4g
16. Health facility has the equipment and supplies to support full vaccination services		F4d
17. Index of availability of four vaccines (mean) (BCG, OPV, DPT, Measles)		F4e (mean)
(17a). HF having all 4 vaccines available		F4e
18. Proportion of health facilities with at least 60% of workers managing children trained in IMCI		F4a
(18a). Health facilities with at least 60% of the health workers present the day of visit and managing children trained in IMCI		F4apres

ANNEX A

Part 2:
Survey instruments

Enrolment Card

Date: ..... / ..... / ..... Facility Name: ..... Code: .....

Child's arrival time at the facility: ..... hours ..... min Child's ID: .....

Child's Name: ..... Child's birthdate: ..... / ..... / ..... Age (months): .....

Child sex: (1) M (2) F

Read the following statement to the caretaker:

"Hello. I am ..... from the Ministry of Health. I am here with my colleagues to do a study about children with common illnesses, and how they are routinely assessed and treated in health facilities. A member of our team would like to observe the consultation between your child and health worker. Following your consultation another member of our team would like to ask you some questions about your experience during the consultation. There are no risks or direct benefits to you from participating in the survey but your participation will contribute to improving health services in this and other facilities. Please be assured that the information will be confidential and you may choose to stop your participation at any time or refrain from answering any questions.

At this time, do you want to ask me anything about this survey?

Do I have your agreement to participate? ..... (write YES or NO)

Signature: .....

Form 1: observation [ ] Form 2: caretaker interview [ ] Form 3: re-examination [ ]

Questionnaire # | ... | ... | ... | ... |

HF code Child ID

Questionnaire No. ……

Form 1. Observation checklist – child
(2 months–5 years)

District: …… Date: … / …/ …

Facility name: …… Facility code …… Facility type …… Surveyor ID: ……

Health worker: Name …… ID …… Sex: (1) M (2) F Trained: (1) Yes (2) No
Type: (1) Physician (2) Nurse (3) Medic Assist (4) Other Year trained: ……

Child: Name …… ID …… Sex: (1) M (2) F Birth date: … / …/ … Age: ……

ASSESSMENT MODULE

Record what you hear or see.

A3. Does the health worker, or another staff, weigh and record the weight of the child today?
(1) Yes
(2) No
(8) Doesn't know

A4. Does the health worker, or another staff, check the temperature of the child?
(1) Yes
(2) No

A5. What reasons does the caretaker give for bringing the child to the health facility?
Circle all signs mentioned.

a.	Diarrhoea/vomiting	(1) mentioned	(2) not mentioned
b.	Fever/malaria	(1) mentioned	(2) not mentioned
c.	Fast/difficult breathing/cough/pneumonia	(1) mentioned	(2) not mentioned
d.	Ear problem	(1) mentioned	(2) not mentioned
e.	Well-child visit	(1) mentioned	(2) not mentioned
f.	Other	(1) mentioned	(2) not mentioned

Specify ……

A6. Does health worker ask whether the child is able to drink or breastfeed?
(1) Yes
(2) No

A7. Does health worker ask whether the child vomits everything?
(1) Yes
(2) No

A8. Does health worker ask whether the child has convulsions?
(1) Yes
(2) No

A9. Is the child visibly awake (e.g., playing, smiling, crying with energy)?

(1) Yes → *Skip to question # A11*
(2) No

A10. If child not visibly awake, does health worker check for lethargy or unconsciousness (try to wake up the child)?

(1) Yes
(2) No

A11. Does health worker ask for cough or difficult breathing?

(1) Yes
(2) No

A12. Does health worker ask for diarrhoea?

(1) Yes
(2) No

A13. Does health worker ask/feel for fever (or refer to temperature if taken previously)?

(1) Yes
(2) No

A14. Does health worker check for visible severe wasting?

(1) Yes
(2) No
(8) Don't know

A15. Does health worker look for palmar pallor?

(1) Yes
(2) No
(8) Don't know

A16. Does health worker look for oedema of both feet?

(1) Yes
(2) No
(8) Don't know

A17. Does health worker check child's weight against a growth chart?

(1) Yes
(2) No

A18. Does the health worker ask for and check the child's vaccination card?

(1) Yes
(2) No → *Skip to question # A20*

A19. Does the caretaker have the child's vaccination card?

(1) Yes → *Skip to question # A21*
(2) No

A20. Does the health worker ask the caretaker if

a. the child has ever been given an injection in the shoulder against tuberculosis (BGG)? (1) Yes (2) No

b. the child has ever been given drops against polio? (1) Yes (2) No

c. the child has ever been given injection against DTP? (1) Yes (2) No

d. the child has ever been given an injection in the arm against measles? (1) Yes (2) No

e. the child has ever been given vitamin A capsules? (1) Yes (2) No

A21. Does health worker ask about breastfeeding?

(1) Yes
(2) No

A22. Does health worker ask whether the child takes any other foods/fluids?

(1) Yes
(2) No

A23. Does health worker ask whether feeding changed during illness?

(1) Yes
(2) No

A24. Does health worker ask about possible "other problems"?

(1) Yes
(2) No

CLASSIFICATION MODULE

C1. Does health worker give one or more classifications for the child?

(1) Yes
(2) No → *Skip to Treatment Module*

Record all classifications given in the table below:

C05. One or more danger signs	1	2
C10. Severe pneumonia/very severe disease	1	2
C11. Pneumonia	1	2
C12. No pneumonia	1	2
C20. a. Severe dehydration	1	2
b. Some dehydration	1	2
c. No dehydration	1	2
C21. Severe persistent diarrhea	1	2
C22. Persistent diarrhea	1	2
C23. Dysentery	1	2
C30. Very severe febrile disease	1	2
C31. Malaria	1	2
C32. Fever, malaria unlikely	1	2
C33. Fever, no malaria	1	2
C34. Severe complicated measles	1	2
C35. Measles with eye/mouth complications	1	2
C36. Measles	1	2
C40. Mastoiditis	1	2
C41. Acute ear infection	1	2
C42. Chronic ear infection	1	2
C43. No ear infection	1	2
C50. a. Severe malnutrition	1	2
b. Severe anaemia	1	2
C51. a. Anaemia	1	2
b. Very low weight	1	2
C52. No anaemia and not very low weight	1	2
C60. Other, *specify* ……	1	2
C61. Other, *specify* ……	1	2

To be completed by supervisor

Based on the re-examination of the child (instrument 3A) circle surveyor classifications

105. One or more danger signs
110. Severe Pneumonia/very severe Disease
111. Pneumonia
112. No pneumonia

120. a. Severe dehydration
b. Some dehydration
c. No dehydration
121. Severe persistent diarrhea
122. Persistent diarrhea
123. Dysentery

130. Very severe febrile disease
131. Malaria
132. Fever, malaria unlikely
133. Fever, no malaria
134. Severe complicated measles
135. Measles with eye/mouth complication
136. Measles

140. Mastoiditis
141. Acute ear infection
142. Chronic ear infection
143. No ear infection

150. a. Severe malnutrition
b. Severe anaemia
151. a. Anaemia
b. Very low weight
152. No anaemia and not very low weight

160. Other, *specify* ……
161. Other, *specify* ……

165. Follow-up visit required in
170. Malaria risk: high, low, no risk

Note: Numbers above are not consecutive to allow space to add country-specific adaptations of the imci guidelines without changing variable labels in the data file.

TREATMENT MODULE

T1. Does health worker administer or prescribe injection(s)?

(1) Yes
(2) No → *Skip to question # T3*

T2. If yes, record all injections given:

a. Antimalarial : specify ..... (1) Yes (2) No
b. Antibiotic: specify ..... (1) Yes (2) No
c. Other injection: specify: ..... (1) Yes (2) No

T3. Does the health worker administer or prescribe ORS?

(1) Yes
(2) No → *Skip to question # T5*

T4. If yes health worker administer ORS at the facility?

(1) Yes
(2) No
(8) Don't know

T5. Does the health worker prescribe immediate referral for the child?

(1) Yes
(2) No → *Skip to question # T6*

T5a Does the caretaker accept referral for the child?

(1) Yes → — *If health worker give any oral treatment to the child before referral, record the oral treatment given in question T7 then go to question CM12 at the end of the questionnaire.*
— *If no oral treatment is administered to the child before referral, go to question CM12 at the end of the questionnaire*
(2) No

T6. Does the health worker administer or prescribe oral treatment?

(1) Yes
(2) No → *Skip to Communication Module, question # CM5*

T7. Record all oral treatment given:

a. Antidiarrheal/antimotility (1) Yes (2) No
b. Metronidazole tablets/syrup (1) Yes (2) No
c. Recommended antimalarial tablets/syrup (1) Yes (2) No
d. Other antimalarial tablet/syrup (1) Yes (2) No
e. Paracetamol/aspirin (1) Yes (2) No
f. Recommended antibiotic tablets/syrup (1) Yes (2) No
g. Other antibiotic tablets/syrup (1) Yes (2) No
h. Vitamin A (1) Yes (2) No
i. Multi-vitamins (1) Yes (2) No
j. Other vitamins (1) Yes (2) No
k. Mebendazole (1) Yes (2) No
l. Iron tablets/syrup (1) Yes (2) No
m. Tablets/syrup, unknown type (1) Yes (2) No
n. Other, *specify* ..... (1) Yes (2) No

T8. Does the oral treatment given or prescribed by the health worker include an antibiotic?

(1) Yes
(2) No → *Skip to question T10*

T9. IF the oral treatment includes an antibiotic, record what health worker says:

a. name: ……
b. Formulation: ……
c. Amount each time: ……
d. number of times per day: ……
e. total days: ……

Second antibiotic:

f. name: ……
g. Formulation: ……
h. Amount each time: ……
i. # times per day: ……
j. total days: ……

T10. Does the oral treatment given or prescribed by the health worker include an antimalarial?

(1) Yes
(2) No → *Skip to Communication Module*

T11. If the oral treatment includes an antimalarial, record what health worker says:

a. name: ……
b. Formulation: ……
c. Amount each time: ……
d. number of times per day: ……
e. total days: ……

Second antimalarial:

f. name: ……
g. Formulation: ……
h. Amount each time: ……
i. # times per day: ……
j. total days: ……

COMMUNICATION MODULE

In some settings, tasks are shared and the dispenser counsels the caretaker on the treatment given and also administers the first dose. The child should then be followed to the dispenser to complete the observation.

CM1. Does the health worker explain how to administer oral treatment?

a.	antibiotic	(1) Yes	(2) No	(8) NA
b.	antimalarial	(1) Yes	(2) No	(8) NA
c.	ORS	(1) Yes	(2) No	(8) NA

CM2. Does the health worker demonstrate how to administer the oral treatment?

a.	antibiotic	(1) Yes	(2) No	(8) NA
b.	antimalarial	(1) Yes	(2) No	(8) NA
c.	ORS	(1) Yes	(2) No	(8) NA

CM3. Does the health worker ask an open-ended question to verify the caretakers' comprehension of how to administer the oral treatment?

a.	antibiotic	(1) Yes	(2) No	(8) NA
b.	antimalarial	(1) Yes	(2) No	(8) NA
c.	ORS	(1) Yes	(2) No	(8) NA

CM4. Does the health worker give or ask the mother to give the first dose of the oral drug at the facility?

a.	antibiotic	(1) Yes	(2) No	(8) NA
b.	antimalarial	(1) Yes	(2) No	(8) NA

CM7. Does the health worker explain the need to give more liquid or breastmilk at home?

(1) Yes
(2) No

CM8. Does the health worker explain the need to continue feeding or breastfeeding at home?

(1) Yes
(2) No

CM9. Does the health worker give advice on the frequency of feeding/BF?

(1) Yes
(2) No → *Skip to question CM10*

CM9a. If yes, how many times/24 hours did the health worker advise to feed/breastfeed?

…… times per 24 hours

CM10. Does the health worker tell the caretaker to bring the child back immediately for the following signs? Tick all that apply.

a.	Child is not able to drink or breastfeed	(1) Yes	(2) No
b.	Child becomes sicker	(1) Yes	(2) No
c.	Child develops a fever	(1) Yes	(2) No
d.	Child develops fast breathing	(1) Yes	(2) No
e.	Child develops difficult breathing	(1) Yes	(2) No
f.	Child develops blood in the stool	(1) Yes	(2) No
g.	Child drinking poorly	(1) Yes	(2) No
h.	Other, *specify* ……	(1) Yes	(2) No

CM11. Did the health worker ask at least one question about the mother's health (ask about her own health, access to family planning or vaccination status)?

(1) Yes
(2) No

CM12. Did the health worker use the IMCI chart booklet at any time during the management of the child?

(1) Yes
(2) No
(8) Don't know

END OF OBSERVATION

The surveyor may need to ask the health worker about the diagnosis made and the treatment given during the consultation, but only if these two components were not stated during the consultation. The surveyor must complete this form before the next child observation.

Form 1. Supervisor coding

	Information needed	Where to find data	Codes		
A	If antibiotics were prescribed, is it a non-IMCI reason that justifies the antibiotic treatment?	Based on re-examination (page 4, questions 160 and 161)	(1) Yes	(2) No	(8) NA (no AB)
B	If antibiotics were prescribed (whatever the reason) were they prescribed correctly?	YES in T8 and CORRECT for T9c, d and e and h, I, and j if 2 antibiotics	(1) Yes	(2) No	(8) NA (no AB)
C	If antimalarials were prescribed (whatever the reason) were they prescribed correctly?	YES in T10 and CORRECT in T11c, d and e and h, i , and j if 2 antimalarials	(1) Yes	(2) No	(8) NA (no AM)
D	If the child was referred (whatever the reason) did the child receive an appropriate pre-referral treatment?	YES in T5a and appropriate pre-referral treatment in T2 and/or T3	(1) Yes	(2) No	(8) NA (child not referred)

Questionnaire No. .....

Form 2. Exit interview – caretaker of child
(2 months-5 years)

District: ..... Date: ... / .../ ...

Facility name: ..... Facility code ..... Facility type ..... Surveyor ID: .....

Child: Name ..... ID ..... Age: .....

Caretaker: Sex: (1) M (2) F Relationship to child: (1) biological mother
(2) father
(3) other relative
(4) other .....

---

1. What do you think of services for sick children at this facility? Read all options to the caretaker.

(1) Good as they are
(2) Should improve What should improve: .....
.....
(8) Doesn't know

2. How do you feel about the time you had to wait today before receiving attention for your child? Read all options to the caretaker.

(1) Definitely too long
(2) Long
(3) Acceptable
(4) Short
(8) Doesn't know

3. Did the health worker give you or prescribe any oral medicines for <CHILD> at the health facility today?

(1) Yes
(2) No → *skip to question # 16*
(8) Doesn't know → *skip to question # 16*

If yes compare the caretaker's medication with the samples for identification of the oral medicines.

4. Were antibiotics prescribed or given?

(1) Yes
(2) No → *Skip to question # 8*

Copy the information from the caretaker's medication or prescription:

a. Name: .....
b. Formulation: .....

Then ask the caretaker (record what you hear):

4.c How much will you give <CHILD> each time: ……

4.d How many times will you give it to <CHILD> each day? …… **times**

4.e How many days will you give the medicine to <CHILD> ? …… **days**

5. Was a second antibiotic prescribed or given?

(1) Yes
(2) No → *Skip to question # 8*

Copy the information from the caretaker's medication or prescription:

a. Name: ……
b. Formulation: ……

Then ask the caretaker (record what you hear):

5.c How much will you give <CHILD> each time: ……

5.d How many times will you give it to <CHILD> each day? …… **times**

5.e How many days will you give the medicine to <CHILD> ? …… **days**

8. Were antimalarials prescribed or given?

(1) Yes
(2) No → *Skip to question # 16*

Copy the information from the caretaker's medication or prescription:

a. Name: ……
b. Formulation: ……

Then ask the caretaker (record what you hear):

9. How much will you give <CHILD> each time: ……

10. How many times will you give it to <CHILD> each day? …… **times**

11. How many days will you give the medicine to <CHILD> ? …… **days**

12. Was a second antimalarial prescribed or given?

(1) Yes
(2) No → *Skip to question # 16*

Copy the information from the caretaker's medication or prescription:

a. Name: ……
b. Formulation: ……

Then ask the caretaker (record what you hear):

13. How much will you give <CHILD> each time: ……

14. How many times will you give it to <CHILD> each day? …… **times**

15. How many days will you give the medicine to <CHILD> ? …… **days**

16. Was ORS prescribed or given?

(1) Yes
(2) No → *Skip to question # 20*

17. How much water will you mix with one ORS packet? ……

18. When will you give ORS to <CHILD> each day? ……

19. How much ORS will you give to <CHILD> each time? ……

20. Did the health worker give you a specific day when to come back to this facility?

(1) Yes → In how many days? …… days
(2) No → *Skip to question # 21*
(8) Doesn't know → *Skip to question # 21*

21. Sometimes children condition may worsen and they should be taken immediately to a health facility: What types of symptoms would cause you to take your child to a health facility right away?
Do not prompt—keep asking for more signs/symptoms until the caretaker cannot recall any additional ones.

a.	Child not able to drink or breastfeed	(1) Mentioned	(2) Not mentioned
b.	Child becomes sicker	(1) Mentioned	(2) Not mentioned
c.	Child develops a fever	(1) Mentioned	(2) Not mentioned
d.	Child has fast breathing	(1) Mentioned	(2) Not mentioned
e.	Child has difficult breathing/pneumonia	(1) Mentioned	(2) Not mentioned
f.	Child has blood in the stools	(1) Mentioned	(2) Not mentioned
g.	Child is drinking poorly	(1) Mentioned	(2) Not mentioned
h.	Other, *specify* ……		
i.	Other, *specify* ……		
j.	Other, *specify* ……		

If the caretaker is a woman, ask:

22. Were you ever given an injection in the arm to prevent the baby from getting tetanus, that is convulsions after birth?

(1) Yes → When did you receive the last injection? Year: ……
(2) No
(8) Doesn't know

23. Did you receive or have you been shown this card today? Show mother's card.

(1) Yes
(2) No
(8) Doesn't know

END OF EXIT INTERVIEW

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

Questionnaire No. ……

Form 2. Supervisor coding

	Information needed	Where to find data	Codes		
A	If an antibiotic has been given or prescribed (whatever the reason) does the caretaker describe correctly how to give antibiotic?	YES in 4 and caretaker's answers correct in 4c, 4d and 4e (and if YES in 5, also correct in 5c, 5d, and 5e)	(1) Yes	(2) No	(8) NA (didn't receive AB)
B	If an antimalarial has been given or prescribed (whatever the reason) does the caretaker describe correctly how to give antimalarial?	YES in 8 and caretaker's answers correct in 9, 10 and 11 (and if YES in 12, also correct in 13, 14 and 15)	(1) Yes	(2) No	(8) NA (didn't receive AM)
C	If ORS has been given or prescribed does the caretaker describe correctly how to give ORS?	YES in 16 and caretaker's answers correct in 17, 18, and 19	(1) Yes	(2) No	(8) NA (didn't receive ORS)

Questionnaire No. .....

Form 3. Re-examination – child
(2 months–5 years)

District: ..... Date: .../.../... Facility name: ..... Facility code: ..... Surveyor ID: .....

Child name: ..... Child's ID: ..... Age: ..... Sex: M F Weight: ..... kg Temperature: .....

ASSESS (CIRCLE ALL SIGNS PRESENT)	CLASSIFY
CHECK FOR GENERAL DANGER SIGNS NOT ABLE TO DRINK OR BREASTFEED VOMITS EVERYTHING CONVULSIONS LETHARGIC OR UNCONSCIOUS	General danger sign present? Yes ..... No ..... **Remember to use danger sign when selecting classifications**
DOES THE CHILD HAVE COUGH OR DIFFICULT BREATHING? Yes ... No ... • For how long? ..... days • Count the breaths in one minute. ..... breaths per minute. Fast breathing? • Look for chest indrawing. • Look and listen for stridor.	
DOES THE CHILD HAVE DIARRHOEA? Yes ... No ... • For how long? ..... days • 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?	
DOES THE CHILD HAVE FEVER? (by history/feels hot/temperature 37.5 °C or above) Decide MALARIA risk: High Low Yes ... No ... • For how long? ..... days • If more than 7 days, has fever been present every day? • Has child had measles within the last 3 months? • 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 If Yes, are they deep and extensive? • Look for pus draining from the eye. • Look for clouding of the cornea.	
DOES THE CHILD HAVE AN EAR PROBLEM? Yes ... No ... • Is there ear pain? • Is there ear discharge? If Yes, for how long? ..... days • Look for pus draining from the ear. • Feel for tender swelling behind the ear.	
THEN CHECK FOR MALNUTRITION AND ANAEMIA • Look for visible severe wasting. • Determine weight for age. Very low ..... Not Very low ..... • Look for palmar pallor Severe palmar pallor? Some palmar pallor? • Look for oedema of both feet.	
CHECK THE CHILD'S IMMUNIZATION STATUS AT THE TIME HE/SHE LEAVES THE FACILITY based on the child immunization card or asking questions listed in Annex 1. Circle immunizations still needed. BCG DPT 1 DPT 2 DPT 3 OPV 0 OPV 1 OPV 2 OPV 3 Measles Vitamin A	Return for next immunization on: ..... (Date)
ASSESS OTHER PROBLEMS	

Questionnaire No. ……

1. Did your child receive a vaccination today?

(1) Yes
(2) No

2. Did the health worker ask you to bring back the child to receive vaccination another day?

(1) Yes → *If yes, when?* ……
(2) No

3. Is the child's vaccination card available?

(1) Yes
(2) No

If child does not have a vaccination card, or if the card was not seen, ask questions 1 to 5a.
If child has a vaccination card, skip to question 6.

