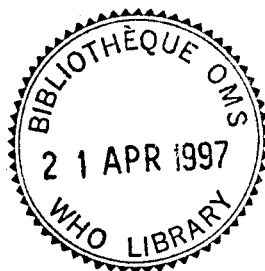


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C.2

## **CDD/ARI Programme Management**

# **INTRODUCTION**



**WORLD HEALTH ORGANIZATION**  
**DIVISION OF DIARRHOEAL AND**  
**ACUTE RESPIRATORY DISEASE CONTROL (CDR)**



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## **DIARRHOEAL DISEASES AND ACUTE RESPIRATORY INFECTIONS AS GLOBAL PROBLEMS**

### **DIARRHOEAL DISEASES**

Diarrhoea is a leading cause of illness and death among children in developing countries, where an estimated 1.3 thousand million episodes and 3.2 million deaths occur each year in those under five years of age. Overall, these children experience an average of 3.3 episodes of diarrhoea per year, but in some areas the average exceeds nine episodes per year. Where episodes are frequent, young children may spend more than 15% of their days with diarrhoea. The main cause of death from acute diarrhoea is dehydration, which results from the loss of fluid and electrolytes in diarrhoeal stools. Other important causes of death are dysentery and malnutrition.

Diarrhoea is an important cause of malnutrition. This is because patients with diarrhoea eat less and their ability to absorb nutrients is reduced; moreover, their nutrient requirements are increased as a result of the infection. Each episode of diarrhoea contributes to malnutrition; where episodes are prolonged, their impact on growth is increased.

In addition, diarrhoeal disease places an economic burden on developing countries. In many countries more than a third of the beds in children's hospitals or wards are occupied by patients suffering from diarrhoea. These patients are usually treated with expensive intravenous (IV) fluid and unnecessary drugs. Diarrhoeal disease can also have significant economic impact on a country's work force, although diarrhoeal disease is less harmful to adults than to children.

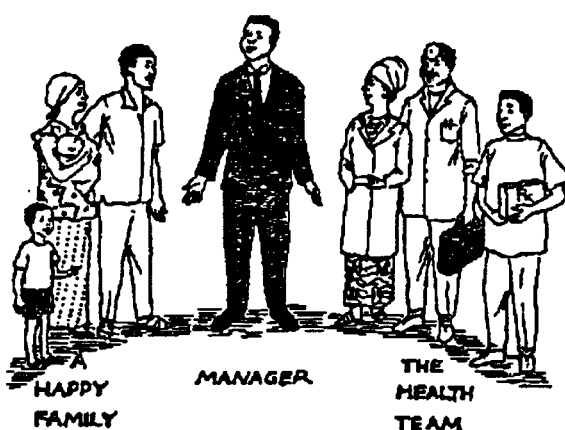
### **ACUTE RESPIRATORY INFECTIONS**

Acute respiratory infections (ARI), like diarrhoeal diseases, are a leading cause of childhood morbidity and mortality in the developing world. The effect on small children is particularly devastating, annually killing about 4 million children under 5 years of age in Asia, Africa and Latin America. Pneumonia is the most serious ARI for children and accounts for nearly all the ARI deaths. Children also may die of bronchiolitis, croup and complications of upper respiratory infections.

Because acute respiratory infections are extremely common, they place an economic burden on developing countries. On the average, a child in an urban area may have from five to eight episodes of ARI annually. In rural areas the number of episodes is somewhat lower. Inappropriate drugs are often used for children with ARI, and helpful drugs are overused, being given to cases that do not need them. Thus, large amounts of money are spent by families and government without benefit.

Recognizing the extent of the problems of diarrhoeal disease and ARI, WHO's Division of Diarrhoeal and Acute Respiratory Disease Control (CDR) has a global programme for the control of diarrhoeal diseases (CDD) and the control of ARI. Both programmes are viewed as critical parts of primary health care and are directed primarily towards children under the age of five years.

The CDD and ARI Programmes are both fully operational and are collaborating with a large number of countries in the implementation of national CDD/ARI Programmes or related research activities. The primary objective of the programmes is to reduce the severity of and mortality from dehydration and pneumonia in children. Both programmes also aim to reduce the inappropriate use of drugs such as antidiarrhoeals and antimicrobials. Other objectives of the ARI Programme are to reduce the incidence of acute lower respiratory infections (ALRI) and to reduce the severity of and complications from acute upper respiratory infections.



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## PURPOSE OF THIS TRAINING COURSE

Controlling diarrhoeal disease and acute respiratory infections will require long-term efforts on the part of a country's health care providers. These efforts must be effectively managed. This course is designed for managers of national CDD/ARI programmes. It is assumed that control of diarrhoeal disease and acute respiratory infections is a priority in participants' countries, that participants' countries have CDD/ARI programmes, and that participants play a leading role in managing their countries' programmes.

### ORGANIZATION OF THE COURSE

#### How this course differs from other courses

You will be given a set of booklets called "modules" that serve as the main resource for this course. The modules will help you to develop specific skills necessary to effectively manage national CDD/ARI programmes, including how to:

- set national programme policy,
- write programme objectives, targets, and subtargets,
- plan and monitor programme activities,
- plan programme involvement in diarrhoea prevention, and
- evaluate progress.

These skills are developed through practice exercises provided throughout the course.

You can work at your own pace within the time limits of the course.

You are encouraged to discuss any problems or questions with a facilitator, and to take completed exercises to him promptly. The facilitator will give you comments on your work and any suggestions for improvement.

#### What is a facilitator?

A facilitator is a person who will help you learn the skills presented in the course materials, usually through individual discussions. He or she is one of several sources of instruction; other sources include the modules, reference materials, and other participants in the course. Skills, knowledge, or experiences in the subject being taught enable a facilitator to better explain ideas, lead discussions, and generally provide any help you need to complete the course successfully. However, because modules are the primary resource for the course, a facilitator is not expected to teach the course through formal lectures or other traditional teaching methods.

### **Course materials to be used**

This course consists of a set of modules. Each module is designed to help prepare you to manage a national CDD/ARI programme, and contains exercises so you can practice what you learn. You will work through one module at a time, in the order shown. The titles of the modules are:

- Introduction
- National Policies
- National Targets
- Planning and Monitoring Activities
- Evaluation

There is a section at the end of this introduction titled "Glossary of Terms." Refer to the glossary whenever you read an unfamiliar term as you work through the modules.

There is also a section at the end of this introduction titled "Reference Materials Available at the Course." This section lists all articles, documents, or other materials provided as references to the course.

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### How you should proceed

This course combines individual work with small group discussions. You will be assigned to a small group with one or two facilitators. You will complete each module by reading it and working through the practice exercises. There may be several types of exercises in a module:

**Short-answer exercise:** In a short-answer exercise, you will be asked to write a brief answer to the exercise. The correct answer will be given in the module (usually on the following page) so you can check your own work.

**Individual work followed by discussion with a facilitator:** In this type of exercise, you will first be asked to write an answer to the exercise. You will then talk with a facilitator, who will review your answers with you and help resolve any questions you may have. The facilitator will also give you a copy of the answer sheet for the exercise.

Before each exercise of this type, you will see a picture like this:



**Individual work followed by group discussion:**

In this type of exercise, you may be asked to write or think about an answer to an exercise. Then, when all the participants are ready, the facilitator will lead a small group discussion to review the possible answers. The group discussion will also allow you to discuss how you will use the information in the course in your own country.

**Role play followed by group discussion:**

In this type of exercise, you will be asked to play the role of a person in a situation that may arise in your job. For example, you may be asked to play the role of a CDD/ARI manager participating in a meeting with the manager of another programme. After the role play sessions, the facilitator will lead a small group discussion about the role play.

Before each exercise in which there will be a group discussion or role play, you will see a picture like this:



Remember, the facilitators are here to help you. Feel free to ask questions. If a facilitator cannot answer a question, he or she will find someone who can.

Tell the facilitator when you have read  
to this point in the module.

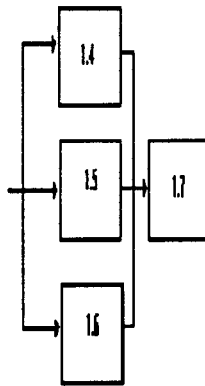
## PROGRAMME MANAGEMENT FLOWCHART

The flowcharts describe the steps involved in managing national CDD/ARI programmes. Look at the flowchart now to familiarize yourself with it. Some general guidelines for reading the flowchart are provided below.

