CHD 1996–1997 Report
CHD 1996–1997 Report

DIVISION OF CHILD HEALTH AND DEVELOPMENT

FAMILY AND REPRODUCTIVE HEALTH

WORLD HEALTH ORGANIZATION
Contents

Preface ix

Chapter 1. Focusing on global priorities in child health 1
  Highlights of 1996-1997 1
  The first priority: reducing childhood mortality 1
  Creating a Division of Child Health and Development to meet the challenge 2
  Defining a strategy for Integrated Management of Childhood Illness 4
  Considering other child health problems 7
  Promoting child health through the Convention on the Rights of the Child 7

Chapter 2. Improving health worker skills 9
  Highlights of 1996-1997 9
  Developing standard guidelines 10
    IMCI guidelines for health workers in first-level health facilities 10
    Adapting the IMCI guidelines for first-level health workers 11
      The IMCI Adaptation Guide 11
      The adaptation process in countries 12
    Guidelines for care at referral level 13
  Producing materials for training and follow-up 14
    Training materials for health workers in first-level health facilities 14
      Training in integrated case management 14
      Follow-up as a part of training 16
      Improving facilitator training 16
      Alternatives to the 11-day course 17
        An example: Complementary course for health workers with limited reading ability 17
    Training materials for referral care of severe malnutrition 18
    Identifying potential targets for training among other health care providers 18
    Training materials on breastfeeding counselling 19
    Training materials for community health workers 20
      Early experience in developing materials for training community health workers 20
    Developing approaches to preservice training in IMCI 21
  Implementing training activities 22
    IMCI training of first-level health workers 22
      A training strategy 22
An example: The training strategy in Tanzania 23
IMCI training courses conducted 24
Follow-up findings 26
Lessons learned from IMCI training to date 28

Special Report: Progress in the implementation of IMCI 1996-1997 29
Training to improve breastfeeding practices 31
Breastfeeding in the IMCI course 31
Breastfeeding counselling course 32
The strategy for breastfeeding in IMCI 33
CDD and ARI training 34
Inservice training 35
Preservice training in diarrhoea and ARI case management 35
Training in communication skills 37

Chapter 3. Improving health systems to support IMCI 38
Highlights of 1996-1997 38
Making changes in health systems through the introduction of IMCI 39
Ensuring the availability of drugs, equipment, and supplies needed for IMCI 39
Review of policies on essential drugs 40
Strategies to improve the availability of drugs and other supplies 40
A course to improve the management of drugs and other supplies in health facilities 42
Improving the quality of services and organization at health facilities 43
Improving referral pathways and services 44
Issues in the system of referral 44
Issues in providing referral level care 45
Estimating IMCI costs and cost-savings 46
Measuring the effectiveness of the IMCI strategy 47
Linking IMCI and health management information systems 47

Chapter 4. Improving family and community practices 49
Highlights of 1996-1997 49
Research and development to improve breastfeeding and complementary feeding 50
An evaluation of the breastfeeding counselling course 50
Technical reviews on breastfeeding issues 50
Efficacy of feeding recommendations in promoting child health 51
The impact of IMCI counselling on the caretaker’s behaviours and child growth 51
Community-based interventions to improve complementary feeding 51
Developing interventions to improve child growth and development 52
Research and development on appropriate responses to illness 53
Research on indoor air pollution 54
Tools to improve family and community practices 55
Protocol to identify locally understood terms for signs of illness 55
Guidelines for assessing caretaker comprehension 55
Protocol for adapting feeding recommendations 56
Manual on working with community organizations 57
Guidelines for using ethnography 57
Country activities to improve family and community practices 57
Using mass media 57
Improving communication between health workers and families 58
Using the mother’s counselling card 58
Training health workers in communication in China 59

Chapter 5. Managing the implementation of IMCI 61

Highlights of 1996-1997 61
Defining an implementation strategy 61
Approaches to implementation 61
Making full use of the working levels of WHO and defining clear functions for each of them 62
Supporting the development of regional strategies 62
Reinforcing the capacity at country level to implement IMCI 62
Promoting an early implementation phase to gain experience with IMCI, before expanding nationally 63
Finding opportunities to link IMCI with health sector reforms 63
Building technical and managerial capacity 63
Increasing collaboration with partners 64
The IMCI Planning Guide 64
The planning process in countries 64
Introduction phase 64
Early implementation phase 65
Expansion phase 65
Building capacity in regions and countries 65
Joint planning exercises 66
Programme manager meetings 66
Global and regional workshops for regional staff, national experts and consultants 66
IMCI planning and adaptation workshops 66
Intercountry IMCI training for course directors and clinical instructors 67
Monitoring and evaluation 67
CDD and ARI surveys 67
Programme reviews 69

Special Report: Progress in the control of diarrhoeal diseases in Bangladesh 70
Documenting early experiences with IMCI implementation 73
IMCI monitoring and evaluation 73
Chapter 6: Developing the technology for improving child health

Highlights of 1996-1997
Research to improve case management
  Integrated Management of Childhood Illness
  Management of acute respiratory infections (ARI)
    ARI case management studies in Pakistan
  Results from pharmacokinetic studies
  Management of severe pneumonia
  Addressing antibiotic resistance
  Management of wheeze
Management of diarrhoea
  Reduced osmolarity ORS solution
  Oral rehydration therapy in severely malnourished children
  Management of persistent diarrhoea
  Management of dysentry
  Inappropriate use of drugs
Management of severe malnutrition
  Domiciliary care of severe malnutrition
  Vitamin and mineral mixes
Management of meningitis
  Fluid requirement in bacterial meningitis
  Dexamethasone as adjuvant therapy in bacterial meningitis
Improving resistance to infection
  Zinc research
    Zinc supplementation and improved growth
    Zinc supplementation and disease prevention
    Zinc supplementation effects on diarrhoeal and pneumonia morbidity
    Zinc supplementation and acute diarrhoea
    Zinc supplementation and malaria
Vitamin A research
Vaccine research
  Rotavirus vaccine
  Cholera Vaccine
  Haemophilus influenzae type b (Hib) vaccine
  Streptococcus pneumoniae vaccine
  Development of a standard pneumococcal ELISA
  Planning for vaccine development, evaluation and use

Chapter 7: Building partnerships and developing resources for child health and development

Highlights of 1996-1997
Our partners within WHO
  Family and Reproductive Health
## CONTENTS

- Working group 90
  - IMCI task force 90
  - Technical Working Group on Breastfeeding 90
  - WHO Gender Working Group 91

- Our international partners 92
  - UNICEF 92
  - The World Bank 92
  - International Society of Paediatric Oncology 93

### Special Report: Benefiting from the Associate Professional Officer programme 94

- Collaborators in research and development 96
  - WHO Collaborating Centre for Epidemiological and Environmental Aspects of Diarrhoeal Diseases 96
  - USAID-Funded Child Health Research Project 96
    - Harvard University: Applied Research on Child Health (ARCH) Project 96
    - ICDDR,B: Centre for Health and Population Research, Bangladesh 96
  - Our collaborators in implementation in countries 98

- The First Global Review and Coordination Meeting on Integrated Management of Childhood Illness 98
- Sharing Information 99
  - Child Health Dialogue 99
  - The IMCI Information package 99
  - Brochure: Improving child health 100
  - Poster: IMCI brings it all together 100
- CHD briefings 101
- The CHD Internet Website 101
- Funding for CHD 102
- HQ and regional budgets 104

### Annexes

- Annex 5. New papers arising out of research supported by the Division in 1996-1997 113
- Annex 6. Results of CDD and ARI surveys 118
Global childhood mortality rates continue to fall. This is good news but by no means reason to be complacent. Progress has been extremely uneven; in some countries the rates of childhood mortality are on the increase and in many, especially in sub-Saharan Africa, they remain shockingly high. In some populations one, or even two, of every 10 children born do not survive to the age of five years. We must acknowledge that we cannot claim that the issue of child survival is being adequately addressed.

It is no surprise to find that the children who are most commonly and severely ill, who are malnourished and who are most likely to die of their illness, are those of the most vulnerable and underprivileged populations of the developing world. Childhood mortality is a sensitive indicator of inequity in health and health care. To address inequity in health we must continue to give our priority attention to reducing childhood mortality, particularly where it is highest.

Mortality reduction remains, therefore, the main objective of the WHO Division of Child Health and Development (CHD). The main strategy to achieve this objective, Integrated Management of Childhood Illness (or IMCI), is no longer purely a research and development activity. It is already making its mark on the public health activities in over 50 countries. Its introduction, during 1996-1997, has been met with enthusiasm just as its implementation has faced many challenges. Among the challenges is the recognition that effectively implementing IMCI requires a health system that is functioning and that families use. CHD is therefore, in collaboration with other WHO programmes and UNICEF, expanding its activities to strengthen the health system and to encourage families to respond appropriately to illness and to seek care when needed. The three components of IMCI – improving health workers’ skills, improving health systems to support IMCI, and improving family and community practices – form the content of the central part of this report.

In most of the countries where CHD’s work is of relevance, change, and particularly change in the quality of health care, is slow. However, other aspects of the health system are changing more quickly in many countries. Health sector reform, often characterized by less emphasis on the capacity of the central Ministry of Health and considerable decentralization of management, brings particular challenges for the way we work with countries. The Division is therefore working to define how health sector reform can provide opportunities to implement IMCI, and to explain how the IMCI strategy can reinforce reform efforts by ensuring the quality of health care for children as one essential component of health services delivery. The Division’s close collaboration with the World Bank in a number of countries provides valuable opportunities to learn more in this area.

In addition to its work aimed at reducing mortality, CHD continues to be concerned with the prevention of disease,
and is defining a role in addressing the psychosocial development of children. Late in the 1996-1997 biennium CHD also moved into another area – working with the Convention on the Rights of the Child and other human rights mechanisms in order to bring greater attention to child health while contributing concretely to the realization of children’s rights.

In carrying out all of its work, CHD continues to maintain a balance between research and development and its technical support to countries. The latter is important to ensure that the products of research and development are introduced in countries and that their early use is nurtured, monitored and evaluated. This, in turn, ensures that the research and development activities remain relevant to country needs.

In this biennial report we have tried to complement the reporting on the Division’s achievements in 1996-1997 with additional detail on specific subjects in order to make the report more informative, particularly to those who may be reading about our work for the first time.

It is difficult to convey in a formal report the enthusiasm of the CHD staff, in Headquarters, in the Regional Offices and in countries, for their work. We hope that the report will demonstrate to the reader that these staff and their national colleagues in programmes and research and training institutions can reasonably claim significant achievements during 1996-1997. We hope you enjoy reading the report and that it will encourage you to support, or continue to support, our work in whatever way you can.
**CHAPTER 1**

**Focusing on global priorities in child health**

**HIGHLIGHTS OF 1996–1997**

- In 1996 WHO created the new Division of Child Health and Development to enable the Organization to address more effectively the issues affecting child health. The new Division was able to take advantage of the expertise developed through experience in the disease control programmes for diarrhoea and acute respiratory infections.

- Based on an analysis of data on the global burden of disease, the Division expanded research and development activities to address the causes of most deaths of children under five years of age—malaria, measles, and malnutrition, in addition to pneumonia and diarrhoea. In 1996 and 1997, the Division, with UNICEF, further developed the strategy for Integrated Management of Childhood Illness (IMCI).

- Making a commitment to support the Convention on the Rights of the Child, CHD outlined a plan to work on mechanisms to implement the rights of a child to enjoy the highest attainable standard of health and to have access to health services. A human rights specialist was added to the staff to coordinate these activities.

**The first priority: reducing childhood mortality**

From 1980 to 1995 childhood mortality rates in developing countries fell by an average of 35% (Figure 1). In 20 countries, however, the decline was less than 15% (or 1% per year); 13 of those countries are in sub-Saharan Africa. In five countries rates either stayed the same or increased.

It is clear that there has been progress in addressing the major causes of child death; it is equally clear that this progress has been uneven across the world’s geographic regions. In 1995, in 45 countries one or more of every 10 live births did not survive to the age of five years. In 13 of these countries, 12 in Africa, one out of five live births did not survive their first five years.

Much has been said recently about the necessity to address more vigorously the health needs of the poor and to strive for greater equity in health and health care. Recent analysis of the data on the global burden of disease has shed some light on what this means in prac-

---


---

Among the world’s poorest populations, the proportion of all deaths that occur among children is almost 10 times greater than in the richest populations.

Seventy percent of child deaths globally, and a higher proportion in the poorest developing countries, are caused by just four diseases, in combination with malnutrition: acute respiratory infections, diarrhoea, malaria, and measles.
tival terms. Among the world’s poorest populations the proportion of all deaths that occur among children is almost 10 times greater than in the richest populations.¹

Not surprisingly the contribution of infectious disease as a cause of death is enormously greater among the poor.

Creating a Division of Child Health and Development to meet the challenge

In April 1996, the Division of Child Health and Development (CHD) was officially created at WHO Headquarters as part of a group of divisions and units called Family and Reproductive Health (FRH).

The new Division incorporated the work previously carried out by the Division of Diarrhoeal and Acute Respiratory Disease Control (CDR), as well as the child health and development activities of the former Division of Family Health (FHE). In this way the new Division assumed responsibility for the Organization’s work to improve the health of children less than 5 years old. Exceptions to the Division’s scope of activities within child health are most activities related to childhood immunization, covered by the Global Programme for Vaccines and Immunization (GPV), and some nutrition related activities, covered by the Nutrition Programme (NUT). Others in the Organization address school health and adolescent health.

Addressing the needs of the poor and addressing inequity must therefore include as a high priority attention to the control of infectious diseases among children and particularly among children less than five years old – the age group where the burden of disease and deaths are concentrated.

The specific causes of the deaths among children less than five years old are no mystery. Seventy percent of deaths globally, and a higher proportion in the poorest developing countries, are caused by just four diseases – acute respiratory infections, diarrhoea, malaria, and measles – in combination with malnutrition. Projections based on the analysis of the global burden of disease indicate that these conditions will continue to be major contributors to child deaths in the year 2020, unless significantly greater efforts are made to control them.

In consultation with external advisers in child health and development, the Division redefined its objectives and priorities, and the CHD Technical Advisory Group and the Meeting of Interested Parties subsequently endorsed them in 1996 and 1997. The objectives of the Division are:

- To reduce mortality associated with the most important health conditions of childhood,
- To reduce morbidity associated with these conditions, and
- To improve the healthy growth and development of children.

Priority is given to health conditions and their determinants that cause the greatest burden amongst children, especially among low-income populations. The focus of effort is on interventions demonstrated to be cost-effective and on appropriate research and development activities in areas where the potential for identifying such interventions is high. An important criterion for judging interventions of interest to the Division is the practicality of implementing them on a large scale in developing countries.

Given the broad scope of child health and, therefore, potentially of the Division’s work, it has been essential to use the limited resources available in a rational manner and without losing sight of the ultimate objective of a significant impact on the health of children. The Division has found it useful to try to discipline its activities by following a model of programme development (Table 1).

The structure of the organization of work in the Division (Figure 2) is designed to ensure that different areas of expertise are brought to bear on the development and implementation of its activities.

Two broad areas of research and development are each guided by a working group: family and community practices and health systems management. Two working groups are needed because the target audiences for the two areas and the nature of their activities are distinct. One group is involved more in behaviour change and communication; the other works more on the definition and application of norms and standards. This distinction implies that the two working groups also require a different balance of disciplinary expertise.

The development of practical guidelines and training materials for both programme management and for specific health interventions constitutes a major part of the Division’s work. The Division believes that this is an essential role of

<table>
<thead>
<tr>
<th>Step</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Quantify the health problem.</td>
<td>Larger problems should be given higher priority.</td>
</tr>
<tr>
<td>2. Define broad objectives.</td>
<td>Is mortality or morbidity reduction, for example, the main objective?</td>
</tr>
<tr>
<td>3. Describe the risk factors and determinants of the problem.</td>
<td>Research is often required to test hypotheses.</td>
</tr>
<tr>
<td>4. Describe plausible interventions.</td>
<td>The practicality of implementation on a large scale in developing countries is an important consideration.</td>
</tr>
<tr>
<td>5. Demonstrate the efficacy and assess the cost effectiveness of the interventions.</td>
<td>This is a major area of research activity, eventually supplemented by programme evaluation.</td>
</tr>
<tr>
<td>6. Define programme strategies.</td>
<td>How might interventions be best grouped and promoted? What tools are needed?</td>
</tr>
<tr>
<td>7. Develop and test necessary tools.</td>
<td>This constitutes the link between evidence and action. Without a major investment in the development of tools, knowledge will remain unapplied.</td>
</tr>
<tr>
<td>8. Plan implementation activities and set targets.</td>
<td>Planning, which includes the setting of realistic targets and taking into account the resources available, is critical.</td>
</tr>
<tr>
<td>9. Implement, monitor and evaluate.</td>
<td>Evaluation findings may lead to reconsideration of any or all of the preceding steps.</td>
</tr>
</tbody>
</table>
WHO and one that it is well placed to carry out effectively by calling on expertise inside and outside the Organization.