1. Has <CHILD> ever been given a BCG vaccination against tuberculosis—that is, an injection in the left shoulder that caused a scar?

(1) Yes
(2) No
(8) Doesn't know

2. Inspect left shoulder for presence of BCG scar

(1) Present
(2) Absent
(8) Unable to examine/unable to tell

3. Has <CHILD> ever been given "vaccination injections"—that is, an injection in the thigh or buttocks—to prevent him/her from getting tetanus, whooping cough, diphtheria?

(1) Yes → How many times? …… When was the last dose given? ……
(2) No
(8) Doesn't know

4. Has <CHILD> ever been given "vaccination drops" to protect him/her from getting diseases—that is, polio?

(1) Yes → How many times? …… When was the last dose given? ……
(2) No
(8) Doesn't know

5. Has your child ever been given "vaccination injections"—that is, a shot in the arm, at the age of 9 months or older—to prevent him/her from getting measles?

(1) Yes
(2) No
(8) Doesn't know

5a. Has your child ever been given vitamin A drops from a capsule? Show the mother a capsule of vitamin A

(1) Yes
(2) No
(8) Doesn't know

Surveyor: based on caretaker interview and on your re-examination of the child, answer the following question:

6. Does the child leaving the facility still need a vaccination today?

(1) Yes
(2) No

SUPERVISOR COPY CLASSIFICATIONS IN APPROPRIATE BOX ON PAGE 4, FORM 1.

Form 4. Equipment and supply checklist

District: ..... Date: ... / .../ ...

Facility name: ..... Facility code: ..... Facility type: 1 2 3 Surveyor ID: .....

Discuss with the head of facility to determine the number of health workers who usually have child case-management responsibilities:

Table 1. Characteristics of health workers with case management responsibilities for children

Category	No. of hws assigned to facility	No. of hws assigned to facility who usually manage children	No. of hws usually managing children present today	No. of hws usually managing children IMCI trained	No. trained in IMCI present today
Physician					
Nurse					
Midwife					
Health Assistant					
Others					
Total					

Ask a health worker to show you around the facility. Look and touch to complete the following questions.

EQUIPMENT AND SUPPLIES MODULE

E1. Does the facility have the following equipment and materials?

a.	Accessible and working adult scale?	(1) Yes	(2) No
b.	Accessible and working baby scale?	(1) Yes	(2) No
c.	Working watch/timing device available to every health worker managing children?	(1) Yes	(2) No
d.	Supplies to mix ORS, cups and spoons	(1) Yes	(2) No
e.	Source of clean water	(1) Yes	(2) No
f.	Stock cards/drug logbook	(1) Yes	(2) No
g.	Child vaccination cards	(1) Yes	(2) No
h.	Mothers' counselling cards?	(1) Yes	(2) No
i.	IMCI chart booklet?	(1) Yes	(2) No
j.	……	(1) Yes	(2) No
k.	Accessible means of transportation for patients requiring referral	(1) Yes	(2) No

E2. Does the facility have needles and syringes appropriate for vaccinations?

(1) Yes
(2) No → *Skip to question # E3*

E2a If appropriate needles, how do health workers use these needles?

(1) Single use
(2) Multiple uses

E3. Does the facility have a functional sterilizer, cooker or stove?

(1) Yes
(2) No

E4. Does the facility have a functioning fridge?

(1) Yes → *Skip to question # E6*
(2) No

E5. Does the facility have ice packs and cold boxes?

(1) Yes
(2) No → *Skip to module on availability of drugs*

E6 Does the facility have the following vaccines in stock?

a.	BCG vaccine	(1) Yes	(2) No
b.	OPV vaccine	(1) Yes	(2) No
c.	DPT vaccine	(1) Yes	(2) No
d.	Measles vaccine	(1) Yes	(2) No
e.	TT vaccine	(1) Yes	(2) No

AVAILABILITY OF DRUGS MODULE

Check the drug stocks. Answer the following questions based on what you see.

D1. Does the facility have the following drugs available the day of visit?

a.	ORS	(1) Yes	(2) No
b.	Recommended antibiotic for pneumonia:	(1) Yes	(2) No
c.	Another antibiotic recommended for pneumonia:	(1) Yes	(2) No
d.	Recommended antibiotic for dysentery:	(1) Yes	(2) No
e.	Another antibiotic recommended for dysentery:	(1) Yes	(2) No
f.	Recommended antimalarial:	(1) Yes	(2) No
g.	Another recommended antimalarial	(1) Yes	(2) No
h.	Vitamin A	(1) Yes	(2) No
i.	Iron	(1) Yes	(2) No
j.	Paracetamol/aspirin	(1) Yes	(2) No
k.	Mebendazol	(1) Yes	(2) No
l.	Tetracycline eye ointment	(1) Yes	(2) No
m.	Gentian violet	(1) Yes	(2) No
n.	.....	(1) Yes	(2) No

D2. Does the facility have the following injectable drugs available the day of visit?

a.	Recommended intamuscular antibiotic for children:	(1) Yes	(2) No
b.	Quinine IM	(1) Yes	(2) No
c.	Benzylpenicillin IM	(1) Yes	(2) No
d.	Gentamycin IM	(1) Yes	(2) No
e.	Sterile water for injection	(1) Yes	(2) No
f.	Recommended IV fluid for severe dehydration	(1) Yes	(2) No

Facility code .....

FACILITY SERVICES MODULE

Ask the following questions to the health worker who has been observed during case management. If there are several health workers who have been observed managing cases in the same facility, discuss the following questions with all of them and try to reach a consensus for each question. Add comments on the back of the form if you have any problems.

S1. How many days per week is the facility open? **Days/week** .....

S2. How many days per week are child health services provided? **Days/week** .....

S3. How many days per week are vaccination services available? **Days/week** .....
Other .....

S5. How many times during the last six months did the facility receive a supervisory visit? **Times** .....
if 0 time, skip to question # S8

S6. How many of these supervisory visits were follow-up visits to health workers who have been recently trained in IMCI? **Visits** .....

Ask the health worker question 7 based on the most recent supervisory visit that was not an IMCI follow-up visit:

S7. Did the supervisor observe case management of a sick child the last time he/she visited the facility?
(1) Yes
(2) No
(8) Don't know

S8. Where do you refer the severely-ill children?
(1) Hospital, specify name: .....
(2) Private physician
(3) Other, specify: .....

S9. How long does it take for the patient to get to the referral center/physician using the most common local transport? **Hours** .....

S10. Have you ever wanted to refer a very severely-ill child but been unable to do so?
(1) Yes → Why? .....
(2) No

S11. If you had to refer 10 children to the hospital, how many of them do you think will end up going to the hospital? .....

FACILITY RECORDS MODULE

Ask the health worker responsible for records to help you identify records for all visits to the health facility. Do not include inpatient records. Use these records to answer the questions below. If not enough information is available to answer a question, mark NI (not enough information).

Adaptation note: The availability of records will vary by country and by level of health facility. Procedures to be used for arriving at estimates of attendance should be determined in each site. The procedure must be practical!

R1. What is the total number of visits to the health facility for outpatient services during the previous month?

No. of visits: .....

R2. How many of these visits were made by children from 0 upto 5 years?

Visits by children under 5: .....

R3. How many of these child visits were made by female children?

Visits: .....

R4. How many of these visits were made by children between the ages of 0 to 2 months?

Visits by children 0 day–2 months: .....

R5. How many of all child visits were for:

a. Outpatient care of illness ..... visits

b. Well-child care ..... visits

c. Other types of services ..... visits

Count total for each type of service. Children may visit more than one service during one visit to the facility.

ANNEX B

Question-by-question explanations

1 ENROLMENT FORM

A sample enrolment form is available in Annex A. All children included in the survey should have an enrolment form completed before they are seen by a health worker. The form is used to track progress of the child through the facility, and to ensure that all surveyors know that the child is included in the survey. The enrolment form is completed by supervisors as they identify children who meet the entry criteria for the survey. The caretaker carries the form until the child leaves the health facility, at which time it is collected and stapled together with the completed questionnaires. If caretakers have more than one child included in the survey, then each child should have a separate enrolment form. Sometimes it is useful to print the form on brightly coloured paper so that it can be easily identified.

- **Date**: Fill in the date of the visit ('today's date'). All dates should be recorded in the questionnaires consistently, following the format that was agreed upon during training. (*Note: This information may be recorded before arriving to the facility.*)
- **Facility name**: Write the full name of the health facility. (*Note: This information may be recorded before arriving to the facility.*)
- **Facility code number**: The facility code number is a two-digit number assigned to each health facility by the coordinator. The codes are written on the list of facilities in advance. (*Note: This information may be recorded before arriving to the facility.*)
- **Child's ID number**: Every child enrolled in the survey will be given a two digit number. At each health facility the ID numbers start with 0 1 for the first child enrolled, followed by 0 2 for the second, and so on. At each health facility visited the first child seen is always 0 1, and continues sequentially upwards. The Child ID Number written on the enrolment form will be used by surveyors to complete the child ID boxes on forms 1, 2 and 3.
- **Child's name**: Write the *child's name* in the space provided. The name will be used by surveyors on forms 1 to 3.
- **Child's arrival time at the facility**: Write the time of day the caretaker arrived at the facility. Use a 24-hour time format with two digits for the hours and two digits for the minutes (e.g. 13:15 for a child that arrived to the health facility at 13 hours and 15 minutes). In instances when the caretakers arrived at the health facility before the survey team, ask the caretaker the time she arrived.
- **Child's birth date**: Write the day, month, and year of the child's birth (dd/mm/yyyy), or the format that was agreed upon during training. Use two digits for the day and month and four digits for the year. If the caretaker gives you an age (for example three years), try to obtain the actual date of birth. If the caretaker does not know the birth date, check the birth certificate, immunization record, or any other relevant document. If the birth date is unknown, record the age of the child.
- **Age (months)**: The age of every child selected should be recorded in completed months, using two digits. The range is from 02 to 59 months. For example, a child who will become 3 years old next week should be recorded as 35 months today. A child of less than 2 months old should not be included in the survey. A table converting birth dates into age in months is extremely useful by saving time and avoiding errors. *You must enter an age in months for all children, even if it is just your best estimate*.
- **Child sex**: Write down the sex of the child. Circle **(1)** if the child is a boy, and **(2)** if it is a girl.
- **Caretaker agreement to participate**: After reading the informed consent statement to the caretaker and answering any concerns they may have, the surveyor should indicate whether the caretaker agreed to participate ('yes' or 'no'). The caretaker then signs or marks the form.
- **Form 1, 2, 3**: Each of these is checked by surveyors as the questionnaire forms are completed.
- **Questionnaire number**: The questionnaire number is the single most important identifier in the survey. The questionnaire number is assigned when the child is enrolled. The number has four digits formed by combining the health facility ID and the child ID number. For example, if the facility ID number is **14**, and the child's ID number is **05**, the questionnaire number will be **1405**.

Surveyors copy the questionnaire number from the enrolment form into every page of forms 1, 2 and 3. Writing the questionnaire number on every page of the questionnaire forms ensures that pages can be identified if they are accidentally separated from the instrument.

2 OBSERVATION CHECKLIST FOR THE SICK CHILD (FORM 1)

2.1 Overview of instrument

Structure of the instrument

This instrument is used to record observations of health worker practice. It is structured into five sections:

1. General information—the surveyor records general information about the health facility, the health worker being observed, and the sick child being observed;
3. Assessment module (A)—the surveyor observes and records the assessment tasks completed by the health worker;
4. Classification module (C)—the surveyor observes and records the classification made by the health worker;
5. Treatment module (T)—the surveyor observes and records the treatment given by the health worker;
6. Communication module (CM)—the surveyor observes and records counselling tasks conducted by the health worker.

Method for using the instrument

The surveyor completing the observation checklist sits in the consultation room with the health worker seeing the sick children. The surveyor must be able to observe what the health worker says and does, but should not interfere with normal practice. Because this is an observation of practice, the surveyor should not speak or interrupt the consultation at any time, nor express any opinions or give advice.

Sometimes the classification made or treatment given are not clear at the end of the consultation. This may be because the health worker has not discussed these areas with the caretaker. In this situation, the surveyor may ask the health worker for the classification and treatment given when the consultation is over. This is the only time that it is permissible for the surveyor to ask the health worker a direct question.

Identifying children for observation

All sick children aged 2 to 59 months of age with fever/malaria, diarrhea/vomiting, cough/fast or difficult breathing/pneumonia, an ear problem, measles, or a nutrition or feeding problem, presenting for the first time during the morning clinic session, are included (see Chapter 4). All children for inclusion are identified in advance by supervisors, and given an enrolment form. *Every child with an enrolment form should have an observation checklist completed.*

Children selected for inclusion are observed sequentially, starting with the first selected child, and continuing until the last child has been seen. Enrolment forms include a child identification number that reflects the order of arrival. These numbers should be sequential (1, 2, 3, 4, 5, and so on). As each observation checklist is completed the next child with a sequential number is selected. Every child with an enrolment form should have a form 1 completed. If a caretaker has more than one child enrolled, then an observation checklist must be completed for each child.

Procedure for selecting enrolled children

At the end of each observation, surveyors go to the waiting area to identify the next child to be included. The child enrolment forms are checked, and the child who is next in order of enrolment, is selected. This child is accompanied to the health worker and an observation checklist is completed.

In most first-level health facilities, only one health worker will be responsible for seeing sick children, so all observations will therefore be conducted with this health worker. In larger facilities, there may be more than one health worker seeing sick children. In this situation, surveyors *follow each selected child with an enrolment form* regardless of which health worker sees the child. *Surveyors observe the clinical management of each sick child, again regardless of which health worker sees the child*. This is because this survey focuses on the quality of care provided to sick children coming to the facility.

During the survey period, health workers should not begin a clinical consultation with any child who has an enrolment form, until the surveyor conducting the observations is in the room.

Note: In special circumstances survey objectives may seek to compare case-management practices between the different categories of health worker, for example IMCI-trained health workers and those who have not had IMCI training. In this situation health worker category will influence which children are observed, and the methods for conducting observations will need to be different.

Completing the observation checklist

1. Complete the identifying information at the top of form 1 and record the questionnaire number on all the pages of the form. It is important to do this before the observation begins. The questionnaire number is recorded on the enrolment form. Much of this information can be recorded in advance;
2. Observe the clinical interaction and complete the checklist. It is important to listen and observe carefully, and to record exactly what the health worker says and does. It is very common for health workers to ask questions, conduct the examination, or give

counselling or treatment advice, in a non-sequential manner. For example, a few assessment tasks may be done, then some counselling tasks, followed by more assessment tasks. Tasks often do not follow the order presented in the checklist. For this reason, *surveyors must be prepared to jump around the checklist and to complete it in a non-sequential fashion*. In order to do this effectively, surveyors must be very familiar with the content of the checklist. A commonly used strategy is to complete all the questions with positive or 'yes' responses, as well as the classification and treatment sections during the clinical interaction, and then at the end of the consultation go back and complete all the negative or 'no' responses. This approach is more likely to produce valid and reliable information, as any attempt to complete all the questions during the clinical interaction will only distract the surveyor's attention from the observation.

3. Check all the questions at the end of the clinical observation. As soon as the clinical interaction is over, it is important to go back and complete every question. All questions requiring a 'yes' or 'no' response, should have a 'yes ' or 'no' response circled. If information on classification and treatment was not available during the observation, then surveyors may ask the health worker;

4. Ensure that the caretaker and child are taken to the surveyor conducting the exit interview and re-examination or any other area where they can sit and wait to have the final instruments completed. Supervisors are often able to do this, so that surveyors can continue immediately with the next observation.

Note: Sometimes, at larger facilities, clinical tasks are divided between different health staff. For example, after the consultation with the health worker, a pharmacist at a drug window may dispense drugs and give counselling. In this situation, drug dispensing and counselling practice for each child needs to be observed separately. There are three options to ensure this observation is made:

a. The surveyor observes the consultation with the health worker and then accompanies the caretaker and child to the dispensary and observes dispensing and counselling practice following which the checklist is completed. This is possible in smaller clinics with relatively light patient loads;

b. Another member of the survey team accompanies the caretaker and child to the dispensary and observes dispensing and counselling practice, and thereafter completes the checklist. Supervisors may only be able to do this if the patient load is not too high;

c. At larger clinics alternative arrangements are made to ensure that enough survey staff are available to observe clinical practice. In larger clinics it may be useful to schedule two survey teams at the facility on the same day so that six survey staff are available. Survey tasks can then be shared between all team members. One surveyor, for example, can then be stationed at the drug dispensary to observe dispensing and counselling practice.

2.2 General information

- **Questionnaire number**: Write the four-digit questionnaire number on each page of Form 1. The questionnaire number is written on the child's enrolment form. This number is a combination of the facility ID number and the child's ID number. It ensures that pages can be identified if they are separated from the instrument accidentally.
- **Province/district**: Write the province or district where the surveyed health facility is located. Province or dis-trict names will be known in advance. (*Note: This information may be recorded before arriving to the facility.*)
- **Date**: Enter today's date. (*Note: This information may be recorded before arriving to the facility.*)
- **Facility name**: Write the name of the facility. All facility names will be known in advance. (*Note: This information may be recorded before arriving to the facility.*)
- **Facility code number**: Write the two-digit facility code in the box. This code will have been assigned at the sampling stage and will be included on the list of sampled facilities. (*Note: This information may be recorded before arriving to the facility.*)
- **Facility type**: Circle the type of facility. Outpatient facilities are usually hospital-based, health centers, or health posts. All facility names will be known in advance. (*Note: This information may be recorded before arriving to the facility.*)
- **Surveyor ID number**: Write the one or two digit number. Each team member will have been assigned an individual surveyor number by the training facilitator. (*Note: This information may be recorded before arriving to the facility.*)
- **Health worker ID**: Write the one digit number. In facilities with only one health worker managing children, the health worker ID will be **01**. In facilities with more than one health worker with case management responsibilities, an ID number (**01**, **02**, and so on) will be assigned to each health worker by the survey supervisor.

- **Health worker sex**: Circle the health worker's gender, **(1)** for male, and **(2)** for female.
- **IMCI-trained health worker**: The health worker is asked whether he/she has ever received training in IMCI. If training has been received, then **(1)** 'yes' is circled. If training was not received, then **(2)** 'no' is circled. The definition of 'IMCI training' will be agreed upon during surveyor training. If the surveyor is in doubt about the type of training received, then a note can be made on the instrument, and it can be discussed with the supervisor at the end of the session.
- **Health worker type**: Circle the type of health worker being observed. Common categories of health workers are medical assistants, nurses, and doctors. The type is the health worker's professional category, rather than his or her position in the health facility. (*Note: This information will have been obtained in advance by the supervisor.*)
- **Child's name**: **Copy from the enrolment form**. (*Note: This information will have been obtained in advance by the supervisor.*)
- **Birth date**: **Copy from the enrolment form**. (*Note: This information will have been obtained in advance by the supervisor.*)
- **Age in months**: **Copy from the enrolment form**. (*Note: This information will have been obtained in advance by the supervisor.*)
- **Sex of the child**: **Copy from the enrolment form**. (*Note: This information will have been obtained in advance by the supervisor.*)
- **Child ID number**: **Copy from the enrolment form**. (*Note: This information will have been obtained in advance by the supervisor.*)

2.3 Assessment module

- **A3. Was the child weighed today?** Circle 'yes' or 'no'. To circle '**yes**', the child must have been weighed on the day of the visit, and this information must be available to the health worker conducting the clinical examination. The child may have been weighed by another health worker in advance, or may be weighed by the health worker during the consultation. In order to determine whether the child was weighed in advance, the surveyor should look at the child's record or child health card before the caretaker leaves the consultation room.
- **A4. Was the child's temperature checked?** Circle 'yes' or 'no'. To circle '**yes**', the child's temperature must have been taken on the day of the visit and this information must be available to the health worker conducting the clinical examination. A child's temperature may have been taken by another health worker in advance, or may have been assessed by the health worker during the clinical consultation. If the temperature is taken by the health worker, there are two usual methods: 1) using a thermometer, and; 2) feeling the child with the back of the hand. National Clinical Guidelines will specify the method recommended locally. The correct definition will be discussed and agreed upon during training. To determine whether the child's temperature was taken in advance, the surveyor should look at the child's record before the caretaker leaves the consultation room.
- **A5. Reason for bringing the child**. Circle the reason or reasons reported by the caretaker for bringing the child to the health facility. More than one reason may be given. If none of the symptoms or signs reported match the entry criteria for the survey, or if the caretaker does not know why she is there check with the supervisor to clarify whether the child should be included.

Note on assessment questions A6–A24: In all of these assessment questions, the surveyor observes and records whether the health worker performs each assessment task. The surveyor does not record the caretaker's response to each assessment question or the findings of the assessment. The survey is a measure of whether or not the health worker completes the assessment tasks.