Each of the boxes across the top line of the flowchart (numbered 1, 2, 3, etc.) represents a major step in managing a national programme. These steps are most likely to be performed in order from left to right, as the arrows indicate.

A line dropping from the bottom of each of these boxes leads to another series of boxes (numbered 1.1, 1.2 ..., 2.1, 2.2 ..., etc.). These lower-level boxes represent the steps which must be taken to complete the major steps. For example, steps 1.1-1.7 must be carried out to complete major step 1.

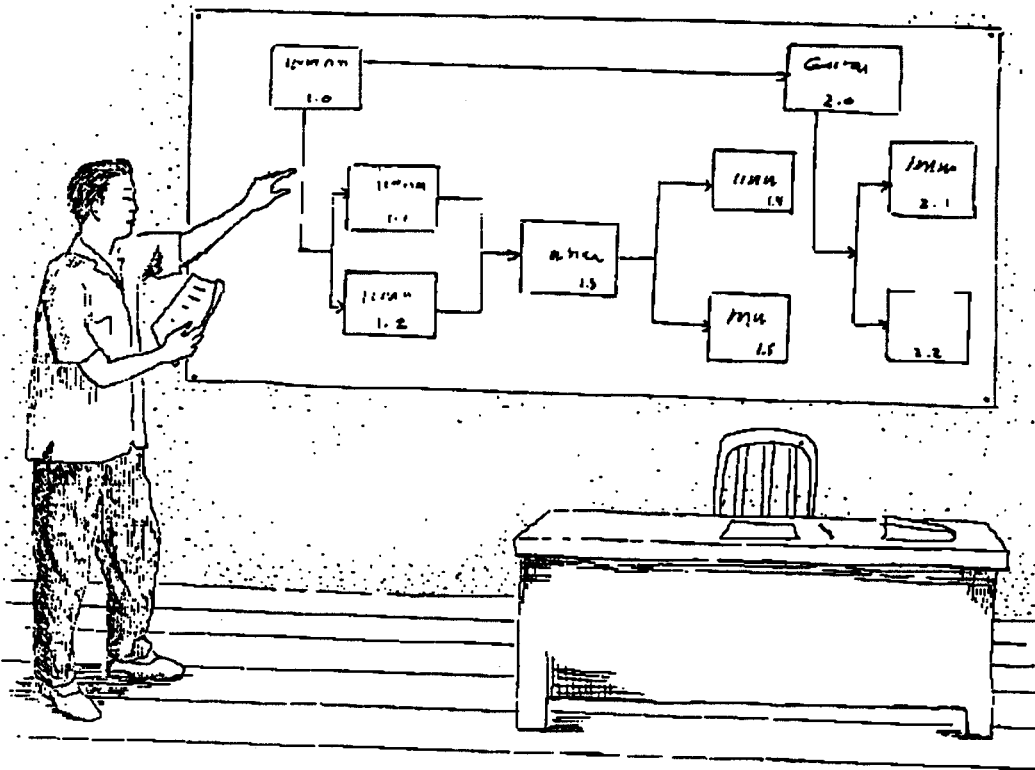
Sometimes two or more boxes in the flowchart are connected by a vertical line, as shown below.



This means that steps 1.4, 1.5, and 1.6 may be done at the same time or in any order, but that they should be completed before step 1.7 is performed.

The flowchart could be used as a model for the management of a country's CDD/ARI programme. A national manager may wish to change one or more of the steps, or add other steps to better suit the country's needs. In any case, the flowchart can provide a useful framework.

Each module in this course describes one or more of the steps in the flowchart. At the beginning of each module, your facilitator will point out which steps are covered.



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### SHORT-ANSWER EXERCISE

After studying the flowchart, answer the following questions. Write your answers in the space provided after each question.

1. According to the flowchart, which should be done first:
  - a) establishing or revision national policy, or
  - b) planning for improvements in case management and setting targets?
2. Which of the following steps should be done first:
  - a) 5.3,
  - b) 5.4, or
  - c) either one?
3. Why does step 7 need to be done before step 8?
4. Why are steps 2.1 - 2.4 listed on parallel lines on the flowchart?

When you have finished this short-answer exercise, compare your answers with the answers provided on the next page.

**Possible answers:**

1. The correct answer is a) establishing or revise national policy.
2. The correct answer is c) either one. Because steps 5.3 and 5.4 are connected by a vertical line, it means that they may be done at the same time or in any order.
3. Step 7.0 needs to be carried out before step 8.0 because programme resources should be developed and support systems in place before personnel are trained. Otherwise people will not be able to use the skills they have learned.
4. Steps 2.1 - 2.4 are listed on parallel lines because they should be done at the same time.

## STRATEGIES AND INTERVENTIONS FOR CONTROL OF DIARRHOEAL DISEASE

There are five major diarrhoeal disease control strategies recommended by WHO, each of which involves one or more interventions.

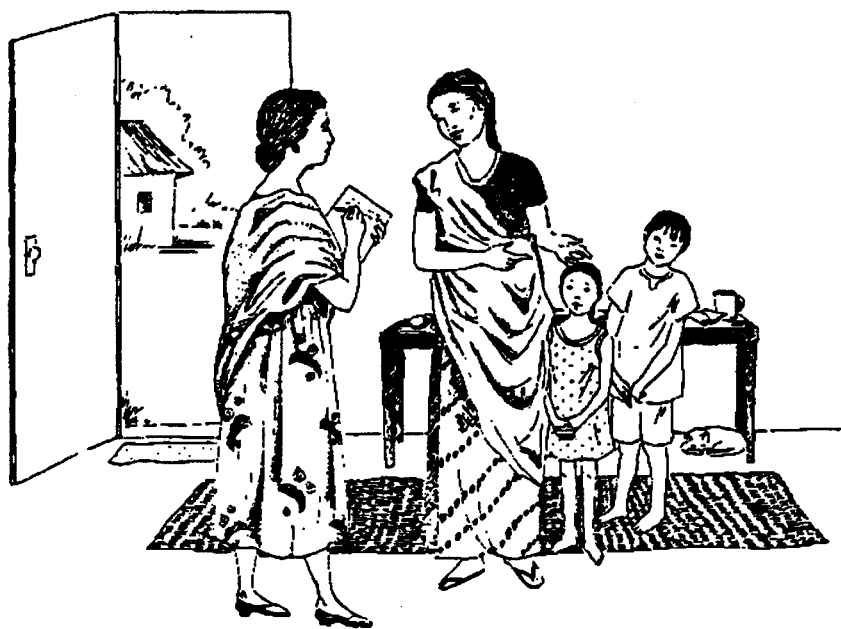
Strategy	Interventions
Effective case management	ORT * Continued feeding during diarrhoea IV therapy for severe dehydration Selective antibiotic therapy
Improved nutrition	Breastfeeding (exclusively for 4-6 months and continuing up to 2 years, or beyond) Improved weaning practices
Use of safe water	Collecting plenty of water from the cleanest source Protecting water from contamination - at the source - in the home
Good personal and domestic hygiene	Handwashing Use of latrines Proper disposal of stools of young children
Immunization	Measles immunization

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\* Oral rehydration therapy or increased total fluid intake, using ORS, food-based fluids, water or other recommended home fluid to treat or prevent dehydration.

ORS, or oral rehydration salts, contains the following ingredients to be dissolved in one litre of drinking water: glucose (a form of sugar) 20 grams; sodium chloride (ordinary salt) 3.5 grams; trisodium citrate, dihydrate 2.9 grams or sodium bicarbonate (baking soda) 2.5 grams; potassium chloride 1.5 grams.

This yields a solution with the following concentrations in millimoles (mmol) per litre: glucose 111 mmol; sodium 90 mmol; potassium 20 mmol; chloride 80 mmol; bicarbonate 30 mmol or equivalent base from citrate.



**SHORT-ANSWER EXERCISE**

Answer the following questions about the CDD strategies and interventions.

1. Which of the CDD strategies are intended to prevent diarrhoea from occurring?

2. What is the main cause of deaths from diarrhoea?

What are two other important causes?

3. Which strategy is intended to prevent deaths of diarrhoea cases?

a) Which interventions are intended to prevent dehydration?

b) Which interventions are intended to treat dehydration?

c) Which interventions are intended to treat dysentery?