**Technical support to countries** is always done in close collaboration with the WHO regional and country offices. Working with countries is essential to test and demonstrate the effectiveness of interventions, to introduce new interventions and support their use until they are taken up by the countries, and to inform and influence research and development activities to meet identified needs. Approximately one half of the Division’s resources are devoted to this support.

While recognizing that the determinants of health are complex and interrelated, the Division focuses its attention predominantly on interventions to be delivered in the health sector. In 1997, however, the Division also started to examine how a **human rights approach** could complement its activities by drawing attention to the rights of children to health and to health care. (The human rights approach is described later in this chapter.)

**Defining a strategy for Integrated Management of Childhood Illness**

As stated earlier, seven in ten childhood deaths are due to five causes: acute respiratory infections (mostly pneumonia), diarrhoea, measles, malaria, and malnutrition – and often to a combination of these conditions. In addition, at least three out of four episodes of childhood illness are caused by one of these five conditions; and every day millions of parents seek health care for sick children, taking them to hospitals, health centres, pharmacists, community health care providers, and traditional healers.

The evidence that a large proportion of childhood morbidity and mortality in the developing world is caused by just five conditions does not in itself argue for an integrated approach to the management of childhood illness. However, most sick children present with signs and symptoms related to more than one of these conditions. This overlap means that a single diagnosis may be neither possible nor appropriate. Treatment of childhood illness may also be complicated by the need to combine therapy for several conditions. An integrated approach to managing sick children is therefore indicated, as is the need for child health programmes to go beyond single diseases and address the overall health of a child.

Much has been learned from disease-specific control programmes in the past 15 years. The current challenge is to apply the lessons from these programmes to strategies that promote coordination and, where appropriate, greater integration of activities in order to improve the prevention and management of childhood illness.

CHD, in collaboration with ten other WHO programmes and UNICEF, has responded to this challenge by developing a strategy for **Integrated Management of Childhood Illness (IMCI)**.
While many agencies, institutions, and individuals are contributing to the initiative, CHD is responsible for overseeing the development, implementation, and monitoring of IMCI materials and activities. The strategy combines improved management of childhood illness with aspects of nutrition, immunization, and several other important influences on child health, including maternal health (Figure 3).

Using a set of interventions for the integrated treatment and prevention of major childhood illnesses, the IMCI strategy aims to reduce death and the frequency and severity of illness and disability, and to contribute to improved growth and development. This set of interventions aims to improve practices in both health facilities and in the home (Figure 4).

The core intervention is integrated case management of the five most important causes of childhood deaths and of common associated conditions at both first-level and referral-level health facilities. In individual countries, the combination of interventions that makes up IMCI may be modified to include other important conditions for which effective treatment and/or preventive practices have been identified. The main interventions of the global IMCI strategy may evolve as new findings from analysis of the global burden of childhood disease and from child health research become available.

Implementation of the IMCI strategy in countries involves the following three components:

- **Improvements in the case management skills of health staff** through the provision of locally adapted guidelines on integrated management of childhood illness and activities to promote their use.
- **Improvements in health systems** to support Integrated Management of Childhood Illness.
- **Improvements in family and community practices.**

---

**Integrated Management of Childhood Illness** is an effective, low-cost strategy for improving child health. It promotes:

- Prompt recognition and treatment of all co-existing conditions.
- Rapid and effective treatment through standard case management.
- Prevention of illness, through improved nutrition including breastfeeding, and vaccination.

---

**FIGURE 3**
IMCI as a key strategy for improving child health

**FIGURE 4**
Interventions included in the IMCI strategy

```
<table>
<thead>
<tr>
<th>Promotion of growth</th>
<th>Response to sickness</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Health services</strong></td>
<td><strong>Family and community</strong></td>
</tr>
<tr>
<td>Community/home-based</td>
<td>Case management of:</td>
</tr>
<tr>
<td>interventions to improve</td>
<td>ARI, diarrhoea, measles,</td>
</tr>
<tr>
<td>nutrition</td>
<td>malaria, malnutrition,</td>
</tr>
<tr>
<td>Insecticide-impregnated</td>
<td>other serious infection</td>
</tr>
<tr>
<td>bednets</td>
<td>Complementary feeding and breastfeeding</td>
</tr>
<tr>
<td>Vaccination</td>
<td>counselling</td>
</tr>
<tr>
<td>Complementary feeding and</td>
<td>Iron treatment</td>
</tr>
<tr>
<td>breastfeeding counselling</td>
<td>Antihelminthic treatment</td>
</tr>
<tr>
<td>Micronutrient supplementation</td>
<td></td>
</tr>
</tbody>
</table>
```
In health facilities, the IMCI strategy promotes the accurate identification of childhood illnesses in outpatient settings, ensures appropriate combined treatment of all major illnesses, strengthens the counselling of caretakers and the provision of preventive services, and speeds up the referral of severely ill children. The strategy also aims to improve the quality of care of sick children at the referral level. In the home, it promotes appropriate care-seeking behaviours, improved nutrition and preventive care, and the correct implementation of prescribed care.

In many developing countries some type of health sector reform is underway. Health sector reform often involves decentralization of management, including responsibilities for training, supervision and drug supplies. The emphasis in IMCI implementation on activities to build capacity at the district level contributes to this aspect of health sector reform.

The essential service approach or a minimum package of activities is another aspect of health sector reform being promoted in some countries. There is a strong rationale for including IMCI in such an approach, as activities to integrate care improve health worker performance, the quality of care provided, and the cost-effectiveness of health services.

Regardless of the approach taken by a country, it is important that IMCI be discussed early in the process and included in plans for health sector reform, especially plans for building capacity at district level.

Benefits of Integrated Management of Childhood Illness (IMCI)

The IMCI strategy:

- **Addresses major health problems.**
  The strategy systematically addresses the most important causes of childhood death and illness.

- **Responds to demand.**
  Every day millions of parents take their sick children to hospitals and health centres, pharmacists and community health care providers. At least three out of four of these children suffer from one of the five conditions that are the focus of IMCI.

- **Is likely to have a major impact on health status.**
  The 1993 World Bank World Development Report, *Investing in Health*, estimated integrated management of childhood illness to be the group of interventions with the potential to have the greatest impact on the global burden of disease.

- **Promotes prevention as well as cure.**
  In addition to its focus on treatment, it also provides the opportunity for, and emphasizes, important preventive interventions such as immunization and improved infant and child nutrition, including breastfeeding.

- **Is cost-effective.**
  *Investing in Health* ranked IMCI among the ten most cost-effective interventions in both low- and middle-income countries.

- **Promotes cost saving.**
  Inappropriate management of childhood illness wastes scarce resources. Although increased investment will be needed initially for training and reorganization, the IMCI strategy will result in cost savings.

- **Improves equity.**
  Nearly all children in the developed world have ready access to simple and affordable preventive and curative care that protects them from death due to acute respiratory infections, diarrhoea, measles, malaria, and malnutrition. Millions of children in the developing world, however, do not have access to this same life-saving care. The IMCI strategy addresses this inequity.
Considering other child health problems

With the creation of the WHO Division of Child Health and Development came a broad mandate for child health issues. There have been calls to look beyond children aged less than 5 years and to address the health concerns of older children. While the Division’s work has remained focused globally on the major life threatening diseases of childhood, it has initiated a process for systematically considering other disease areas for inclusion in its work, resources permitting.

In 1997, a review of the burden of disease in children less than 15 years of age reaffirmed the importance of the major causes of child death and the group of diseases addressed by immunization programmes. The review also showed that three other groups of health problems contribute very significantly to childhood death and disability: perinatal conditions, injuries (predominantly unintentional) and congenital anomalies (Figure 5). Some of these health problems may receive greater attention from the Division.

Perinatal conditions are addressed by the WHO Programme on Maternal and Newborn Health and Safe Motherhood (MSM), the unit responsible for prenatal health through the first week of life. CHD, which provides guidelines for managing the sick young infant starting at age one week, is working closely with MSM to make consistent and effective recommendations to improve the survival of infants from birth.

For many congenital anomalies there is no proven preventive intervention. Those interventions that do exist must necessarily be implemented before delivery, and are beyond the scope of CHD’s work.

The area of injury prevention, on the other hand, is one for which feasible interventions may exist. CHD will, with appropriate partners, continue to explore this area of child health. Other diseases with a significant burden for which the Division has initiated some activity are asthma, rheumatic heart disease and cancer.

Promoting child health through the Convention on the Rights of the Child

With the creation of CHD, the Division assumed the responsibility in WHO for support to those aspects of the Convention on the Rights of the Child that relate particularly to the health of the young child. The Convention and its monitoring body, the Committee on the Rights of the Child, provide a valuable framework for the development of strategies to deal with issues affecting the health of the child.

While many of the Articles of the Convention have a bearing on health as broadly defined by WHO, Article 24 specifically defines the rights of the child to health and health care. IMCI strategies address directly the requirements of Article 24 for countries to take action...
to reduce mortality and provide essential health care. The mechanisms of the Committee can therefore potentially focus national planning for child health on essential issues and activities.

Because of its high political profile, the Convention highlights the importance of the issues that can be addressed by IMCI and the practical advantages of the IMCI strategy to a country. Furthermore, the focus of IMCI on health care can be reflected in more realistic and useful reporting by States Parties of the Convention. This can lead in turn to recommendations by the Committee that address health problems in terms of feasible action to be taken by national authorities, with the support of WHO, UNICEF, and other partners.

In light of this rationale, a framework for initial activities in relation to the Convention was adopted by CHD in December 1997. In January 1998, CHD and other WHO programmes—with technical advice from UNICEF, the Office of the High Commissioner for Human Rights, and the NGO Group for the Convention on the Rights of the Child—organized a briefing to the Committee on the role WHO can play in the reporting process.

The successful outcome of the briefing and subsequent recommendations by the Committee provide the basis for further activities in three areas. First, an important role of CHD will be to provide technical support to the reporting process of the Committee. CHD’s first activity in this area was to coordinate a joint WHO/UNICEF commentary on the State Party report of Iraq, presented to the Committee in January 1998.

Second, given the significant lack of valuable health data in some country reports, CHD is collaborating with the Committee to improve the mechanisms for country reporting. CHD, for example, is lending its experience in using indicators of health and health care to help the Committee develop a focused set of reporting indicators. These will enable countries to make better use of available data on child health.

Third, the Division will also give priority to contributing to the implementation in countries of health-related recommendations formulated by the Committee, where the recommendations coincide with CHD’s defined priorities and directions.
CHAPTER 2

Improving health worker skills

HIGHLIGHTS OF 1996–1997

- The training materials for Integrated Management of Childhood Illness in first-level facilities were completed and the new IMCI strategy was introduced in 41 countries. By the end of 1997, twenty-three countries had begun implementing IMCI; of these, eight countries were already implementing IMCI at the district level.

- CHD produced an IMCI Adaptation Guide to assist countries in adapting the generic IMCI guidelines and course materials. Through the adaptation process countries develop consensus on major childhood illnesses to include in the guidelines and national policies for managing them, and ensure that the guidelines are feasible to implement through the health system and in communities. Seventy-five consultants and national planners have been trained to use the guide; 24 countries have begun adapting the guidelines; and 13 countries have already completed the adaptation of training materials.

- A clinical course in integrated case management, designed to complement the IMCI course for first-level facilities, was developed in collaboration with the USAID-funded BASICS project. The complementary course introduces instructional methods appropriate for health workers with limited reading ability. The field trial took place in Zambia in January 1997, and the materials are being revised in preparation for a second field test in 1998.

- A draft of the manual, Management of the Child with a Serious Infection or Severe Malnutrition: Guidelines for Care at the First Referral Level in Developing Countries, was completed and sent out for external review. The manual includes recommendations on triage, emergency care, assessment, diagnosis, treatment, monitoring, and discharge.

- Facilitators have been trained in 36 countries to conduct the WHO/UNICEF Breastfeeding Counselling Course, and in the past two years 16 countries have begun conducting the course for their health staff (eleven of these countries are also implementing IMCI). An evaluation in Brazil found that this training leads to considerable increase in the knowledge and skills of health workers, with these levels being maintained at least three months after the completion of the training. A study in Bangladesh demonstrated the positive effects of breastfeeding counselling on rates of exclusive breastfeeding.

- A set of technical reviews on breastfeeding issues was completed. These reviews provide up-to-date information, for example, on the prevention of hypoglycaemia of the newborn, the role of breastfeeding in the prevention and management of persistent diarrhoea, and evidence for each of the Ten Steps to Successful Breastfeeding.
Developing standard guidelines

The Division continues to maintain a high priority on developing materials to improve health worker skills, while expanding the implementation of IMCI globally. The biennium has seen progress in developing standard guidelines and training materials for first-level care and referral care for sick children and for training health workers in special skills, such as breastfeeding counselling.

IMCI guidelines for health workers in first-level health facilities

The IMCI guidelines for health workers in first-level health facilities describe what health workers need to do to reduce child mortality and avert significant disability. These guidelines approach the assessment and treatment of major childhood illnesses in a comprehensive and systematic way, combining the steps needed to manage several different conditions. The use of the IMCI guidelines leads to accurate classifications of illness in outpatient settings, ensures the appropriate combined treatment of all major illnesses, and speeds up the referral of severely ill children.

The IMCI guidelines rely on detection of cases based on simple clinical signs, without laboratory tests, and offer empirical treatment. A careful balance has been struck between sensitivity and specificity in the classification of illness using as few clinical signs as possible, and signs that health workers of diverse backgrounds can be trained to recognize accurately.

The guidelines were developed to address the major killers of children globally and are therefore appropriate for most countries with high infant mortality rates (> 40 per 1000). In each country, however, a systematic adaptation is needed to ensure that the guidelines are appropriate to local epidemiology (Table 2).

As a result of country adaptations completed to date, technical guidance is now available for important additional conditions: asthma and wheeze, dengue haemorrhagic fever, tuberculosis, and sore throat. Materials also support adaptations where HIV/AIDS is highly prevalent. Generic guidelines have been drafted for the care of the infant in the first week of life, and these will be the subject of a research project to be conducted jointly with the WHO Maternal and Newborn Health and Safe Motherhood (MSM) programme. In addition, skin diseases may be considered for future inclusion because of their prevalence and their potential importance for caretaker satisfaction.

CHD focuses its technical assistance and development efforts on meeting the needs of countries with the highest childhood mortality rates and therefore in most cases with the spectrum of diseases addressed by the current guidelines. On the other hand, it also encourages countries with lower mortality rates (e.g. Argentina, Chile, and Uruguay) to adopt the basic IMCI approach as the basis for a review to rationalize

| TABLE 2 |
| Interventions included in the IMCI guidelines for first-level health workers |

<table>
<thead>
<tr>
<th>Conditions covered by case management interventions</th>
<th>Preventive interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Generic version</strong></td>
<td></td>
</tr>
<tr>
<td>Acute respiratory infections</td>
<td>Immunization during sick child visits</td>
</tr>
<tr>
<td>Diarrhoea</td>
<td>Nutrition counselling</td>
</tr>
<tr>
<td>Dehydration</td>
<td>Breastfeeding support</td>
</tr>
<tr>
<td>Persistent diarrhoea</td>
<td>Vitamin A supplementation</td>
</tr>
<tr>
<td>Dysentery</td>
<td></td>
</tr>
<tr>
<td>Meningitis, sepsis</td>
<td></td>
</tr>
<tr>
<td>Malaria</td>
<td></td>
</tr>
<tr>
<td>Measles</td>
<td></td>
</tr>
<tr>
<td>Malnutrition</td>
<td></td>
</tr>
<tr>
<td>Anaemia</td>
<td></td>
</tr>
<tr>
<td>Ear infection</td>
<td></td>
</tr>
</tbody>
</table>

Adaptations addressed in the IMCI Adaptation Guide

<table>
<thead>
<tr>
<th>Adaptations addressed in the IMCI Adaptation Guide</th>
<th>Preventive interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIV/AIDS</td>
<td>Periodic deworming</td>
</tr>
<tr>
<td>Dengue haemorrhagic fever</td>
<td></td>
</tr>
<tr>
<td>Wheeze</td>
<td></td>
</tr>
<tr>
<td>Tuberculosis</td>
<td></td>
</tr>
<tr>
<td>Sore throat</td>
<td></td>
</tr>
</tbody>
</table>

IMCI guidelines rely on the classification of illness based on simple clinical signs, without laboratory tests.
their clinical guidelines for the management of childhood illness. For countries with lower infant mortality rates or significantly different disease patterns, however, the suitability of the guidelines must be carefully considered.