- **A6. Does the health worker ask whether the child is able to drink or breastfeed?**
- **A7. Does the health worker ask whether the child vomits everything?**
- **A8. Does the health worker ask whether the child had convulsions?**

  For each of these questions circle 'yes' or 'no'. If the caretaker reports the information in questions A6–A8, without being asked by the health worker, then this is considered to allow a '**yes**' response. In this case 'yes' means that the information is available to the heath worker so the health worker does not need to ask about it.
- **A9. Is the child visibly awake?** Circle '**yes**' if the child is visibly awake and skip to question A11. If the child is not awake or appears to be sleeping then circle no and proceed to question A10. If the child is visibly active, then health workers do not need to check the level of consciousness (question A10).
- **A10. Does the health worker check for lethargy or unconsciousness?** This question is checked if the

child is not visibly awake (that is, '**no**' is circled in question A9). The health worker is considered to check for lethargy or unconsciousness if an attempt is made to wake the child up. In this case, check '**yes**'. If the health worker does not attempt to wake the child up then circle '**no'**.

- **A11. Does the health worker ask for cough or difficult breathing?**
- **A12. Does the health worker ask for diarrhoea?**
- **A13. Does the health worker ask/feel for fever?**

  For each of these questions, circle 'yes' or 'no'. If the caretaker reports the information in questions A11–A13, without being asked by the health worker, then this is considered to allow a '**yes**' response. In this case '**yes**' means that the information is available to the heath worker, so the health worker does not need to ask about it.

- **A14. Does the health worker check for visible severe wasting?** Circle 'yes' or 'no'. Circle '**yes**' if the health worker undresses the child and looks at the legs, arms, buttocks and trunk. If the child is not undressed, then it is not possible to circle 'yes'. If the surveyor is unsure if the health worker checked for visible severe wasting, then **(8) 'Don't know'** can be circled.
- **A15. Does the health worker look for palmar pallor**. Circle 'yes' or 'no'. Circle '**yes**' if the health worker takes the child's hand and looks at the palm.
- **A16. Does the health worker look for oedema of both feet?** Circle 'yes' or 'no'. Circle '**yes**' if the health worker removes the shoes and socks on both feet and presses the skin of the feet to look for swelling.
- **A17. Does the health worker check the child's weight against a growth chart?** Circle 'yes' or 'no'. The child must have been weighed the same day for a 'yes' response to be possible. Circle '**yes**' if the following have occurred; a) the child's weight is written on the child's own growth chart in advance of the clinical consultation and the health worker refers to it during the consultation; b) the child's weight is written on the child's own growth chart by the health worker during the clinical examination; c) the child's weight is checked against a standard growth chart (if children do not have growth charts of their own) during the clinical examination. In many countries, the child's health and vaccination card includes a growth chart and the child's weight is plotted directly onto this chart. If growth charts are not included on health and vaccination cards, then health workers need to check the child's weight against a standard chart and then record the percentile in the child's record. During training, locally used methods for plotting child weights will be discussed, and a method for completing this question is agreed upon. The purpose of this question is to determine whether the health worker takes the weight of the child into account during the assessment.
- **A18. Does the health worker ask for and check the child's vaccination card?** Circle 'yes' or 'no'. Circle '**yes**' if the health worker asks for and looks at the vaccination card of the child. If the health worker does not ask for, or check, the vaccination card, skip to question A20.
- **A19. Does the caretaker have the child vaccination record?** Circle 'yes' or 'no'. Circle '**yes**' if the caretaker has the child's vaccination card with her and can show it to the health worker. If the vaccination card is available, then skip to question A21. If the vaccination card is not available, proceed to question A20.
- **A20. Does the health worker try to find out the child's vaccination status?** Circle 'yes' or 'no'. If the caretaker does not have the child's vaccination card, the health worker should ask questions to determine the immunization status of the child. Circle '**yes**' for all questions asked by the health worker about vaccinations received. Circle '**no**' for all questions not asked.
- **A21. Does the health worker ask about breastfeeding?** Circle 'yes' or 'no'. Circle '**yes**' if the health worker asks anything about breastfeeding practice (for example, how often it is practiced, problems encountered, and if there were any questions). If the health worker does not ask anything about breastfeeding, then circle '**no**'. This question is most important for children under two years of age. In the analysis, children under two will be looked at separately.
- **A22. Does the health worker ask whether child takes any other foods/fluids?**
- **A23. Does the health worker ask whether feeding changed during the illness?**
- **A.24. Does the health worker ask whether there are other problems?**

  For these questions circle 'yes' or 'no'. Circle '**yes**' for A22–A24 if the health worker asks these questions specifically. If the caretaker reports the information in these questions without being asked by the health worker, then this is usually considered to make a '**yes**' response possible. In this case '**yes**' means that the information is available to the heath worker so the health worker does not need to ask about it.

2.4 Classification module

Health workers may classify a child with one or several conditions. Surveyors need to record all the classifications made by the health worker for each child. Circle 1 for '**yes**' (the health worker makes this classification), and 2 for '**no**' (the health worker does not make this classification).

There are two methods for finding out the classification(s) made by the health worker:

1. By listening to what the health worker tells the caretaker. If the health worker tells the caretaker the child's classification(s) directly, then the surveyor can record this information immediately on the checklist.
2. By asking the health worker at the end of the consultation. Sometimes the health worker does not tell the caretaker the child's classification(s). In this case, surveyors should wait until the end of the consultation, and then ask the health worker directly how he or she classified the child.

If the classifications given by the health worker do not match any of those listed on the instrument, or if the surveyor is not sure, then the health worker's classification(s) can be recorded under 'other' and checked later with the supervisor. If the health worker has not given any classification or diagnosis, then this should be recorded in question C1 by circling '**no**'. It is important to circle '**yes**' or '**no**' for all of the conditions listed in the classification section.

Supervisors review classifications at the end of the clinic and complete the coding box on the right of the page which are the 'gold-standard' classifications from the child re-examination. Surveyors should not write in this box.

Note: Sometimes, in larger facilities, the health worker may ask for laboratory tests on the child. The final classification and treatment will not be decided until the laboratory results are available. In this case, the surveyor should put the instrument aside until the child returns with the laboratory result. The surveyor can then complete the classification, treatment and counselling sections of the instrument.

2.5 Treatment module

The health worker may prescribe and/or administer medications. When the health worker writes a prescription the surveyor may not know immediately what drugs were prescribed; in this case, the surveyors should ask to see the prescription when the caretaker is ready to leave.

As noted in Section 2.1 on completing the observation checklist, drug dispensing and counselling are sometimes done by another health worker such as a pharmacist. In this case, this section of the instrument can only be completed by following the child and observing the practices of the health worker who is dispensing. Options are discussed in Section 2.1.

- **T1. Does the health worker administer/prescribe injections?**
- **T2. Record all injections given.**

  For question **T1**, circle '**yes**' if the health worker administers or prescribes any injections, and specify the type of injection given in the next question (**T2**). Write the name of the injected drug given by category of drug (antimalarial, antibiotic, other). If no injection is given, the skip to question **T3**. Vaccines are not considered injections.

- **T3. Does the health worker administer or prescribe ORS?**
- **T4. Does the health worker administer ORS at the health facility?**

  Circle 'yes' or 'no'. For question **T3**, circle '**yes**' if the health worker administered or prescribed ORS, and proceed to question **T4**. If the health worker did not administer or prescribe ORS, then skip to question **T5**. For question **T4** circle '**yes**' if the child was given ORS in the health facility, or in the consultation room, or was referred to the ORS corner. If the child was referred to the ORS corner, it is important for the surveyor to verify that the child was actually given ORS. If this is not verified, then circle '**Don't know**'.

- **T5. Does the health worker recommend immediate referral for the child?**
- **T5a. Does the caretaker accept referral for the child?**

  Circle 'yes' or 'no'. For question **T5**, circle '**yes**' if the health worker prescribes immediate referral for the child to a hospital (for example a district hospital), or to a higher level of the health system (for example, a larger health facility or a private physician), and proceed to question **T5a**. If the health worker does not prescribe immediate referral, then skip to question **T6**. For question **T5a**, circle '**yes**' if the caretaker tells the health worker that he/she will go to the referral facility immediately or as soon as possible.

  If the caretaker accepts referral ('**yes**' is circled in **T5a**) surveyors follow three steps:

  1. Record any oral treatment given prior to referral in section T7 (if any injection is given as pre-referral treatment it should have been recorded in questions T1 and T2;

2. Go to the end of the instrument;

3. Take the caretaker and the child to the surveyor conducting the exit interview and re-examination and conduct a quick re-examination. The exit interview can be skipped.

- **T6. Does the health worker administer or prescribe oral treatment?**
- **T7. Record all oral treatment given.**

For question **T6**, circle '**yes**' if any oral treatment is given or prescribed, and proceed to question **T7**. If no oral treatment is given or prescribed circle '**no**', and skip to the Communication Module (question **CM1**). For question **T7**, circle '**yes**', for all oral drugs given or prescribed, and '**no**' for all those not given or prescribed. There are two methods for determining the drugs given or prescribed:

1. If the drug(s) are given to the caretaker: At the end of the consultation, ask to see the drugs before the caretaker leaves. If the drugs are labeled, record what is written on the label. If the drugs are not labeled, show the health worker each drug and ask "what is the name of this drug?" for each.

2. If the drug(s) are prescribed. At the end of the consultation, ask to see the prescription before the caretaker leaves, and record what is written. If what is written on the prescription is not clear, then ask the health worker "what does this say?" for each. If dosage information is not complete, then the health worker should not be asked for this information. This is considered an incomplete prescription.

Remember: If the child is referred immediately, record the pre-referral injections given in question T2 and the oral drugs given in question T7.

Note: Drugs given or prescribed. For the purposes of the survey, both first and second line antibiotics or antimalarials are considered to be appropriate for the treatment of classifications requiring these drugs.

- **T8. Does the oral treatment given or prescribed by the health worker include an antibiotic?**
- **T9. If the oral treatment given or prescribed includes an antibiotic, record the dose given.**
- **T10. Does the oral treatment given or prescribed by the health worker include an antimalarial?**
- **T11. If the oral treatment given or prescribed includes an antimalarial, record the dose given.**

For question **T8**, circle '**yes**' if the oral antibiotics were given or prescribed, and proceed to question **T9**, record the dose. If no antibiotics were given or prescribed, circle '**no**' and skip to question **T10**. For question **T10**, circle '**yes**' if oral antimalarials were given or prescribed, and proceed to question **T11**, and record the dose. If no antimalarials were given or prescribed, circle '**no**' and skip to the Communication Module **(CM1)**.

Use the following guidelines to complete questions **T9** and **T11**:

Record the drug doses at the end of the consultation, when the caretaker is ready to leave.

Determining the drugs given or prescribed and the doses of these drugs:

1. If the drug(s) are given to the caretaker: At the end of the consultation, ask to see the drugs before the caretaker leaves. If the drugs are labeled, record what is written on the label. If the drugs are not labeled, show the health worker each drug and ask the name, formulation, and dose for each drug, as described below.

2. If the drug(s) are prescribed. At the end of the consultation, ask to see the prescription before the caretaker leaves, and record what is written. If what is written on the prescription is not clear, ask the health worker "what does this say?" and if necessary, complete the name, formulation and dose for each drug of the prescription.

Recording the dose:

This information should be recorded on the drug label, or on the prescription. Surveyors can copy this information directly. If it is not clear, ask the health worker to clarify.

1. **Drug name**. Write the name that appears on the drug label or on the prescription;

2. **Formulation**. Record the form of the drug (tablet, capsule or syrup) and the dose (for example, a 500mg tablet, or 250mg/ml syrup);

3. **Amount each time**. Record the dose of drug taken each time it is taken (for example, one tablet, one capsule, or one teaspoon of syrup). In the case of chloroquine which often has a variable dose each day, write the dose each day (for example 1, 1, 1/2);

4. **Number of times a day**. Record the number of times each day the drug needs to be taken, for example, once (x1), twice (x2), three times (x3), or four times (x4). If a single dose is given, write 'single dose'; and

5. **Total number of days**. Record the number of days that the treatment will be given (for example, 3 days,

5 days, 10 days). If the medication is to be given until it is finished, write 'until finished'. If a single dose only is given, write 'single dose'.

2.6 Communication module

This section records the communication and counselling activities that the health worker performs. As discussed in Sections 2.1 and 2.5 drug dispensing and counselling is sometimes done by another health worker in the facility. In this situation, alternative arrangements need to be made to record this information. How to proceed in specific settings will be discussed and agreed upon during training.

- **CM1. Does the health worker explain how to administer the oral treatment?**
- **CM2. Does the health worker demonstrate how to administer the oral treatment?**
- **CM3. Does the health worker ask an open-ended question to verify the caretaker's comprehension of how to administer the oral treatment?**
- **CM4. Does the health worker give or ask the mother to give the first dose of the oral drug at the facility?**

  Questions on drug dispensing are asked about three oral medications (antibiotics, antimalarials, and ORS). Questions **CM1** to **CM4** are completed if one of these medications was given or prescribed. All questions should be answered '**yes**' or '**no**' or '**NA**' (not applicable). The question will be not applicable if the medication was not given or prescribed.

An explanation of the oral treatment: this entails the health worker describing verbally how much medicine to take, how many times a day and for how many days.

A demonstration of how to give the oral treatment: In this case the health worker takes out a tablet, or some syrup, and shows how much to take, and how to take it. For example, a tablet may need to be crushed in water with a spoon.

Ask open-ended questions about how to take the oral treatment: For this the health worker asks the caretaker to tell him/her how they will give the drug. The health worker listens and does not prompt the caretaker. This is to find out how much the caretaker knows.

Giving the first dose of drug at the facility: The health worker ensures that an appropriate dose is measured out while the caretaker is at the facility and that the child is given this dose and swallows this dose.

Although the health worker may provide explanations, demonstrations, etc., for drugs other than oral antibiotics, antimalarials and ORS, these are not recorded for this survey. The survey focuses only on oral agents that are the most important for reducing morbidity and mortality.

- **CM5. Does the health worker explain when to return for a follow-up visit?**
- **CM6. In how many days does the health worker ask the caretaker to come back?**

  For question **CM5**, circle '**yes**' if the health worker explains specifically when to return for a follow-up visit, and then proceed to **CM6** and record what instructions were given. In many cases children will not need a follow-up visit, and this should be stated clearly by the health worker. On other occasions the child's condition will require a follow-up visit after a certain period of time (for example, a child with pneumonia should be seen in two days). A non-specific instruction, such as asking the caretaker to return if the child does not improve, is not considered to be follow-up advice. Visits scheduled for vaccination or other purposes are not considered follow-up visits. For question **CM6**, circle the information given to the caretaker on when to return. If no follow-up information is given, then skip to question **CM7**.

- **CM7. Does the health worker explain the need to give more liquid or breastmilk at home?**
- **CM8. Does the health worker explain the need to continue feeding or breastfeeding at home?**
- **CM9. Does the health worker give advice on the frequency of feeding or breastfeeding?**
- **CM9a. If yes, what frequency of feeding does the health worker recommend?**

  For questions **CM7** and **CM8**, circle '**yes**' if the health worker counsels the mother about the need to give increased amounts of liquid or breast milk at home, and the need to continue to feed or breastfeed at home during the illness. Circle '**no**' if no advice was given. For question **CM9**, circle '**yes**' if the health worker explains how frequently to give food or breastmilk to the child, and then proceed to question **CM9a** and record the frequency that is described.

- **CM10. Does the health worker tell the caretaker to bring child back immediately if danger signs are noticed?** Caretakers should recognize specific signs to bring the child back immediately to the facility. Circle '**yes**' for all the signs that the health worker tells the caretaker as reasons to bring the child back to the health facility. Circle '**no**' if the signs are not mentioned by the health worker.

- **CM11. Does the health worker ask at least one question about the mother's health?** Circle '**yes**' in CM11 if the health worker asks the mother at least one question about her own health, and '**no**' if no questions are asked.
- **CM12. Does the health worker use the IMCI chart booklet during consultation?** In IMCI settings health workers are expected to have and use a copy of the IMCI chart booklet for easy reference. Circle '**yes**' if the health worker uses the IMCI chart booklet at least once during the consultation. The question is skipped in non-IMCI settings.

Note: The coding box at the end of the form will be completed by the supervisor.

3 CARETAKER EXIT INTERVIEW (FORM 2)
Re-examination of two-month to fifty-nine-month old children (Form 3)

3.1 Overview of the instruments

Purpose

The purpose of the exit interview is to determine how much of the consultation was understood by the caretaker, and to collect information on caretaker satisfaction. Information on caretaker satisfaction can be used to improve service quality. By linking the observation with the exit interview it is possible to determine whether the messages given by health workers were understood. This information can be used to improve the quality of counselling.

The purpose of the re-examination is to determine the 'gold-standard' classification of the child according to the IMCI clinical guidelines. It is also used to check whether or not the health worker classified and treated the child correctly.

Identifying children who need the exit interview and re-examination

All children who are enrolled in the survey should have an exit interview and re-examination when the consultation with the health worker is finished. Children who are prescribed urgent referral by the health worker need to be quickly re-examined before they leave the facility, and their caretakers are not interviewed. It is important that caretakers and children are escorted to the area where these instruments are being administered to ensure that they do not leave the health facility. They can be escorted by:

1. The surveyor completing the observation checklist at the end of the clinical consultation. This is possible if the patient load is relatively light;
2. The supervisor;
3. A facility worker or volunteer who is available to assist during the morning clinic session. This can, for example, be the survey team driver, or the facility watchman.

If caretakers are dispensed drugs at the health facility, they must then have received their drugs before going for the exit interview.

Location of the exit interview and re-examination

Ideally the exit interview and re-examination will be conducted in a free room in the health facility. If a room is not available, then a site that is outside and away from other waiting caretakers is needed. A table or bench is ideal for the re-examination, and a chair for the caretaker and surveyor. The instruments should be administered in a place that is away from other waiting caretakers so that they cannot hear the questions in advance. This will also ensure that waiting caretakers do not prompt or suggest answers.

Since the exit interview and re-examination often take longer that the observation checklist, caretakers may have to wait a short time after the clinical consultation. A bench or a place in the shade may be needed where caretakers can wait comfortably.

Method for completing the instruments

Each caretaker and child should retain their enrolment form when they leave the consultation room and should give it to the surveyor conducting the exit interview and re-examination.

Method: exit interview

The exit interview is completed first. All questions are asked to the **principal caretaker** of the child (i.e. the person most often responsible for care of the child). The surveyor should make sure the caretaker understands the purpose of the interview. It is important to explain that the questionnaire is anonymous and confidential, and that the findings are not repeated to the health worker. It is important to be polite and respectful at all times.

If the surveyor asks a question which the caretaker doesn't know, the surveyor should move onto the next question without criticizing the caretaker. If the caretaker has questions for the surveyor, it is best that he/she is asked to wait to ask them at the end of the interview.

With the exception of questions one and two, it is important that surveyors do not prompt caretakers for answers. This means that surveyors should wait for the caretakers to answer on their own and not suggest responses to them. It may be useful to encourage the caretaker by saying, "Yes, is there anything else that you

can think of?" or, "Is there anything else that you would like to say?"

In situations where antibiotics and antimalarial drugs are not given at the health facility, samples of these commonly-used drugs are needed to help with recall of doses. Sample cards can be prepared in advance for all surveyors conducting exit interviews. Examples of the common antibiotics and antimalarials can be stuck to a piece of cardboard with clear sticky-tape, so that they can be seen. The cards can be shown to caretakers and examples of a particular drug can be identified. Samples of ORS packets are also needed in places where ORS is not dispensed at health facilities.

Note: In some areas, it may be necessary to use an interpreter to ask questions in the local language. In this situation, the surveyor should ask each question exactly as written, and have the interpreter immediately translate the same words for the caretaker. The supervisor is responsible for identifying a local translator at each health facility if needed.

Method: re-examination
All children enrolled in the survey should receive a re-examination after the exit interview. Surveyors conducting the re-examination must have been trained in the local adaptation of IMCI. The re-examination checklist is the standard IMCI patient recording form for children two months to five years of age that is available in the generic IMCI training materials. Surveyors assess and classify each child using the IMCI algorithm, however, they do not modify the treatment of the child unless they feel that the treatment given by the health worker will result in harm to the child. They should ensure that caretakers know how to give the treatment at home and answer any questions.

3.2 Guidelines for completing the exit interview

3.2.1 General information

Most of the general information on the exit interview can be taken from the enrolment form, including questionnaire number, the province/district, date, name, code, and type of the health facility, child's name, ID number, and age and sex. Additional questions are:

- **Caretaker's relationship to the child**. Circle the number that corresponds to the caretaker's relationship with the child (biological mother, father, other relative, or other).

3.2.2 Questions

- **Q1. What do you think of the services for sick children at this facility?**
- **Q2. How do you feel about the time you had to wait today before receiving attention for your child?**

  Questions 1 and 2 ask about the caretaker's perceptions of the facility and the services received. Both questions are prompted. This means that for each question, all of the options are read to the caretaker, and the caretaker chooses one. The surveyor circles the number that corresponds to the caretaker's response.

- **Q3. Did the health worker give or prescribe any oral medicines for the child at the health facility today?**

  Circle '**yes**' if an oral medication was given and proceed to **Q4**. If no oral medications were given, skip to **Q16**.

- **Q4–Q15. What oral medication (s) were given?**

  The surveyor follows the following procedure for all oral drugs:

  1. Ask to see the medications (if medications was given at the facility) or the prescription (if medications have not been given at the facility);
  2. Record the name(s) of all antibiotics or antimalarial drugs given or prescribed. If surveyors are not sure whether a drug is an antibiotic or an antimalarial, then they should ask the supervisor;
  3. Ask the caretaker to describe how they will give the medication(s) at home.