4. Which interventions are intended to prevent and treat malnutrition?

**Possible answers:**

1. The CDD strategies of improved nutrition, use of safe water, good personal and domestic hygiene, and immunization are intended to prevent diarrhoea from occurring.
2. The main cause of deaths from diarrhoea is dehydration. Other important causes of death are dysentery and malnutrition.
3. The effective case management strategy is intended to prevent deaths through treatment of diarrhoea cases.
  - a) ORT and continued feeding during diarrhoea are intended to prevent dehydration.
  - b) ORT and IV therapy are intended to treat dehydration.
  - c) Selective antibiotic therapy is intended to treat dysentery. If there is dehydration, ORT or IV therapy may also be needed.
4. Breastfeeding, improved weaning practices and continued feeding during diarrhoea are intended to prevent and treat malnutrition.

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## WHY FOCUS ON EFFECTIVE CASE MANAGEMENT FIRST?

You have seen on the flowchart that WHO's CDD Programme recommends devoting resources first to the effective case management strategy and then to the other strategies. There are several reasons for this recommendation:

- Effective case management is the strategy which can quickly prevent and treat dehydration and thus death, the worst consequence of diarrhoea. It is estimated that proper ORT plus feeding can prevent 55% of diarrhoea deaths (The next section of this introduction explains the 55% estimate in more detail.) In addition, nutritional management of persistent diarrhoea, and selective use of antibiotics for treatment of dysentery and cholera, help prevent additional deaths.
- The contribution of diarrhoea case management to overall primary health care is important. The curative action of ORT provides an opportunity for mothers to be convinced of other important measures for preventing diarrhoea. When mothers see their children's diarrhoea properly treated, they become more receptive to guidance on other steps they can take to maintain and improve their children's health, for example, immunizations, and treatment of respiratory infections and malaria. Mothers also become confident that their children will survive. The entire primary health care effort gains credibility through effective diarrhoea case management.
- The strategies for prevention of diarrhoea, with the exception of measles immunization, take longer to develop and to have an impact, and the impact may not be as dramatic. In the meantime, it is most important that a strategy be in place to prevent deaths from dehydration and dysentery.
- In most countries, programmes other than the CDD programme have major responsibility for breastfeeding, clean water, sanitation, and other aspects of the prevention strategies. In nearly all countries the Expanded Programme on Immunization (EPI) is responsible for measles immunization. While CDD programmes should work with these other programmes as much as possible, the CDD programmes are primarily responsible for treating diarrhoea and for providing education to enable home treatment.

## **THE EXTENT TO WHICH EFFECTIVE CASE MANAGEMENT CAN PREVENT DEATHS**

### **Definitions of types of diarrhoea**

Diarrhoea can be classified as acute or persistent. Diarrhoea can be further classified as loose or watery diarrhoea or dysentery. For the purposes of this explanation, the following definitions will be used:

**Acute** diarrhoea starts suddenly and may continue for several days. It is caused by infection of the bowel.

- **Loose or watery** diarrhoea includes cholera and other dehydrating diarrhoeas. Deaths due to watery diarrhoea are usually the result of dehydration, the most common cause of all diarrhoea deaths.
- **Dysentery** is diarrhoea with blood in the stool, with or without mucus. The most common types are shigella dysentery and amoebic dysentery. Deaths due to dysentery are often caused by complications other than dehydration.

**Persistent** diarrhoea refers to diarrhoeal episodes, presumed to be caused by infectious agents, that begin acutely, but have an unusually long duration. It is defined as an episode that lasts at least 14 days. Episodes of persistent diarrhoea are often associated with deterioration in nutritional status and there is a substantial risk of death. Deaths due to persistent diarrhoea are usually due either to complications of the acute illness or to some underlying risk factor of the patient (e.g. malnutrition).

### **Impact of ORT and feeding on deaths**

Widespread use of ORT and feeding can greatly reduce deaths due to diarrhoea. It is estimated that ORT and feeding alone can prevent about half of all diarrhoeal deaths.

The figure of 55% of deaths prevented by ORT and feeding alone is based on rough estimates of the percentage of diarrhoeal disease deaths which are due to dehydration. ORT and feeding have the greatest potential for preventing deaths in cases of watery diarrhoea, where dehydration is the primary cause of death; 95% of these deaths may be preventable by oral rehydration and feeding alone. The following table shows the potential effectiveness of ORT and feeding in preventing deaths due to the different types of diarrhoea.

**DISTRIBUTION OF 100 CHILDHOOD DEATHS DUE TO UNTREATED  
DIARRHOEA, AND ESTIMATED IMPACT OF ORT PLUS FEEDING  
AND OF FULL CASE MANAGEMENT\***

Type of diarrhoea	Deaths due to diarrhoea	Estimated deaths prevented by ORT plus feeding	Estimated deaths prevented by full case management	Distribution of 100 cases of diarrhoea by type of diarrhoea
Acute: Watery	50	47 (95%)	50 (100%)	80
Acute: Dysentery	15	1	12 (80%)	10
Persistent	35	8 (23%)	28 (80%)	10
Total	100	55 (55%)	90 (90%)	100

\* All figures in this table are estimates

Feeding during and after diarrhoea and appropriate use of antibiotics can prevent additional deaths. Available evidence suggests that the combination of ORT and feeding, IV therapy, dietary management, and appropriate antibiotic use should prevent approximately 90% of all diarrhoeal deaths, if cases are treated promptly. The remaining 10% of deaths are very difficult to prevent. The difficulty is caused by the serious complications which sometimes accompany dysentery, and the current lack of understanding of the causes and thus treatment of persistent diarrhoea and its complications.

The WHO recommendations for standard case management of diarrhoea are contained in the module *Management of the Patient with Diarrhoea* from CDD Supervisory Skills training course.

## STRATEGIES FOR CONTROL OF ACUTE RESPIRATORY INFECTIONS

ARI Programmes have as their primary objective reducing deaths from ARI, primarily pneumonia, in children below age 5. The diagram on page 17 shows a "chain of events" in the process of reducing pneumonia mortality. The strategy of immunization, carried out by the EPI programme, can prevent some pneumonia cases from occurring.

When pneumonia occurs, ARI programmes can have an impact on pneumonia mortality at several different points in the process through the strategy of standard ARI case management.

Children with ARI can be brought by their mothers to a first-level health facility\* or other health care provider. The health care provider assesses the child and, if the child has pneumonia, provides standard case management of pneumonia. Children including young infants (less than 2 months old) who have severe pneumonia or very severe disease are referred to a hospital where they receive standard case management of their disease. The components of the standard ARI case management strategy (listed on page 17) which reduce deaths from pneumonia are standard case management of:

- pneumonia (in health facilities);
- severe pneumonia or very severe disease (at hospitals);
- young infants with severe pneumonia or very severe disease (in hospitals).