The IMCI guidelines were developed using both expert clinical opinion and research results, and their development involved the cooperation of twelve WHO technical programmes. The guidelines were refined through research and field tests in Ethiopia, the Gambia, Kenya, and the United Republic of Tanzania. Special studies were commissioned to address particular problems that were encountered in choosing clinical signs to detect anaemia and to decide which children with fever in a low malaria risk setting do not need antimalarial treatment. The group of studies designed to form the technical basis for the first-level IMCI guidelines have now been published in Supplement No. 1 to Volume 75, 1997, of the Bulletin of the World Health Organization.

The generic IMCI guidelines are summarized in a spiral bound chart booklet of 35 pages, designed for easy reference by the health worker. Separate tabbed sections provide step-by-step guidance for how to assess, classify, and treat the child and the young infant, and how to counsel the mother. Guidance on how to manage children returning for follow-up visits is also included.

Adapting the IMCI guidelines for first-level health workers

The IMCI Adaptation Guide. Guidelines and training materials for Integrated Management of Childhood Illness need to be adapted by each country before implementing activities.

Adaptation ensures that the most serious childhood illnesses first-level health workers must be able to treat are included. The adaptation process also ensures that materials are consistent with national treatment guidelines and other policies, and that the guidelines are feasible to implement through the health system and in communities.

CHD provides an IMCI Adaptation Guide to help national experts and programme staff complete the various adaptation tasks. The Guide describes the process of making decisions on adaptations, and the appropriate changes to be made in the related training materials. It includes:

- A description of the steps in the adaptation process and who should contribute to adaptation.
- The technical basis for the guidelines, including citations for the clinical research that supports the generic recommendations.
- Technical considerations in reviewing possible adaptations.
- Three simple-to-use protocols to gather and organize information re-

The correct management of malaria could save the lives of 500,000 children per year

The integrated approach to the management of the major killers of children, including malaria, has several advantages. Reducing the number of children who die from malaria demands:

- Encouraging parents to seek prompt care.
- Accurate assessment of the condition of the whole child.
- Prompt treatment with appropriate anti-malarial drugs.
- Recognition and treatment of other co-existing conditions, such as malnutrition and anaemia.
- Prevention by using mosquito-proof bednets.

Children with malaria can in most cases be quickly and effectively treated with a course of inexpensive oral tablets. But because fever may be the only sign of malaria, it may be difficult to distinguish it from other potentially life-threatening conditions.

CHD’s integrated approach enables health workers to make more accurate assessments of children with fever, providing them with the treatment they need and further referral if necessary, and to avoid excessive use of drugs.

Integrated case management is the primary intervention to save the lives of children suffering from malaria.

Countries adapt IMCI guidelines and training materials to make them appropriate for specific epidemiological profiles and other local conditions.
lated to improving home care and communication with mothers: to adapt the feeding recommendations, to identify and validate locally-used terms for signs of illness, and to design and test an adapted card for counselling mothers.

- Specific changes in materials required for adaptations most likely to be considered by countries.
- Instructions on how to make the physical changes in the charts and IMCI training modules, including simplified instructions for using the computer files that contain these materials.

Accompanying the IMCI Adaptation Guide are tools to assist in the adaptation process. These include computer files containing the generic charts and modules and an illustration book to use in producing camera-ready copies for local production. Training is also provided for key national staff and consultants involved in assisting countries with the adaptation materials. To date, 75 persons have been trained in adaptation workshops.

The adaptation process in countries. The adaptation process is a key element in national preparations for implementing IMCI. It is a mechanism for developing consensus on technical issues across disease conditions, and helps to mobilize a range of expertise from within and outside of ministries of health to contribute to the common effort to improve the quality of health care for children.

A subgroup of the national IMCI working group is assigned the task of reviewing the generic guidelines and collecting information to help make decisions on the adaptations needed. The subgroup includes persons from different technical units in the Ministry of Health (e.g., those concerned with malaria, nutrition, acute respiratory infections, diarrhoea, immunizations, and essential drugs) and their local expert advisers, including paediatricians and university professors. The group begins by reviewing the existing national guidelines and then, using the IMCI Adaptation Guide, adapts the IMCI guidelines to reflect the best feasible practices.

The process of reaching consensus and adapting the materials can take six months to a year. The time depends on such factors as whether national treatment policies exist or need to be developed, and the need for agreement on health system issues, including which drugs should be made available in first-level facilities.

Certain adaptations are essential. Others may be necessary to reach consensus on the case management guidelines. Essential adaptations include, for example:

- The selection of effective first- and second-line antibiotics and antimalarials for treatment of illness, depending on patterns of sensitivity;
- The identification of appropriate complementary foods for children of different age groups; and
- The identification of specific terms for signs of illness that are used in the communities in which IMCI is being implemented.

In addition to these essential adaptations, countries must reach consensus on treatment guidelines for each of the conditions covered in the course. Countries have different policies, for example, on which children should be given vitamin A. The recommendations on breastfeeding, including the timing for introducing complementary foods, need to be reviewed in order to make the interventions during the sick child visit compatible with other efforts to improve nutrition. Where HIV infection is highly prevalent, countries may consider several adaptations to the generic training materials, including how to manage the child with related infections that do not respond to initial treatment and how to counsel mothers on breastfeeding. The
TABLE 3
Major adaptations made to first-level IMCI guidelines by selected countries

<table>
<thead>
<tr>
<th>Country</th>
<th>Malaria risk categories included</th>
<th>Laboratory diagnosis of malaria added</th>
<th>Vitamin A supplementation added</th>
<th>Other Additions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bolivia</td>
<td>No, low, high malaria risk</td>
<td>___</td>
<td>___</td>
<td>Sore throat, wheeze</td>
</tr>
<tr>
<td>Ecuador</td>
<td>Malaria, no malaria risk</td>
<td>Yes</td>
<td>___</td>
<td>Dengue haemorrhagic fever</td>
</tr>
<tr>
<td>Indonesia</td>
<td>No, low, high malaria risk</td>
<td>Yes</td>
<td>Yes</td>
<td>Routine deworming</td>
</tr>
<tr>
<td>Nepal</td>
<td>No, low, high malaria risk</td>
<td>Yes</td>
<td>___</td>
<td>Sore throat, wheeze</td>
</tr>
<tr>
<td>Peru</td>
<td>Malaria, no malaria risk</td>
<td>Yes</td>
<td>___</td>
<td>Dengue haemorrhagic fever</td>
</tr>
<tr>
<td>Philippines</td>
<td>Malaria, no malaria risk</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Tanzania</td>
<td>High malaria risk only</td>
<td>___</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Uganda</td>
<td>High malaria risk only</td>
<td>___</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Viet Nam</td>
<td>Malaria, no malaria risk</td>
<td>Yes</td>
<td>___</td>
<td>Dengue haemorrhagic fever</td>
</tr>
</tbody>
</table>

adapted guidelines are then used to adapt the IMCI training modules and mother’s counselling card. Selected major adaptations made by nine countries are summarized in Table 3.

Guidelines for care at referral level

The existing IMCI guidelines describe outpatient care at first-level facilities. In addition, IMCI guidelines are also being developed for care of sick children at referral level. A manual on Management of the Child with a Severe Infection or Severe Malnutrition: Guidelines for Care at the First Referral Level in Developing Countries is being developed within the context of a project to improve the quality of care at referral facilities. Specific treatment plans are included in appendices to the manual. These guidelines are consistent with those for the outpatient management of the sick child.

The manual will also provide the technical foundation for the interventions to be developed for improving the quality of care in referral facilities. The content of the manual has benefited from the contributions of a large group of inter-

Essential adaptations to the generic IMCI guidelines

Following are three essential adaptations, illustrated by examples of adaptation decisions made in Uganda:

- **The selection of effective first- and second-line antibiotics for treating pneumonia, dysentery, and cholera.** These must be antibiotics to which organisms in the country are sensitive and that can be made available in first-level facilities.

  Uganda selected cotrimoxazole and amoxycillin for treatment of pneumonia; cotrimoxazole and nalidixic acid for dysentery; and cotrimoxazole and erythromycin for cholera.

- **The identification of appropriate complementary foods for children of different age groups.** These foods must be readily available, affordable, and culturally acceptable for mothers to give to their children.

  After a study of locally appropriate and available foods in the Central Region, Uganda made this recommendation for complementary foods to be introduced to children aged 6 months up to 12 months: Thick porridge made out of either maize or cassava or millet or soya flour. Add sugar and oil mixed with either milk or pounded groundnuts.

- **The identification of specific terms for signs of illness that are used in the communities in which IMCI is being implemented.** These terms help health workers communicate with mothers: to assess the child’s illness, and help mothers to recognize when to take a child to the health worker for care.

  In the Central Region, there was no commonly understood term for fever. A study found, however, that the best term that described fever, without other signs or conditions of illness, was *ayokya omubiri* (hot skin). The study also revealed that caretakers might not spontaneously volunteer the information that a child has had *olukusense* (the local word for measles) for fear of spreading the illness to other children in the house by naming it. Other words, such as *mulangira* (The Prince), may be used to avoid the name.
A particularly important step in the management of children seen at referral facilities is rapid triage and treatment for children requiring urgent attention. Special guidelines have been developed on this, and they are currently being field tested for validity and feasibility in Brazil and Malawi.

Management of the child with a severe infection or severe malnutrition

The guidelines for care at the first referral level in developing countries include:

- **Triage**: Triage assessment for all children, giving emergency treatment and assessing for further treatment
- **Problem-based assessment and diagnosis**: Child presenting with lethargy, unconscious or convulsing, with diarrhoea, cough, or fever
- **Treatment guidelines**
  - **Diarrhoea**: Severe dehydration, non-severe dehydration, non-dehydration, severe persistent diarrhoea, non-severe persistent diarrhoea, and dysentery
  - **Respiratory problems**: Severe pneumonia, cough or cold; conditions presenting with wheeze, severe stridor, pertussis, severe measles, foreign body inhalation, cardiac failure, pleural effusion, and empyema; and conditions presenting with common cough
  - **Fever**: Severe malaria, non-severe malaria, meningitis, septicaemia, typhoid, ear infections, urinary tract infections, bone or joint infections, dengue haemorrhagic fever, and fever lasting longer than 7 days
  - **High risk groups**: Young infants, and children with severe malnutrition and with HIV/AIDS

The manual went through two complete drafts in 1996-1997. At the end of 1997 it was sent out to a large number of developing country paediatricians and other experts for review. The production of a pocket version for use by physicians and nurses on the job is planned for 1998. The promotion and distribution of both the full and pocket versions is felt to be, in itself, an intervention that may have significant benefit.

Producing materials for training and follow-up

The Division, throughout its work to control diarrhoeal disease and acute respiratory infections, assumes responsibility not only for developing guidelines, but also for finding ways to introduce them for use in countries. An important step in facilitating their introduction is to provide training materials to improve the skills of health workers. Building on this experience, the Division during the last two years has developed training materials on integrated case management for first-level health workers and has done significant work in the development of training for other providers, including those at the referral level and breastfeeding counsellors.

Training materials for health workers in first-level health facilities

**Training in integrated case management.** During the biennium, the Division completed the preparation and the printing of the generic training materials for the 11-day inservice IMCI course Integrated Management of Childhood Illness (IMCI) for Health Workers in First-Level Facilities. The course is for persons working in the outpatient services of hospitals, health centres, health posts, dispensaries, and clinics. Health workers from these first-level facilities may include doctors, medical assistants, nurses, health assistants, or other health workers who treat sick children.
CHAPTER 2. IMPROVING HEALTH WORKER SKILLS

The course materials were designed to teach health workers effective management of sick children age one week up to five years. In addition to the effective management of illness, the IMCI training course emphasizes disease prevention and communication with caretakers. This course combines intensive classroom work with training modules and video and photo exercises, and active hands-on clinical practice in outpatient and inpatient clinical settings. These methods require that participants have sufficient reading ability to use the course modules and charts.

The training course is designed to teach the standard IMCI guidelines adapted for each country. After completion of the course, the first-level health workers are expected to have the knowledge and skills to:

- Assess, classify, and treat sick children accurately following the IMCI case management guidelines.
- Administer pre-referral treatment correctly and refer seriously ill children.
- Counsel caretakers about home care including how to give treatment, what signs to look for that indicate a child should immediately return to the health facility, and when to return for follow-up care.
- Check children’s immunization status routinely, and give immunizations when needed.
- Carry out feeding assessments of children who are less than two years old, and of all children who have anaemia or are very low weight-for-age.
- When necessary, to provide caretakers with appropriate nutrition and breastfeeding counselling.

Under the guidance of trained course facilitators and a clinical instructor, each participant attends ten clinical sessions, seeing 30 to 50 sick children in an outpatient clinic and in an inpatient ward. Clinical sessions allow participants to practise assessment, classification, treatment, and counselling skills using the IMCI case management guidelines. The clinical sessions include practice with hospitalized children presenting signs of severe disease. These provide opportunities for participants to learn the accurate assessment of all clinical signs

### Training materials available for the course Integrated Management of Childhood Illness (IMCI) for Health Workers in First-Level Facilities

- **A set of four wall charts that describe IMCI case management guidelines:**
  - Assess and classify the sick child age 2 months up to 5 years
  - Treat the child
  - Counsel the mother
  - Assess and classify the sick young infant
  - The charts are also in a convenient booklet form for use by course participants.

- **A set of seven training modules:**
  - Introduction
  - Assess and classify the sick child age 2 months up to 5 years
  - Identify treatment
  - Treat the child
  - Counsel the mother
  - Management of the sick young infant
  - Follow-up

- **A photo exercise booklet**

- **Two videos:**
  - Assess and classify the sick child
  - Assess and classify the sick young infant

- **For use during clinical practice in outpatient and inpatient clinical settings:**
  - Mother’s counselling card
  - IMCI case recording form

- **For course organizers and trainers of course facilitators:**
  - Course director’s guide

- **Three facilitator guides:**
  - Facilitator guide for modules
  - Guide for outpatient clinical practice
  - Guide for the inpatient clinical instructor

The IMCI Adaptation Guide is provided for adapting these training materials to the country context.
covered by the course, including even the more uncommon signs that indicate a need for urgent referral.

The guidelines for facilitation of classroom work contain instructions for introducing the seven training modules and using the instructional techniques: written exercises, individual feedback, group discussions, drills, presentations, demonstrations, short answer exercises and role plays. Several exercises cover the identification of clinical signs using photographs and a video that demonstrate the assessment of sick children and present several case studies.

Follow-up as a part of training. Training for the integrated management of childhood illness (IMCI) includes both initial skill acquisition and skill reinforcement. The IMCI course is designed to help first-level health workers acquire new skills to manage sick children more effectively. Health workers may find that it is difficult, however, to begin using these skills when they see children in their health facilities. They often need help to transfer what they have learned in the course to their own work situation.

A follow-up visit, the second component in the training of first-level health workers, is designed to reinforce the transfer of new skills. At least one follow-up visit should be conducted soon after the course, within one month, in order to help health workers apply what they have learned to their routine responsibilities. District supervisors and IMCI facilitators, who have been trained in IMCI, facilitation skills, and the follow-up tasks, conduct the visits.

CHD has developed Guidelines for Follow-Up after Training and materials for preparing supervisors and others to conduct the visit. These individuals must be able to review and reinforce integrated case management, and to identify and help solve the problems health workers face in their health facilities as they start using the new integrated approach.

The materials also assist countries in collecting information from follow-up visits in order to strengthen IMCI activities and gain the health system resources needed to facilitate integrated case management. The visits provide information on how well health workers care for sick children after they have been trained in IMCI. They give districts information also on the availability of drugs and other supplies, the functioning of critical equipment (e.g. refrigerators and supplies needed to maintain the vaccine cold chain), and difficulties referring children who need hospital care.

The guidelines for follow-up, completed in 1997, are now being used where health workers are receiving training in IMCI. (The section on Follow-up findings, later in this chapter, summarizes what has been learned during follow-up visits.)

Improving facilitator training. To ensure the quality of inservice IMCI training courses, the Division continued to develop effective and feasible options for the training of course facilitators. A first set of materials for course directors and facilitators was completed and introduced in courses at the beginning of the biennium. After a review of experience in training, the Division in 1997 proposed a new approach to facilitator training involving three phases:

- Participation in an 11-day standard IMCI course for first-level health workers, which gives future facilitators knowledge of the course content and methods used;
- Participation in a five-day facilitator training course in the instructional techniques used in the course; and
- Immediate application of newly acquired skills by the facilitator-trainees during a course for health workers, with the support of an experienced course director.