  If drugs have been given at the facility: give the caretaker the packet or bottle of each antibiotic or antimalarial in turn and ask them to describe the dose. If they can read, then they are permitted to read from the drug packaging.

  If drugs have not been given at the facility and the caretaker has a prescription: show the caretaker the sample card and point to each drug prescribed in turn. Tell them the name of the drug and ask them to describe the dose. If they cannot remember the dose, show them the prescription and point to the prescription for each antibiotic and antimalarial in turn. They are permitted to read from the prescription, if possible. If the health worker gave any other written instructions then they can refer to these instructions as well.

  For each drug ask the following questions in turn:

  — **How much will you give each time?** Record the

number of tablets or capsules, or the amount of syrup that will be given.

— **How many times a day will you give it?** Record the number of times.

— **How many days will you give it?** Record the number of days. If the caretaker says 'until finished' write this in the space.

If the caretaker says 'I don't know' for any question, write '**DK**' in the space. At the end of the exit interview, it is important that the caretaker is instructed in the correct dose for all medications for which they do not know the dose.

For this survey, the dosages of other oral drugs that might have been given are not recorded.

- **Q16. Was ORS given or prescribed?**

  Circle '**yes**' if ORS was given or prescribed and proceed to **Q17–19**. If ORS was not given or prescribed skip to **Q20**.

- **Q17–Q20. What dose of ORS will be given?**

  If ORS has been given at the health facility: Give the caretaker the ORS packet and ask them to describe the dose. If they can read, let them to read the instructions on the sachet.

  If ORS has not been given at the facility and the caretaker has a prescription: Show the caretaker a sample packet of ORS and ask them to describe the dose. If they cannot remember the dose, show them the prescription, and let them read from the prescription, if possible. If the health worker gave any other written instructions, then they can refer to these instructions as well.

  Ask the following questions in turn:

  — **How much water will you mix with one ORS sachet?** Record the volume of water.

  — **When will you give ORS to the child each day?** Record what the caretaker says.

  — **How much ORS will you give to the child each time?** Record the volume.

  If the caretaker answers "I don't know" to any question, write '**DK**' in the space. At the end of the exit interview, it is important that the caretaker is instructed in the correct method of administering ORS if they do not know.

- **Q20 and Q20a: Did the health worker give you a specific day for returning to this facility?**

  Circle '**yes**' for **Q20** if the caretaker reported that the health worker gave him a day to return to the health facility for a follow-up visit, and proceed to **Q20a** to record in how many days they will return. If the caretaker says that they were not given advice on when to return, or they do not know, circle '**no**' or '**doesn't know**'.

- **Q21. What symptoms or signs would make you take your child to a health facility immediately?**

  Circle '**yes**' for each symptom that is mentioned, and '**no**' if the symptom is not mentioned. This question asks about caretakers' understanding of the symptoms and signs of severe illness. The surveyor should not prompt the caretaker for her response, but continue to ask for more signs and symptoms until the caretaker cannot mention any more.

- **Q22–Q22a. Were you ever given a tetanus injection in the arm to prevent the baby from getting tetanus, that is convulsions after birth?**

  Q22 is asked only to caretakers who are women of childbearing age. Circle '**yes**' for **Q22** if the caretaker remembers ever receiving an injection for tetanus, and proceed to **Q22a**, and ask the year the vaccination was received.

- **Q23. Did you receive or were you shown the mothers' counselling card today.**

  Show an example mothers counselling card. Circle '**yes**' for **Q25** if the caretaker reports that they were given or were shown the card on the day of the visit. The purpose of this question is to measure the distribution of IMCI mother counselling cards. Mothers' counselling cards are used in IMCI to teach age-specific feeding recommendations and danger signs. This question may have to be modified depending on the local policy regarding the use of mothers' cards for counselling, and will not be used in non-IMCI settings.

Note: Coding boxes at the end of the form will be completed by the supervisor.

3.3 Re-examination of two-month to fifty-nine-month old children (Form 3)

3.3.1 General information

- **Identifying information**. The surveyor should copy the identifying information at the top of the form from the enrolment card as was described for Form 1.

- **Child's weight**. Record the child's weight in kilograms if it is available on the child's health card. If the child's weight is not available, surveyors can weigh the child themselves as every team have weighing scales available.

- **Child's temperature**. Record the child's temperature if it is available on the child's health card. If not, the surveyor can record whether or not the child feels hot by manual palpation.

3.3.2 Assessment and classification

The assessment is based on the IMCI clinical case-management algorithm. The surveyor conducts a clinical assessment of each sick child and fills out the survey form. At the end of the assessment the child is classified according to IMCI Clinical Guidelines. The classifications are written into the box along the right side of the form. For the purpose of the survey, the surveyor does not have to conduct the feeding assessment and counselling sections of the IMCI guidelines. Other clinical problems observed should be noted in the 'other problems' section.

The surveyor should not change the treatment given by the health worker unless they both think that it will result in a negative clinical outcome for the child. Any change in the treatment prescribed by the health worker should be carried out tactfully to prevent any loss of confidence of the caretaker in the health worker. The appropriate way to modify treatment if a child is in danger will be discussed during the surveyor training.

If the surveyor classifies the child as being severely ill and requiring immediate referral, and this differs from the management recommended by the health worker, then the surveyor should then arrange for appropriate pre-referral treatment and referral. The case can be discussed with the health worker at the end of the clinic.

In the 'check the immunization status' section of the recording form, surveyors need to ask the caretaker for the child's immunization card. If the card is available, then surveyors record all the immunizations needed on the day of the visit on the form. If the card is not available, then they need to ask the caretaker questions O3a-f in order to estimate whether or not the child is up to date, the immunizations needed on the day of the clinic visit can then be estimated and recorded on the chart.

3.3.3 Questions

- **Q01. Did your child receive a vaccination today?**

  Circle '**yes**' for **Q01** if the caretaker reports that the child received an immunization on the same day as the visit.

- **Q02. Did the health worker ask you to bring your child back to receive a vaccination on another day?**

  Circle '**yes**' for **Q02** if the caretaker reports that the health worker told them to come back on another day to receive a vaccination, and record when they were told to return. Caretakers must have been given a specific day to return. If the caretaker does not know when to return then write 'don't know'.

- **Q03. Does the caretaker have the child's vaccination card?**

  Circle '**yes**' for **Q03** if the caretaker has the child's vaccination card on the day of the facility visit, and skip to question 6t. Circle '**no**' if the caretaker does not have the child's vaccination card, and proceed to **Q03(1–5a)**.

- **Q03(1-5a)**. These questions ask the caretaker about vaccinations given to their child in the past. All are questions to the caretaker and require a '**yes**', '**no**', or '**doesn't know**' response. Question 3.2 requires the surveyor to inspect the child shoulder for the presence of a BCG scar. For the last question the surveyor needs to show a vitamin A capsule to the caretaker to ascertain whether or not the child has been given a capsule in the past.

Advising the mother

At the end of the interview surveyors should thank caretakers for their time, and ask them if they have any questions. If a caretaker does not know how to prepare ORS, the surveyor should explain how to prepare it. If the caretaker does not know the dosage of the medication to give, they should then explain the proper dosage. If the caretaker does not know at least three signs for seeking care immediately, the surveyor should then also explain these signs.

Feedback

Classification or treatment errors may be discussed with health workers before leaving the facility.

4 EQUIPMENT AND SUPPLY CHECKLIST (FORM 4)

4.1 Overview of the instrument

Modules

Form 4 has four modules:

1. Equipment and supplies;
3. Availability of drugs;
4. Facility services; and
5. Facility records.

Method

This instrument is usually completed by the supervisor. Some sections can be completed during the clinic session. Other sections need to be completed at the end of the session, for example the sections on record review, and those questions that need to be asked to health staff.

All equipment, supplies and drugs need to be directly observed by the supervisor. It is not appropriate to ask health staff whether or not items are available and to accept this information without seeing them. It will be necessary to ask health facility staff where certain items of equipment, drugs and supplies are to be found. The facility services module needs to be asked to the senior health staff person at the facility. This module is sometimes best left to the end of the clinic session.

4.2 General information

- **Identifying Information**. This information includes: the Province/District; facility name, type and ID number; date; and surveyor ID number. This information will be available in advance. The facility code should be written on the upper right-hand corner of each page. Facility codes are assigned in advance (during the sampling phase), and will be available to supervisors before going to the field. Note, this instrument does not require identifying information for children or health workers.
- **Health workers with child case-management responsibilities**

Table 1 is used to record the number and characteristics of staff regularly working at the facility. To complete the table, the supervisor needs to speak to the head of the facility, or to the most senior health worker available. The following information is collected:

1. Health staff categories. These are listed in the first column of the table and will be adapted to fit local health staffing patterns. The total number of each type of health worker assigned to the facility is entered in the second column (No. assigned to facility). If there is no one assigned to a category of health workers, **0** should be entered, rather than leaving it blank;
2. Staff with sick child case-management responsibilities. This is entered in the third column (No. assigned to case management of children). It is common for health staff to have multiple responsibilities—if any of these responsibilities include the management of sick children, then they are included;
3. Staff managing sick children on the day of the visit. This is entered in the fourth column (No. managing children present today). In many smaller facilities it will be common to have only one health worker available to see sick children;
4. Staff managing sick children with IMCI training. This is entered in the fifth column of the table (no. managing children trained in IMCI). The definition of 'IMCI training' is discussed and agreed upon during the training. For example, supervisors may make a difference between the full 11-day IMCI course, and the shorter orientation briefings or informal peer training. If the head of the facility is unsure about the training status of one of the health workers, the health worker should be questioned directly.
5. Staff managing sick children with IMCI training present on the day of the survey. This is entered in the sixth column (no. trained in IMCI present today).

Note: In non-IMCI areas, the two last columns could be skipped or adapted to collect information about other types of training.

4.3 Equipment and supplies module

- **E1. Availability of equipment and materials**

  The supervisor will need to ask a health worker to show him/her around the facility. All the items listed in questions E1 through E6 should be inspected directly, and an attempt made to determine whether they are functioning properly. It is important to see and/or touch each item listed in the checklist. The quantity of the items is not relevant for the purpose of this survey. '**Yes**' or '**no**' should be circled for all questions.

- **E1k. Accessible means of transport for patients requiring referral**. 'Accessible' means of transportation for referral is discussed and agreed upon during the training.
- **E2. Does the facility have needles and syringes appropriate for vaccinations?** Circle '**yes**' if a supply of both syringes and needles is available. The quantity of syringes and needles should be sufficient to allow at least one vaccination session. If needles are available, proceed to **QE2a** to determine how the needles are used. If a supply of needles and syringes is not available, skip to **QE3**.
- **E2a. If vaccination needles are available, how do health workers use these needles?** This question needs to be asked directly to the health worker(s) responsible for giving vaccinations. Circle (1) if each needle is used once and then thrown away. Circle (2) if needles are used several times.

- **E3. Does the health facility have a functional sterilizer, cooker or stove?** Circle '**yes**' if the sterilizer is available and working, or if there is a functioning cooker or stove available for heating the sterilizer.
- **E4. Does the facility have a functioning fridge?** A functioning fridge is usually defined as a fridge with a temperature between 4–8 degrees centigrade on the day of visit.
- **E5. Does the facility have ice-packs and cold boxes?** Ice-packs should be able to be frozen or unfrozen. Ice-boxes should be functional—this means that the boxes should be intact with lids. The rubber seal around the rim of the lids should be present and intact.
- **E6. Does the facility have vaccines in stock?** Vaccines must be inspected directly. There should be enough of each vaccine to allow at least one vaccination session. The expiration date of the vaccines should be inspected—expired vaccines are not considered valid. Frozen vials of measles vaccine are not considered valid.

4.4 Availability of drugs module

Circle '**yes**' or '**no**' for all **D1–D2** questions. For the purpose of this survey, the quantity of drugs available is not important. If at least one treatment course of the drug is available on the day of the visit, then this drug is considered to be in stock. Locally recommended drugs for pneumonia, dysentery, malaria, and intramuscular antibiotics will be added when the instruments are adapted for local use. Additional drugs that are considered essential can also be added when the instruments are adapted for local use.

4.5 Facility services module

Questions S1–S11 ask about availability of services, supervision, and referral. Questions are asked directly to health workers with sick child case-management responsibilities. In facilities where only one health worker has been observed managing cases, questions are asked to the health worker who was observed by the surveyor during the clinic session. If more than one health worker is observed, then health workers can be asked questions as a group, and a consensus reached on the questions they were asked.

- **S1–S3. Days that services are provided**. The surveyor should write down the number of days per week for each question.
- **S5–S7. Supervisory visits**. Supervisory visits include any visit to oversee technical patient-care programs. They do not include visits for maintenance (e.g., the cold chain maintenance). For **S5** record the number of supervisory visits made to the facility in the last six months. If no visits were made, skip to **S8**. If the facility had at least one supervisory visit during the last six months, **S6** asks how many of these were follow-up visits to health workers recently trained in IMCI. S6 is skipped in non-IMCI settings. **S7** asks about the most recent supervisory visit that was not an IMCI follow up visit. **S7** asks whether the supervisor observed case management of sick children at the last visit. If supervisory visit books are available in the health facility they can be used to confirm supervisory visits and the timing of these visits.
- **S8–S11. Facility procedures for referring sick children**. These questions ask the more common sites of referral, estimated time required to get to the referral site, reasons for being unable to refer a child, and health worker estimates of the proportion of all children they refer who reach the referral site.

4.6 Facility records module

R1–R5. These questions require a review of routine outpatient attendance records. All these data are usually included in the outpatient case register, and used for recording the name of child as well as the age, sex, diagnosis, treatment and follow-up provided. This register is usually completed by the health worker seeing sick children. As the register is often being used during the clinic session, it is best reviewed at the end of the morning clinic.

All the data are collected on cases coming to the facility during the month prior to the survey (e.g. if the survey visit takes place on 7 March you will collect data on all cases who came to the facility in February). The supervisor needs to go back to the beginning of this period, and count cases in each of the categories, in order to fill in the numbers. Sometimes there may be an administrative assistant or a health worker who has responsibility for record keeping who can help with this tally. Some of the data required may have already been presented in a monthly summary report. If this is available, then the data can be obtained directly.

The availability of records will vary by country and by health facility level. The most practical procedures for getting outpatient attendance data need to be determined during surveyor training.

ANNEX C

Training survey staff

Suggested five-day schedule for training

DAY	ACTIVITIES
1	Opening • Opening remarks by MoH • Introduction of the participants • Administrative information • Clarification of participant expectations or concerns General information • Introduction to the survey • Training objectives and agenda • Survey protocol and techniques • Organization of survey teams • Introduction of Chapter 4 and Annex B of the manual Instrument 1: Observation checklist – sick child • Review • Role play instrument 1 Instrument 2: Exit interview – sick child • Review • Role play instrument 2 Introduction to practice at health facility
2	Health facility visit: Practice instruments 1 and 2 Debriefing on health facility visit (instruments 1 and 2) Role play instruments 1 and 2 Enrolment form – review Instrument 3: Sick child recording form: Re-examination of sick children Instrument 4: Equipment and supplies checklist • Review • Role play instrument 4
3	Health facility visit: Practice instruments 1, 2, 3, and 4 Debriefing on health facility visit (instruments 1, 2, 3, and 4) Team identification for field survey Role play in small groups
4	Health facility visit: Practice instruments 1, 2, 3, and 4 Debriefing on health facility visit Role play in small groups – reliability check
5	General review • Rules • Open questions Role play in small groups – reliability check Survey team meetings Team supervisors meeting Trainer debriefing

1 INTRODUCTION

Training of surveyors and supervisors is a critical step to ensuring the success and the quality of the survey. This chapter describes a five-day agenda for surveyor and supervisor training.

Surveyor training should be scheduled to take place immediately before field activities. A team of training facilitators should be selected in advance. The number of training facilitators needed is flexible and greatly depends on the experience and availability of local human resources; however, an ideal trainer-trainee ratio is 1:6. In most situations, a class size of no more than 15 to 18 trainees is desirable. The training team should hold a preliminary meeting in order to reach agreement on how to conduct the training, and to decide on the roles and responsibilities of each member of the team. At the end of each day, a brief meeting should be held to evaluate the performance of the day, to recapitulate the survey rules that have been agreed upon, and clarify the final preparations for the next day.

In this chapter, 'training facilitators' or 'trainers' is used to refer to the individuals who conduct the training. Training facilitators should have read and familiarized themselves with this manual, especially Chapter 4 and Annex B prior to training. 'Participants' or 'trainees' refer to the surveyors and supervisors who make up the survey teams and conduct the survey in the field.

2 TRAINING OBJECTIVES

The objectives of the training are to prepare supervisors and surveyors to:

1. Perform all survey tasks, including using the survey instruments, managing survey activities at a health facility, and identifying solutions to problems;
2. Establish rules with other surveyors on how to interpret questions or words in the survey questionnaires;
3. Reach agreement and consistency with other surveyors in following the survey procedures, and completing the survey forms (inter and intra-surveyor reliability).

Training and rigorous practice in the use of forms is necessary in order to increase reliability, reduce errors, and increase efficiency in doing survey tasks. A five-day training schedule is recommended to allow supervisors and surveyors to feel comfortable with the survey procedures and instruments. Clinical practice is critical; a minimum of two to three half-days of practice in busy facilities is recommended.

3 TRAINING SCHEDULE

A suggested five-day schedule for surveyor training is shown on the first page. This schedule, along with the suggested activities and training materials, can be adapted to meet local needs. Additional time and/or training activities will be required if data entry is to be conducted in the field, for example. Some activities may take longer than expected and the schedule will need to be adjusted. The proposed training schedule assumes an eight-hour training day. If this is not possible, then this schedule will need to be modified.

In addition to the training schedule outlined, team supervisors will require some specific training. Team supervisor training often takes place at the end of each training day. In some countries, one or two extra hours are added at the end of each day, starting on day 2. In addition, the last afternoon before fieldwork begins also provides time to brief supervisors.

4 SUMMARY OF TRAINING ACTIVITIES
Day 1

4.1 Opening

- An official opening by MoH representatives, representatives of national and/or international organizations. This helps to show participants the importance of the survey, the expectations of the MoH and its commitment to use the results for programme improvement;
- Welcome for participants and participant introductions. The survey coordinator, or a training facilitator, will welcome all participants and facilitate a round of participant introductions;
- Explanation of administrative arrangements for the survey. Basic administrative information such as transportation, accommodations, and per diems should be discussed briefly during the opening session, along with any other 'housekeeping' details that participants will need to know in order to be comfortable and productive during the training.
- Responses to questions and concerns from participants. Before beginning the more technical part of training, it is good practice for facilitators to allow participants to ask questions, or express any concerns they may have, or make any suggestions. Facilitators may need to make minor changes to the agenda depending on group feedback.

4.2 General information

Introduction to the survey

- A very brief introduction to child health activities in the country, and the progress made to date with IMCI. Other subjects could include: the data collected during follow-up visits to health workers recently trained in IMCI, or selected results from previous surveys;
- Background information on why an evaluation of IMCI services in health facilities is needed now, including: a brief description of the purpose of the survey; what will be measured; the survey objectives; and how the survey results will be used.

Training objective and agenda

- The specific goals the trainers and trainees hope to achieve during the training period (key objectives are presented in Section 2). Objectives should be realistic, and not be so numerous that participants feel overwhelmed. Facilitators may wish to invite participant input to clarify these objectives. At the end of the training, an assessment should be made of how well these objectives were met.
- A description of the rule list. For each survey instrument used during the training, a rule list will be established. As each questionnaire is reviewed, training participants will be asked to discuss questions and agree on the interpretation of those questions that have multiple interpretations. These interpretations will be summarized as rules.
- A review of the schedule for each day includes the starting and finishing times, and the timing of breaks.

Survey protocol and techniques

- A summary of the major decisions made when preparing and planning for the survey, especially the sampling procedure used. For example, the reasons for the selection of the geographic areas, the selection criteria for districts and health facilities, the list of facilities eligible for survey and the final sample. If possible, a map with the location of the selected facilities could be shown. In some cases, it might be helpful to explain the concept of random sample.
- An introduction to the operational plans for how facilities will be visited and children will be selected; the major tasks to be performed; and the time required for each phase of the survey.
- Brief presentation of the survey instruments:
  - The enrolment form and its purpose;
  - The four survey instruments (observation, exit interview, re-examination, and review of facility equipment and supplies).
- A review of the conduct of the survey: Review the team composition (two surveyors and one supervisor); the importance of arriving early at each facility; roles for each of the three team members (enrolment form, each of the four instruments); obtaining consent from health facility workers and caretakers; selecting children at the facility; and the importance of managing patients' flow at the facility (see the box below).

Points to emphasize: conduct of the survey

- The supervisor completing the enrolment form will greet the caretaker and read the informed consent statement. If the caretaker refuses to participate, the child is not enrolled in the survey, but will be recorded to keep track of the number of refusals.
- In facilities with only one health worker managing sick children, only that health worker will be observed managing cases, and children will be enrolled in order of arrival.
- In facilities with more than one health worker managing sick children, surveyors will follow each sick child. This method works as follows: the surveyor follows the first child who arrives at the facility, and observes the sick child consultation with the health worker seen. When the case management observation is completed, the surveyor goes back to the waiting area, and accompanies the 'next' child in the line—regardless of which health worker this child sees.
- Unless the specific country objectives for the survey include a comparison between the quality of care provided by trained health workers as opposed to the quality of care delivered by untrained health workers, the training status of the health workers at facilities is not important for this survey. The survey is designed to assess the quality of care provided to sick children at health facilities, regardless of the training status of the health workers seeing them.
- In some facilities, case management tasks may be shared between different health workers. For example, providing counselling on how to administer the drugs may be performed by the person in charge of dispensing the drugs. In such cases, surveyors have to follow the child until he/she leaves the facility. This is again because the survey is designed to assess the quality of care provided to sick children at health facilities and not specific health worker practices.