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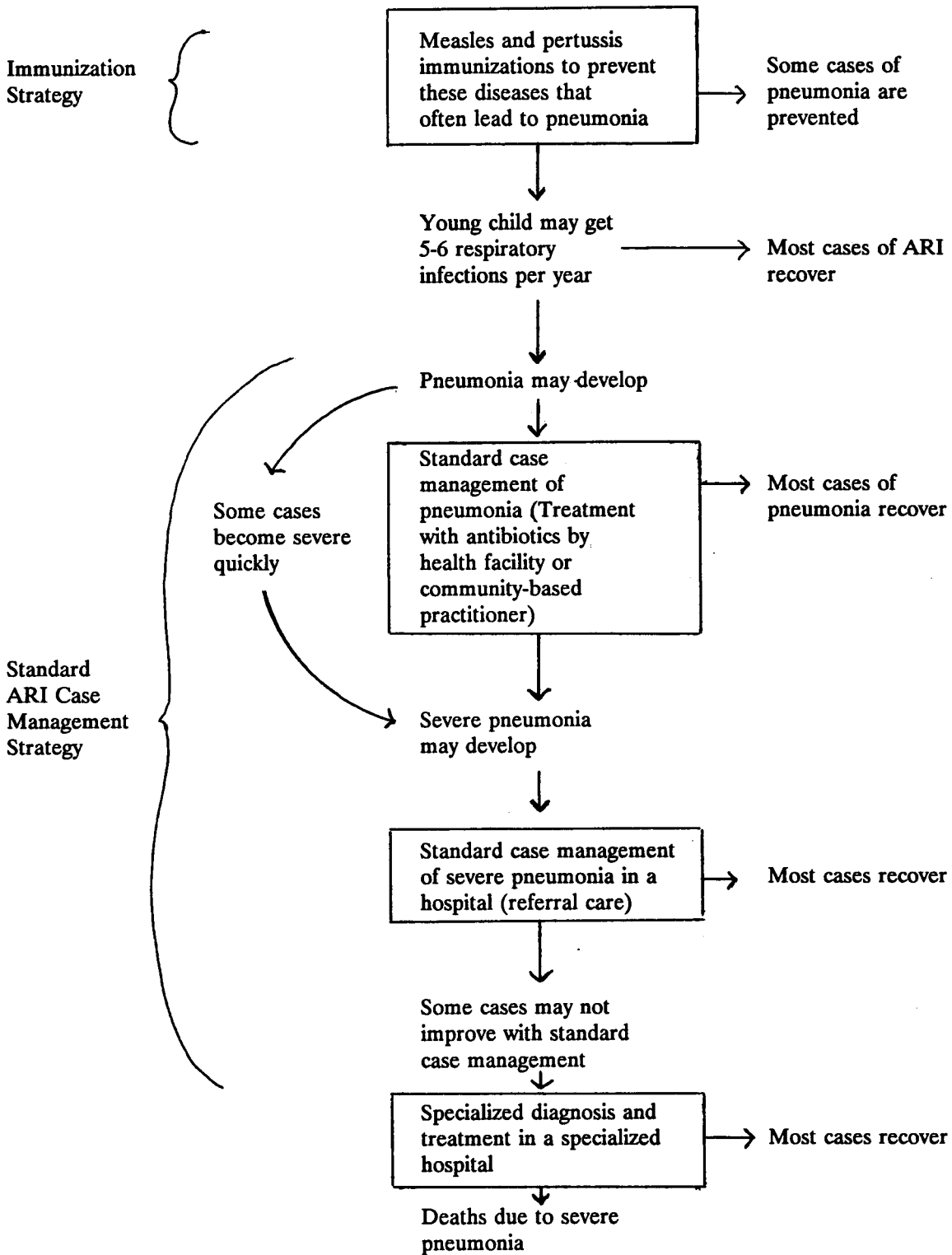
\* First-level health facilities include facilities such as health centres, clinics, rural health posts, dispensaries and outpatient departments of hospitals.

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**STANDARD ARI CASE MANAGEMENT STRATEGY**

Components	Interventions
Standard case management of:	
Pneumonia (at first-level health facilities)	Antibiotic treatment with home care for pneumonia
	Referral of child with signs of very severe disease or severe pneumonia
	Referral of young infants with signs of very severe disease or severe pneumonia
Severe pneumonia or very severe disease at hospitals (referral care)	Parenteral antibiotics
	Oxygen
	Supportive hospital care
	Referral or complicated cases for specialized care
Severe pneumonia or very severe disease in young infants at hospitals (referral care)	Parenteral antibiotics
	Oxygen
	Good thermal environment
	Supportive hospital care
	Referral or complicated cases for specialized care
Cough or cold (no pneumonia)	Home care
Wheezing	Bronchodilators
	Oxygen
	Antibiotic treatment when pneumonia is possible
Ear infections	Local ear care for draining ear
	Antibiotic treatment for acute infection
Streptococcal sore throat	Antibiotic treatment

# POSSIBLE CHAIN OF EVENTS IN REDUCING PNEUMONIA MORTALITY



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In some countries, children who do not improve with standard case management may be referred to a hospital that can give specialized diagnosis and treatment.

In addition to management of pneumonia and severe pneumonia, the standard ARI case management strategy has components to address other ARI-related conditions:

- coughs and colds (no pneumonia)
- wheezing\*
- ear infection\*
- streptococcal sore throat\*

The target age group for the standard ARI case management strategy is children less than 5 years of age. These children are the focus because almost all childhood deaths from pneumonia are in this age group. WHO developed the case management recommendations specifically for this age group. Guidelines for assessment and treatment of older children would be different because, for example, their normal respiratory rate is considerably slower. Also, in older children, complications of sore throat are more important and pneumonia is relatively less important as a contributor to mortality and significant disability.

Special guidelines have been developed for standard case management of children less than 2 months of age. This age group is of particular concern for the programme because a significant proportion of childhood pneumonia deaths, sometimes as high as 20-30%, occur in children less than 2 months of age. Special assessment guidelines are needed because these young infants may not show specific signs of pneumonia but may show only generalized signs of illness. Prompt and effective hospital treatment is needed because bacterial infection in young infants can cause death very rapidly. Home antibiotic treatment is much less effective.

The chart on page 19 lists the components of the standard ARI case management strategy and the interventions in each. **The term "standard" indicates that there is an established set of procedures and specified drugs that all trained health staff should use to manage all children with the condition.**

You will learn the WHO recommendations for standard case management of ARI in the module, *Management of the Young Child with an Acute Respiratory Infection*. It was developed by WHO to teach supervisors of health services about standard ARI case management, and is a helpful basic explanation of the procedures.

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\* ARI programmes may decide which staff at which levels will treat these conditions. These decisions are addressed in the module *National Policies*.

## **OTHER STRATEGIES**

Standard case management and immunization are the only strategies currently recommended for control of ARI. The immunization intervention is immunization with measles and pertussis vaccine. Immunization is the only preventive strategy that is currently recommended. It can prevent some cases of pneumonia. **Home care of coughs or colds does not prevent pneumonia from occurring.**

Some possible additional strategies to prevent ARI or to reduce its severity require research. These include prevention of low birth weight, improved nutrition, reduction of indoor air pollution (e.g., from cooking and parental smoking), and protecting children from overexposure to cold and chilling. The relative effectiveness or feasibility of these interventions has not been determined.

## **HOW IS STANDARD ARI CASE MANAGEMENT CARRIED OUT AT DIFFERENT LEVELS OF THE HEALTH SYSTEM?**

### **At first-level health facilities**

Children with ARI are assessed. If they have only a cough or cold, their mothers are given advice on caring for them at home. If they have pneumonia, they are given standard antibiotics and their mothers are advised on how to care for them at home and when to return to the health worker. If they have severe pneumonia or other signs of severe disease, they are referred to a hospital for referral care. All young infants with severe pneumonia or very severe disease are also referred to a hospital.

In some countries health staff are trained and given supplies so they can manage wheezing with bronchodilators. If they cannot, wheezing children are referred.

Health staff give local care for ear infections (drying out the ear). In some countries health staff will be trained and given supplies to treat acute ear infections and streptococcal sore throat with antibiotics.

### **At hospitals**

Hospital staff give standard case management to children and young infants with severe pneumonia. Children and young infants with very severe disease, such as sepsis, severe croup, meningitis or mastoiditis, are treated also. This standard case management requires clinical skills, equipment and drugs (e.g., oxygen, parenteral antibiotics) available at the hospital but usually not at a health facility. It is also called referral care. Wheezing children are treated with bronchodilators and oxygen as needed. Ear infections are given local care and antibiotics.

Children who do not respond to standard case management and/or require specialized care are referred to a hospital with specialized capabilities.

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**In the community**

In some countries community-based practitioners (e.g., community health workers, pharmacists and drug sellers, midwives) assess children with ARI and provide standard case management of pneumonia (i.e., assessment, antibiotic treatment for pneumonia, advice on home care and referral if appropriate). In some other countries, community-based practitioners assess but do not provide treatment for pneumonia, as they do not have drugs. They refer these cases to first-level facilities.

**SHORT-ANSWER EXERCISE**

Write answers to the following questions about the ARI strategies and interventions.

1. Which is the only ARI strategy that can prevent some cases of pneumonia?
2. What is the main cause of death from ARI?
3. What components of the standard ARI case management strategy can reduce deaths from pneumonia?
4. Most children who come to a health worker because of ARI have only a cough or cold and not pneumonia. What intervention helps these children?

**Possible answers:**

1. Immunization is the only strategy that can prevent some cases of pneumonia from occurring.
2. Pneumonia is the main cause of death from ARI.
3. Three components of the standard ARI case management strategy can reduce deaths from pneumonia:
  - standard case management of pneumonia
  - standard case management of severe pneumonia or very severe disease
  - standard case management of young infants with severe pneumonia or very severe disease
4. Home care helps children with only a cough or cold.

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## WHAT ARE THE ADVANTAGES OF STANDARD PNEUMONIA CASE MANAGEMENT?