A manual for the five-day facilitator training was drafted. The training pro-
CHAPTER 2. IMPROVING HEALTH WORKER SKILLS

provides a guided tour through the course content, with emphasis on the use of the three facilitator guides (Facilitator Guide for Modules, Guide for Outpatient Clinical Practice, and Guide for the Inpatient Clinical Instructor). Participants practise the teaching techniques used in the course, including clinical instruction.

The manual was tested in October 1997 in Indonesia and in the Philippines. The field tests found that trainees were able to learn the content of all three facilitator guides during the five days, although this required about eight hours of work and one or two hours of homework daily. All facilitators had a chance to practise most of the teaching methods proposed in the guides. Based on their self-assessments, the future facilitators were comfortable with the teaching methods; clinical instruction, as anticipated, was considered the most difficult. The field tests also confirmed the need for future facilitators to be trained first in an 11-day standard IMCI course in order to master the technical content, before receiving the five-day facilitator training.

The Division has begun to review relevant sections of the current IMCI Course Director Guide to ensure that it contains the necessary guidelines for a course director to assess progress made by new facilitators and to provide effective supervision to support the development of skilled facilitators. The Division also is preparing more detailed guidelines for the third phase of IMCI facilitator training during which facilitators apply their newly acquired skills under the supervision of the course director.

Alternatives to the 11-day course. The course on Integrated Management of Childhood Illness is the primary tool available for training first-level health workers in IMCI. Several factors associated with the current training methodology, however, will affect the pace at which countries can train all first-level health workers who manage sick children. The training course requires that health workers leave their normal duties for eleven days to attend this full-time inservice course. The course also requires the availability of qualified trainers and a training site with adequate caseloads of children to support clinical practice.

To address the difficulties countries face in meeting these training conditions, alternative options for training first-level health workers to complement the 11-day course are being considered. The Division is collaborating with several partners who are involved in implementing alternative training with the aim of learning about the strengths and weaknesses of each approach in the context of district-level training. Approaches being reviewed include distance learning of diarrhoea case management in Indonesia, training of midwives in perinatal and neonatal care through self-learning and regular supervision in Brazil, and alternative IMCI inservice training schedules in Brazil, Indonesia, and Peru. A complementary course for health workers with limited reading ability, the example described below, has been field tested in Zambia.

The first phase should enable the Division to make a well-informed decision, if possible during the first half of 1998, about next steps in the development of alternative options for teaching the IMCI content to first-level health workers.

An example: Complementary course for health workers with limited reading ability. Health workers with limited literacy continue to play an important role in the management of sick children in most developing countries. In order to help these health workers carry out their responsibilities, the Division collaborated with the USAID-funded BASICS project on the development of a complementary IMCI course.
A course development seminar took place in Zambia in January 1997. The materials for a complementary course, based on guidelines included in the standard IMCI course, were then developed and pre-tested in Zambia in September 1997. A five-day training of facilitators preceded the course. The pre-test version of the complementary course was of 16 days' duration, and included classroom and clinical sessions. A new session, designed to assist participants in making the transition to IMCI in their facilities, was added to the course schedule.

Results of assessments conducted at the end of the course and during follow-up visits approximately five weeks later indicated that health workers found the course to be useful, and they had acquired knowledge and skills about IMCI. Recommendations were made to develop a feasible means of assessing the literacy levels of cadres of health workers for which this course is designed. Further revisions were also recommended before a second field test of the materials will be conducted in the second or third quarter of 1998.

Training materials for referral care of severe malnutrition

Within the project to improve referral care facilities, training materials are being developed for a five-day workshop on the management of severe malnutrition. This training will be based on the recently drafted WHO guidelines on the management of severe malnutrition as reflected in Management of the Child with a Serious Infection or Severe Malnutrition. A detailed list of the skills and knowledge required for staff working in small hospitals to manage severe malnutrition has been completed. A meeting of experts at the London School of Hygiene and Tropical Medicine met in November 1997 to review the list and confirm the appropriateness of the analysis. Next studies on the feasibility of implementing these guidelines in small hospitals will be conducted with staff who have the knowledge and skills to correctly manage patients. The results will be used to modify the plan for developing additional materials.

Identifying potential targets for training among other health care providers

IMCI to date has focused mainly on improving the quality of care provided by first-level government health workers. While increasing access to and quality of government health services is crucial, this will not ensure that all sick children receive appropriate care.

Six modules in the training for referral care on severe malnutrition

A. The child with severe malnutrition: Principles of care
   The physiology of severe malnutrition is presented to clarify why the child is especially vulnerable and must be treated differently.

B. Initial management
   Emergency care is recommended for a child with circulatory collapse or shock, hypoglycaemia, hypothermia, severe anaemia, corneal ulceration, and watery diarrhoea and/or vomiting.

C. Feeding
   Feeding with special formulas (F-75 and F-100), including vitamin and mineral mixes and the introduction of home foods, is described.

D. Daily care
   Nursing care for the malnourished child is presented, including caring for the eyes and for dermatosis, weighing of the child, measuring the pulse, counting respiration, and measuring temperature, and the importance of providing continuing care at night.

E. Problem solving
   A process is described for reviewing care on the ward, investigating the cause of problems, and solving them. The review includes, for example, monitoring individual patient progress and care, overall weight gain on the ward, and patient outcomes.

F. Involving mothers in care
   In recognition of the central role of mothers in providing the conditions to reverse malnutrition, the module describes how to encourage the mother's involvement in the care of the child on the ward and when the child is discharged. Some topics for teaching mothers are feeding and caring for their children, the importance of social stimulation, and how to make and use toys.
CHAPTER 2. IMPROVING HEALTH WORKER SKILLS

In many countries care is sought primarily from non-government health providers, including private physicians, licensed and unlicensed drug sellers, traditional healers, traditional birth attendants, and others. Therefore, for the desired impact on child morbidity and mortality, it is important to recognize the importance of non-government health providers and identify ways to promote their participation in, and contribution to, IMCI.

In 1997 a review identified what is known about non-government health providers, including the key issues and challenges in working with them. Most efforts to work with non-governmental health providers have been poorly documented and evaluated, making it difficult to say with any certainty what types of interventions work best, with which providers, and in what contexts.

Nonetheless, it seems likely that decisions about whether and how to work with non-government health providers need to be considered within the overall process of planning for the implementation of IMCI in countries. The Division, therefore, will begin in this area by exploring how to distribute treatment guidelines, being developed by the referral-care project, to non-government as well as public providers of health care. Appropriate avenues for distributing guidelines may be, for example, through professional associations and their continuing education activities. Options for influencing the practices of private pharmacists and other drug sellers will also be explored to find ways to improve the quality of care for families who use these providers.

Training materials on breastfeeding counselling

Complete materials for *Breastfeeding Counselling: A Training Course* have been available since 1994, and have been used in at least 36 countries for training health workers to counsel mothers about breastfeeding. Included is a strong emphasis on the practice of clinical and counselling skills, and intensive training of trainers. The original materials consist of a Director’s Guide, Trainer’s Guide, Participant’s Manual; a booklet on breastfeeding and maternal medication; and a flipchart, transparencies, and slides. In addition, in 1997 a book containing prints of the photographic slides was developed in order to facilitate training in situations where projection may be difficult.

The materials have now been translated and are available in Arabic, French, Portuguese, Russian and Spanish. In addition, they have been translated into other national languages in individual countries, including in China, Iran, Turkey, and Viet Nam.

An adaptation of the materials called *Breastfeeding Management: A Modular Course* has been developed in collaboration with UNICEF in Europe. This is principally for use in some Euro-

Many families seek private clinicians and other providers for the care for their sick children.

To improve the access of children to quality health care, it is necessary to reach these providers and explore with them ways they can improve their skills.

Breastfeeding promotion — one of the most feasible and cost-effective strategies to prevent childhood illness.

Even a modest improvement in breastfeeding practices could reduce by 10% the worldwide annual total of 11 million deaths in children under 5 years of age.

To achieve these gains, health workers need skills to support breastfeeding mothers — to help them to breastfeed optimally and to help them overcome difficulties should they arise.
pean countries in which it may not be possible to conduct a course during five or more consecutive days, or where it may be difficult to conduct clinical practice sessions in groups visiting health facilities. The course is divided into six modules, each composed of two or more sessions, which can be arranged in different ways and conducted on different days. Adaptations include the addition of key references, more theoretical details on a few topics such as hypoglycaemia of the newborn, and a session on changing hospital practices to become baby friendly in the European situation. Alternative ways to conduct clinical practice are also described. To teach the course, it is an advantage to have been trained as a trainer on the original breastfeeding counselling course, as the latter includes more exercises and practice using clinical and counselling skills.

**Training materials for community health workers**

Work was started in 1997 to examine the rationale and feasibility of supporting the involvement at community level of the community health worker (CHW) in the implementation of tasks related to Integrated Management of Childhood Illness.

A review is being conducted to assess whether IMCI interventions delivered through CHWs can:

- Improve the delivery of IMCI to populations particularly at risk within the community;
- Respond more adequately to the needs of families to manage childhood illness at home; and
- Facilitate the interaction between the community and health facility to serve as a bridge to improve care and increase access to more families.

Current evaluations confirm that CHWs can be successful channels for the delivery of services, as extenders of health services at community level and as support to families in responding more adequately to child health and development needs. It is expected that the results of the review will help identify the priority interventions to ensure that CHWs have the necessary knowledge and skills to deliver components of IMCI, that the community will benefit from their skills, and that appropriate capacities and mechanisms exist for their sustainable involvement.

**Early experience in developing materials for training community health workers.** A training project for community health workers in India was initiated with the involvement of WHO, the Ministry of Health and the NGOs, CARE, Family Welfare India and SWACH. The project addressed the needs of community health workers for an integrated approach to the management of cough or difficult breathing, diarrhoea, and undernutrition in young children. These workers are called Basic Health Workers (BHWs) in India and include Anganwadi Workers and Female Multi-purpose Health Workers.

The training materials, based on the IMCI guidelines, cover the clinical guidelines for cough or difficult breathing and diarrhoea, and counselling mothers about food and feeding the child, giving fluids, relieving cough, and when to return to or consult a health worker. They address the needs of literate BHWs who have access to drugs and who work in health posts at community level. The training helps the BHW to:

- Identify children who may have a serious illness and need referral;
- Advise mothers about simple home care during the child’s illness;
- Treat the most common children’s illnesses with selected medicines at home; and
- Provide advice on nutrition and promote health through simple measures.
(e.g. vitamin A supplementation, prevention of anaemia, and immunization).

The materials, field tested in Lucknow in August 1996 and translated into local languages, include a learner’s guide with a mother’s counselling card and laminated charts for the BHWs; a trainer’s manual; and a video, which illustrates the steps in assessment and the key clinical signs.

In 1997, more than 200 BHWs in seven states were trained during seven 5-day workshops. The methods used, based on a participatory teaching approach, combine classroom work and supervised practice both in the health clinic and at community level.

Follow-up supervisory visits found that BHWs practise what they have learned and that their counselling skills have improved. These first experiences have led to a proposal to expand the training to reach more BHWs.

The training of community health workers is also increasingly an IMCI priority in other regions. In Latin America, two countries have shown strong interest. The Regional Office for the Americas IMCI Unit is preparing a Training Course for Community Health Agents (CHA) and other materials to strengthen the roles of community volunteers. Brazil has expressed an interest in training CHWs as they are a very important group of health workers in service delivery: 30,000 CHWs are currently working at peripheral level and this number is expected to increase. Generic materials targeting CHWs are being developed in Colombia with the collaboration of the USAID-funded BASICS project.

In the African Region, a CARE-sponsored project on “Community Initiatives for Child Survival” in Kenya is designed to increase IMCI skills among CHWs. Two workers per village are trained in treating major childhood illnesses. Essential drugs are provided through Bamako Initiative pharmacies and are managed by a Village Health Committee, both located at subregional level. An evaluation of CHW performance in case management showed that they assessed, classified, and treated the child correctly in 67% of pneumonia cases, 80% of fever cases, and 40% of diarrhoea cases. However, the assessment indicated that the prevention and health promotion aspects of the CHWs’ work need to be strengthened, including their skills for communicating with mothers.

All these experiences are of great value to help understand more about the conditions under which CHWs can be mobilized to extend and complement the care provided in health facilities.

**Developing approaches to preservice training in IMCI**

Since the introduction of IMCI, some countries have expressed concerns about how to more rapidly achieve full coverage with IMCI training, how to make IMCI training cost-effective, and how to ensure the sustainability of IMCI implementation efforts.

As a possible answer to these questions, it was felt that practical options for IMCI preservice training should be developed as soon as possible, because this type of training is likely to be more sustainable and cost-effective than inservice training approaches.

In 1997 Tanzania began to experiment with using the standard IMCI first-level training course as a block in the preservice training of paramedical staff. IMCI training for tutors was conducted in October 1997, followed by the first course for students in a Clinical Officer’s school. The trial showed that the students learned quickly and well, and their performance at the end of the block course was at least as good as that demonstrated by first-level health workers who had been through the standard IMCI inservice course.
Problems that were identified reflected the increased pressure that this type of training imposes on the routine training provided by the school. Decisions on the use of this approach will be taken by the Tanzanian authorities after further experience has been gained over the coming months by teaching the course in the same school and in a school for more senior Assistant Medical Officers, planned for early 1998.

In other efforts to introduce IMCI into preservice training AMRO collaborated with the Latin American Association of Pediatrics (ALAPE) to develop a questionnaire to identify how the health conditions addressed by the IMCI strategy are currently taught in the major paediatric departments in the region. Contacts with the Pan American Federation of Colleges and Schools of Medicine (FEPAFEM) were also initiated to carry out a similar survey and to explore ways to improve the practical aspects of training in child health.

Meanwhile, the Division prepared for a meeting to review possible options for preservice training both in medical and paramedical teaching institutions. Representatives of medical and paramedical schools from all WHO regions attended this informal consultation in January 1998 to discuss:

- The general objectives of IMCI teaching;
- Possible options for including instruction on IMCI in the agendas of teaching institutions;
- Elements needed to adequately support IMCI teaching; and
- Steps for introducing IMCI teaching options in selected pre-service institutions.

Based on the recommendations from this consultation, the Division will proceed with further developmental work to support the introduction of IMCI in pre-service training institutions.

### Implementing training activities

#### IMCI training of first-level health workers

Recognizing that the effectiveness of IMCI will depend largely on how effectively health workers are trained, the Division provided intensive support to countries in the initiation of inservice training of health workers from first-level health facilities and emphasized the need for quality training to achieve an impact on improving skills.

**A training strategy.** Until now, inservice training has been the main channel for the introduction of the technical concepts of IMCI. All countries that have so far implemented IMCI have adapted the training materials as soon as they have completed their national adaptation of the IMCI clinical guidelines. Using the adapted materials, they have then developed and implemented training strategies in a limited number of districts.

The strategy for implementing IMCI training for first-level health workers needs to ensure the availability of skilled trainers and appropriate sites for classroom and clinical instruction. A training course for 18 participants, for example, requires a minimum of seven trainers: five facilitators, a clinical instructor and a course director. As individual trainers

---

**Quality criteria used in planning IMCI inservice training (11-day course)**

- Maximum of 24 participants per training course
- Ratio of facilitators to participants of no less than one to four
- The completion of all training modules
- A copy of the IMCI chart booklet for each participant to keep as a reference
- Duration of 80 hours
- Minimum of 30% of time in clinical practice
- Minimum of 20 sick children managed by each trainee
are unlikely to be available for more than three courses during a year, the training plans must include the development of a sufficiently large pool of trainers to reach the desired training coverage.

The first training in all countries has been a national level course. The first course is for senior (or master) trainers, decision-makers in the Ministry of Health and others, such as local expert advisers from the paediatric society. This core group conducts the first training of provincial or district staff who will become the local facilitators. In most countries this core group has also been used to ensure the quality of the subsequent training and follow-up activities at the district level. They have been course directors and clinical instructors who provide back-up support to district facilitators. When expansion to new districts is called for, master trainers from the core group provide their expertise to train new facilitators, and help to maintain the quality of training during the expansion.

**An example: The training strategy in Tanzania.** In Tanzania this strategy was applied to the various levels of training, including follow-up of trained health workers, in order to develop the capacity of trainers and maintain the quality of training (Figure 6). The first step was an 11-day course conducted by WHO for ten potential national master trainers. Included in this group were national staff of the Ministry, local WHO staff, regional medical officers, instructors at schools for medical assistants, and professors of paediatrics. Nine of these went on to facilitator training, and they in turn prepared 29 district facilitators in two courses. The district facilitators received both the 11-day training course and the 5-day facilitator training. The district facilitators, supported by their national master trainers, then began to train front-line health workers at first-level outpatient facilities.