Organization of survey teams

The following should be summarize the:

- Composition of teams and when final decisions about teams will be made;
- Roles and responsibilities of surveyors and super-visors;
- Assignment of surveyor ID numbers;
- Importance of reviewing questionnaires each day before leaving the health facility;
- Importance of daily meetings of the survey teams with their supervisors;
- Importance of reporting issues faced in the field and solutions implemented.

Introduction of Chapter 4 and Annex B of the survey manual

Distribute copies of Chapter 4 and Annex B (question-by-question explanations), briefly review the documents, and encourage trainees to refer to them when needed. Training facilitators can also refer regularly to the chapter during the training week.

4.3 Introduction to survey instruments and techniques

4.3.1 Instrument 1: Observation checklist – sick child

Review of the instrument

Note: During the review of the instruments, it is useful for each participant to keep a 'master copy' of each instrument to include any changes in wording or explanations on how to ask specific questions. These master copies can then be taken to the field and used for reference, if needed.

Reviewing the instrument involves the following steps:

- Presenting the purpose of instrument 1;
- Distributing instrument 1, and referring to Annex B during the review of the instrument;
- Introducing the identification information on the top of the form, and explaining how to complete it;
- Reviewing the instrument with the participants, and explaining the procedures and specific instructions for each question; and
- Clarifying any unclear questions/answers, and reaching agreement among participants on how to interpret each of them. Developing rules for the instrument, and writing these on a flipchart. Adding new rules as they are formulated.

Points to emphasize

- The surveyor should copy the questionnaire number on the top of each page of the form, and answer all questions (i.e. no blanks should be left).
- During the observation, the surveyor should not interfere with the health worker. At the ***end*** of the consultation, the surveyor may need to ask the health worker about the classification and treatment given, but only if this information was not stated by the health worker during the consultation.
- Surveyors should not react to or judge the health worker assessment, either verbally (for example, by saying 'good' or 'okay'), or non-verbally (for example, by nodding their head).
- This questionnaire is often not completed in a linear fashion. Surveyors may need to jump between questions, because each health worker will perform tasks in a different order.

Role play

Explain that the purpose of the first role-play is to practice observing the care provided to a sick child and to complete instrument 1 (observation checklist—sick child). Ask three participants to play the following roles: the health worker, the caretaker, and the surveyor. Distribute a blank instrument to the surveyor in the role-play and ask him to observe the interaction and complete the instrument. Distribute blank instrument to the other training participants, and ask them to observe the role play carefully, and to complete their instruments at the same time. One facilitator also observes the interaction and completes an observation checklist—this will be the 'gold standard' observation.

Example case for the role play

A caretaker arrives at a health facility with his 3-year-old son who is coughing and has a fever. The health worker will find that the child has 'fast breathing', and will prescribe antibiotics. The child doesn't have diarrhoea, weighs 11.5 kgs, doesn't have signs of malnutrition, and doesn't have anemia. The caretaker has the child's vaccination card and the child vaccination status is up to date. The health worker is very supportive, and has a collaborative attitude, but does not follow the order of questions on the form. The health worker explains how to give the treatment, checks the caretaker's understanding, and teaches him or her the three danger signs on when to bring the child back to the facility immediately.

- Solicit reactions from the participants on how the surveyor conducted the observation: *What was done well? What procedures were followed? What could be done to improve the observation?*
- Compare the participants' observations, question by question, with a 'gold standard' (i.e. observations by the training coordinator or any designated expert). Identify differences or discrepancies between the participants and try to reach agreement.
- Emphasize that there are often no right or wrong answers. Emphasize that the surveyors need to learn to observe and to rate the same events in the same way. Clarify misunderstandings and introduce the concept of intra- and inter-surveyor reliability by discussion and consensus (refer to Section 4.7.4. below for more information on intra- and inter-surveyor reliability).

Note: It is useful to limit the time taken for each role-play. A role-play for instrument 1 should not exceed 15 minutes in total (corresponding to the average duration of consultations at health facilities), plus five minutes for the participants to complete their forms. More examples of role plays are available at the end of this section.

4.3.2 Instrument 2: Exit interview – sick child

Review of the instrument

Reviewing the instrument involves the following steps:

- Presenting the purpose of instrument 2;
- Distributing instrument 2 and referring to Annex B during the review of the instrument;
- Proceeding in the same manner as described for instrument 1; and
- Clarifying any unclear questions/answers, and reaching agreement among participants on how to interpret each of them. Developing rules for instrument 2 and write on a flipchart. Adding new rules as they are formulated.

Role play

Ask two volunteers to play the role of the caretaker and the surveyor. Distribute a blank exit interview questionnaire to the surveyor in the role-play and ask him to observe the interaction and complete the instrument. Distribute blank exit interview questionnaires to the other training participants, and ask them to observe the role play carefully, and to complete their instruments at the same time. One facilitator also observes the interaction and completes an exit interview questionnaire, this will be the 'gold standard' exit interview. More examples of role-play are available at the end of this section.

Points to emphasize

- Every caretaker whose child has been observed during the survey should be interviewed when leaving the facility. For every completed instrument 1, there should be a completed instrument 2, and the questionnaire number of instrument 2 should be the same as the questionnaire number on the enrolment form (and instrument 1) for this child.
- If the health worker has referred the child and the caretaker accepted the referral, do not administer instrument 2. Fill in only the questionnaire number and the administrative information on the top of the form and write 'child referred' across the page. Instrument 3, however, needs to be quickly completed.
- When a caretaker comes to the facility with two sick children, and both children have been included in the survey, two instruments 2 have to be completed, one for each child.
- Surveyors should ask the questions as they are written and in the order that they appear on the instrument.
- Except otherwise stated, surveyors should ***not*** prompt answers, especially those questions with multiple answers.

Examples of role plays

The caretaker has been prescribed a treatment with cotrimoxazole because his or her son has pneumonia. The child also received paracetamol for fever. The caretaker remembers that he or she has to come back with the child in three days, and knows the three danger signs on when to seek care immediately.

- Allow approximately 10 minutes for the role play. Solicit reactions on how the surveyor conducted the interview, and ask participants to compare their answers. Identify areas of disagreement and try to reach consensus. Clarify misunderstandings and add more rules, if necessary.

4.3.3 Preparation for practice at the health facility

The final activity for day 1 of training should be preparation for practice at a health facility the next day (health

facilities selected for training should not be included in the final sample of facilities for the survey). Trainers should discuss where the trainees will go, what will be done at the health facility, the goals of the exercise, and expectations of health facility workers. Trainers should also discuss how the surveyors will be introduced, any required government protocol, and the basic rules of courtesy at the health facility. Surveyors should be asked to bring their copies of Chapter 4, Annex B, IMCI chart booklets where appropriate, several blank instruments 1 and 2 for each participant, and other supplies. Logistical arrangements for going to the facility early the next morning should be discussed, and a meeting time set up for returning to the training site if participants are going to separate facilities.

5 SUMMARY OF TRAINING ACTIVITIES: Day 2

5.1 Practice at a health facility

Upon arrival at the health facility, once the whole training team is together, the survey coordinator should introduce the team to the health facility and staff. The introduction of the training team to the health facility workers should, as much as possible, mirror the manner in which survey teams will eventually need to introduce themselves at health facilities during the survey.

Trainees need to practice all steps learnt on day 1 before beginning work at the health facility, including: the introduction to the health workers, the selection of a suitable place for caretaker interviews, greeting caretakers, obtaining caretaker consent, selecting and enrolling children, assigning questionnaire numbers, and completing identifying information.

Trainees can be organized into groups so that all participants have a chance to practice and complete as many instruments 1 and 2 as possible. If the group is large, two or three surveyors can observe the same child at the same time and then compare their answers. For the exit interview, one surveyor can interview the caretaker and complete instrument 2, while two or three other surveyors listen and complete their copies. Training facilitators should observe surveyors and look for problems asking questions, or recording information on the forms. Facilitators can also answer questions, serve as a 'gold standard' (i.e. complete forms themselves, and then compare with surveyors), and facilitate agreement.

Facilitators should discuss strategies for managing survey activities at the health facilities with surveyors and potential supervisors.

Point to emphasize

■ During the practice session at the facilities, surveyors should follow the same rules for enrolling children as agreed upon during survey day 1 of training. However, the training facilitator may decide to observe all children so that surveyors have as many opportunities to practice as possible.

5.2 Debriefing

Practice at the health facility usually takes the entire morning. After the practice (usually after lunch), trainees reconvene at the training site and training facilitators lead a debriefing session. The trainees are asked about their experiences in the health facility: *What difficulties did you encounter completing the survey tasks? What questions do you have? What tasks do you need more practice on?* Trainers should review difficulties encountered, answer questions, and clarify areas of confusion. New rules for completing the questionnaires can be added, as necessary.

5.3 Role play

If time allows, more role plays are always useful.

5.4 Enrolment form

Introduce the enrolment form and briefly review its purpose, the information it collects, and how it should be completed. Annex B contains detailed instructions for completing the enrolment form.

All sick children included in the survey must have an enrolment form completed before the health worker sees the child. If the caretaker refuses to participate in the survey no enrolment form should be completed, but the name and age of the child should be recorded on a separate form to keep track of the number of refusals. The enrolment form allows the child to be followed through the facility and ensures that he/she will be included in the survey. The supervisor fills in the card by asking caretakers a few questions while they are waiting to be seen. If a caretaker has more than one sick child, then an enrolment form should be completed for each sick child.

5.5 Instrument 3: Re-examination of the child

Instrument 3 is the 'patient recording form' used in training for first-level health workers in IMCI case manage-

Points to emphasize

- For the purpose of the survey, surveyors have only to re-assess and classify the child, then write down what treatment they would give to the child according to their classifications. Surveyors do not have to go through the feeding assessment and counselling section.
- Surveyors should not modify the treatment prescribed/given by the health workers unless: 1) the child is severely ill and needs referral; or 2) incorrect treatment has been given and is likely to put the child at risk. In either of these cases, the surveyor should take corrective action to ensure that the child receives adequate care. Participants should discuss during the training the best way to take corrective action in collaboration with the health worker. If the surveyor thinks that the treatment given to the child is wrong, but unlikely to cause harm to the child, he/she should not change it.
- If the health worker has urgently referred a child, whether appropriately or not, surveyors should quickly re-examine the child, then ensure that the child gets the referral immediately.
- Although surveyors do not have to go through the counselling section when completing instrument 3, they should make sure that the caretaker knows how to give treatment when leaving the facility.

ment. Surveyors who will be conducting the re-examination of sick children should have been trained in IMCI, so they should be familiar with this form and how to use it. There are some differences, in the form, however, and it should be reviewed carefully. It is important to explain how the information on this form will be transferred by supervisors into the appropriate box on instrument 1.

5.6 Instrument 4: Equipment and supply checklist

Review of the instrument

Reviewing the instrument involves the following steps:

- Presenting the purpose of instrument 4;
- Distributing instrument 4 and referring to Annex B during the review of the instrument;
- Discussing how supervisors can observe all the items included on the checklist, for example how they can get information on supplies such as drug stock cards, drugs and vaccines and essential equipment, and how to obtain attendance data; and
- Clarifying any unclear questions/answers, and reaching agreement among participants on how to interpret each of them. Develop rules for instrument 4 and write on a flipchart. Adding new rules as they are made.

5.7 Choosing supervisors and surveyors

During the second afternoon, after the facilitators have had a chance to observe all the trainees, decisions about the roles and responsibilities for each trainee need to be made. Decisions on which participants will be likely supervisors have often been made before the training began. Observing all trainees in the field, however, will be the best indicator of which staff will be suited to a supervisory role. Observation of surveyors will make it clearer which instrument they are best suited for. Trainees are then aware of their own specific responsibilities for the survey, and can focus on practicing the instruments that they have been allocated.

Trainees need to be allocated into categories:

1. Supervisors who oversee all team activities, enroll sick children, supervise facility survey work, complete instrument 4, the equipment and supply checklist, and code questionnaires.
2. Surveyor one is responsible for conducting all sick child, and observing health workers.
3. Surveyor two is responsible for re-examination and exit interviews.

After allocations have been made, role plays can be conducted. This time, divide the trainees in two groups. Group A will include surveyors who will administer instrument 1, and group B will administer instruments 2 and 3. Each group practices using the instrument(s) that they will use for the survey.

5.8 Preparation for practice at a health facility

Distribute blank instruments 1, 2, 3, and 4 and ask surveyors to carry them in their file folders. Describe arrangements for meeting and visiting the health facility early the next morning. Set up a meeting time if participants are going to separate facilities.

Trainees need to go through all steps required at the health facility before beginning work (i.e. introduction

to the health workers, selection of a suitable place for caretaker interviews, greeting caretakers, obtaining caretaker consent, selecting and enrolling children, assigning questionnaire numbers, and completing identifying information).

5.9 Supervisor training

At the end of the day, review supervisor responsibilities for completing all four instruments, including:

- Completion of coding boxes on instruments 1 and 2; and transferring 'gold standard' classifications from instrument 3 into the appropriate box of instrument 1;
- Enrolling sick children in the survey;
- Managing patient flow to ensure that all sick children are included;
- Managing common problems with the completion of instruments 1, 2 and 3; and
- Completing instrument 4—this is normally to be done at the end of the clinic session.

6 SUMMARY OF TRAINING ACTIVITIES: Day 3

6.1 Practice at the health facility

Repeat the procedure of the previous day. Surveyors should practice using instruments for which they will be responsible during the survey. Supervisors should alternate in order to master all survey instruments.

6.2 Debriefing

Conduct this session in the same way as described for day 2. Review with the group the difficulties encountered, answer questions, and clarify areas of confusion. Add new rules as necessary.

6.3 Finalize survey teams for fieldwork

After working with participants and observing their experience and skills during the first two days of training, facilitators should be prepared to divide the group into survey teams (two surveyors and one supervisor per team), and determine where each team will conduct the field survey. Before the training, the training coordinator and local counterparts will have developed possible itineraries for each survey team, and these can be used to guide the selection and allocation of teams. Criteria to consider when selecting survey teams may include the following points:

- Surveyors should not conduct the survey in their home district or area;
- Surveyors re-examining each sick child must have received clinical IMCI training and be experienced in its application; and
- Teams should be balanced according to the strengths and weaknesses of participants.

Participants should be informed of the composition of the teams at this time, so that they can begin discussing the fieldwork itinerary.

6.4 Role play

For role plays at this point in training, the whole group can be organized into two subgroups (Group A: instrument 1, Group B: instruments 2 and 3), so that surveyors can practice using the instruments for which they are responsible. Training facilitators should allocate themselves between the two groups and themselves play roles. Role plays for instruments 1 and 2 are often the most useful.

6.5 Preparation for practice at a health facility

Distribute blank instruments 1, 2, 3, and 4 and ask participants to carry them in their file folders. Describe arrangements for meeting and visiting the health facility early the next morning. Set up a meeting time if participants are going to separate facilities.

Note: Facilitators should prepare the reliability checking forms (form 4 in Annex A) for the instruments that they will be checking the next day.

6.6 Supervisor training

At the end of the day, facilitators can sit with supervisors to review their roles and the responsibilities and problems identified. Facilitators can use the supervisory section of the manual to review supervisory tasks.

7 SUMMARY OF TRAINING ACTIVITIES: Day 4

7.1 Practice at a health facility

Surveyors should practice using the instruments for which they have been assigned responsibility. Supervisors should be encouraged to practice the tasks for which they are responsible as team leaders.

7.2 Debriefing

The conduct of this session is the same as that of day 3. Course facilitators should review a sample of the questionnaires used by surveyors and discuss any problems during the debriefing session. The rule development sheets for each instrument should be finalized so that they can be distributed to participants the next day.

Note: Completed survey instruments can be collected at the end of the session and used to test the EpiInfo files for data entry and analysis.

7.3 Role play: reliability checking

As on the previous day, the whole group should be divided into two subgroups according to the specific responsibilities of the surveyors. Facilitators should allocate themselves between the two groups.

Introduce the reliability checking form. Explain to participants that an important objective for the training is to achieve 90% reliability for three role plays in a row. At the end of each role play, the responses of participants are compared to those of a 'gold standard' observer (usually a facilitator). The responses of each participant are recorded on the reliability checking form. Responses that are not in agreement with the 'gold standard' can be noted, and a percentage agreement can be calculated for each question and each surveyor. This method allows participants to identify questions that still pose problems and issues that need to be discussed or clarified. It also enables facilitators to assess the overall performance of the group and to identify participants who need more assistance. A blank reliability checking form that can be copied and used for checking other instruments is included in form 4 of Annex A.

7.4 Using the reliability checking form

Reliability checking is the process whereby survey facilitators check to ensure that all surveyors are observing/recording the same events in the same manner (in this case, child case- management practices, or the exit interview with the caretakers). It is also a way to ensure that individual surveyors are consistent in how they observe/record events from one child or caretaker to the next. When facilitators are confident that all surveyors observe and record the same events in the same way, survey observations are said to be 'reliable'. In other words, 'inter-observer reliability'—or the consistency of the observations—is said to be good. Similarly, when facilitators are confident that each individual observes events the same way every time, 'intra-observer reliability' (that is, consistency within the surveyor) is said to be good.

Facilitators select a level of reliability they wish to achieve, e.g. 90%. This means that measures of reliability equal to or above 90% are indicative of good consistency between and within surveyors, while anything below 90% reflects poor observation reliability. In the latter case, more role plays and practice are needed.

The Reliability Checking Form (see Figure 2 below) is most useful for instruments 1 and 2. Figure 2 shows how the Reliability Checking Form can be used. Each ques-

Figure 2. Sample reliability checking form

Instrument number …… Training day ……

Question number	Gold standard	Surveyor name or number										Percentage agreement
		1	2	3	4	5	6	7	8	9	10	
A3	Y	Y	N	Y								2/3
A4	Y	Y	N	N								1/3
A5	N	N	Y	Y								1/3
A6	N	Y	Y	N								1/3
Intra-observer reliability		3/4	0/4	2/4								
Total inter-observer reliability (average percentage agreement for the group)												[5/12 (42%)]

tion on the instruments is listed in the left column. The correct response for each question is determined by the most senior facilitator and is written in the 'gold standard' column. The responses for each surveyor for each question are listed. The percentage agreement between the gold standard and the surveyors is summarized in the column at the far right. By looking across each row, the questions with the lowest percentage agreement can be identified. An overall percentage agreement is calculated at the bottom of the table.

In addition, the percentage agreement between each surveyor and the 'gold standard' can be calculated by looking down each column. Surveyors who are having difficulty matching the gold standard can then be identified.

Reliability checks are proposed for days 4 and 5. Reliability checking is most often done at the training site, not at the facility. Training facilitators could, however, choose to conduct reliability tests in small groups during the practice at the health facility. At the end of training, surveyors should reach 90% reliability for all questions on each questionnaire.

8 SUMMARY OF TRAINING ACTIVITIES: Day 5

8.1 Debriefing and general review

During this session facilitators are free to discuss important issues that they consider the most appropriate to meet the training objectives. Participants may guide the agenda of this session according to their needs. A copy of the rules for completion of each instrument should be distributed and reviewed. It may be useful to review the rules/guidelines for each questionnaire. It may also be useful to review the conduct of the survey, and the roles and responsibilities of supervisors and surveyors.

8.2 Role play and reliability checking

This is the last opportunity to improve inter-surveyor reliability. The process used on day 4 can be repeated with participants working in small groups. Role plays for each small group can be conducted simultaneously. At the end of each role play, facilitators should check reliability using the reliability form. Disagreements should be discussed in small groups.

8.3 Review of training objectives and participant evaluation

Discuss with participants whether all the objectives the group initially agreed have been met. If any of the objectives have not been met adequately, trainers and participants can discuss the best way to address problem areas. The group may decide to conduct more review sessions or role plays, schedule another health facility practice, continue reliability checking practice, or a combination of these, as needed.

If all training objectives have been met, facilitators should lead a group discussion on participant evaluation of the training. It is useful to prepare questions in advance to assist facilitators in guiding the discussion. The following issues are of interest: opinions about the strengths and weaknesses of the training, likes and dislikes, and recommendations for improvement. This exercise can be useful for assessing possible problem areas in the conduct of the survey (as a result of parts of the training being weaker than others, for example), as well as for improving and fine-tuning future training sessions.

8.4 Team meetings

Each survey team should meet to discuss activities for the fieldwork. The following issues should be discussed:

- Roles and responsibilities of each team member;
- Conduct of the survey at each health facility;
- Survey itinerary. To prepare the itinerary each team should discuss the schedule of facility visits, overnight stops, and logistical arrangements. A final itinerary should be completed by each team and submitted to the survey coordinator;
- Arrangements for meeting every evening to review the day's work and discuss/resolve problems with supervisors;
- Procedures to report periodically to survey coordinator; and
- Procedures to collect completed instruments.