Within the overall standard ARI case management strategy, WHO's ARI Programme recommends devoting resources first to standard case management of pneumonia. There are several reasons for this recommendation:

- Standard case management of pneumonia can have the greatest impact in preventing death. It is estimated that standard pneumonia case management can prevent 40% of ALRI deaths. (The next section of this module explains this estimate in detail.)
- Antibiotics alone have been shown to treat many cases of pneumonia effectively. Therefore, an ARI programme can significantly reduce mortality by making antibiotic therapy available to a large proportion of the population and seeing that the therapy is used properly. This should be possible, as many health facilities already give antibiotics for many conditions. In addition, community-based practitioners, in areas where it is necessary to improve access to standard pneumonia case management, can be trained to provide standard antibiotic therapy.
- By treating nearly all cases as soon as possible, fewer cases will have to be referred. This will save time and expense for families and will cut down on the case load at hospitals.
- In emphasizing the proper use of antibiotics, the programme can also emphasize **not** giving antibiotics to ARI cases when they are not needed. This will save badly needed resources and lessen the possibility of drug resistance.
- The contribution of case management of pneumonia to overall primary health care is important. The curative action of antibiotic therapy provides an opportunity for mothers to be convinced of other important measures for improving child health. They become more receptive to guidance on other steps they can take to maintain and improve their children's health, for example, immunizations, and treatment of diarrhoea and malaria. Mothers also gain confidence that their children will survive. The entire primary health care effort gains credibility through effective case management of pneumonia.

## **ADDITIONAL REASONS TO EMPHASIZE STANDARD ARI CASE MANAGEMENT**

The effectiveness and feasibility of strategies for prevention of pneumonia, with the exception of measles and pertussis immunization, have not been determined. They may take longer to develop and to have an impact, the impact may not be as dramatic. In the meantime, it is most important that a strategy be in place to prevent deaths from pneumonia.

In most countries, programmes in addition to the ARI programme are responsible for improved nutrition. In nearly all countries, EPI is responsible for immunization. ARI programmes may concentrate on case management and thus provide an additional priority element of primary health care.

## **THE EXTENT TO WHICH STANDARD ARI CASE MANAGEMENT CAN PREVENT DEATHS**

### **Types of ARI**

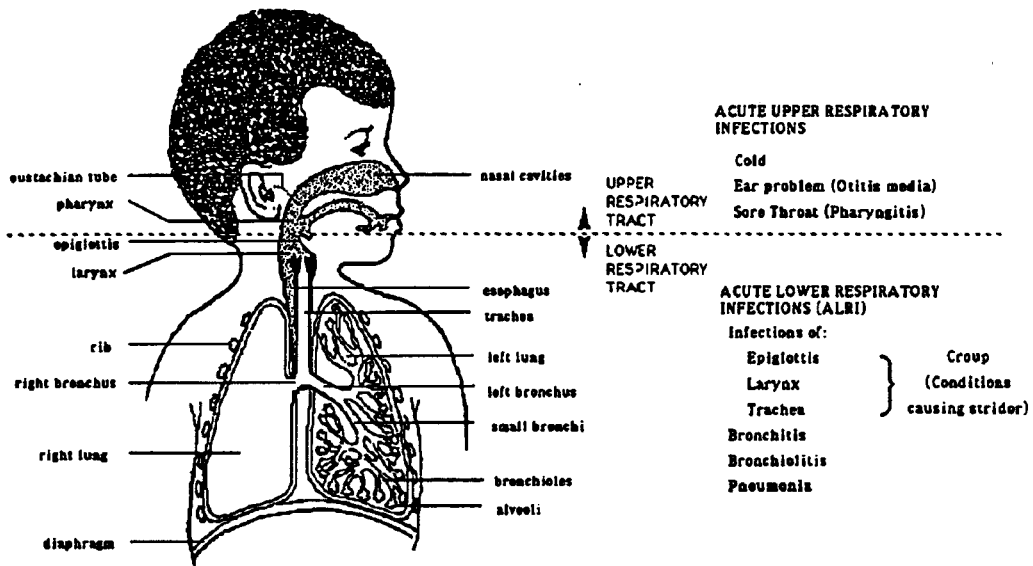
The figure on the next page shows the upper and lower respiratory tract and its acute infections.\* Almost all ARI mortality in children under 5 years is caused by acute infections of the lower respiratory tract; most of these deaths are from pneumonia. Most cases of severe pneumonia in developing countries are caused by bacteria.

Acute infections of the upper respiratory tract are extremely common and therefore cause much suffering. Most are colds caused by viruses. Ear infection is important because it can be treated and is the leading cause of preventable deafness in children. Deaths due to acute upper respiratory infections are rare and are due to complications (e.g., meningitis).

---

\* This division of the upper and lower respiratory tract is used throughout this course and in WHO treatment guidelines. Some texts may distinguish "upper" from "lower" differently.

## Anatomy of the Respiratory Tract and a list of Acute Respiratory Infections



### **Impact of standard case management on deaths**

Since almost all ARI mortality in young children is due to acute lower respiratory infections and most of these deaths are due to pneumonia, the standard ARI case management strategy emphasizes case detection and treatment of pneumonia.

Clinical experience and studies in developing countries indicate that early treatment with antibiotics can reduce mortality from pneumonia. It is estimated that standard case management of pneumonia (the critical element of which is treatment with standard antibiotics) can prevent 40% of ALRI deaths and 50% of deaths due to bacterial pneumonia.

These figures are based on rough estimates of the percentage of ALRI deaths which are due to bacterial pneumonia, the effectiveness of antibiotic therapy in preventing these deaths, and the impact of other treatment measures. These estimates would vary in different countries depending on the proportion of pneumonia deaths which are bacterial, the level of malnutrition in the population and other factors.

Even with supportive hospital care, oxygen and parenteral antibiotics, all children with severe pneumonia cannot be saved. Some may suffer extensive lung damage and respiratory failure. Other children with pneumonia develop an overwhelming bacterial infection in the blood stream (sepsis). This is especially common in young infants, severely malnourished children and children with another medical problem who then develop pneumonia.

The following table shows the estimated potential effectiveness of standard ARI case management in preventing deaths due to different types of ALRI.

**DISTRIBUTION OF 100 DEATHS DUE TO UNTREATED ACUTE LOWER  
RESPIRATORY INFECTION AND ESTIMATED IMPACT OF  
STANDARD CASE MANAGEMENT**

	<b>Type of Acute Lower Respiratory Infection</b>		
	Severe/very severe bacterial pneumonia*	Viral pneumonia and other ALRI**	Total ALRI Deaths
<b>Deaths Due to Untreated ALRI</b>	80	20	100
Estimated Deaths Prevented by Standard Case Management of Pneumonia at First-level Health Facilities	40 (50%)	0	40
Estimated Deaths Prevented by Referral Care at Hospitals	15	5	20
Estimated Deaths Prevented by Full Hospital Care at a Specialized Hospital	12	8	20
<b>Total Deaths Prevented by Full Case Management</b>	67	13	80

The critical element of standard case management of pneumonia at first-level health facilities is treatment with standard antibiotics. Referral care at hospitals is standard case management of severe pneumonia or very severe disease. It includes parenteral chloramphenicol, other antibiotics, oxygen, supportive hospital care and good thermal environment for young infants. Full hospital care includes the addition of more expert airway management, ventilation and management of complications at a hospital with specialized capabilities.

Therefore, 40% of ALRI deaths can be prevented with standard case management of pneumonia at first-level facilities alone; another 20% can be prevented by referral care at hospitals. Thus, programmes that are able to provide the population with standard case management of pneumonia plus referral care for severe pneumonia or very severe disease when needed could prevent 60% of ALRI deaths.

\* Includes bacterial pneumonia arising from bronchiolitis, measles and pertussis.

\*\* Includes bronchiolitis and acute obstructive laryngitis.