The first training to conduct follow-up visits to IMCI-trained health workers at their facilities was used as an opportunity to train both national and district trainers, and WHO provided staff input for this. National master trainers supported the follow-up process for the first round in each district, by training district supervisors and backing them up on the first round of visits. Thereafter the trained district facilitators and supervisors took full responsibility. To monitor the quality of activities, the national IMCI group introduced a standard format for reporting on all training courses and follow-up visits.

Of the 48 potential facilitators who were trained at various levels to serve the needs of six districts, 38 completed their training successfully but only 30 (63%) could be made available to conduct other courses. This drop-out rate, similar to that found in other countries implementing IMCI training, is an important factor to be considered in planning for this type of training.

**FIGURE 6**

Training strategy for building national and district-level capacity, and maintaining the quality of IMCI training: Example from six districts in Tanzania

---

* The 9 qualified national trainers can perform one or more training roles.
The training strategy developed by Tanzania supports higher quality throughout the implementation of activities to improve health worker skills and the initial monitoring of the implementation of IMCI at the district level. This strategy, however, is demanding on central resources, particularly on the national trainers. This highlights the importance of the need for planning for decentralizing the routine responsibilities of training, including course direction, and developing over time greater capacity at the district level for these training roles. Developing this capacity at the district level makes it more feasible for the national team to play their essential role in assuring quality, and it will permit them to focus more on other aspects of implementing IMCI.

**IMCI training courses conducted.** By the end of 1997, a total of 40 countries had initiated activities to introduce the IMCI strategy, with inservice training as an important component. This included the preparation of locally adapted guidelines and adapted training materials.

Among the 40 countries that started the introduction phase of IMCI, 16 countries had conducted at least one training course by the end of 1997. As a first step, all of these countries conducted training courses for national course facilitators and key national IMCI implementation staff. By the end of 1997, thirteen countries had held their first training courses at district level.

Three types of IMCI training were conducted in 1996-1997 to support the training strategy, described above (Figure 7):

- Eleven **intercountry courses** were held to build the capacity within regions to assist countries implementing IMCI. (Two intercountry courses were also conducted during the previous biennium);
- Thirty-three **national courses** were conducted to develop the national capacity for training, as well as for guiding planning, adaptation, and other implementation activities; and
- Ninety-five **district courses** were conducted to train front-line health workers in first-level facilities.

The Regions of Africa and the Americas have begun to develop more capacity
CHAPTER 2. IMPROVING HEALTH WORKER SKILLS

regionally through their intercountry IMCI clinical courses (Table 4), as well as through IMCI planning and adaptation workshops. As a result these two regions have made considerable progress in the introduction and early implementation of IMCI in many of their countries (Table 5). While other regions have begun to initiate some national training, and even a few district courses (e.g. in the Region of the Western Pacific), the capacity for these regions will need significant strengthening in order to support similar progress.

Implementing IMCI in a way that is effective and sustainable is complex – producing locally adapted case management guidelines and training materials, improving the health system to support integrated case management, and implementing a training strategy that will result in and maintain high quality training. Reaching the step of training front-line health workers, as a result, is all the more impressive in the thirteen countries that have achieved this in the first two years of the new IMCI strategy (Table 5).

### TABLE 4
**Intercountry IMCI courses for the development of regional and national capacity, 1996-1997**

<table>
<thead>
<tr>
<th>Region*</th>
<th>Intercountry courses</th>
<th>Number trained</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>4</td>
<td>78</td>
</tr>
<tr>
<td>The Americas</td>
<td>7</td>
<td>218</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td><strong>296</strong></td>
</tr>
</tbody>
</table>

* No intercountry courses were held in the Regions of Europe, South-East Asia, or the Western Pacific.

### TABLE 5
**Reported national and district-level IMCI courses, 1996-1997**

<table>
<thead>
<tr>
<th>Region and country</th>
<th>National training for trainers</th>
<th>District training of health workers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Courses</td>
<td>Number trained</td>
</tr>
<tr>
<td><strong>Africa</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tanzania</td>
<td>3</td>
<td>47</td>
</tr>
<tr>
<td>Uganda</td>
<td>8</td>
<td>136</td>
</tr>
<tr>
<td>Zambia</td>
<td>1</td>
<td>16</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>12</td>
<td>199</td>
</tr>
<tr>
<td><strong>The Americas</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bolivia</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>Brazil</td>
<td>5</td>
<td>75</td>
</tr>
<tr>
<td>Dominican Republic</td>
<td>2</td>
<td>60</td>
</tr>
<tr>
<td>Ecuador</td>
<td>5</td>
<td>159</td>
</tr>
<tr>
<td>El Salvador</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Honduras</td>
<td>1</td>
<td>28</td>
</tr>
<tr>
<td>Nicaragua</td>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>Peru</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>16</td>
<td>349</td>
</tr>
<tr>
<td><strong>Eastern Mediterranean</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sudan</td>
<td>1</td>
<td>25</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1</td>
<td>25</td>
</tr>
<tr>
<td><strong>South-East Asia</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indonesia</td>
<td>1</td>
<td>24</td>
</tr>
<tr>
<td>Nepal</td>
<td>1</td>
<td>25</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>2</td>
<td>49</td>
</tr>
<tr>
<td><strong>Western Pacific</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Philippines</td>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>Viet Nam</td>
<td>1</td>
<td>15</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>2</td>
<td>35</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>33</td>
<td>657</td>
</tr>
</tbody>
</table>

* Seven-day IMCI courses (rather than the WHO 11-day IMCI course for first-level health workers)
Follow-up findings. The IMCI approach emphasizes follow-up after training as an integral part of the training process. (For a description of the follow-up process, see the Training materials for first-level health workers, described previously in this chapter.) The guidelines for follow-up recommend that a facilitator and/or district supervisor visit each trained health worker at least once, within one month after participation in an IMCI course. The Guidelines for Follow-up after Training provide a set of activities for the visit with job aids to observe case management and review facility supports.

The visits are designed to help newly trained health workers use their skills, and to identify and solve problems they and others in the facility have encountered in trying to apply the new case management approach. During the visit some information is collected on the quality of care and the facility supports needed to give the care (e.g. availability of drugs and other supplies, status of equipment, and organization of work).

The results from follow-up visits have been encouraging. The first rounds of visits in three countries – Tanzania, Uganda and the Philippines – found that most health workers had continued to practise the new integrated approach to case management when they returned to their facilities after training (Table 6). Health workers were found to be now using their IMCI chart booklets, and in many cases the patient recording forms, which had been introduced during the course. They were able to correctly manage most children when compared to the classification and treatment decisions made by supervisors. For example, they identified and referred most severe cases needing referral (28 cases identified and referred by health workers of 33 severe cases needing referral based on the supervisor's decision); and a high proportion of children who needed an antibiotic (69 of 79 children needing an antibiotic), an antimalarial drug (71 of 76 children needing an antimalarial), and/or oral rehydration salts (ORS) solution (14 of 19 children needing ORS) received these treatments from the trained health workers.

### TABLE 6
Summary of information from IMCI follow-up after training

<table>
<thead>
<tr>
<th>Information on correct case management</th>
<th>Uganda (2 districts)</th>
<th>Tanzania (6 districts)</th>
<th>Philippines (1 district)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Severe cases referred</td>
<td>22 of 27</td>
<td>5 of 5</td>
<td>1 of 1</td>
<td>28 of 33</td>
</tr>
<tr>
<td>Severe cases who received first dose of antibiotic before referral</td>
<td>—</td>
<td>3 of 5</td>
<td>1 of 1</td>
<td>4 of 6</td>
</tr>
<tr>
<td>Cases needing antibiotics who received a full course of antibiotics at the health facility</td>
<td>44 of 49</td>
<td>21 of 26</td>
<td>4 of 4</td>
<td>69 of 79</td>
</tr>
<tr>
<td>Cases of malaria who received a full course of antimalarials at the health facility</td>
<td>28 of 31</td>
<td>43 of 45</td>
<td>—</td>
<td>71 of 76</td>
</tr>
<tr>
<td>Cases of diarrhoea with some dehydration who received ORS solution in facility</td>
<td>8 of 11</td>
<td>5 of 7</td>
<td>1 of 1</td>
<td>14 of 19</td>
</tr>
<tr>
<td>Cases who should have received an immunization and received it the day of the visit</td>
<td>—</td>
<td>7 of 19</td>
<td>0 of 4</td>
<td>7 of 23</td>
</tr>
<tr>
<td>Cases who received an oral drug whose caretakers when leaving the facility knew how to administer the drug correctly</td>
<td>—</td>
<td>28 of 40</td>
<td>3 of 4</td>
<td>31 of 44</td>
</tr>
<tr>
<td>Cases to be treated at home whose caretakers knew the three rules of home care (giving fluid, food, and when to return immediately)</td>
<td>—</td>
<td>27 of 47</td>
<td>8 of 10</td>
<td>35 of 57</td>
</tr>
</tbody>
</table>
CHAPTER 2. IMPROVING HEALTH WORKER SKILLS

Other countries, for example, Bolivia and Peru, also report that health workers are implementing their training: they are using their chart booklets and patient recording forms to guide them, they check for danger signs and the minimal symptoms included in IMCI, and they are using drugs more rationally.

Integrated case management often identifies overlapping conditions and the need for multiple treatments. The IMCI course therefore emphasizes techniques for instructing caretakers on how to give each treatment at home. During the follow-up visits, mothers and other caretakers demonstrated in exit interviews that most knew how to give all prescribed oral drugs, with the correct dose, to their children (31 of 44 caretakers interviewed). This demonstrates the effectiveness of the special emphasis on instructing mothers on home care, as integrated management is often complicated by the need of the mother to give her child more than one drug.

Follow-up visits found that, since taking the course, many health workers (and other staff in the facility, whom they have instructed) have begun to ask the caretaker to give the child the first dose, under supervision, before leaving the facility. The caretaker demonstrates what she remembers on how to give the drug, learns to give the correct dose, and gains confidence that she will be able to provide correct treatment at home. Many health workers mention that this new practice is useful for teaching caretakers and checking their understanding of the instructions.

When difficulties in case management or caretaker knowledge are identified, the follow-up visit is an opportunity to help the health worker identify and correct the problems. The visit, as a result, is used to reinforce the comprehensive set of skills that have been learned during IMCI courses.

The follow-up visits have also identified problems in facility supports for case management, for example: breakdowns in the cold chain for maintaining vaccines; the inability of many facilities to provide daily vaccination services; shortages of drugs used in integrated case management, particularly pre-referral drugs (Table 7); and lack of access to referral-level facilities. The

<table>
<thead>
<tr>
<th>TABLE 7</th>
<th>Health facility capability for IMCI (trained health worker and IMCI drugs available)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Uganda</td>
</tr>
<tr>
<td>Health facilities with essential ORS and other essential IMCI drugs</td>
<td>*25 of 70</td>
</tr>
<tr>
<td>Facilities with at least 50% of clinical staff trained in IMCI</td>
<td>—</td>
</tr>
</tbody>
</table>

*excludes IM chloramphenicol and quinine
**excludes IM chloramphenicol

What mothers are saying about the care their children receive with IMCI

The nurses in this centre have become like doctors. They examine my child completely.  
Mother in a health centre (Uganda)

My child gets better attention and better treatment now. [The health worker] spends more time listening to me and examining my child — he even picked up my child and held him.  
Mother in a dispensary (Tanzania)

The health workers are now all very polite and they talk to us. They ask us everything.  
Mother in a health centre (Uganda)

I am satisfied today because the nurse talked to me about many things. She even asked me to show her how I will give this pill.  
Mother in a health centre (Philippines)

The people in this centre have changed a lot. Did they get a salary increase?  
Mother in a dispensary (Tanzania)

Don’t feel bad that you are waiting. My child was thoroughly examined and that took time. Your child will also be examined from head to toe. So wait for your turn and you will be happy.  
One mother talking to another (Philippines)

I am happy. The doctor told me exactly what to do when I go home. For the first time I think I know how to give the medicine to my child.  
One mother talking to another (Philippines)
visits provide valuable information to help officials at the district or national level to take corrective action, if possible.

Some problems identified through follow-up visits, however, require broader collaboration to find a solution. The correct application of the IMCI guidelines in assessing and classifying children, for example, identifies children who must be referred because appropriate care is not available for them at a first-level facility. There are many barriers to referral, however, including poor transportation, distance, cost, or too few referral hospitals, as well as the social conditions that prevent families from seeking referral care. The documentation during follow-up visits on the nature and extent of this problem in many communities can be used to mobilize cross sector efforts to find a solution.

Lessons learned from IMCI training to date.

Recognizing the importance of maintaining standards of quality in IMCI training as a prerequisite for successful IMCI implementation, the Division continued to closely monitor IMCI training courses and post-course follow-up visits conducted at country level. (See Chapter 5, for information on the efforts to document the early implementation of IMCI.) The main objectives of this monitoring were to provide immediate assistance to countries and to continue the search for the most effective and feasible ways of providing inservice training to first-level health workers in IMCI.

The first two years’ experience of conducting inservice IMCI courses led to some early conclusions and raised a number of important issues related to training:

- The 11-day training course is an effective tool for teaching health workers from first-level health facilities how to manage sick children using the IMCI approach.

- In each country it is helpful to test the adapted course materials during one or two training courses before they are used on a larger scale.

- The training of the course facilitators is a multi-step process, which includes the participation of the facilitators in a full course, followed by five days’ training in facilitation techniques and by supervised application of the newly acquired facilitation skills.

- It often takes several courses before a facilitator becomes confident with the course content as skills increase with additional practice in facilitation.

- Considering the teaching methods used to provide maximum individual instruction, an appropriate ratio is one facilitator to three to four participants (1:3-4).

- The course requires good clinical facilities with staff who are well-informed about IMCI procedures, busy outpatient clinical settings and good paediatric wards with a variety of patients.

- The course requires that participants have adequate reading abilities; even so, the existing training materials are not designed for self-instruction but require the presence of trained course facilitators.

- The follow-up of trainees is an essential part of training and is important in helping the course participants to start using their newly acquired skills in their own health facilities; persons conducting follow-up visits should be trained in IMCI clinical skills and in course facilitation skills.

- Information from follow-up visits stimulates cross sector collaboration, for example, to provide needed drugs and other supplies, to review policies on immunization and other services, and to improve referral pathways and care.
Progress in the implementation of IMCI 1996–1997

Countries implementing IMCI. IMCI implementation goes through three phases. In the introductory phase, countries conduct orientation meetings, train key decision makers in IMCI, identify a management structure for preparing for IMCI, planning and early implementation, and work for government commitment to move forward with the IMCI strategy.

In the early implementation phase, countries gain experience while implementing IMCI in a limited geographic area. They develop their national strategy and plan, adapt the IMCI guidelines to their national context, build management and training capacity in a limited number of districts, start implementing and monitoring IMCI in first-level facilities, and review their experience before planning for expansion.

During the expansion phase, countries increase the range of IMCI interventions, and increase their coverage. An important challenge during the expansion phase is maintaining quality while expanding coverage.

The two maps presented here show the number of countries in each of the three phases of IMCI implementation in January 1996 (Figure 8), at the start of the biennium, and in December 1997, at the close of the biennium (Figure 10). During this two-year period, 26 new countries started IMCI, and discussions to proceed with IMCI had started in at least another ten countries.

Global monitoring of IMCI implementation. CHD and UNICEF monitor global progress in the implementation of key IMCI activities at country level through the use of milestones and indicators. Milestones are country achievements related to stages of IMCI implementation. To date they have been defined only for areas with IMCI interventions that are available now, or will be soon. Additional milestones will be identified as new interventions become available. Indicators identify the outcomes of implementing IMCI.

FIGURE 8
Implementation of IMCI early 1996
The progress of countries in passing selected IMCI milestones is summarized in Figure 9. Global goals have been set for a few milestones in 1997 and for all of them beginning in 1999.

Lessons learned. The ongoing documentation of early experience, coupled with early efforts at global monitoring, have and will continue to provide essential information to guide further implementation of the IMCI strategy. Among the most important lessons learned during these first two years are the following:

- Countries and partners must address all three components of the IMCI strategy (improving health workers’ skills, improving the health system to support IMCI, and improving family and community practices) for IMCI to realize its potential in improving child health. At country level, early planning should address all three components, even if activities are implemented in a staggered fashion.

- The adaptation of the IMCI guidelines to the local epidemiological conditions.
and the planning for IMCI implementation provide countries with an opportunity to update their clinical standards and to rationalize the delivery of primary health care services.

- IMCI is feasible for implementation at first-level facilities, and follow-up visits find that it leads to significant improvements in the quality of service.
- Both high-level Ministry of Health commitment and strong management capacity at the district level are needed to ensure the sustainability of IMCI interventions.
- During the expansion phase, countries need to develop a sustainable strategy to ensure that the quality of IMCI activities is maintained.