Each team should receive a package containing:

- An introductory letter from the Ministry of Health explaining the purpose of the survey team's visit. The survey teams will use this for official clearance and cooperation at health facilities;
- Per diem and travel arrangements (car, driver, itinerary, accommodations, if any);
- Adequate number of blank instruments 1 to 4, and enrolment forms;
- Clipboards, pencils, sharpeners, erasers, watches;
- File folders for blank and completed instruments;
- Set of rules, Chapter 4, and Annex B ;

- Copy of the IMCI Clinical Guidelines;
- Set of 'Mothers Counselling Cards' (if used in the area), and additional IMCI chart booklets for distribution at the end of the visit in facilities where these items are missing;
- In some settings it might be appropriate to provide teams with an emergency kit (e.g. malaria prevention/treatment, etc.).

8.5 Final meeting with team supervisors

The survey coordinator and training facilitators should meet with the team supervisors to:

- Review supervisor responsibilities;
- Answer any questions and/or resolve any administrative problems;
- Check that each team has an adequate number of instruments;
- Finalize the itinerary for each team;
- Make arrangements for the return of instruments by survey teams;
- Discuss arrangements for meeting each day with teams to solve field problems;
- Agree on frequency and procedures for reporting periodically to the survey coordinator.

8.6 Trainer debriefing

At the end of the training session, facilitators should meet to:

- Review the strengths and weaknesses of the training;
- Identify, discuss and document problems that may be encountered during implementation of the survey and possible solutions; and
- Discuss and document follow-up actions.

CHECKLIST FOR SURVEYOR TRAINING

- ❑ Venue identified; coffee and tea arranged.
- ❑ Administrative assistant identified.
- ❑ Facilitators identified.
- ❑ Draft itineraries for survey teams prepared.
- ❑ Computer and printer for administrative assistant, facilities for photocopies.
- ❑ Adequate number of copies of instruments printed.
- ❑ Adequate number of copies of Chapter 4 and Annex B printed.
- ❑ Adequate number of reliability check forms printed.
- ❑ Accommodation and per diems for surveyors and supervisors arranged.
- ❑ Supplies ordered.
- ❑ Doll and sample of used vaccination cards (children and mothers) for role plays; mother's card and/or child health card, if any.
- ❑ IMCI clinical guidelines; if the survey is conducted in an area without IMCI, table for conversion of health workers classifications into standard IMCI classification (for use by supervisors).
- ❑ Busy health facilities identified, and notified for use during practice sessions.
- ❑ Arrangement for participant transportation during practice sessions.
- ❑ Blank paper for additional printing and copying.
- ❑ Pens, pencils, pencil sharpeners, erasers, and clipboard for each participant.
- ❑ Case/pack for each participant for supplies.
- ❑ Two or three staplers, supply of staples, and staple removers
- ❑ Two or three flip-charts and flip-chart paper.
- ❑ Marker pens for use on flipcharts.
- ❑ Emergency kits if appropriate.

ADDITIONAL EXAMPLES OF ROLE PLAY

Role play 1

Caretaker

You are the mother of a one-and-half-year-old girl who has had diarrhoea without blood for three days. She vomited twice since yesterday, but did not vomit 'everything'. You did not notice any other symptoms. You have stopped breastfeeding one month ago because you had another baby. Your daughter eats less since the diarrhoea started. She is asleep while you talk to the health worker.

Your other baby is at home with your son and you cannot stay at the facility for a treatment. Do not volunteer any information other than the child had diarrhoea for three days. You are collaborative and you answer questions when asked for. You brought the child immunization and growth monitoring card.

When leaving the facility, you remember that ORS has to be mixed with water, and that you have to give it to your daughter after each stools, but you don't remember how much water you need to mix ORS. You remember two danger signs on when to come back.

Health worker:

You ask the child's age and problems and examine the child carefully. However, you ask only for one danger sign (whether the child vomits everything), and you don't try to wake up the child. You ask about fever, but not about cough and difficult breathing. You assess the child's feeding.

The mother brought the child immunization/growth monitoring card and you ask for it. You check immunization status and you refer to child weight taken two weeks ago. The child weight recorded on the card is 9 kg. You conclude that the child has diarrhoea with some dehydration, and prescribe ORS and metronidazole.

You explain how to give metronidazole, and check whether the mother understood. You ask the mother to go to the ORT corner to rehydrate the child but she refuses. You explain how to mix ORS but don't demonstrate it and don't check mother understanding. You advise on increased fluids and continue feeding and about danger signs.

Role play 2

Caretaker

You are the father of a 29 month-old-boy and you brought him at the facility because he has had a fever for more than three days and an ear discharge since last week. This morning the child had had convulsions. You live in a high malaria risk area. Your son does not have other symptoms. You forgot to bring your son's immunization card, and don't remember which vaccines the child received.

You want immediate treatment and don't have the time, or the money to go to a hospital. You are very collaborative and answer all the health worker's questions, but sometimes you don't know the answers because it's the boy's mother who usually takes care of the child.

When you leave the facility you don't remember how to give the treatment at home correctly and don't remember any of the danger signs.

Health worker

You ask the child's age and what's wrong with him, and then examine the child carefully. You have got the weight of the child (11 kg) and his temperature (38.2 C). You ask about all the danger signs: cough, diarrhoea and fever. You also assess feeding although the child is more than 2 years old. You ask about the child immunization card, but you don't ask additional questions to try to determine whether the child immunization status was up-to-date.

You conclude that the child is likely to have meningitis, and needs to be referred. You try to convince the father. You give the child an injection of an antibiotic and a paracetamol tablet. When you understand that the father will not go to the hospital, you also prescribe cotrimoxazol for five days and cloroquine for three days. You explain how to give the treatment, but do not demonstrate, nor ask checking questions, nor give the first dose at the facility. You ask the father to come back in three days, and advise correctly about food, fluids, and danger signs.

Role play 3

Caretaker

You are the grandmother of a three-year-old girl who has had a skin rash since yesterday and feels hot. The child does not have other symptom and eats normally. You know that other children in the village had measles recently. You don't understand the health worker very well, and you are unable to answer his questions. You forgot the child immunization card at home.

When leaving the facility you know how to give paracetamol at home, but you don't know how to give cotrimoxazol. You know two danger signs.

Health worker

You ask the child's age, ask what's wrong with him, and then examine the child carefully, but not in order. You start asking about immunization, then look at the child's

weight then ask for the major symptoms. Finally, you undress the child to look at the rash, check for wasting, edema of both feet, and then look for palmar pallor.

You conclude that the child has measles and prescribe vitamin A, paracetamol, and ampicilin. You give the vitamin A and a paracetamol tablet at the facility, but not the antibiotics. You explain how to give paracetamol and ask checking questions. You don't explain how to give the antibiotics, and tell the grandmother to try to find the antibiotics at the market and that the drug seller will explain her how to give them. You don't given any advice on food or fluids, but tell the grandmother about danger signs.

ANNEX D

Indicators for IMCI in first-level health facilities

Part 1: Priority Indicators for IMCI at health facility level

(*A validated classification is a classification made by an IMCI-trained expert clinician after re-examining the child. The indicators listed below refer to children two months up to five years of age, unless otherwise stated.*)

1. *Child checked for three general danger signs*. The proportion of children checked for the three general danger signs.

   Numerator: Number of sick children aged 2 months up to five years seen who are checked for three danger signs (is the child able to drink or breastfeed, does the child vomit everything, has the child had convulsions)

   Denominator: Number of sick children aged 2 months up to five years seen

2. *Child checked for the presence of cough, diarrhoea and fever*. The proportion of children checked for the presence of cough, diarrhoea, and fever.

   Numerator: Number of sick children seen whose caretakers were asked about the presence of cough, diarrhoea, and fever

   Denominator: Number of sick children seen

3. *Child weight checked against a growth chart*. The proportion of children who have been weighed the same day and have their weight checked against a recommended growth chart.

   Numerator: Number of sick children seen who have been weighed the same day and have their weight checked against a recommended growth chart

   Denominator: Number of sick children seen

4. *Child vaccination status checked*. The proportion of children who have their vaccination status checked.

   Numerator: Number of sick children seen who have their vaccination card or vaccination history checked

   Denominator: Number of sick children seen

5. *Index of integrated assessment*. Mean of assessment tasks performed per sick child assessed (need further fieldtest).

   Definition: Arithmetic mean of 10 assessment tasks performed for each child (checked for three danger signs, checked for the three main symptoms, child weighted and weight checked against a growth chart, checked for palmar pallor, and checked for vaccination status divided by ten)

   Calculation:
   - checked for "ability to drink or breastfeed", "vomits everything", and convulsions", 1 point each
   - checked for presence of "cough & fast/difficult breathing", "diarrhoea", and "fever", 1 point each
   - child weighed the same day and child's weight used against a recommended growth chart, 1 point each
   - child checked for palmar pallor, 1 point
   - child vaccination status checked (card or history), 1 point

6. *Child under two years of age assessed for feeding practices*. The proportion of children under two years of age whose caretakers are asked about breastfeeding, complementary foods, and feeding practices during this episode of illness.

   Numerator: Number of sick children under two years of age whose caretakers are asked if they breastfeed this child, whether the child takes any other food or fluids other than breastmilk, and if during this illness the child's feeding has changed

   Denominator: Number of sick children under two years of age seen

7. *Child needing an oral antibiotic and/or an antimalarial is prescribed the drug correctly*. The proportion of children who do not need urgent referral, who need an oral antibiotic and/or an antimalarial who are prescribed the drug(s) correctly.

   Numerator: Number of sick children with validated classifications, who do not need urgent referral, who need an oral antibiotic and/or an antimalarial (pneumonia, and/or dysentery, and/or malaria, and/or acute ear infection, and/or anaemia in high malaria risk areas) who are correctly prescribed them, including dose, number of times per day, and number of days

   Denominator: Number of sick children with validated classifications who do not need urgent referral, who need an oral antibiotic and/or an antimalarial

8. *Child not needing antibiotic leaves the facility without antibiotic*. The proportion of children who do not need urgent referral and who do not need an antibiotic for one or more IMCI classifications who leave the facility without having received or having been prescribed antibiotics.

   Numerator: Number of children with validated classification who do not need urgent referral and do not need an antibiotic for one or more IMCI classifications (no pneumonia: cough or cold, diarrhoea with or without dehydration, persistent diarrhoea, malaria, fever-malaria unlikely, measles, chronic ear infection, no ear infection, anaemia or very low weight, and/or no anaemia and not very low weight) who leave the facility without receiving antibiotics or a prescription for antibiotics for those validated classifications

   Denominator: Number of children seen who do not need urgent referral and who do not need an antibiotic for one or more IMCI classifications

9. *Caretaker of sick child is advised to give extra fluids and continue feeding*. The proportion of sick children whose caretakers are advised to give extra fluid and continue feeding.

   Numerator: Number of sick children with validated classifications, who do not need urgent referral, whose caretakers are advised to give extra fluid ***and*** continue feeding

   Denominator: Number of sick children with validated classifications, who do not need urgent referral

10. *Child needing vaccinations leaves facility with all needed vaccinations*. The proportion of children needing vaccinations (based on vaccination card or history) who leave the HF with all needed vaccinations (according to national immunization schedule).

    Numerator: Number of children who need vaccinations (based on vaccination card or history) who leave the HF with all needed vaccinations

    Denominator: Number of children seen who need vaccinations (based on vaccination card or history)

11. *Caretaker of child who is prescribed ORS, and/or an oral antibiotic and/or an oral antimalarial knows how to give the treatment*. The proportion of children prescribed ORS, and/or an oral antibiotic and/or an oral antimalarial whose caretakers can describe correctly how to give the treatment.

    Numerator: Number of sick children prescribed ORS, and/or an oral antibiotic and/or an oral antimalarial whose caretakers can describe how to give the correct treatment including the amount, number of times per day, and number of days

    Denominator: Number of sick children prescribed ORS and/or an antibiotic and/or an antimalarial

12. *Child needing referral is referred*. The proportion of children needing referral who are referred by the health workers.

    Numerator: Number of sick children with a validated classification of severe disease needing referral (one or more danger signs, severe pneumonia or very severe disease, and/or severe dehydration with any other severe classification, and/or severe persistent diarrhoea, and/or very severe febrile disease, and/or severe complicated measles, and/or mastoiditis, and/or severe malnutrition or severe anaemia) who were referred by the health workers

    Denominator: Number of sick children with a validated classification of severe disease needing referral

13. *Health facility received at least one supervisory visit that included observation of case management during the previous six months*. The proportion of health facilities that received at least one visit of routine supervision that included the observation of case management during the previous six months.

    Numerator: Number of health facilities that received at least one visit of routine supervision (excluding the follow-up visits to health workers shortly after their training that are part of IMCI training) that included the observation of case management during the previous six months

    Denominator: Number of health facilities surveyed

14. *Index of availability of essential oral treatments*. Essential oral drugs for home treatment of sick children present the day of visit

Definition: Arithmetic mean of essential oral drugs recommended for home treatment of diarrhoea, dysentery, pneumonia, fever, malaria, and anaemia available at each facility the day of visit, divided by eight.

Calculation:
- — ORS, 1 point
- — recommended antibiotic for pneumonia, 1 point
- — recommended antibiotic for dysentery, 1 point
- — recommended antimalarial, 1 point
- — vitamin A, 1 point
- — iron, 1 point
- — mebendazol, 1 point
- — paracetamol/aspirin, 1 point

15. *Index of availability of injectable drugs for prereferral treatment*. Injectable antibiotics and antimalarials for prereferral treatment of sick children and young infants that are available in each facility the day of visit.

Definition: Arithmetic mean of recommended injectable pre-referral treatment for children and young infant with severe classification needing immediate referral, divided by four.

Calculation:
- — recommended intramuscular antibiotic for children, 1 point
- — quinine, 1 point
- — gentamicine, 1 point
- — benzylpenicillin, 1 point

16. *Health facility has the equipment and supplies to support full vaccination services*. The proportion of health facilities that have the equipment and supplies to provide full vaccination services on the day of survey.

Numerator: Number of health facilities that have the equipment and supplies to support full vaccination services (functioning refrigerator or cold chain, and functioning sterilizer and needles/syringes or disposable needles/syringes available on the day of survey

Denominator: Number of health facilities surveyed

17. *Index of availability of four vaccines*. Mean of four recommended antigens available at each facility the day of visit.

Definition: Arithmetic mean of recommended vaccines available at each facility the days of visits, divided by four.

Calculation:
- — BCG, 1 point
- — Polio, 1 point
- — DPT, 1 point
- — Measles, 1 point

18. *Health facilities with at least 60% of workers managing children trained in IMCI*. The proportion of first-level health facilities with at least 60% of health workers managing children trained in IMCI.

Numerator: Number of health facilities with at least 60% of health workers managing children who are trained in IMCI

Denominator: Number of health facilities surveyed

Part 2. Supplemental measures for IMCI at health facility level

(*A validated classification is a classification made by an IMCI-trained expert clinician after re-examining the child. The indicators listed below refer to children two months up to five years of age, unless otherwise stated.*)

S1. Child checked for other problems. The proportion of children brought to the facility for an "other problem" who were checked for this "other problem".

Numerator: Number of children brought to the facility for one or more of the main symptoms (cough/fast/difficult breathing, diarrhoea, fever) or for "ear problems" and for an "other problem" or who were brought to the facility for an "other problem" only, whose caretaker were asked to describe this other problem

Denominator: Number of children brought to the facility for one or more of the main symptoms (cough/fast/difficult breathing, diarrhoea, fever) or for "ear problems" and for an "other problem" or who were brought to the facility for an "other problem" only

S2. *All child symptoms identified*. Proportion of children with one or more main symptoms (fast or difficult breathing with or without cough, diarrhoea, fever) for whom all symptoms were identified.

Numerator: Number of children with validated symptoms of "fast and/or difficult breathing with or without cough"

and/or "diarhoea", and/or "fever" for whom all symptoms were identified

Denominator: Number of children with validated symptoms of "fast and/or difficult breathing with or without cough" and/or "diarhoea", and/or "fever" seen

S3. *Child with very low weight is assessed for feeding problems*. The proportion of sick children with very low weight who are assessed for feeding problems.

Numerator: Number of sick children with a validated classification of very low weight and no severe classification whose caretaker are asked if the mother breastfeeds the child, if the child takes food or fluids other than breastmilk, and if during this illness the child's feeding has changed

Denominator: Number of sick children with a validated classification of very low weight

S4. *Child with very low weight is correctly classified*. The proportion of children with very low weight who are correctly classified.

Numerator: Number of children with a validated classification of very low weight who are classified as very low weight

Denominator: Number of children with a validated classification of very low weight

S5. *Child is correctly classified*. Proportion of children whose classifications given by the health worker match all the classifications given by an IMCI-trained surveyor (validated classification)

Numerator: Number of children whose validated classifications (for the three major symptoms: cough, diarrhoea, and fever) matches the classifications given by the health worker

Denominator: Number of children seen

S6. *Child with pneumonia correctly treated*. The proportion of children with pneumonia who are prescribed antibiotic treatment correctly.

Numerator: Number of children with a validated classification of pneumonia and no severe classification who are given/prescribed treatment with an appropriate antibiotic (including correct amount, times per day, and number of days)

Denominator: Number of children with a validated classification of pneumonia and no severe classification

S7. *Child with dehydration correctly treated*. The proportion of children with diarrhoea and some dehydration who receive ORS at the facility.

Numerator: Number of children with a validated classification of diarrhoea with some dehydration and no severe classification who receive ORS at the facility

Denominator: Number of children with a validated classification of diarrhoea with some dehydration and no severe classification

S8. *Child with malaria correctly treated*. The proportion of children with malaria who are prescribed antimalarial treatment correctly.

Numerator: Number of children with a validated classification of malaria and no severe classification who are given/prescribed treatment with an appropriate antimalarial (including correct amount, times per day, and number of days)

Denominator: Number of children with a validated classification of malaria and no severe classification

S9. *Child with anaemia correctly treated*. The proportion of children with anaemia who are prescribed treatment correctly.

Numerator: Number of children with a validated classification of anaemia and no severe classification who are given/prescribed correct treatment including iron, mebendazole if over two years of age and did not receive mebendazole during the previous six months, and an antimalarial if high malaria risk area (including correct amount, times per day, and number of days for all drugs)

Denominator: Number of children with a validated classification of anaemia and no severe classification

S10. *Child receives first dose of treatment at facility*. The proportion of children, who do not need urgent referral, who need an antibiotic and/or an antimalarial who receive the correct first dose(s) at the facility.

Numerator: Number of children with validated classifications, who do not need urgent referral, who need an antibiotic and/or an antimalarial (pneumonia, dysentery, malaria, acute ear infection, anaemia[1]) who receive the correct first dose(s) at the health facility.

Denominator: Number of children with validated classifications, who do not need urgent referral, who need an antibiotic and/or an antimalarial.

S11. *Child checked for lethargy*. The proportion of children not visibly awake (who are not playing, smiling, or crying with energy) who are checked for lethargy.

Numerator: Number of sick children not visibly awake when assessed by the health worker (who are not playing, smiling, or crying with energy) who are checked for lethargy

Denominator: Number of sick children not visibly awake seen

S12. *Child with severe illness correctly treated*. The proportion of children with severe classifications needing urgent referral who receive correct treatment and referral.

Numerator: Number of children with validated classifications of severe disease needing urgent referral (one or more danger signs and/or severe pneumonia or very severe disease, severe dehydration, severe persistent diarrhoea, very severe febrile disease, severe complicated measles, mastoiditis, severe malnutrition or severe anaemia) who receive correct first dose of all needed treatments (appropriate antibiotic and/or antimalarial and/or vitamin A and/or ORS) and referral

Denominator: Number of children with validated classifications of severe disease needing urgent referral

S13. *Child prescribed oral medication whose caretaker is advised on how to administer the treatment*. The proportion of children, who do not need urgent referral, who received or were prescribed an antibiotic and/or an antimalarial and/or ORS who received at least two treatment counselling messages.

Numerator: Number of children with validated classifications not needing referral, who do not need urgent referral, who received or were prescribed an antibiotic and/or an antimalarial and/or ORS who receive at least two treatment counselling messages (explanation on how to administer treatment, demonstration on how to administer treatment, open-ended question to check caretaker understanding)

Denominator: Number of children with validated classifications not needing urgent referral, who received or were prescribed an antibiotic and/or an antimalarial and/or ORS

S14. *Sick child whose caretaker is advised on when to return immediately*. The proportion of sick children whose caretakers received at least three counselling messages on when to return immediately.

Numerator: Number of sick children, who do not need urgent referral, whose caretakers received at least three of the following counselling messages on when to return immediately to a health facility: if the child is not able to drink or breastfeed, if the child becomes sicker, if the child develops fever, if the child has difficult breathing, if the child has fast breathing, if the child has blood in the stool, or if the child is drinking poorly

Denominator: Number of sick children seen who do not need urgent referral

S15. *Child with very low weight whose caretaker received correct counselling*. The proportion of children with very low weight whose caretakers are provided with age-appropriate feeding messages.

Numerator: Number of children with a validated classification of very low weight, who do not need urgent referral, whose caretakers are provided with

[1] In low- or no-risk area for malaria, anaemia is not treated with antimalarial.

age-appropriate feeding messages[1] using a mothers' counselling card[2]

Denominator: Number of children with a validated classification of very low weight, who do not need urgent referral

S16. *Child leaving the facility whose caretaker was given or shown a mother's card*. Proportion of children, who do not need urgent referral, whose caretakers have a mother's counselling card[2] with them at departure, or report having been shown a mother's card by the health worker (Adaptation needed for sites where mothers' counselling cards are not distributed.)