## GLOSSARY OF TERMS

- Absorption:** process of transfer of nutrients from the intestine to the blood
- Access:** living within a reasonable distance (such as 5 kilometres). Having access to a health facility is living within a reasonable distance of a health facility. Having access to a particular service, such as standard case management of pneumonia, is living within a reasonable distance of a trained, supplied provider of that service.
- Activities:** a group of tasks which are done by a programme to achieve subtargets or to make other impacts on the health care system or the public's health-related knowledge, attitudes, or practices. Activities for a CDD/ARI programme are often in the areas of training, procurement and distribution of supplies, health care delivery, communications, supervision and evaluation.
- Acute:** new condition. Acute cough: lasting less than 30 days; acute ear infection: lasting less than 14 days.
- Acute respiratory infection:** an acute infection of the ear, nose, throat, larynx, trachea, bronchi, bronchioles or lung.
- Acute lower respiratory infection (ALRI):** acute infection of the epiglottis, larynx, trachea, bronchi, bronchioles or lung.
- Acute upper respiratory infection:** acute infection of the nose, pharynx (throat), middle ear.
- Antibiotic:** drug that kills bacteria or stops their growth. It does not kill viruses. (Also referred to as antimicrobial).
- Antimalarial:** drug that kills malaria parasites.
- Apnoea:** abnormally long period of not breathing.
- Asthma:** a condition marked by repeated attacks of wheezing in which the airways narrow due to bronchospasm (tight muscles around the airways). (Also called wheezy bronchitis, although this term should be avoided).
- Bacteria:** microorganisms or germs that are killed by antibiotics.

Barriers:	conditions that prevent people from doing something. For example, lack of time, money, equipment, authority, or supplies might be barriers to doing a job correctly.
Breathing rate:	number of breaths per minute. Same as respiratory rate.
Breastfeeding on demand:	allowing a baby to breastfeed whenever he wants, beginning immediately after delivery.
Bronchi:	the large air passages of the lungs.
Bronchioles:	the smallest air passages of the lungs.
Bronchiolitis:	a viral infection of the bronchioles of the lungs which causes a swelling and narrowing resulting in wheezing. It can kill infants because of hypoxia or because pneumonia develops.
Bronchitis:	an infection of the bronchi, generally caused by viruses in young children.
Bronchodilator:	drug which helps to open the air passages when the wheezing is caused by tight muscles around the airways.
Bronchospasm:	a tightening (spasm) of the muscles around the airway, which narrows the airway and causes wheezing.
Chest indrawing:	when the lower part of the chest (lower ribs and lower sternum) goes in when a child breathes in. It is a sign of severe pneumonia, a wheezing condition, or croup.
Channel:	(of communication) the way by which a message is transmitted. For example, word of mouth, pamphlet, radio, telephone.
Childhood:	less than 5 years of age; that is, 0-4 years old.
Chronic cough:	cough lasting more than 30 days.
Chronic ear infection:	ear draining more than 14 days (also called chronic otitis media).
Cold:	an acute viral infection of the upper respiratory tract (also called common cold).
Colostrum:	a breastfeeding mother's first milk, secreted in small amounts. Colostrum gives the baby immunity from many diseases.

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Communication:	the process of sharing or exchanging information between two or more persons by interpersonal (face-to-face) interaction or media, such as newspapers, radio or television broadcasts, brochures or posters, using words or pictures.
Communication research:	an investigation of the factors and situations that will affect communication activities including the characteristics of the audiences, the communication networks available, resources available, the feasibility and desirability of the behaviours being promoted, and the effectiveness of given strategies and materials. It is the basis for planning and implementing effective communication activities.
Community-based practitioner:	a provider of services to improve health who lives in the community of people served, such as a community health worker, traditional birth attendant, or local pharmacist.
Complex carbohydrate:	a carbohydrate composed of many molecules of sugar (for example, starch).
Component:	a part of a strategy which addresses a specific part of a health problem. A component is made up of interventions. In an ARI programme, a component of the standard ARI case management strategy is standard case management of pneumonia. Another is standard case management of severe pneumonia or very severe disease in young infants at hospitals.
Comprehensive programme review:	a thorough examination of all levels of a CDD/ARI (i.e. national, regional, district, and community levels). A is conducted by a group including both national and outside staff, and should be conducted every 2 to 3 years.
Convulsions:	sudden loss of consciousness with uncontrolled, jerky movement. They can be caused by high fever, meningitis, hypoxia, cerebral malaria, epilepsy, and other conditions. (Also called fits).
Croup:	narrowing of the larynx, trachea or epiglottis which interferes with air entering the lungs. It can be caused by a viral or bacterial infection.
Cyanosis:	blue, purple, or grey skin colour due to hypoxia.
Dehydration:	loss of a large amount of water and salt from the body.

Dehydration status:	the degree to which a person is dehydrated. A patient may show signs of no hydration, some dehydration, or severe dehydration. Treatment should be appropriate for a patient's dehydration status.
Denominator:	the bottom number in a fraction. For example, the denominator in the fraction 51/100 is 100. It signifies the whole, of which the numerator is a part. For example, if 51/100 is the proportion of the population with access to a health service, this means that out of 100 people, 51 have access.
Diarrhoea:	a disease characterized by frequent passage of abnormally loose or watery stools. Since "normal" stools vary among children, a mother is probably the best judge of what is "abnormal" for her child.
Diarrhoea Training Unit:	a hospital unit which routinely treats many cases of acute childhood diarrhoea and conducts thorough training in diarrhoea treatment.
Diarrhoea-associated death:	a death is considered diarrhoea-associated if the child had diarrhoea in the week before death, and there was no obvious cause of death unrelated to diarrhoea (e.g., an accident).
Diarrhoeal mortality rate:	the number of children under five who die from diarrhoea per 1000 children in a given time period, usually one year.
Diphtheria:	an acute, contagious bacterial infection marked by a grey, adherent membrane on the throat. It may cause death from laryngeal obstruction or cardiovascular toxic effects. It is a vaccine-preventable disease.
Dysentery:	diarrhoea with blood in the stool, with or without mucus.
Effective diarrhoea case management in the health facility:	<ul style="list-style-type: none"><li>* correct assessment of the patient</li><li>* correct rehydration therapy (oral or IV)</li><li>* continued breastfeeding of small children</li><li>* feeding of children who stay more than 4-6 hours</li><li>* correct use of antibiotics, if indicated</li><li>* correct advice on effective case management at home:<ul style="list-style-type: none"><li>- feeding</li><li>- continued ORT</li><li>- when to seek further treatment.</li></ul></li></ul>

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Effective diarrhoea case management in the home:	<ul style="list-style-type: none"><li>* timely ORT using correctly prepared fluid in increased volumes</li><li>* continued feeding in adequate quantity</li><li>* correct knowledge of when to seek treatment outside the home.</li></ul>
Engorgement:	the condition of the breasts when they are too full of milk.
Epiglottis:	the cartilaginous structure shaped like a lid overhanging the entrance to the larynx and serving to prevent food from entering the larynx and trachea while swallowing.
Epiglottitis:	bacterial infection of the epiglottis, causing severe croup.
Epinephrine:	a bronchodilator which is injected subcutaneously to relax bronchospasm (also called adrenaline).
Eustachian tube:	tube that connects the throat to the ear.
Evaluation:	the process of assessing a programme's status, achievements, and impact in order to detect and solve problems and plan future programme emphases.
Exclusive breastfeeding:	giving a baby breastmilk only and no other fluids such as water, juice or formula. Infants should be exclusively breastfed during the first 4 to 6 months of life.
Fast breathing:	a child age 2 months up to 12 months who is taking 50 breaths per minute or more has fast breathing. A child age 12 months up to 5 years who is taking 40 breaths per minute or more has fast breathing. A young infant less than 2 months who is breathing 60 breaths per minute or more has fast breathing.
Feedback:	information provided by others on the way a person is doing something. For example, a manager is giving feedback when he informs his staff of work they are doing well or makes suggestions for improvements. In communication, feedback is information provided by the receiver of a message on the way he reacts to the message.
First-level health facility:	a facility offering health services such as a health centre, clinic, rural health post, dispensary, and outpatient department of a hospital, which is considered the first facility within the health system where the population seeks care.

- Fits:** see convulsions.
- Focus group interview:** an interview conducted with a group of 6-10 people, specially selected and brought together to represent a target population which a programme is interested in learning about. A trained interviewer uses a prepared list of probing questions to encourage participants to speak freely among themselves.
- Food-based fluids:** fluids made by combining water or other fluid and a food. Examples of food-based fluids are cereal gruels, soups, and diluted yogurt-like drinks.
- Foreign body:** an object that is not normal to the place where it is found. For example, a bean that a child inhaled into his airway.
- Goal:** something which a programme plans to do or achieve. It is a general term which includes objectives, targets, subtargets and the results of activities.
- Government subsidy:** a grant of supplies or funds by the government to assist in activities it considers advantageous to the public, e.g. provision of soap or payments to producers of soap by government in order to maintain lower prices for the consumer.
- Gruel:** a thin porridge.
- Grunting:** short sounds that a child makes at the beginning of expiration. A sign of severe pneumonia.
- Home care of ARI:** care given to a child at home by the mother or other caretaker. For the young infant, the mother should keep the young infant warm, breastfeed frequently, clear nose if it interferes with feeding, and return quickly if breathing becomes difficult, breathing becomes fast, feeding becomes a problem, or the young infant becomes sicker.
- For the child age 2 months up to 5 years, the mother should feed the child, increase fluids, soothe the throat and relieve the cough with a safe remedy, and return quickly if breathing becomes difficult, breathing becomes fast, the child is not able to drink, or the child becomes sicker.
- Home therapy of diarrhoea:** ORT and continued feeding at home.