Training to improve breastfeeding practices

The promotion of breastfeeding is one of the most feasible and cost-effective strategies to prevent childhood illness. The Division is strongly committed to promoting breastfeeding, particularly through activities to improve skills of persons working throughout the health services.

Training in breastfeeding is conducted at three interlinked levels: the IMCI course, for first-level health workers; a 40-hour breastfeeding counselling course, for the mid-level health worker; and a four-week specialist course, for trainers and programme organizers.

Breastfeeding in the IMCI course. The integration of basic support for breastfeeding mothers into the Integrated Management of Childhood Illness Course for First-Level Health Workers is an important innovation. It extends the concept of breastfeeding management beyond specialized maternity services and the Baby Friendly Hospital into general primary care. The training, as a result, reaches a wide range of health workers who are not usually included in other breastfeeding courses. By helping with breastfeeding they can provide better case management of children who are ill and are being fed inadequately. For the bottle-fed infant who develops diarrhoea, for example, they can help the mother to re-establish exclusive breastfeeding.

IMCI-trained health workers can also give mothers continuing encouragement and help them to breastfeed optimally to prevent illnesses. This continuing care contributes to fulfilment of the Ten Steps to Successful Breastfeeding, on which the Baby Friendly Hospital Initiative is based – in particular, Step 10, which calls for support of mothers after they have left the maternity facility. Although Step 10 specifies the use of breastfeeding support groups, experience during the first eight years of the Initiative shows that continuing help can be given in a number of appropriate ways, including through health services.

Skills to support breastfeeding in the IMCI course

In the IMCI course, first-level health workers learn to assess breastfeeding practices of mothers of all children age less than 2 years, and those children who have anaemia or are very low weight-for-age.

The assessment of breastfeeding practices includes:

- Asking the mother
  - Do you breastfeed your child?
    - If yes, how many times during the day?
    - Do you breastfeed during the night?
  - Does the child take any other food or fluids?
    - If yes, what food or fluids?
    - How many times per day?

- Observing a breastfeed for four minutes
  - Is the child able to attach?
  - Is the child suckling effectively?

If health workers identify problems, they counsel mothers on how to use simple techniques to provide more optimal feeding — to correct the child’s position and attachment to the breast.

For more difficult problems, they refer the mother to a health worker who has been trained in breastfeeding counselling.
The inclusion of skills to support breastfeeding in IMCI training has proved popular among course participants, most of whom have not received training in practical aspects of breastfeeding previously. They welcome the opportunity to learn something concrete and specific that they can do to help mothers and influence feeding favourably.

**Breastfeeding counselling course.** CHD developed the 40-hour *Breastfeeding counselling: A training course*, in collaboration with UNICEF, as a tool to increase the clinical and counselling skills of health workers caring for mothers and babies in maternity, paediatric and outpatient facilities. Skilled guidance and support for mothers has been shown to increase breastfeeding rates significantly in a wide variety of settings, and to be among the most cost effective health interventions available.

The training strengthens and extends the Baby Friendly Hospital Initiative. It enables health workers in maternity facilities to guide and support mothers more effectively. Shorter (18-hour) courses, designed primarily to train maternity staff to change their routines and to become baby friendly, do not allow enough time to develop adequate clinical and counselling skills. Training health workers in outpatient facilities of hospitals and health centres extends the Baby Friendly Hospital Initiative beyond the hospital. It enables health workers to provide mothers with continuing help after discharge from the maternity ward.

Thus the breastfeeding counselling course fits well into a country’s breastfeeding programme after the country begins to implement the Initiative – when hospitals have already started instituting practices such as the initiation of breastfeeding in the first hour after delivery, rooming-in, demand feeding, and restriction of supplementary feeds. Experience has shown that it can be difficult to make these changes and improve counselling skills in the same step.

Breastfeeding counselling is introduced into a country through national training courses. Some health workers who are trained in these courses may then be selected to be trained as trainers. Their training includes being closely supervised during their first experience in training other health workers, immediately following the facilitator training course.

The Philippines, for example, held three national level courses in August 1994 after the introductory field test (Figure 11). A team of national trainers, mostly Wellstart Associates, were prepared with the assistance of a WHO staff member. The core team of national trainers then conducted six regional courses to develop teams of regional trainers. Extensive repeat training has also taken place – at least 34 local courses have been reported so far, involving over 1 000 health staff.

The breastfeeding counselling course has now been introduced with WHO’s support into 26 countries. Sixteen of
these countries are known to have already conducted further training after the initial courses (Figure 12). Eleven of these are also countries that have begun to implement IMCI. The course has also been introduced into at least twelve other countries with assistance either from UNICEF or the Ministry of Health, or independently by a university or an NGO. (For the results of the evaluation of this course, see the section in Chapter 4 on Research and development to improve breastfeeding and complementary feeding.)

**The strategy for breastfeeding in IMCI.** The development of an overall strategy for the implementation of IMCI has made it possible to clarify within it the position of breastfeeding activities. There are interventions in each of the three components of the IMCI strategy that contribute to improving breastfeeding practices (Table 8).

To integrate breastfeeding into IMCI, it is necessary that those responsible for the Baby Friendly Breastfeeding Initiative and other breastfeeding activities be included in discussions from the beginning – whether at regional, country, or district level. The responsible person or group is invited to participate in planning and in adaptation of IMCI materials, to ensure that activities are complementary, even if implemented independently.
A plan for the introduction of the breastfeeding counselling course should be made as part of the plan for introducing IMCI, to ensure that trained breastfeeding counsellors are available to provide referral care in districts where IMCI is being implemented. IMCI trainers should participate in breastfeeding counselling courses, and their trainers should be included in IMCI courses in order to ensure that the breastfeeding sections of IMCI are taught adequately and so that follow-up during facility visits can include the assessment of support for breastfeeding provided by trained first-level health workers. Hospitals in districts where IMCI is being implemented should be encouraged to become baby-friendly, and to train appropriate members of their staff in breastfeeding counselling.

It is hoped that linking training in breastfeeding counselling with the implementation of the IMCI strategy will increase the effectiveness of breastfeeding support at both first and referral level facilities, and will strengthen the care provided the children who are at risk due to inadequate breastfeeding.

The results of joint efforts to improve breastfeeding practices are now being seen in countries that have been most active. Brazil, for example, has had an active programme to promote breastfeeding for a number of years. The programme received support from several sources, including support for health worker training from CHD (and from the former Division of Diarrhoeal and Acute Respiratory Disease Control). It is encouraging that there has in the last ten years been a nationwide increase of nearly 10% in breastfeeding rates among infants in the first year of life (Figure 13).

**TABLE 8**

<table>
<thead>
<tr>
<th>IMCI component</th>
<th>Breastfeeding intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improvements in skills of health workers</td>
<td>Care at the first level provided by IMCI trained health workers; referral care provided by selected health workers trained in the 40-hour breastfeeding counselling course.</td>
</tr>
<tr>
<td>Improvements in the health system to support IMCI</td>
<td>The Baby Friendly Hospital Initiative, and deployment of trained staff to give breastfeeding counselling in maternity facilities and in outpatient facilities.</td>
</tr>
<tr>
<td>Improvements in family and community practices</td>
<td>Community or peer counsellors, breastfeeding support groups, legislation to protect working women, and implementation of the International Code of Marketing of Breastmilk Substitutes.</td>
</tr>
</tbody>
</table>

**FIGURE 13**

Breastfeeding rates at 4, 6, 12 and 24 months according to two national surveys, Brazil, 1986 and 1996

<table>
<thead>
<tr>
<th>Proportion of children breastfed</th>
<th>1986</th>
<th>1996</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 months</td>
<td>61.6</td>
<td>71.1</td>
</tr>
<tr>
<td>6 months</td>
<td>49.9</td>
<td></td>
</tr>
<tr>
<td>12 months</td>
<td>29.3</td>
<td>37.4</td>
</tr>
<tr>
<td>24 months</td>
<td>14.7</td>
<td>17.2</td>
</tr>
</tbody>
</table>


**CDD and ARI training**

The Division continued to support countries to improve and monitor the quality of training of all levels of health workers in effective management of acute respiratory infections (ARI) and control of diarrhoeal diseases (CDD). More emphasis also was given to the strengthening of ARI and CDD training in preservice settings, both medical schools and basic training institutions.
CHAPTER 2. IMPROVING HEALTH WORKER SKILLS

Inservice training. The Division continued monitoring ARI and CDD training activities using an updated version of the Annual Training Summary, which is completed by the staff of national ARI and CDD programmes. A summary of the information received from the WHO Regions is presented in Tables 9 and 10.

More than 90% of all managerial staff trained in ARI and CDD programme management were from either district or provincial level. The continuing trend towards provincial, away from national, training is a reflection of the process of ongoing health reforms in many countries aiming for greater decentralization of health services.

Table 10 presents the total number of ARI, diarrhoea or combined ARI and diarrhoea case management training courses reported in 1996-1997. Overall, there was a decline in the reported number of courses conducted separately for ARI and CDD, in comparison with the previous biennium. This decline may be linked to the fact that during 1996-1997 an increasing number of countries favoured the introduction of IMCI training instead of continuing disease-specific training.

The Division continued to encourage countries to pay attention to the quality of case management training conducted at all levels of the national health system and for all categories of health personnel. The annual training summary obtains information on the quality of training courses. It includes questions related to the duration of the training courses, the use of WHO-recommended methodology, the use of appropriate training materials, and whether each trainee managed at least three patients.

The review identified that on average at least 50% of reported clinical management training courses met all four quality criteria, and almost 80% of courses met at least three of the four criteria. Most of the better quality courses reported during 1996-1997 were conducted in about 200 training units, which continued to play important roles as centres of excellence for national ARI and CDD programmes.

Preservice training in diarrhoea and ARI case management. The Division continued to support countries in strengthening the teaching of diarrhoeal diseases and ARI management in medical schools and in basic training schools that are responsible for preparing nurses and other health workers. The broad objectives of this

<table>
<thead>
<tr>
<th>Region</th>
<th>ARI National</th>
<th>ARI Provincial</th>
<th>CDD National</th>
<th>CDD Provincial</th>
<th>Combined National</th>
<th>Combined Provincial</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>18</td>
<td>90</td>
</tr>
<tr>
<td>The Americas</td>
<td>1 470</td>
<td></td>
<td>561</td>
<td></td>
<td>1 445</td>
<td></td>
</tr>
<tr>
<td>Eastern Mediterranean</td>
<td>375</td>
<td>276</td>
<td>2 917</td>
<td></td>
<td>159</td>
<td>531</td>
</tr>
<tr>
<td>Europe</td>
<td>35</td>
<td>35</td>
<td>1 115</td>
<td>1 115</td>
<td>31</td>
<td>984</td>
</tr>
<tr>
<td>South-East Asia</td>
<td>24</td>
<td>2</td>
<td>769</td>
<td></td>
<td>21</td>
<td>56</td>
</tr>
<tr>
<td>Western Pacific</td>
<td>2</td>
<td>18</td>
<td></td>
<td></td>
<td>15</td>
<td>106</td>
</tr>
<tr>
<td>Total</td>
<td>436</td>
<td>4 008</td>
<td>313</td>
<td>5 362</td>
<td>244</td>
<td>3 106</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Region</th>
<th>ARI Courses</th>
<th>ARI Health workers trained</th>
<th>Diarrhoea Courses</th>
<th>Diarrhoea Health workers trained</th>
<th>Combined Courses</th>
<th>Combined Health workers trained</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>185</td>
<td>3 293</td>
<td>116</td>
<td>2 145</td>
<td>65</td>
<td>1 154</td>
</tr>
<tr>
<td>The Americas</td>
<td>531</td>
<td>17 585</td>
<td>402</td>
<td>11 540</td>
<td>193</td>
<td>2 607</td>
</tr>
<tr>
<td>Eastern Mediterranean</td>
<td>777</td>
<td>12 965</td>
<td>942</td>
<td>15 891</td>
<td>69</td>
<td>1 541</td>
</tr>
<tr>
<td>Europe</td>
<td>521</td>
<td>8 416</td>
<td>692</td>
<td>9 214</td>
<td>27</td>
<td>1 159</td>
</tr>
<tr>
<td>South-East Asia</td>
<td>767</td>
<td>20 469</td>
<td>223</td>
<td>3 926</td>
<td>8</td>
<td>174</td>
</tr>
<tr>
<td>Western Pacific</td>
<td>305</td>
<td>6 100</td>
<td>43</td>
<td>1 089</td>
<td>60</td>
<td>871</td>
</tr>
<tr>
<td>Total</td>
<td>3 086</td>
<td>68 828</td>
<td>2 418</td>
<td>43 805</td>
<td>422</td>
<td>7 506</td>
</tr>
</tbody>
</table>
effort are to improve the theoretical and practical knowledge of students about standard case management, and to ensure that students develop the basic skills required to carry out standard case management in accordance with the guidelines of their national CDD and ARI programmes.

By the end of 1997, teachers from more than 160 medical schools in almost 40 countries had attended workshops that introduced the training package *Strengthening the Teaching of Diarrhoeal Diseases in Medical Schools (MedEd)*. During the biennium, *MedEd* workshops were conducted in Brazil, Colombia, Fiji, Honduras, Iran, Malawi, Mexico, Morocco, Pakistan and Saudi Arabia. Using the *MedEd* methodology and standard WHO ARI case management materials, a number of countries (Brazil, Colombia, Fiji, Iraq, Mongolia, Pakistan and Viet Nam) also conducted ARI-focused *MedEd* workshops.

In addition to providing support to country workshops, in 1996-1997 the Division carried out a review of *MedEd* progress in three countries: Bangladesh, Ethiopia and Myanmar. The objective of this review was to assess to what extent workshop participants were able to implement what they had learned during the *MedEd* workshop. The review confirmed that the schools assessed were giving more time to teaching on diarrhoeal diseases, were using the diarrhoea case management chart to teach students, and were placing more emphasis on clinical instruction and interactive teaching. The review also found that individual clinical practice was limited due to the large number of students, and that formal monitoring and assessment of students’ clinical skills was often deficient.

To help preservice training institutions overcome difficulties encountered when trying to strengthen the teaching of diarrhoeal diseases and ARI, the Division provided support to countries throughout the biennium to help them conduct follow-up of activities after a *MedEd* workshop. In 1997, the Division prepared guidelines for persons responsible for the planning and implementation of *MedEd* follow-up. Testing of the follow-up guidelines began in late 1997, and the results are expected to become available in early 1998.

As clinical practice by students in a diarrhoea or ARI training unit is an integral part of the *MedEd* package, the Division created a tool in 1997 to monitor their performance. The primary objectives of a training unit are to provide model care in accordance with national programme standards, and to conduct quality training activities. Therefore, the tool describes a set of procedures to help ensure that training units fulfil both objectives. The national CDD and ARI programmes in Viet Nam initiated the testing of this tool in late 1997. The test will be completed in the first quarter of 1998, and the guidelines will then be revised and made available to countries.

During the biennium the Division also continued to improve the teaching in training institutions for other health staff, using the training package *Strengthening the Teaching of Diarrhoeal Diseases in Basic Training Programmes (BasEd)*. Workshops for teaching staff were conducted in Cambodia, Indonesia, Iraq, Kenya, Myanmar, Nigeria, United Republic of Tanzania, Viet Nam and Zimbabwe. An intercountry course for Pacific Island countries was also conducted.

CHD is now developing additional materials that will help to strengthen ARI components, and it is expected that the materials will be added to the *BasEd* package by mid-1998. Preservice training in CDD and ARI is likely to remain relevant even where IMCI has been introduced, as it is a basis upon which to build more comprehensive training.
In late 1997 the Division initiated a document review of experiences with BasEd in order to define the future directions of this activity. Based on the results of the review, CHD plans to develop practical monitoring tools intended to help countries with the implementation of BasEd.

**Training in communication skills**

Training of health staff in face-to-face communication techniques was continued in two ways: through ARI and CDD case management courses, and through IMCI training for first-level health workers. These activities took place in countries in all WHO regions.

In the Eastern Mediterranean Region, particular attention was given to improving communication skills in Iran, where two national workshops in *Advising Mothers* were held to train trainers from all provinces, who in turn conducted similar provincial-level workshops. In Iraq, communication messages and advising aides were developed based on the results of a recent knowledge, attitudes and practices study on CDD and ARI. In the Western Pacific Region, three countries focused on improving communication skills for ARI and CDD. The ARI communication project in China, which trained almost 800 primary health care workers, provides a model for programmes to plan, develop materials, and effectively train relatively large numbers of health workers. The Lao People’s Democratic Republic took a different approach, developing instead a methodology to expand the health education intervention aimed at grandmothers as primary caretakers of children. Based on recommendations of a focused programme review held in 1995, the Viet Nam ARI programme developed a new curriculum for the 3-day training in ARI case management for community health workers, with emphasis on communication skills. In preparation for using this curriculum countrywide, the programme trained teams from 12 priority provinces in health education and communication skills for ARI. In the South-East Asia Region, communication activities, including training in communication skills as part of CDD and ARI training, were supported in Bangladesh, Bhutan, Indonesia and Myanmar.