Numerator: Number of children, who do not need urgent referral, whose caretakers have a mother's card[2] with them at departure or report having been shown a mother's card by the health worker during the visit

Denominator: Number of sick children seen who do not need urgent referral

S17. *Health facility has essential equipment and materials*. The proportion of health facilities that have all needed equipment and materials available on the day of the survey.

Numerator: Number of health facilities with all needed equipment and materials (accessible and working weighing scales for adults and children, timing device, child health cards, source of clean water, spoons, cups and jugs to mix and administer ORS) available on the day of the survey

Denominator: Number of health facilities surveyed

S18. *Health facility has IMCI chart booklet and mothers' counselling cards*.[3] The proportion of health facilities that have IMCI chart booklet available for use by health workers and mothers' counselling cardsd for use during mothers' counselling and/or for distribution on the day of the survey.

Numerator: Number of health facilities with at least one legible IMCI chart booklet available for use by health workers managing children and at least one mother counselling card for use during counselling of caretakers of sick children

Denominator: Number of health facilities surveyed

[1] A child has received age-appropriate feeding advice if the child is under four month of age and the caretaker has been advised to breastfeed only and at least eight times in 24 hours, or the child is 4–6 months of age and the caretaker has been advised to breastfeed at least eight times in 24 hours, or the child is 6–11 months of age and the caretaker is advised to breastfeed as often as the child wants and give food three times per day if breastfed or five times per day if not breastfed, or the child is 12–23 months of age and the caretaker is advised to give family food five times per day, or the child is 24 months of age or older and the caretaker is advised to give family food at least three times per day and to give nutritious food between meals. This description of age-appropriate feeding advices might require country adaptation.

[2] Counselling card given or shown to the caretaker during the counselling and that includes at least country-appropriate and age-specific feeding advices and the danger signs when to bring the child immediately back to a health facility.

[3] Counselling card given or shown to the caretaker during counselling and that includes at least country-appropriate and age-specific feeding advices and the danger signs when to bring the child immediately back to a health facility.

ANNEX E

Supplemental measures

Supplemental measures can be used to calculate additional information to help explain or describe case case-management practices. As discussed in Chapter 5, it is recommended that the data analysis team review the survey objectives and the data analysis plan in advance in order to decide whether supplemental measures will be needed. In most cases not all supplemental measures are needed—a few may be useful in selected areas. Eighteen supplemental measures are defined in this section. At the end of the section, other descriptive data that may be useful are also described.

A. Screening and assessment of the sick child

Supplemental measure S1: Child checked for other problems

Definition	Numerator/Denominator	Source of information	Formula
Proportion of children brought to the facility who were checked for an "other problem"	Number of sick children brought for one or more of the main symptoms whose caretakers were asked if there was an "other problem"	Instrument 1	Number of sick children with 'Yes' in A24
	Number of sick children seen		Total number of sick children seen ('Yes' in A24 plus 'No' in A24)

Supplemental measure S2: All child main symptoms identified

Field tests have shown that this indicator is difficult to calculate and not very helpful. It is not calculated anymore.

Supplemental measure S3: Child with very low weight is assessed for feeding problems

Definition	Numerator/Denominator	Source of information	Formula
Proportion of sick children with very low weight who are assessed for feeding problems	Number of sick children observed with a validated classification of very low weight and no severe classification needing referral, whose caretakers are asked at least three questions on child's feeding*	Instrument 1	Number of sick children with 151b circled **AND** no circle in 105, 110, 120a, 121, 130, 134, 140, 150a, and 150b, **AND** 'Yes' in A21 and A22 and A23
	Number of sick children observed with a validated classification of very low weight and no severe classification needing referral		Number of sick children with 151b circled and no circle in 105, 110, 120a, 121, 130, 134, 140, 150a, and 150b

* The three minimum questions are: "does the mother breastfeed the child", "does the child take food or fluids other than breastmilk", and "during this illness has child's feeding changed".

B. Classification and treatment of the sick child

Supplemental measure S4: Child with very low weight is correctly classified

Definition	Numerator/Denominator	Source of information	Formula
Proportion of children with very low weight who are correctly classified	Number of sick children with a validated classification of "very-low-weight" who are classified as very-low-weight by the health worker	Instrument 1	Number of sick children with 151b circled and 'Yes' in C51b
	Number of sick children with a validated classification of "very-low-weight"		Number of sick children with 151b circled

Supplemental measure S5: Child is correctly classified

Definition	Numerator/Denominator	Source of information	Formula
Proportion of children whose classifications given by the health worker match all classifications given by an IMCI-trained surveyor	Number of sick children with validated classification not needing referral, for whom classifications for the main symptoms* given by the health worker match all the validated classifications	Instrument 1	Number of sick children with no circle in 105, 110, 120a, 121, 130, 134, 140, 150a, and 150b for whom all 'Yes' or 'No' answers in C05 to C36 match exactly answers in 105 to 136
	Number of sick children with validated classification not needing referral		Number of sick children with no circle in 105, 110, 120a, 121, 130, 134, 140, 150a, and 150b

* The main symptoms include cough or fast or difficult breathing, diarrhoea, and fever

Additional calculations

- Repeat calculation excluding "green classifications" (112, 120c, 133)—to determine the proportion of children with no treatable illness who are classified correctly. **Please note that this is the indicator that is calculated with the EpiInfo program for analysis provided on the CD in this manual**.
- Repeat calculation for all classifications but excluding "other problems"—to determine proportion of children with IMCI classifications only who were classified correctly

Supplemental measure S6: Child with pneumonia correctly treated

Definition	Numerator/Denominator	Source of information	Formula
Proportion of children with pneumonia who are prescribed antibiotic treatment correctly	Number of children with a validated classification of pneumonia and no severe classification needing referral who are given/prescribed treatment correctly*	Instrument 1	Number of sick children with 111 circled and no circle in 105, 110, 120a, 121, 130, 134, 140, 150a, and 150b **AND** 'Yes' in B (coding box)
	Number of children with a validated classification of pneumonia and no severe classification needing referral		Number of sick children with 111 circled and no circle in 105, 110, 120a, 121, 130, 134, 140, 150a, and 150b

* For treatment to be considered correct, the correct amount, times per day, and number of days must be given.

Supplemental measure S7: Child with dehydration treated correctly

Definition	Numerator/Denominator	Source of information	Formula
Proportion of children with diarrhoea and some dehydration who receive ORS at the facility	Number of children with a validated classification of diarrhoea with some dehydration and no severe classification needing referral who receive ORS at the facility	Instrument 1	Number of sick children with 120b circled and no circle in 105, 110, 120a, 121, 130, 134, 140, 150a, and 150b **AND** 'Yes' in T4
	Number of children with a validated classification of diarrhoea with some dehydration and no severe classification needing referral		Number of sick children with 120b circled and no circle in 105, 110, 120a, 121, 130, 134, 140, 150a, and 150b

Supplemental measure S8: Child with malaria correctly treated

Definition	Numerator/Denominator	Source of information	Formula
Proportion of children with malaria who are prescribed antimalarial treatment correctly	Number of children with a validated classification of malaria and no severe classification needing referral who are given/prescribed treatment correctly*	Instrument 1	Number of sick children with 131 circled and no circle in 105, 110, 120a, 121, 130, 134, 140, 150a, and 150b **AND** 'Yes' in C (coding box)
	Number of children with a validated classification of malaria and no severe classification needing referral		Number of sick children with 131 circled and no circle in 105, 110, 120a, 121, 130, 134, 140, 150a, and 150b

* For treatment to be considered correct, the correct amount, times per day, and number of days must be given. If the national guidelines recommend a combined therapy, both antimalarial drugs need to be given in the correct dose.

Supplemental measure S9: Child with anemia correctly treated

Definition	Numerator/Denominator	Source of information	Formula
Proportion of children with anemia who are prescribed treatment correctly	Number of children with a validated classification of anemia and no severe classification needing referral who receive appropriate treatment for anemia*	Instrument 1	Number of sick children with 151a circled and no circle in 105, 110, 120a, 121, 130, 134, 140, 150a, and 150b **AND** 'Yes' in T7l and 'Yes' in C (coding box) if high malaria risk (170) and 'Yes' in T7k if age ≥24
	Number of children with a validated classification of anemia and no severe classification needing referral		Number of sick children with 151 circled and no circle in 105, 110, 120a, 121, 130, 134, 140, 150a, and 150b

* Appropriate treatment for anemia includes iron, mebendazole (if the child is over two years of age and has not received mebendazole during the previous six months), and an antimalarial if the child lives in a high malaria risk area. For treatment to be considered appropriate, the correct amount, times per day, and number of days must be given.

Supplemental measure S10: Child receives first dose of treatment at facility

Definition	Numerator/Denominator	Source of information	Formula
Proportion of children who do not need urgent referral, who need and antibiotic and/or an antimalarial who receive the first dose at the facility	Number of children with validated classifications, who do not need urgent referral, who need an antibiotic and/or an antimalarial, who receive the first dose at the health facility	Instrument 1	Number of sick children with no circle in 105, 110, 120a, 121, 130, 134, 140, 150a, 150b, **AND** one or more circles in 111, 123, 141, 131 and 'Yes' in CM4a and/or 'Yes' in CM4b
	Number of children with validated classifications, who do not need urgent referral, who need an antibiotic and/or an antimalarial		Number of sick children with no circle in 105, 110, 120a, 121, 130, 134, 140, 150a, 150b, **AND** one or more circles in 111, 123, 141, and 131

Supplemental measure S11: Child checked for lethargy

Definition	Numerator/Denominator	Source of information	Formula
Proportion of children not visibly awake who are checked for lethargy	Number of sick children not visibly awake* when assessed by the health worker who are checked for lethargy	Instrument 1	Number of sick children with 'No' in A9 and 'Yes' in A10
	Number of sick children not visibly awake* when assessed by the health worker		Number of sick children with 'No' in A9

* A child not visibly awake is a child who appears to be asleep—and is not playing, smiling, or crying with energy.

Supplemental measure S12: Child with severe illness correctly treated

Definition	Numerator/Denominator	Source of information	Formula
Proportion of children with severe classification needing urgent referral who receive appropriate treatment and referral	Number of sick children with validated classification of severe disease needing urgent referral* who receive appropriate treatment** and referral	Instrument 1	Number of sick children with 'Yes' in coding box D and the following classifications circled: 105 and/or 110 and/or 121 and/or 130 and/or 134 and/or 140 and/or 150a and/or 150b
	Number of sick children with validated classification of severe disease needing urgent referral		Number of sick children with the following classifications circled: 105 and/or 110 and/or 121 and/or 130 and/or 134 and/or 140 and/or 150a and/or 150b

* Validated classification of severe disease needing urgent referral includes: presence of one or more danger signs; severe pneumonia or very severe disease; severe dehydration with any other severe classification; severe persistent diarrhoea; very severe febrile disease; severe complicated measles; mastoiditis; and severe malnutrition or severe anemia.

** Appropriate treatment may include an antibiotic and/or antimalarial and/or vitamin A and/or ORS.

C. Counselling of the sick child

Supplemental measure S13: Child prescribed oral medication whose caretaker is advised on how to administer the treatment

Definition	Numerator/Denominator	Source of information	Formula
Proportion of children, who do not need urgent referral, who received or were prescribed an antibiotic and/or an antimalarial and/or ORS who received at least two treatment counselling messages	Number of children with validated classification not needing referral, who received or were prescribed an antibiotic and/or an antimalarial and/or ORS who received at least two treatment counselling messages*	Instrument 1	Number of sick children with no circle in 105, 110, 120a, 121, 130, 134, 140, 150a, 150b, **AND** (with 'Yes' in T8 and at least two 'Yes' in CM1a, CM2a, and CM3a) **AND/OR** ('Yes' in T10 and at least two 'Yes' in CM1b, CM2b, and CM3b) **AND/OR** ('Yes' in T3 and at least two 'Yes' in CM1c, CM2c, and CM3c)
	Number of children with validated classification not needing referral, who received or were prescribed an antibiotic and/or an antimalarial and/or ORS		Number of sick children with no circle in 105, 110, 120a, 121, 130, 134, 140, 150a, 150b, **AND** with 'Yes' in T8 and/or 'Yes' in T10 and/or 'Yes' in T3

• At least two of the following treatment messages: explanations about how to administer the treatment, demonstration on how to administer the treatment, open-ended question to check caretaker understanding. At least two treatment counselling messages should be given for each treatment.

Supplemental measure S14: Sick child whose caretaker is advised on when to return immediately

Definition	Numerator/Denominator	Source of information	Formula
Proportion of sick children whose caretakers received at least three counselling messages on when to return immediately	Number of sick children with validated classification not needing urgent referral whose caretakers received at least three counselling messages* on when to return immediately to a health facility	Instrument 1	Number of sick children with no circle in 105, 110, 120a, 121, 130, 134, 140, and 150a, 150b, **AND** at least three 'Yes' in CM10a to CM10g
	Number of sick children with validated classification not needing urgent referral		Number of sick children with no circle in 105, 110, 120a, 121, 130, 134, 140, 150a, and 150b

* Appropriate counselling messages include: if the child is not able to drink or breastfeed, if the child becomes sicker, if the child develops fever, if the child has fast or difficult breathing, if the child has blood in the stool, and if the child is drinking poorly.

Supplemental measure S15: Child with very low weight whose caretaker received correct counselling

Definition	Numerator/Denominator	Source of information	Formula
Proportion of children with very low weight whose caretakers are provided with age-appropriate feeding messages	Number of sick children with a validated classification of very low weight not needing referral whose caretakers are provided with age-appropriate feeding messages using a mothers' counselling card	Instrument 1	Number of sick children with 151b circled and no circle in 105, 110, 120a, 121, 130, 134, 140, 150a, 150b and 'Yes' in CM9 and 'correct' in CM9a
	Number of sick children with a validated classification of very low weight not needing referral		Number of sick children with 151b circled and no circle in 105, 110, 120a, 121, 130, 134, 140, 150a, 150b

Supplemental measure S 16: Child leaving the facility whose caretaker was given or shown a mother's card

Definition	Numerator/Denominator	Source of information	Formula
Proportion of children not needing urgent referral whose caretakers have a mother's counselling card with them at departure, or report having been shown a mother's card by the health worker	Number of sick children not needing referral, whose caretakers have a mother's card at departure or report having been shown a mother's card by the health worker during the visit	Instrument 2	Number of sick children with no circle in 105, 110, 120a, 121, 130, 134, 140, 150a, 150b and 'Yes' in question 23
	Number of sick children not needing referral		Number of sick children with no circle in 105, 110, 120a, 121, 130, 134, 140, 150a, and 150b

D. Availability of health facility supports

Supplemental measure S17: Health facility has essential equipment and materials

Definition	Numerator/Denominator	Source of information	Formula
Proportion of health facilities that have all equipment and materials available on the day of survey	Number of health facilities visited with all needed equipment and materials* available on the day of survey	Instrument 4	Number of health facilities with 'Yes' in E1a–E1g
	Number of health facilities visited		Number of health facilities

* Includes: accessible and working weighing scales for adult and children, timing device, child health cards, source of clean water, spoons and cups and jugs to mix and administer ORS, drug stock cards or logbook.

Supplemental measure S18: Health facility has IMCI chart booklet and mother's counselling cards

Definition	Numerator/Denominator	Source of information	Formula
Proportion of health facilities that have IMCI chart booklet available for use by health workers and mother's counselling cards for use during mother's counselling and/or for distribution on the day of survey	Number of health facilities visited with at least one legible IMCI chart booklet available for use by health workers managing children and at least one mothers counselling card for use during counselling of caretakers of sick children	Instrument 4	Number of health facilities with 'Yes' in E1h and 'Yes' in E1i
	Number of health facilities visited		Number of health facilities

Other information that may be useful for summarizing survey data

Assessment

- The proportion of sick children for whom health workers and surveyors agree on the presence or absence of one or more danger signs (Form 1, questions C05 and S105)
- The proportion of sick children for whom health workers and surveyors agree on the presence or absence of anemia (Form 1, questions C51a and S151a)
- The proportion of caretakers asked about their own health (Form1, question CM11)

Counselling

- The proportion of sick children needing antibiotics or antimalarials who have each of the key drug counselling tasks conducted (Form 1, questions CM1, 2, 3, 4)
- The proportion of sick children needing feeding counselling who have each of the feeding counselling tasks performed (Form 1, questions CM7 and CM8)
- Frequencies of messages on when to bring the child back immediately given to the caretakers of sick children (Form 1, question CM10)

Health facility supports

- The proportion of health facilities that have each of the key equipment and materials (Form 4, questions E1a–i)
- The proportion of health facilities that have each of the key vaccination supplies (Form 4, questions E2–E5)
- The proportion of health facilities that have each of the key vaccines in stock on the day of the survey (Form 4, questions E6a–e)
- The proportion of health facilities that have each of the essential medications available on the day of the survey (Form 4, questions D1a–m)
- The proportion of health facilities that have each of the essential injectable drugs available on the day of the survey (Form 4, questions D2a–f)

- Mean (and range) for: days per week the facility is open; days per week child health services are provided; days per week vaccination services are available (Form 4, questions S1–3)
- Mean (and range) of the number of supervisory visits received in the last 6 months (Form 4, question S5)
- Mean (and range) of the time required to get to the nearest referral facility (Form 4, question S9)
- Mean (and range) of the number of sick child visits during the previous month (Form 4, question R1)
- The proportion of staff trained in IMCI actually present and managing children the day of visit (Form 4, table 1)

ANNEX F

Case scenarios for health worker interviews (option)

Few children with severe illness needing immediate referral or young infant under two months of age are usually brought to first health facilities. Because the number of facilities visited and the duration of the survey are limited, the survey method described in this manual does not provide adequate information about the management of severe illness or young infant at first-level health facilities.

This additional and optional survey instrument includes five case scenarios, each describing a child or a young infant who presents for care at the facility. This will provide some information about health worker knowledge of case management for very severe illness, even though the results will not be as valid as those obtained through direct observation of health workers.

If the country-specific survey objectives include determining health worker knowledge or health facility readiness to manage severely ill children and identifying strategies for improving case-management for this group of children, the survey coordinator may decide to add an interview of health workers during the survey. However, the use of this optional survey instrument will add complexity to the survey and will require extra time during the training of surveyors, the field work, and during data analysis.

For each case scenario, several actions are needed to provide appropriate treatment to the child, and a score will be calculated for each of them. The generic case scenarios, and the possible answers for each of them, need to be adapted locally for malaria risk and treatment recommendations.

Only health workers who have been observed managing sick children during the survey will be interviewed. Prior to the interview, the surveyor will explain the interview procedure to the health worker: surveyor and health worker will read a case scenario together, then the health worker will have to tell all actions he/she would take to treat the child. The health worker can refer to any guidelines if needed. It is important to explain to the health worker that these case scenarios aim to know his/her usual practice in some special situations. These scenarios will not be used to judge his/her practice and the information collected will not be communicated to any district or central level MOH authorities.

Copies of the case scenarios on small cards or paper slips (without the list of possible answers) will be prepared in advance. The cards with the case scenarios are given to the health worker one by one. The surveyor and the health worker read the card together. After reading the case scenario with the health worker the surveyor will ask the health worker to tell him or her all actions and/or prescriptions he/she would take to provide the child with the most appropriate treatment. For this exercise, it is assumed that all needed drugs are in stock at the facility and that there is a referral facility available 20 minutes away. Several answers are possible for each case scenario and surveyor should not prompt.

Survey instrument for health worker interview: Case scenarios

District: …… Date: … / …/ …

Facility name: …… Facility code …… Facility type …… Surveyor ID: ……

Health worker: Name …… ID …… Sex: (1) M (2) F Trained: (1) Yes (2) No

Type: (1) Physician (2) Nurse (3) Medic Assist (4) Other Year trained: ……

Explain to the health worker that these case scenarios aim to know his/her usual practice in some special situations. Explain that you will read the scenarios together then he/she will have to tell you what actions he/she would take to treat the child. Explain that he/she could refer to any clinical guidelines if needed. These scenarios will not be used to judge his/her practice and the information collected will not be communicated to any district or central level MOH authorities.

The health worker should consider that he/she has all authority to decide whether or not to refer a child to an hospital, that all the drugs he/she would like to administer are available at the facility, and that there is a referral center 20 minutes away from the facility.

Before going to the first case scenario, answer any health worker concern.

Give to the health worker the first card with case scenario #1, then read it with him/her.

Case scenario 1

A little girl aged 25 months and weighing 10.5 kg is brought to the facility because she has been asleep since the morning and very difficult to wake up. She hasn't eaten or drank since yesterday. When asked, the mother said that her daughter did not vomit and did not have any convulsions, but had diarrhoea for about six days. She also had fever for three days and a runny nose. The health worker assessed the child and confirmed that the child was lethargic. The health worker also performed a skin pinch that came back very slowly. No other clinical signs were found. The family lives in a low malaria risk area and has not travel recently.

After reading the case scenario with the health worker, ask him/her to tell you all actions and/or prescriptions he/she would take to provide this child with the most appropriate treatment, assuming that all needed drugs are in stock in the facility and that there is a referral facility available 20 minutes away. Do not prompt.

Circle 'yes' for each of the following actions mentioned by the health worker.