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Home therapy fluid:	fluid prepared in the home for preventing dehydration. The recommended home therapy fluid is the fluid(s) felt to be most appropriate in each country.
Hypernatraemia:	excessive amount of sodium in the blood. Too much salt or high glucose concentration in a fluid used for treatment of diarrhoea can cause hypernatraemia.
Household survey:	a method of data collection in which surveyors visit homes to ask a series of standard questions to obtain information.
Hypothermia:	low body temperature (less than 35.5°C).
Hypoxia:	not having enough oxygen in the body.
Incentive:	something that causes a person or group of persons to want to make a decision or take action.
Indicator:	a number, proportion, percentage, or rate that suggests or indicates the extent of some programme achievement or the level of some condition in the population. The indicators used to evaluate a programme will vary according to the stage or emphasis of the programme.
Infant:	a child less than 1 year old (0-11 months). A young infant is less than 2 months old (0-1 month).
Infant mortality rate:	the number of infants who die per 1000 live births per year.
Intercept interview:	a monitoring method in which an interviewer goes to a central location, such as a market, and "intercepts" and interviews individuals who pass by.
Intervention:	<p>a set of activities carried out as part of a strategy to prevent or treat a disease. In a CDD/ARI programme, the standard case management strategy is made up of several components, each of which is made up of one or more interventions. Examples for a CDD programme include breastfeeding and ORT. In an ARI programme, standard case management of pneumonia is made up of the following interventions:</p> <ul style="list-style-type: none"><li>- antibiotic treatment with home care for pneumonia</li><li>- referral of child with signs of severe pneumonia or very severe disease</li><li>- referral of young infants with signs of severe pneumonia or very severe disease.</li></ul>

IV therapy:	treatment involving injection of fluids into a vein. Ringer's lactate is an example of an IV (intravenous) fluid used for rehydration.
Jaundice:	a sign of disease in which parts of the body, such as the eyes, turn yellow.
Kwashiorkor:	a disease of malnutrition that results from a lack of protein. The child is anaemic, may have an enlarged liver, a generalized swelling of the body, and thin, sparse hair.
Laryngitis:	infection of the larynx which causes hoarseness or croup.
Larynx:	a part of the airway which is between the epiglottis and trachea. It is also called the voice box.
Marasmus:	the most common form of severe malnutrition, with wasting away of the fat and muscle until the child has a "skin and bones" appearance.
Mass media:	systems or instruments of communication, such as radio, television, and newspapers, intended to reach anonymous, heterogeneous, and geographically dispersed audiences with uniform messages.
Mastoiditis:	infection of the mastoid bone (behind the ear).
Measles:	an acute viral infection with fever, characteristic rash, and conjunctivitis. It can cause stomatitis, which interferes with feeding. Pneumonia and diarrhoea are common complications. Measles is a vaccine-preventable disease.
Metered-dose inhaler:	a small hand-held canister of pressurized salbutamol with a spray valve.
Monitoring:	regularly checking to see that programme activities are being done as planned.
Monitoring method:	means of collecting information to determine how work is being done. Examples include talking with staff, observation of work, and record review.
Morbidity:	illness.
Mortality:	death.
Nasal flaring:	widening of the nose as the child breathes in. A sign of severe pneumonia.

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Nebulizer:	a device for pressurizing a liquid into vapour or spray.
Neonate:	an infant less than 4 weeks old.
Numerator:	the top number in a fraction. For example, the numerator in the fraction 51/100 is 51. It signifies the number of the parts of the denominator that meet a particular criteria. For example, if 51/100 is the proportion of the population with access to a health service, this means that out of 100 people, 51 have access.
Objective:	an unquantified goal which a programme plans to achieve related to health status. For example, an objective of an ARI programme is "Reduce pneumonia mortality in children under age 5".
ORS:	oral rehydration salts, a mixture of glucose and salts conforming to the WHO recommended formula (in grams per litre): sodium chloride 3.5, trisodium citrate, dihydrate 2.9 or sodium bicarbonate 2.5, potassium chloride 1.5, and glucose 20.0.
ORS access rate:	the proportion of the population with a regular supply of ORS available in their community.
ORS solution:	a solution of oral rehydration salts in water which is recommended for treatment of dehydration from diarrhoea and can be used to prevent dehydration.
ORS use rate:	the proportion of diarrhoea cases under age 5 treated with ORS.
ORT:	oral rehydration therapy or increased fluid intake, using ORS solution, food-based fluids, water or other recommended fluids to treat or prevent dehydration.
ORT corner:	a special area in a health facility that is arranged for providing oral rehydration therapy. A conveniently located and adequately equipped ORT corner will help staff to manage dehydrated cases more easily.
ORT use rate (increased fluid intake):	the proportion of diarrhoea cases under age 5 treated with increased amounts of fluid (e.g., ORS, water, food-based drinks or other recommended fluid).

<b>ORT use rate (increased fluid intake) PLUS continued feeding rate:</b>	the proportion of diarrhoea cases under age 5 treated with increased amounts of fluid (e.g., ORS, water, food-based drinks or other recommended fluid) and received continued feeding.
<b>Osmolality:</b>	a measure of osmotic pressure, which is the pressure exerted by a substance dissolved in water when it is separated from another fluid by a membrane such as the intestinal wall. Osmolality is expressed in milliosmols per kilogram of water, abbreviated mOsm/kg H <sub>2</sub> O.
<b>Osmotic diarrhoea:</b>	diarrhoea which occurs when water from blood plasma crosses the intestinal wall into the gut lumen because of a higher osmolality in the lumen. Too much sugar in an oral rehydration fluid can cause osmotic diarrhoea.
<b>Overall childhood mortality rate:</b>	the number of children under age 5 who die per 1000 children per year.
<b>Otitis media:</b>	infection of the middle ear, the space behind the eardrum. This space is connected by the eustachian tube to the throat.
<b>Otoscope:</b>	a device for examining the ear drum.
<b>Paracetamol:</b>	a drug which lowers fever and relieves pain (also known as acetaminophen).
<b>Parenteral:</b>	not taken orally but rather by injection such as under the skin (subcutaneous), into the vein (intravenous) or into the muscle (intramuscular).
<b>Partial breastfeeding:</b>	giving a baby breastmilk in addition to weaning foods and other fluids such as juice. Partial breastfeeding of infants during the second 6 months of life will reduce the risk of severe diarrhoea and diarrhoea death.
<b>Percentage (%):</b>	the relationship of a part to a whole expressed in hundredths, for example, 25% = 0.25 = 25/100.
<b>Persistent diarrhoea:</b>	diarrhoea, presumed to be caused by infectious agents, that begins acutely but lasts at least 14 days.
<b>Pertussis:</b>	a respiratory infection caused by the pertussis bacteria. A child coughs many times without breathing in. When the child breathes in again, he makes a noise called a whoop. Children may vomit frequently during bouts of coughing. Pertussis is a vaccine-preventable disease. (Also known as whooping cough).

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Pharyngitis:	an infection of the throat.
Pharynx:	throat.
Pneumonia:	an acute infection of the lungs. It is classified according to severity based on clinical signs.

**In the child 2 months up to 5 years:**

Severe pneumonia: cough or difficult breathing with chest indrawing.

Pneumonia: cough or difficult breathing with fast breathing but no chest indrawing.

**Severe pneumonia or very severe disease in the child less than 2 months:**

Any of these clinical signs can mean severe pneumonia or very severe disease:

Fast breathing

Severe chest indrawing

Stopped feeding well

Convulsions

Abnormally sleepy or difficult to wake

Stridor in calm child

Wheezing

Fever or low body temperature

Pneumonia-associated mortality rate: the number of children under age 5 who die with signs of pneumonia per 1000 children in a given time period, usually one year.