Based on earlier experience with CDD and ARI training on clinical management, IMCI training for first-level health workers puts significant emphasis on interpersonal communication skills and on improving interactions between the health worker and the caretaker. Exit interviews with mothers as part of initial follow-up to IMCI trained health workers in Tanzania indicate that mothers are more satisfied with their visit. Some expressed pleasant surprise at the helpful attitude of the health worker, and many mentioned their appreciation for the way health workers asked them questions and gave them advice on home care. A systematic evaluation of the training and practice using improved communication and counselling skills is under development.

Most significantly, the importance of using adapted, appropriate messages based on ethnographic data or, at the very least on studies to identify local terms, has become more widely accepted and practised. Methods to support the use of adapted messages have been incorporated into the protocols developed for countries to use to adapt their IMCI training materials. Based largely on work carried out in previous years in China, Pakistan, and Viet Nam, a guide is also under development to assist countries to adapt messages communicated by health workers and through other sources, including the mass media.
CHAPTER 3
Improving health systems to support IMCI

HIGHLIGHTS OF 1996-1997

- In collaboration with partners, the Division began efforts to estimate the costs of implementing IMCI, including the costs of essential drugs and supplies for managing the sick child in first-level health facilities, and to identify the potential savings in the IMCI strategy.

- After a successful field test in July 1996 in South Africa, the new Drug Supply Management Training was finalized for training nurses, health assistants, and others responsible for managing supplies in first-level health facilities. The training package was developed in collaboration with the USAID-funded BASICS project to improve ordering, record keeping, the organization of stores, and the dispensing of drugs in health facilities.

- As a part of IMCI training, facilitators and district supervisors conduct follow-up visits to each trained health worker. The visits address the organization of work as it affects integrated care, and help to solve problems in the facility and health system supports, including the availability of appropriate drugs, supplies and equipment. The visits also prepare supervisors to focus on clinical aspects of supervision, in order to reinforce and help maintain the skills of health workers trained in integrated case management.

- A study to identify issues needing to be addressed to improve referral systems, including the factors related to improving referral pathways and the quality of referral care, was carried out in 21 hospitals in seven countries. Results suggest that interventions in referral facilities that are likely to improve care are clinical training and improvements in organization, such as patient flow through triage. Improving the ability of the health system to provide a regular supply of drugs and other treatment materials is also needed.

- A test of oxygen concentrators in district hospitals in Egypt demonstrated their use as an alternative for providing and maintaining a supply of oxygen, especially where replacing oxygen cylinders is costly and irregular. The study also validated the WHO manufacturing standards, which had been set previously for concentrators to be used in developing countries.
CHAPTER 3. IMPROVING HEALTH SYSTEMS TO SUPPORT IMCI

Making changes in the health system through the introduction of IMCI

IMCI can only be effective in reducing child mortality if key elements of the public health system are in place and are functioning adequately.

Early experiences with implementing integrated case management at the district level demonstrated that this intervention requires broader systemic changes to support change in the health facility. Countries, for example, review drug policies; revitalize efforts to ensure the availability of drugs, equipment, and other supplies; and make decisions that affect the organization and supervision of health services in order to solve problems they encounter through the implementation process at the district level. Efforts to solve specific problems often trigger wider improvements in the health system. Some examples of these areas for action to improve health systems are presented here.

Ensuring the availability of drugs, equipment, and supplies needed for IMCI

The availability of drugs and their rational use are essential for successful implementation of IMCI. A problem in many countries, particularly in Sub-Saharan Africa, is the irregular or lack of access to essential drugs at health facilities. Distribution is often characterized by a public system in which drugs are free but not available, and a private system in which drugs are available but not affordable to a large proportion of the population.

The availability of IMCI drugs for children who need them is related to: national drug policies, particularly those affecting drugs in first-level facilities; the management of drug supplies (the procurement, distribution and monitoring of drugs); rational practices in the prescription and dispensing of drugs; and correct use of the drugs in treatment. Since none of these areas affecting the availability of drugs is unique to IMCI, coordinated approaches are often required to avoid parallel systems or the duplication of activities among different health care activities and programmes. Although the generic IMCI guidelines for first-level facilities require only a limited set of drugs (Table 11), the complex and interrelated issues of drug procurement and distribution have proven to be a serious challenge in all countries implementing IMCI. The Division is coll-

Improving health systems to support IMCI: areas for action

- Ensuring the availability of drugs and supplies needed for IMCI
  - Review and revision of essential drug policies and lists
  - Strategies to improve availability
  - Strategies to improve supply management and logistics

- Improving service quality and organization at health facilities
  - Patient flow including initial triage of sick children
  - Job descriptions and distribution of IMCI tasks
  - Team-based problem solving
  - Checklists and supportive supervision

- Improving referral pathways and services

- Identifying and/or developing methods for sustainable financing and ensuring equity in access to health services

- Linking IMCI and health management information systems

Examples of problems in the availability and rational use of IMCI drugs

- At central and district levels
  Lack of regular access to essential drugs due to insufficient procurement and distribution routines.

- At provincial levels and health facilities
  Poor management and organization of drug supplies.

- At health facilities and pharmacies
  Non-rational prescription and dispensing of drugs by professional health staff.

- In communities and with individuals
  Lack of consumer information and adherence to treatment regimes.
laborating with global and national Essential Drugs Programmes to address these issues.

**Review of policies on essential drugs.** During the national adaptation of the generic IMCI clinical guidelines, countries select the most appropriate first- and second-line treatments for the major diseases in order to promote rational use of drugs and minimize the emergence of drug resistance. The adaptation subgroup shares the list of drugs selected through the adaptation process with planners for IMCI. Together they work to ensure that all recommended drugs will be included in the national Essential Drugs List and approved for use at the first-level health facility by IMCI trained staff. This process results in variations across countries in the selection of drugs needed for IMCI in first-level facilities (Table 12).

**Strategies to improve the availability of drugs and other supplies.** In the six countries collaborating with WHO in the documentation of early efforts in IMCI implementation, early planning usually did not or could not fully address the issue of drug availability. Ensuring the availability of second-line treatments and pre-referral drugs has proven especially challenging. Temporary solutions can be found, such as using district funds to purchase needed drugs in limited quantities and negotiating with national drug authorities to establish special distribution systems for IMCI drugs. These measures, however, have not been sufficient to ensure and sustain regular drug availability. (See the example of Uganda in Figure 14.)

Efforts to improve the availability of IMCI drugs cannot, therefore, have a short-term perspective. The goal instead is to improve the basic functions of drug management (selection, procurement, distribution, and use), leading to a sustainable system that makes essential drugs, including IMCI drugs, available at all levels. Opportunities and solutions vary from one country to another.

As a result, although interventions and tools can be standardized, they must also provide for possible adaptation to various settings. In this effort, for example, the Regional Office for the Americas held a workshop in October 1997 with their national essential drug consultants from five countries. This workshop, conducted in collaboration with the Rational Pharmaceutical Management Project and BASICS, provided an opportunity to field test the IMCI Drug Management Tool. This tool includes methods for assessing logistics systems and local pre-
TABLE 12

Essential drugs and supplies needed for IMCI at first-level facilities in four countries (Nepal, Peru, Tanzania, and Uganda)

<table>
<thead>
<tr>
<th></th>
<th>Nepal</th>
<th>Peru</th>
<th>Tanzania</th>
<th>Uganda</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral drugs</td>
<td>Cotrimoxazole</td>
<td>Cotrimoxazole*</td>
<td>Cotrimoxazole</td>
<td>Cotrimoxazole</td>
</tr>
<tr>
<td></td>
<td>Amoxycillin</td>
<td>Amoxycillin</td>
<td>Amoxycillin</td>
<td>Amoxycillin</td>
</tr>
<tr>
<td></td>
<td>Chloramphenicol</td>
<td>Clindamycin</td>
<td>Nalidixic acid</td>
<td>Nalidixic acid</td>
</tr>
<tr>
<td></td>
<td>Nalidixic acid</td>
<td></td>
<td>Ciprofloxacin</td>
<td>Erythromycin</td>
</tr>
<tr>
<td></td>
<td>Tetracycline*</td>
<td></td>
<td>Tetracycline*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chloroquine</td>
<td></td>
<td>Chloroquine</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sulfadoxine-pyrimethamine</td>
<td></td>
<td>Sulfadoxine-pyrimethamine</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mebendazole</td>
<td>Mebendazole</td>
<td>Mebendazole</td>
<td>Mebendazole</td>
</tr>
<tr>
<td></td>
<td>Paracetamol</td>
<td>Paracetamol</td>
<td>Paracetamol</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Iron</td>
<td>Iron</td>
<td>Iron</td>
<td>Folic acid</td>
</tr>
<tr>
<td></td>
<td>Vitamin A</td>
<td>Vitamin A</td>
<td>Vitamin A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Salbutamol</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Injectable drugs</td>
<td>Chloramphenicol</td>
<td>Chloramphenicol</td>
<td>Chloramphenicol</td>
<td>Chloramphenicol</td>
</tr>
<tr>
<td></td>
<td>Procaine penicillin</td>
<td>Gentamicin</td>
<td>Gentamicin</td>
<td>Benzy1 penicillin</td>
</tr>
<tr>
<td></td>
<td>Quinine</td>
<td>Benzathine penicillin</td>
<td>Penicillin G</td>
<td>Quinine</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>DiaZepam</td>
</tr>
<tr>
<td>Topical drugs</td>
<td>Tetracycline eye ointment</td>
<td>Gentian violet</td>
<td>Tetracycline eye ointment</td>
<td>Gentian violet</td>
</tr>
</tbody>
</table>

* Nepal, Peru, and Tanzania also selected the oral antibiotic furazolidone as a second-line treatment for cholera and/or dysentery. Based on the results of recent studies, however, WHO no longer recommends this drug.

The availability of equipment and supplies is also a key issue in IMCI implementation. CHD is working with others to develop and make available better and more affordable and effective alternatives. One successful example is the Division’s effort to increase the availability of oxygen through the development and testing of oxygen concentrators for use in hospitals, as well as to set WHO standards for equipment to be used in developing countries (see box).
**Making oxygen available to more children who need it: promising results from a field trial of oxygen concentrators**

Providing a reliable oxygen supply to hospitals in developing countries is difficult. Oxygen cylinders are expensive, and many problems in renewing oxygen supplies must be overcome.

For many years in the developed world, however, patients with chronic respiratory problems have been using portable oxygen concentrators at home. CHD, therefore, decided to test the potential use of oxygen concentrators in district hospitals in developing countries, especially where transporting oxygen cylinders is costly and irregular.

A controlled field trial to examine the performance of oxygen concentrators and their use by different health workers was conducted with WHO and USAID support. In 1993, 22 WHO-approved oxygen concentrators were installed in 13 district hospitals in Upper Egypt. Six technicians, who did not have previous experience with concentrators, were trained to set up, install, and carry out routine maintenance of the machines. They inspected the machines every three to four months and kept a detailed log of cases, machine use, and maintenance.

Preliminary results based on three to four years experience were very positive. Up until March 1997, all machines were still functioning. On average the machines have worked for 9,989 hours each (range 225 to 20,460 hours), and have needed only minor regular maintenance. Machines in the larger hospitals have had very heavy use. Four machines in Sohag District Hospital, for example, have been running almost non-stop for three years since installation.

Nurses and doctors have found the oxygen concentrators very useful. And a large number of patients who otherwise would not have received oxygen therapy received it, with the major use being premature infants and patients with pneumonia.

The WHO specifications for oxygen concentrators to be used in developing countries were validated in the project, and some manufacturers are already making concentrators to meet these quality standards.

Oxygen concentrators cannot completely replace oxygen cylinders, but they can increase the availability of oxygen for young infants and children at district hospitals. Use of oxygen concentrators can also save money, compared to the cost of supplying oxygen cylinders, and these savings can quickly cover initial purchasing costs.

---

**Improving the quality of services and organization at health facilities**

Improving the health worker’s skills alone is not sufficient for improving the quality of care for sick children. An important factor in the quality of care they receive, for example, is how the caretaker and child move through the health facility, from the time they arrive until the time they leave. This organization of care is often referred to as patient flow. The initial triage of children to identify those who need immediate attention is one important aspect of the organization...
of care. The sequence in which tasks are performed and the speed with which they are performed also affect care.

The guidelines for follow-up visits, conducted as a part of IMCI training, describe a process for how supervisors identify and solve problems in patient flow and other factors in the organization of care, and this focus on solving problems needs to become part of regular supervision.

Another important issue in planning and delivering IMCI in first-level facilities is whether the job descriptions of health workers permit integrated case management, and whether IMCI tasks are performed by one health worker or several. In several countries where IMCI implementation has started, more than one health worker is involved in the management process within a single facility. In some first-level facilities in Uganda, for example, one health worker greets the caretaker and weighs the child; a second conducts the assessment and classification of illness, and identifies treatment; caretakers are then sent to the facility dispensary where a third health worker gives them the medicine required and teaches them how to administer it to the child.

Countries implementing IMCI are developing and implementing various solutions to these challenges. In Uganda, for example, a three-day training for those who dispense medicines is planned. Both the IMCI-trained health worker and the person dispensing drugs in the facility will attend this training.

Many issues related to the organization of care at the facility might be successfully addressed through a facility-based problem solving approach. CHD is collaborating with UNICEF and other partners to develop appropriate tools to support the assessment of the quality of care at facility level and the identification of appropriate solutions to problems.

**Review of the organization of case management tasks during facility visits**

The Guidelines for Follow-Up after Training provide a checklist for supervisors to use in reviewing the organization of tasks during their visit to a health facility.

**Checklist of Case Management Tasks**
- Register patients; manage triage or patient flow
- Weigh patients; take temperature
- Assess and classify illness
- Decide on referral
- Assess feeding and breastfeeding problems
- Advise on feeding, nutrition
- Prescribe drugs
- Give ORS solution at facility
- Instruct on giving ORS at home
- Complete patient records
- Give first dose of drug
- Instruct caretaker on giving drugs
- Dispense drugs
- Immunize children

Supervisors help health facility staff identify how missing tasks can be completed. To ensure that the child receives a first dose of a drug before leaving the facility, for example, the staff may identify when in the sequence of tasks the mother could give the first dose. The staff may also need to agree to keep a small supply of drugs in the examination area for this purpose.

Solutions to improve the efficiency of the organization of tasks and how patients move through them can also be identified. Changing the patient flow to ensure that all children are weighed and temperatures have been taken before they see the clinician can make more time available for counselling the mother on home care and feeding.

The role of checklists or other job aids, and supportive supervision, hold promise as interventions to improve service quality and organization at health facilities. Some experience has been gained through CDD and ARI, and more recently through IMCI training follow-up. Work on IMCI monitoring that was begun in 1996 builds on these lessons to ensure that visits to facilities are used effectively to improve health worker skills and address facility problems, as well as to provide useful monitoring information.
Improving referral pathways and services

Issues in the system of referral

The IMCI guidelines focus on the major causes of death in childhood and help health workers to identify the most severely ill children for urgent life-saving treatment. In most cases guidelines specify urgent referral to the nearest hospital as an essential part of the care of the severely ill child. Experience so far suggests that about 15% of children are classified as needing referral. In many settings there are barriers to easy referral. These include the physical difficulty of reaching the hospital because of distance or bad roads; a lack of confidence in the hospital; a lack of money for transport or treatment; or difficulty in leaving home because of family or work responsibilities.

Reports from health staff and results from post-training follow-up visits indicate at least some difficulty with referral in most countries implementing IMCI to date. In Tanzania, about 70% of IMCI-trained health workers reported difficulties with referral, and similar findings came from Uganda.

If referral is very difficult or impossible, the effectiveness of IMCI is seriously compromised. Work is now going forward to explore possibilities for improving this situation. Various options are being considered:

- Modify some criteria for referral in the IMCI guidelines for the first-level health facility.

In this approach criteria leading to classification of a child as severely ill and needing referral would be changed. Some conditions for which referral is less urgent could be treated at home providing that the child could be closely monitored.

- Increase the capacity of the front-line health worker to manage severely ill children.

The existing training course includes an annex that provides guidance on the management of some of the children who are severely ill at the first-level health facility. The treatment in most cases is an extension of the pre-referral treatment that the health worker would normally give. This level of treatment usually depends on being able to see the child at least once a day and the use of some therapy that might usually be available only at the referral hospital, for example, intravenous infusion and second-line intramuscular antibiotics.