1.01	Recommends urgent referral to an hospital	(1) Yes	(2) No
1.02	Administer Ringer Lactate or Normal saline IV solution	(1) Yes	(2) No
1.03	Administer liquid by naso-gastric tube	(1) Yes	(2) No
1.04	Inject one dose of an injectable antibiotic	(1) Yes	(2) No
1.05	Inject one dose of a second antibiotic	(1) Yes	(2) No
1.06	Prescribe injectable antibiotic for five days	(1) Yes	(2) No
1.07	Give one dose of an oral antibiotic	(1) Yes	(2) No
1.08	Prescribe oral antibiotics for five days	(1) Yes	(2) No
1.09	Inject one dose of quinine	(1) Yes	(2) No
1.10	Give one dose of oral antimalarial	(1) Yes	(2) No
1.11	Prescribe quinine for five days	(1) Yes	(2) No
1.12	Prescribe oral antimalarials for 3 days	(1) Yes	(2) No
1.13	Administer ORS at the facility	(1) Yes	(2) No
1.14	Advise on giving ORS on the way to hospital	(1) Yes	(2) No
1.15	Prescribe ORS for home treatment	(1) Yes	(2) No
1.16	Give one dose of paracetamol	(1) Yes	(2) No
1.17	Prescribe paracetamol for home treatment	(1) Yes	(2) No
1.18	Give one dose of vitamin A	(1) Yes	(2) No
1.19	Treat to prevent low blood sugar	(1) Yes	(2) No
1.20	Recommends to continue breastfeeding	(1) Yes	(2) No
1.21	Recommends to give food and fluids other than breastmilk	(1) Yes	(2) No
1.22	Advise mother to keep infant warm	(1) Yes	(2) No

As for the previous case scenario, read this case scenario with the health worker and ask him/her to tell you all actions and/or prescriptions he/she would take to provide this child with the most appropriate treatment, assuming that all needed drugs are in stock in the facility and that there is a referral facility available 20 minutes away. Do not prompt.

Case scenario 2

A father brought his 29 month old son to your facility because he has had a fever for more than three days and has an ear discharge since last week. The child does not have other symptoms and lives in a low malaria risk area. The health worker found that the child had a temperature of 38.2 °C and saw an ear discharge. The health worker found the child's neck to be stiff. The child has a normal weight and received all vaccinations for his age. There are no other clinical signs.

Circle "yes" for each of the following actions mentioned by the health worker.

2.01	Recommends urgent referral to an hospital	(1) Yes	(2) No
2.02	Administer Ringer Lactate or Normal saline IV solution	(1) Yes	(2) No
2.03	Administer liquid by naso-gastric tube	(1) Yes	(2) No
2.04	Inject one dose of an injectable antibiotic	(1) Yes	(2) No
2.05	Inject one dose of a second antibiotic	(1) Yes	(2) No
2.06	Prescribe injectable antibiotic for five days	(1) Yes	(2) No
2.07	Give one dose of an oral antibiotic	(1) Yes	(2) No
2.08	Prescribe oral antibiotics for five days	(1) Yes	(2) No
2.09	Inject one dose of quinine	(1) Yes	(2) No
2.10	Give one dose of oral antimalarial	(1) Yes	(2) No
2.11	Prescribe quinine for five days	(1) Yes	(2) No
2.12	Prescribe oral antimalarials for 3 days	(1) Yes	(2) No
2.13	Administer ORS at the facility	(1) Yes	(2) No
2.14	Advise on giving ORS on the way to hospital	(1) Yes	(2) No
2.15	Prescribe ORS for home treatment	(1) Yes	(2) No
2.16	Give one dose of paracetamol	(1) Yes	(2) No
2.17	Prescribe paracetamol for home treatment	(1) Yes	(2) No
2.18	Give one dose of vitamin A	(1) Yes	(2) No
2.19	Treat to prevent low blood sugar	(1) Yes	(2) No
2.20	Recommends to continue breastfeeding	(1) Yes	(2) No
2.21	Recommends to give food and fluids other than breastmilk	(1) Yes	(2) No
2.22	Advise mother to keep infant warm	(1) Yes	(2) No

As for the previous case scenario, read this case scenario with the health worker and ask him/her to tell you all actions and/or prescriptions he/she would take to provide this child with the most appropriate treatment, assuming that all needed drugs are in stock in the facility and that there is a referral facility available 20 minutes away. Do not prompt.

Case scenario 3

A teenager came to the facility with her small sister aged 13 months. She said that her sister was coughing for five days and has had temperature since yesterday night. She remembers that her sister had a generalized rash about one month ago and that neighbours in the village said that it was measles. Her mother continues to breastfeed her sister. There is no malaria in the place where they live. The health worker weighed the child (8.5 kg) and checked temperature (38.8 °C). The health worker counted 48 breaths per minute and noticed chest indrawing. No other clinical signs were found. The vaccination card shows that the child received all vaccinations as well as a dose of vitamin A four months ago.

Circle "yes" for each of the following actions mentioned by the health worker.

3.01	Recommends urgent referral to an hospital	(1) Yes	(2) No
3.02	Administer Ringer Lactate or Normal saline IV solution	(1) Yes	(2) No
3.03	Administer liquid by naso-gastric tube	(1) Yes	(2) No
3.04	Inject one dose of an injectable antibiotic	(1) Yes	(2) No
3.05	Inject one dose of a second antibiotic	(1) Yes	(2) No
3.06	Prescribe injectable antibiotic for five days	(1) Yes	(2) No
3.07	Give one dose of an oral antibiotic	(1) Yes	(2) No
3.08	Prescribe oral antibiotics for five days	(1) Yes	(2) No
3.09	Inject one dose of quinine	(1) Yes	(2) No
3.10	Give one dose of oral antimalarial	(1) Yes	(2) No
3.11	Prescribe quinine for five days	(1) Yes	(2) No
3.12	Prescribe oral antimalarials for 3 days	(1) Yes	(2) No
3.13	Administer ORS at the facility	(1) Yes	(2) No
3.14	Advise on giving ORS on the way to hospital	(1) Yes	(2) No
3.15	Prescribe ORS for home treatment	(1) Yes	(2) No
3.16	Give one dose of paracetamol	(1) Yes	(2) No
3.17	Prescribe paracetamol for home treatment	(1) Yes	(2) No
3.18	Give one dose of vitamin A	(1) Yes	(2) No
3.19	Treat to prevent low blood sugar	(1) Yes	(2) No
3.20	Recommends to continue breastfeeding	(1) Yes	(2) No
3.21	Recommends to give food and fluids other than breastmilk	(1) Yes	(2) No
3.22	Advise mother to keep infant warm	(1) Yes	(2) No

As for the previous case scenario, read this case scenario with the health worker and ask him/her to tell you all actions and/or prescriptions he/she would take to provide this child with the most appropriate treatment, assuming that all needed drugs are in stock in the facility and that there is a referral facility available 20 minutes away. Do not prompt.

Case scenario 4

A 10-day old baby is brought to the facility by her mother because she thinks her daughter is sick and feels hot. After careful examination, the health worker found that the baby has a temperature of 38 °C and a bulging fontanelle. The mother breastfeeds day and night, about 10 times/24 hours and does not report feeding problems. The child's weight is normal.

Circle "yes" for each of the following actions mentioned by the health worker.

4.01	Recommends urgent referral to an hospital	(1) Yes	(2) No
4.02	Administer Ringer Lactate or Normal saline IV solution	(1) Yes	(2) No
4.03	Administer liquid by naso-gastric tube	(1) Yes	(2) No
4.04	Inject one dose of an injectable antibiotic	(1) Yes	(2) No
4.05	Inject one dose of a second antibiotic	(1) Yes	(2) No
4.06	Prescribe injectable antibiotic for five days	(1) Yes	(2) No
4.07	Give one dose of an oral antibiotic	(1) Yes	(2) No
4.08	Prescribe oral antibiotics for five days	(1) Yes	(2) No
4.09	Inject one dose of quinine	(1) Yes	(2) No
4.10	Give one dose of oral antimalarial	(1) Yes	(2) No
4.11	Prescribe quinine for five days	(1) Yes	(2) No
4.12	Prescribe oral antimalarials for 3 days	(1) Yes	(2) No
4.13	Administer ORS at the facility	(1) Yes	(2) No
4.14	Advise on giving ORS on the way to hospital	(1) Yes	(2) No
4.15	Prescribe ORS for home treatment	(1) Yes	(2) No
4.16	Give one dose of paracetamol	(1) Yes	(2) No
4.17	Prescribe paracetamol for home treatment	(1) Yes	(2) No
4.18	Give one dose of vitamin A	(1) Yes	(2) No
4.19	Treat to prevent low blood sugar	(1) Yes	(2) No
4.20	Recommends to continue breastfeeding	(1) Yes	(2) No
4.21	Recommends to give food and fluids other than breastmilk	(1) Yes	(2) No
4.22	Advise mother to keep infant warm	(1) Yes	(2) No

As for the previous case scenario, read this case scenario with the health worker and ask him/her to tell you all actions and/or prescriptions he/she would take to provide this child with the most appropriate treatment, assuming that all needed drugs are in stock in the facility and that there is a referral facility available 20 minutes away. Do not prompt.

Case scenario 5

A mother brought her three-week old little boy to the facility because he does not gain weight and does not want to eat. The child receives breastmilk and since last week some milk and weak tea because he seemed not to like breastmilk. The health worker finds that the child weights 2.3 kg, does not have an abnormal temperature, and has 62 breaths per minute. The health worker repeated the count and found 65 breaths per minute. There are no other clinical signs. The health worker asked the mother whether he could observe her while she breastfeeds her child. During the observation, the health worker noticed that there was no attachment of the child to the breast at all and that the child was not suckling.

Circle "yes" for each of the following actions mentioned by the health worker.

5.01	Recommends urgent referral to an hospital	(1) Yes	(2) No
5.02	Administer Ringer Lactate or Normal saline IV solution	(1) Yes	(2) No
5.03	Administer liquid by naso-gastric tube	(1) Yes	(2) No
5.04	Inject one dose of an injectable antibiotic	(1) Yes	(2) No
5.05	Inject one dose of a second antibiotic	(1) Yes	(2) No
5.06	Prescribe injectable antibiotic for five days	(1) Yes	(2) No
5.07	Give one dose of an oral antibiotic	(1) Yes	(2) No
5.08	Prescribe oral antibiotics for five days	(1) Yes	(2) No
5.09	Inject one dose of quinine	(1) Yes	(2) No
5.10	Give one dose of oral antimalarial	(1) Yes	(2) No
5.11	Prescribe quinine for five days	(1) Yes	(2) No
5.12	Prescribe oral antimalarials for 3 days	(1) Yes	(2) No
5.13	Administer ORS at the facility	(1) Yes	(2) No
5.14	Advise on giving ORS on the way to hospital	(1) Yes	(2) No
5.15	Prescribe ORS for home treatment	(1) Yes	(2) No
5.16	Give one dose of paracetamol	(1) Yes	(2) No
5.17	Prescribe paracetamol for home treatment	(1) Yes	(2) No
5.18	Give one dose of vitamin A	(1) Yes	(2) No
5.19	Treat to prevent low blood sugar	(1) Yes	(2) No
5.20	Recommends to continue breastfeeding	(1) Yes	(2) No
5.21	Recommends to give food and fluids other than breastmilk	(1) Yes	(2) No
5.22	Advise mother to keep infant warm	(1) Yes	(2) No

ANNEX G

EpiInfo and generic files for data entry and analysis

1. EPIINFO

The EpiInfo software was created in 1983 by the Centers for Disease Control and Prevention (CDC), Atlanta, Georgia, USA, then revised and updated with the collaboration of the World Health Organization. EpiInfo software is public domain and can be copied and shared at no cost. The version used in this manual is the version 6.04d, which is widely available and simple to use. This version is a DOS version that runs easily under Windows 3.1, Windows 95 and 98. The data entry and analysis files provided with this manual could also be used with the latest Windows-based EpiInfo 2000. However, EpiInfo 2000 is not widely available yet and is more complicate to use. Copies of the software and the user's manual are provided on the CD-ROM accompanying this manual.[1]

Table 1. EpiInfo modules and tasks

Module	Tasks
EPED	Create questionnaires or write and edit text (such as output from the ANALYSIS module).
ENTER	Make data files from questionnaire files, enter, edit and query data.
ANALYSIS	Batch checking of data, creation and manipulation of variables, production of tables and graphs, calculation of indicators and statistical analysis.
CHECK	Add range checking, skip patterns, legal values, and complex coding rules to the data entry process.
IMPORT	Import data files from other programs into EpiInfo.
EXPORT	Export EpiInfo files to other file formats.
MERGE	Append, combine, update, or restructure data files.
STATCALC	Calculator for 2x2 tables, sample size calculations, and the chi-square test for trend.
CSAMPLE	Analyse data from complex sample surveys and allow the calculation of confidence intervals for cluster sampling surveys.
EPITABLE	Statistical and epidemiological calculator
EPINUT	Nutritional anthropometry
VALIDATE	Comparison of two copies of a data file
EPIGLUE	Create customized menu and help systems

EpiInfo software files provided with this manual:

EpiInfo software:	Epi604_1.exe
	Epi604_2.exe
	Epi604_3.exe
EpiInfo User's Manual	EpiInfo 6 Manual

EpiInfo software should be installed on the hard drive of all computers that will be used for data entry and analysis. The three compressed files of the software need to be copied on a temporary directory first (e.g., "Transit" or "temporary"). Then the files can be unpacked by clicking on their respective names. When all the files have been unpacked, search and click on the file called "INSTALL.EXE" and follow the installation instructions as they appear on the screen.

EpiInfo consists of several modules. The main tasks performed by each module are summarized in Table 1. For this survey, only five modules are important: EPED to adapt and modify generic .QES files, ENTER to enter data collected during the field work into the database, CHECK which allows the .CHK files to run while entering data, ANALYSIS to run frequencies, calculate indicators, and perform any type of data analysis, and CSAMPLE used when limits of precision for survey results are calculated (see chapter 5 of this manual, section 5.4). More information on how to use the different functions of EpiInfo and perform tasks is available in the EpiInfo user's manual.

2. GENERIC FILES FOR DATA ENTRY AND ANALYSIS

Guidance on how to organize and perform data entry and data analysis is provided in chapter 5 of this manual. It is recommended to keep all files related to the survey in a separate directory on the hard drive and to make backup copies on a daily base. To facilitate work it is recommended to set the correct default path and directory in EpiInfo. This is easily done from the EpiInfo "Main Menu", Setup option, and in EPED and ENTER under F2.

Generic data entry files provided with this manual:

For survey instrument 1:	Form1.QES
	Form1.CHK
	Form1.REC
For survey instruments 2 and 3:	Form23.QES
	Form23.CHK
	Form23.REC
For survey instrument 4:	Form4.QES
	Form4.CHK
	Form4.REC

[1] EpiInfo software and user's manual can also be downloaded from www.cdc.gov/epiinfo/ei6.htm

Generic data analysis files provided with this manual:

For survey instrument 1:
Form1cor.PGM (run this program first)
Form1cal.PGM (run this program second)
Form1ind.PGM (run this program last)

For survey instruments 2 and 3:
Form2cor.PGM (run this program first)
Form2cal.PGM (run this program last)

For survey instrument 4:
Form4cor.PGM (run this program first)
Form4cal.PGM (run this program second)
Form4ind.PGM (run this program last)

Variable list for all instruments:
VARLISTVERSION5G.xls

Data entry and analysis files have been developed using EpiInfo version 6.04. The variable list has been developed using MSExcel. The variable list describes all variables, what they measure, their legal values (or codes), the meaning of the codes, and other relevant information. When variables are calculated automatically whether during data entry or using the analysis programme files, formula are described and explained. This variable list may be useful to the data manager when adapting the generic EpiInfo files to the local context and during the analysis.

2.1 Notes on generic data entry files: questionnaire files (.QES)

Data entry screens

The data entry screens follow the format of the survey instruments with a few variations. In some cases new variables have been created. For example, in survey instrument 1, at the end of question 5 (reasons for bringing the child at the facility) a new variable "total" has been created to calculate the number of reasons for bringing the child at the facility. These additional variables are calculated automatically while entering data. They facilitate the calculation of selected indicators during the analysis.

Names of the variables

Variable names are constructed to easily indicate to which instrument they belong and to which question they refer. For example, the variable name "f1a03" refers to form 1, question A03. It is critical not to modify the names of the variables to allow correct calculation of the indicators by the generic programmes for data analysis. Standard variable names allow comparisons across countries and are extremely useful when data entry screens have been translated into local languages. In the .QES file the variable names precede immediately the data entry field.

Possible values of each variable

Pre-defined codes have been assigned to each possible value for each variable. In this survey, the code 1 is assigned to a "yes" answer, the code 2 to a "no" answer, and the code 8 to "does not know" or "not applicable". Some variable may have multiple possibilities. For example the variable "f1hwtype" for the type of health worker observed while managing a sick child could have the following values: 1=doctor, 2=nurse, 3=auxiliary nurse; 4=health assistant, 5=birth attendant, 6=other.

Pop-up screens (provided that the appropriate *.CHK file is used together with the .QES file) display all the possible values and their codes. The pop-up screens can be called pressing the <F9> key when in a data entry field. The codes will appear on the screen, and by moving the cursor to the correct answer and pressing <Enter>, the choice will be inserted into the field. It is ***not*** necessary to use the <F9> key to select the correct answer—it is simply a way to remind the data entry person what are the possible values.

Pre-defined numeric codes are useful:

a. To avoid having to use letters (Y/N) or words, which simplifies data entry and reduces error;

b. To prevent confusion when data entry screens have been translated into local languages. For example, in Kiswahili "n" (ndio) means "yes" and can be confused with "no".

c. When the database is analysed with other statistical packages.

Compulsory variables

A few variables are crucial to the proper processing and analysis of data and should have a unique value. For example, the questionnaire number (variable name "qno"), should be the same for survey instruments 1 (case management observation), survey instrument 2 (exit interview of the caretaker), and questionnaire 3 (reassessment of the child) and should be unique. In this case, in EpiInfo, it is compulsory to enter a value for the variable "qno" and it is not possible to move the cursor if the questionnaire number has not been entered. The questionnaire number must also be unique and EpiInfo will reject any duplicate number (provided that the appropriate *.CHK file is used together with the .QES file).

These "unique" and "compulsory" features of EpiInfo prevent duplicated entries of records and make possible the linkage of the database from survey instrument 1 with the database from survey instruments 2 and 3, if needed.

Conditional variables

In the survey instruments, a few questions are answered only if a certain condition is present. For example in survey instrument 1, the question A10 ("did the health worker check for lethargy or unconsciousness") has to be answered only if the child is not visibly awake. In this case, skip patterns ("JUMPS") have been inserted in the EpiInfo and the cursor will automatically skip the question A10 (variable f1a10) if the child was visibly awake (provided that the appropriate *.CHK file is used together with the .QES file).

2.2 Notes on generic data entry files: check files (.CHK)

Check files (.CHK) help limit data entry mistakes. To be effective, they should be saved in the same directory as the questionnaires files (.QES) and should have the same name as the questionnaire file but with the extension (.CHK). Check files help define legal values for each variables, perform automatic checks for errors and inconsistencies, calculate some variables automatically, perform skip patterns, etc.

2.3 Making country-specific adaptations

If adaptations to a generic file are needed, it is recommended to save the modified file under a different name. Remember that to function correctly the questionnaire (.QES), check (.CHK), and record (.REC) files related to the same instrument should be located in the same directory and have the same name. For example, the set of files for survey instrument 1 (observation of case management) in a fictitious country could be called: OBS-FICT.QES, OBS-FICT.CHK and OBS-FICT.REC.

Examples of adaptations to generic files include:

in .QES file:

- Translation of the questions into another language. Overwriting the original questions and leaving the variable names intact can do this.
- Changes in the wording of questions: This can be done by changing (overwriting) the original text.
- Insertion of new questions. When inserting additional questions, it is important ***not*** to modify the original numbering of the questionnaires. For example, if a question needs to be inserted into the questionnaire 1 between questions A13 and A14 it is recommended to number the new question A13a and give it a variable name accordingly (f1A13a).
- Deletion of questions. The question should simply be deleted without modification of the original numbering of the questionnaires. For example, if the question C31 in questionnaire 1 (related to malaria classification) has to be deleted, the questionnaire will then jump from C30 to C32.

in .CHK files:

- Names of the districts, types of health facilities, and types of health workers
- Selected pre-coded values may need country adaptation such as the types and recommended doses of medicaments.
- If some questions have been deleted in the .QES files, specific codes related to these questions need also to be deleted. Sometimes other fields have codes referring to the field that has been deleted (for example for automatically calculated fields). If so, the reference to the deleted field also needs to be deleted.
- If questions have been added, it is important to check whether the new variables have to be taken into account in other automatically calculated fields. For example, if in questionnaire 2, question 21 (reasons for bringing a child immediately back to a health facility as mentioned by the caretaker leaving the health facility) an extra option that is considered as an acceptable "danger sign" has been inserted, this new option needs to be taken into account in the "formula" where all correct answers are counted.

Adaptations to generic files have to be made with care using EPED. Each time a file has been modified it should be tested with fictitious data before being used. It is extremely important to keep track of all adaptations made and to record them in the "variable list" file. If the "variable list" is well kept up-to-date, it will be easy for anyone who would like to recalculate some indicators or perform more in-depth analysis to understand the database.

For further information please contact:

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