Proportion: the relationship of a part to a whole. When written as a fraction, the numerator signifies the part, and the denominator signifies the whole. Proportions can also be written as a decimal fraction or percentage (for example, 0.17 or 17%).

<b>Policies:</b>	Programme policies are statements of basic practices to be followed in standard case management. In the case of ARI, policies include choice of antibiotics, use of antibiotics by community-based practitioners, limiting antibiotic use, remedies to be recommended to mothers, criteria families should use for seeking care from a health worker, and management of wheezing, ear infection, and throat infection.
<b>Rate:</b>	a measure of the frequency of some event in a defined population during a given time period. Rates can be expressed as decimal fractions, as percentages, or, for example, as a number per 1000 or 100,000 population.
<b>Rehydration:</b>	giving fluids to replace water and salts that have been lost from the body.
<b>Respiratory distress:</b>	discomfort from not getting enough air into the lungs.
<b>Respiratory rate:</b>	same as breathing rate.
<b>Routine reporting system:</b>	a system used to collect data on a regular basis from all or most reporting sites in an area.
<b>Salbutamol:</b>	a bronchodilator. It is available as a tablet, a syrup, a liquid delivered by nebulizer, and by metered-dose inhaler.
<b>Salt/sugar solution (SSS):</b>	a type of home fluid made with salt and some form of sugar in water in appropriate concentrations.
<b>Sepsis:</b>	the condition that is a result of the invasion of bacteria or their toxins in the blood stream. (Also called septicaemia and blood poisoning.)
<b>Sentinel reporting system:</b>	a system which relies on a small number of specially selected reporting sites to provide accurate, complete data useful for monitoring and evaluating a country's CDD/ARI programme.
<b>Sentinel site:</b>	a specially selected health facility or health provided which reports data for a country's sentinel reporting system.
<b>Specialized case management:</b>	non-standardized management of cases which have not responded to standard treatment and/or cases who might benefit from non-standard diagnosis and treatment. Provided by a specialist at a secondary referral hospital.

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Stage:	the emphasis or focus of a programme over a period of time. For example, at the first stage, a CDD/ARI programme might focus on providing standard case management at public and private health facilities. At a later stage (stage 3), the focus might be on extensive promotion of home care thorough various media as well as the health system.
Sterile:	free from living microorganisms, including viruses and bacteria.
Stomatitis:	inflammation of the mouth.
Strategy:	a specified approach which consists of a variety of interventions for improving health status. In a CDD/ARI programme the main strategy is to provide standard case management.
Streptococcal sore throat:	throat infection caused by the streptococcal bacteria.
Stridor:	a harsh noise when the child breathes in. It occurs when there is a narrowing of the larynx, trachea, or epiglottis. Stridor can be due to croup or a foreign body.
Subtarget:	a quantified statement of a short-term (i.e., 1-2 year) goal which a programme plans to achieve. For effective case management strategy, a programme's subtarget will usually be related to improving access to or use of effective case management.
Tachypnoea:	see fast breathing.
Target:	a quantified statement of a long-term (e.g., 5-6 year) morbidity or mortality reduction goal which a programme plans to achieve. For example, a target of a programme might be "By 1999, reduce diarrhoea (pneumonia) mortality in children under age 5 by 30%." Thus a target is more specific than an objective.
Task:	something that must be done to carry out an activity. For example, one of the many tasks involved in the activity "Train medical staff" might be "Budget the training."
Throat abscess:	an infection of the throat which develops a collection of pus.
Timetable:	a schedule of events or activities.
Timer:	a simple device allowing the accurate measurement of a time interval.

- Trachea:** a tube that takes air from the larynx to the bronchi (also called the windpipe).
- Tracheostomy:** a surgical operation which provides an opening into the trachea through the neck. Once the opening is made, a tube is inserted to allow air to pass into the lungs. It requires a doctor with skill in surgery. Sometimes needed in the management of severe croup or diphtheria.
- Tuberculosis:** a chronic infectious disease caused by a mycobacteria that can cause a chronic cough. It most often harms the lungs but can also cause fever, weight loss, and infection of lymph nodes. (Also known as TB.)
- Under-5 childhood mortality rate:** the number of children under age 5 who die per 1000 children per year.
- Use:** the extent to which people come for and receive a service. Use can be stated as the number of times people use a service or as a use rate.
- Virus:** one of a group of minute infectious agents or germs that cannot be killed by antibiotics.
- Wheeze:** a soft, musical noise when the child breathes out. It may be caused by a swelling and narrowing of the small airways of the lungs or by a contraction of the smooth muscles surrounding the airways in the lung.
- Whooping cough:** see pertussis.
- Wick:** a long point of rolled, absorbent, cotton cloth for drying an ear that is draining.
- Young infant:** a child less than 2 months of age.

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## **CHECKLIST OF REFERENCE MATERIALS AVAILABLE AT THE COURSE**

### **CDD**

#### **For national CDD programme managers**

Oral Rehydration Salts: Planning, establishment and operation of production facilities, WHO/CDD/SER/85.8

Communication: A Guide for Managers of National Diarrhoeal Disease Control Programmes - Planning, management and appraisal of communication activities (1987)

The selection of fluids and food for home therapy to prevent dehydration from diarrhoea: Guidelines for Developing a National Policy, WHO/CDD/93.44

Guidelines for Cholera Control, revised 1992 WHO/CDD/SER/80.4 Rev.4 (1992)

WHO guidance on formulation of national policy on the control of cholera WHO/CDD/SER/92.16 Rev.1

Management of the patient with cholera WHO/CDD/SER/91.15 Rev.1 (1992)

#### **Treatment of diarrhoea**

Readings on diarrhoea: Student manual

A manual for the treatment of diarrhoea. For use by physicians and other senior health workers WHO/CDD/SER/80.2 Rev.2 (1990)

The management and prevention of diarrhoea - Practical guidelines - 3rd edition, (1993)

Guidelines for the control of epidemics due to *Shigella dysenteriae* type I, WHO/CDD/93.45

The rational use of drugs in the management of acute diarrhoea in children (1990)

Diarrhoea Training Unit Director's Guide, CDD/SER/86.1 Rev. 1 (1988)

Diarrhoea Management Training Course: Guidelines for Conducting Clinical Training Courses at Health Centres and Small Hospitals CDD/SER/90.2 Rev.1 (1992)

Clinical Skills: A Self-Instructional Course (1993)

**Supervision of CDD programme**

CDD Supervisory Skills, 1987/1992

**Evaluation of CDD programme**

Household Survey Manual: Diarrhoea Case Management, Morbidity, and Mortality  
CDD/SER/86.2 Rev.1 (1989)

Drug Use Addendum for use in conjunction with the Household Survey Manual  
CDD/SER/91.2

Health Facility Survey Manual, Diarrhoea Case Management CDD/SER/90.1

Guidelines for Conducting CDD Focused Programme Review

Phase I: Identification of priority issues

Phase II: Resolving priority issues

**Prevention of diarrhoea**

Preventing diarrhoea: what are the policy options? by Richard G. Feachem, Health  
Policy and Planning 1986; 1 (2): 109-117, Oxford University Press, 1986

Options for Diarrhoeal Diseases Control, The Cost and Cost-effectiveness of Selected  
interventions for the Prevention of Diarrhoea, by Margaret A. Phillips, Richard G.  
Feachem and Ann Mills, Evaluation and Planning Center for Health Care of the London  
School of Hygiene and Tropical Medicine, 1987

Breast-feeding counselling: A training course (1993)

**ARI****For national ARI programme managers**

Acute Respiratory Infections in Children: Case Management in Small Hospitals in  
Developing Countries - A Manual for Doctors and Other Senior Health Workers, 1990

**WHO ARI technical papers:**

Antibiotics in the Treatment of Acute Respiratory Infections in Young Children

Bronchodilators in the Treatment of Acute Respiratory Infections in Young  
Children

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Cough and Cold Remedies in the Treatment of Acute Respiratory Infections in Young Children

Technical Bases of ARI Case Management

Case Management Options for ARI Control Programmes

ARI treatment chart for community-based practitioners or health posts: Children with Coughs

Household Survey Manual: Community Assessment of ARI Morbidity and Treatment Practices (in preparation)

ARI Health Facility Survey Manual (in preparation)

Guidelines for Conducting a Comprehensive Review of an ARI Control Programme (in preparation)

Manual for the Surveillance of Antimicrobial Resistance of *S. pneumoniae* and *H. influenzae*

Case Management of Pneumonia in Children: An Annotated Bibliography, 1990