In certain settings it might be possible to use a suitably adapted version of these guidelines to help health workers manage such children. They would need to be specially trained to use the more complex treatments and to monitor progress. In addition they would need to be supplied with the necessary drugs and equipment and have authorization to give this level of treatment.

- Upgrade health centres to allow them to provide appropriate care for a larger proportion of severely ill children.

The introduction of IMCI draws new attention to the capacity of the health facilities and to the problems of referral. Where district health systems are being reformed and reorganised, this knowledge may be used to stimulate action to improve the referral system. This could include the upgrading of some health centres, equipping them with more sophisticated equipment and drugs and higher levels of staffing, or taking actions to improve transport to the hospital.

A method for districts to assess the
feasibility of referring children will be included in the IMCI Planning Guide, which is under development.

**Issues in providing referral level care**

A study designed to identify the major obstacles to satisfactory hospital care began in 1996 and has now been completed. The objective was to inform further work on improving the quality of care at referral level by ensuring that development work focused on those interventions that would have the greatest impact on mortality and be feasible for implementation. Members of a team of experienced investigators visited twenty-one hospitals in seven countries in Africa, Asia and Latin America. Each visit included:

- Observation of practice,
- Formal feedback from staff on their assessment of problems,
- A questionnaire to assess staff knowledge,
- An audit of supplies, pharmacy, laboratory and other physical facilities, and
- An assessment of the organisation of the facility.

The major problems identified in these referral care settings were the following:

- Overall, triage quality was judged to be poor. Only one hospital used a formal algorithm or system of triage.
- In most community hospitals, formal emergency care was either non-existent or poor in terms of staff performance. In the teaching hospitals, performance was better but constrained by high patient loads and inadequate resources.
- In most hospitals, inpatient care was judged to be significantly deficient, including poor monitoring of critically ill children and a lack of urgency in attending to clinical deterioration or failure to progress.
- Evaluators studied a total of 131 children and their management in the emergency department or on the ward. In 76% of cases in hospitals, factors that may have increased the risk of adverse outcome were identified. In 43% of cases, pre-referral factors (parent delay, health worker delay, or overwhelming disease) were identified. Nearly one-quarter of adverse factors found were attributed to inadequate triage or failures in the initial assessment of the child. The single most frequent type of hospital factor was inappropriate treatment, accounting for a total of 44% of all adverse factors.
- A detailed questionnaire was administered to 64 staff members to assess clinical knowledge on specific conditions. Overall, 80% of the staff had at least one area that was deemed to be inadequate by the evaluator (Figure 15).
- An inadequate number of medical and nursing staff was a common problem, as was a lack of antibiotics and other drugs.

**FIGURE 15**

Proportion of referral-level staff with knowledge of clinical management, Seven-country* evaluation of paediatric referral care, 1997

<table>
<thead>
<tr>
<th>Condition</th>
<th>% of health workers with adequate knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diarrhoea</td>
<td>64</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>44</td>
</tr>
<tr>
<td>Malnutrition</td>
<td>44</td>
</tr>
<tr>
<td>Hypoglycaemia</td>
<td>39</td>
</tr>
<tr>
<td>Sepsis</td>
<td>33</td>
</tr>
</tbody>
</table>

* Bangladesh, Dominican Republic, Ethiopia, Indonesia, Philippines, Tanzania and Uganda
A meeting was held early in 1998 to review the study findings and to develop recommendations for the development of specific interventions.

**Estimating IMCI costs and cost-savings**

The World Bank in the *World Development Report 1993* identified IMCI as one of the most cost-effective public health interventions for developing countries. These estimates, however, were made before IMCI implementation had begun and before the broad IMCI strategy had been defined. In 1996-97, the Division began the process of defining the basic cost components of IMCI, and developing feasible methods for collecting cost data. The first priority is to obtain sound cost estimates for planners to use in making budgets for implementing IMCI. A second but longer-term priority is to provide a technically sound basis for the cost-effectiveness of implementing integrated case management.

Some data on IMCI costs are already available. The integration of case management requires only a few drugs to be made available in first-level health facilities, and the costs of these drugs are relatively low on the international market (Table 13). During the introduction phase of IMCI, countries go through a process of selecting the most effective, low cost drugs for treating childhood illnesses. This rational process helps countries to focus their limited resources on the drugs that are most needed.

In 1997, the Rational Pharmaceutical Management Project compared the current costs of treating diarrhoeal disease and ARI in first-level health facilities in central Asia with expected treatment costs after the introduction of IMCI. Considerable savings could be expected (Figure 16).

Similar estimates drawing on a study conducted in Uganda yield further evidence of potential savings in treatment costs if IMCI is introduced (Table 14).

In October 1997, CHD convened a meeting of technical partners – World Bank, USAID, and the WHO Regional Office for the Americas – to discuss the objectives and purposes of IMCI cost studies, to agree on common approaches to such studies and to develop mechanisms for ensuring coordination. Among the meeting recommendations were the following actions for the Division:

- Summarize the resources required for IMCI implementation in selected countries.

### TABLE 13

<table>
<thead>
<tr>
<th>Medicine</th>
<th>IMCI classification</th>
<th>Cost US$^a</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cotrimoxazole (5-day course)</td>
<td>Pneumonia</td>
<td>0.27</td>
</tr>
<tr>
<td></td>
<td>Acute ear infection</td>
<td></td>
</tr>
<tr>
<td>Chloroquine (3-day course)</td>
<td>Malaria</td>
<td>0.36</td>
</tr>
<tr>
<td>Oral rehydration salts</td>
<td>Diarrhoea with dehydration</td>
<td>0.33^a</td>
</tr>
<tr>
<td>Vitamin A</td>
<td>Measles</td>
<td>0.06</td>
</tr>
<tr>
<td>Iron supplements (for 2 months)</td>
<td>Anaemia</td>
<td>0.11</td>
</tr>
<tr>
<td>Tetracycline eye ointment</td>
<td>Eye complications of measles</td>
<td>0.06</td>
</tr>
</tbody>
</table>

^a Cost as purchased on the international market of generic drugs, including insurance and freight.

^b Oral rehydration salts are manufactured by many countries and would be less expensive if bought locally.

### TABLE 14

Potential savings in drug costs with IMCI at first-level facilities

<table>
<thead>
<tr>
<th></th>
<th>Current practice</th>
<th>If IMCI introduced</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of different drugs used</td>
<td>50</td>
<td>11</td>
</tr>
<tr>
<td>Percent of children prescribed:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No drug</td>
<td>0.4</td>
<td>39.4</td>
</tr>
<tr>
<td>One drug</td>
<td>4.7</td>
<td>53.0</td>
</tr>
<tr>
<td>More than one drug</td>
<td>94.9</td>
<td>7.6</td>
</tr>
<tr>
<td>Total drug costs per child</td>
<td>US$ 0.82</td>
<td>US$ 0.17</td>
</tr>
</tbody>
</table>

• Develop a checklist of activities and inputs in IMCI implementation. This checklist is to be used as the basis for relatively simple costing exercises to estimate what should be budgeted for the introduction and maintenance of IMCI activities at central and district levels.

• Incorporate costing or economic elements into ongoing research related to IMCI, and encourage other supporters of IMCI research to do so as well.

As a result of this meeting, CHD has identified a health economist to serve as an ongoing technical advisor to the Division and has begun the work outlined above. A cost component figures prominently in plans for the development of protocols for IMCI efficacy and effectiveness studies.

**Measuring the effectiveness of the IMCI strategy**

In 1997 CHD started developing approaches for the conduct of a series of studies on the effectiveness of the IMCI strategy. Background papers were prepared on possible study designs and on issues relating to the costing of IMCI. Four possible evaluation scenarios were considered.

A plan has been developed for a set of studies, including one efficacy and three or four effectiveness studies. Complementary study designs will increase the power of the series of studies to detect impact and to examine different aspects of the IMCI implementation process.

There are a number of characteristics of IMCI implementation that will affect the design of the effectiveness studies. One is that it is a broad strategy, encompassing multiple interventions. The strategy is introduced district-by-district, which means that different parts of the country are in different stages of implementation. It also involves a staggered introduction of a variety of interventions not necessarily in the same order leading to a variable constellation of interventions across countries and districts. These features of IMCI make the assessment of its effectiveness particularly challenging.

A protocol development workshop will be held in early 1998 to start to define standard elements of the study designs. Countries will be selected based on a number of criteria and it is expected that the studies will start in 1998.

**Linking IMCI and health management information systems**

IMCI and the disease surveillance component of a health information system (HIS) in developing countries have different purposes. IMCI is designed to improve the treatment of ill children and health information systems are, generally speaking, designed to detect the occurrence of specific diseases. These different purposes lead to requirements for different types of information.

As IMCI classifications are designed to guide treatment, some are too non-spe-
specific to be of use in an information system. In all countries where IMCI im-
plementation has begun to date, there is some incompatibility between the clas-
sifications used in IMCI and those used in the national health information sys-

tem. IMCI working groups, responsible for early implementation of IMCI in countries, have developed various types of solutions to this problem in or-
der to allow IMCI-trained health workers to provide the information needed by the information system. In a review of problems encountered, the options for addressing these incompatibilities were examined and the most practical options for countries identified. These conclusions will be incorporated into the IMCI Planning Guide.
CHAPTER 4

Improving family and community practices

HIGHLIGHTS OF 1996-1997

- With the USAID-funded BASICS project, CHD participated in the planning of a six-country workshop in West Africa on using radio as a means to improve family practices in preventing and responding to sickness. The workshop followed the Radio Guide, a training manual developed jointly with UNICEF and USAID.

- A project to improve the communication skills of 800 health workers in China was completed with the support of AusAID. The evaluation found that using local terms to indicate when the sick child needs to return for additional care results in significant improvements in mothers’ recall and understanding of these life-saving messages. The Focused Ethnographic Study (FES), a method developed by CHD, was used to identify problems in care-seeking and the local terms for illness used in the training.

- A tool was developed to assess the caretaker’s comprehension and recall of home care advice to be used to provide feedback on the effectiveness of face-to-face communication. The Philippines and Pakistan have used this tool with health workers as one technique to help improve their communication skills.

- A framework was developed to guide research and development activities to promote appropriate family practices in seeking care for the sick child. The framework is being used first in the design of a study of interventions to promote improved care-seeking currently being conducted in three sites (Ghana, Mexico and Sri Lanka).

- A study to develop and test community-based interventions for the promotion of improved feeding practices in infancy and childhood started in two sites, India and Peru. The study, jointly funded with USAID and conducted with Johns Hopkins University, Baltimore, USA, will contribute to the development of practical guidelines for the design of effective and sustainable interventions to improve child health.

- A literature review, Promoting Healthy Growth and Development: A Review of Child Development and Nutrition Interventions, identified a strong synergism between interventions to promote healthy growth and those to promote psychosocial development. The review lays the groundwork for guidance on how the Division might proceed in this new area of work.
Research and development to improve breastfeeding and complementary feeding

An evaluation of the breastfeeding counselling course. A formal evaluation of the WHO/UNICEF Breastfeeding Counselling: A Training Course has been conducted in Brazil by the Instituto de Saude in Sao Paulo, in a randomized, controlled study.

Trainees, who were similar to controls before taking the course, were significantly more knowledgeable about breastfeeding when their knowledge was assessed one week after the course. Their average scores on a multiple-choice test increased from 62% to 84%, while the scores of the 40 persons in the control group decreased slightly from 61% to 55%. Three months later, the scores of participants indicated that they had largely maintained their improvements in knowledge.

An evaluation of skills also showed a significant improvement. Improvement was most marked in relation to the two groups of counselling skills: “listening and learning” (participants’ scores increased from 51% to 77%) and “building confidence and giving support” (an increase from 59% to 80%), with no increase in the scores of controls (Figure 17). Scores for “evaluation of suck” also increased (from 48% to 71%) for participants. “Taking a breastfeeding history”, the skill that proved most difficult to acquire, nevertheless increased from 37% to 52%. Three months later, participants showed no substantial loss of performance or knowledge for any item evaluated, even though some participants had not been able to practise the skills in the meantime. (For more information on the breastfeeding counselling course, see the section Training to improve breastfeeding practices.)

Technical reviews on breastfeeding issues. A set of reviews of the literature commissioned by the Division examines important issues for the promotion and support of breastfeeding:

• Evidence for the Ten Steps to Successful Breastfeeding reviews research on the effect of each step on the incidence and duration of breastfeeding.

• Hypoglycaemia of the newborn reviews recent research into the physiology of glucose homeostasis in the newborn, and the practical implications for prevention and management of hypoglycaemia, in both healthy term infants and newborns at risk, such as babies who are born preterm or small for gestational age.

• Persistent diarrhoea and breastfeeding summarizes available information on the roles of animal milk and milk formulae as a cause of persistent diarrhoea, and of breastfeeding for prevention, and the implications for clinical management.

• Mastitis provides the scientific basis for recommendations that breastfeeding be continued during mastitis and that improved efficiency of
breastmilk removal is important for recovery.

Topics of reviews still in preparation are Effectiveness of breastfeeding counselling and Relactation.

Efficacy of feeding recommendations in promoting child growth. A controlled study is being supported in Peru to examine whether the adoption by caretakers of locally acceptable feeding recommendations leads to an adequate increase in dietary intake among infants age 7-12 months. The study will deliver an intensive intervention, including frequent home visits by feeding counsellors, to ensure that mothers change their practices and adopt the new feeding recommendations.

In addition to assessing the efficacy of the feeding recommendations to increase the child’s dietary intake, the study will also examine the role of reduced appetite and breastmilk substitution in modifying the effects of the adopted recommendations. Finally, the study will document the costs, difficulties and benefits mothers encounter in trying to apply the feeding recommendations.

The impact of IMCI counselling on the caretaker’s behaviours and child growth. A randomized, controlled trial has been initiated in Brazil to examine the effects of the nutrition counselling that is provided by trained health workers according to the IMCI guidelines. The trial examines the effect of counselling on the knowledge of caretakers, on their adherence to the recommended feeding practices, and on the desired health outcome, the improvement in the child’s nutrient intake and growth. In addition to assessing the effects of counselling, the study will help to clarify the reasons caretakers do or do not carry out the feeding practices as recommended. This information is required to continue to improve the adaptation of the content and delivery of counselling and, in the future, to incorporate these improvements into the IMCI course for first-level health workers.

Community-based interventions to improve complementary feeding. A multi-site study, jointly funded by USAID, has begun in India and Peru to develop and test community-based interventions to promote improved complementary feeding. The study – done in collaboration with the All India Institute of Medical Sciences, New Delhi, India; the Instituto de Investigación Nutrional, Lima, Peru; and the Johns Hopkins University, Baltimore, USA – will test community-based interventions for the promotion of improved feeding practices in infancy and early childhood. The interventions, delivered through existing community channels, will also reinforce feeding messages delivered at the health facility as part of IMCI. In addition to attempt-

Recommendations on prevention of hypoglycaemia of the newborn

Healthy term newborns
- Early and exclusive breastfeeding is safe and meets the nutritional needs of healthy term newborns worldwide. Those who are breastfeeding on demand need not have their blood glucose routinely checked and need no supplementary foods or fluids.
- Breastfeeding should be initiated as soon as an infant is ready, preferably within one hour of birth.
- Helping the baby maintain normal body temperature is necessary in addition to breastfeeding to prevent hypoglycaemia. Immediately after birth, the baby should be dried and held against the mother’s chest with skin-to-skin contact to provide warmth, as well as to facilitate the initiation of breastfeeding.

Newborns at risk
- those who are preterm and/or small for gestational age, those who suffered intrapartum asphyxia or who are sick, and those born to diabetic mothers
- In newborns at risk, hypoglycaemia is most likely to occur in the first 24 hours of life. The blood glucose concentration should be measured at around 4-6 hours after birth, before a feed.
- Hypoglycaemia that presents, persists or recurs after the first day of life may indicate underlying disease, such as infection, which should be identified and treated. It does not necessarily indicate inadequate feeding.
- For newborns at risk, breastmilk is the safest, and nutritionally most appropriate, food. For some very low birth weight infants, however, it may need to be supplemented with specific nutrients.

Developing interventions to improve child growth and development

At the beginning of the biennium an interprogramme task force was convened to provide guidance to the Division on how to expand its activities to improve child development. It defined the breadth and direction for a proposed review of potential interventions, which would provide a basis for decisions concerning future activities. The task force highlighted the advances in scientific understanding of the close linkages between mortality, growth faltering, malnutrition, psychological development and family care-giving behaviours. It recommended that the review assess the impact and feasibility of interventions that promote both growth, through improving nutrition, and child development.

The Division established a multi-disciplinary team, comprised of specialists in child development, nutrition, health and nutrition education, and epidemiology. In the first stage of the project, the team assessed the published evidence concerning the efficacy and programmatic effectiveness of interventions to promote growth and to promote psychological development. They also identified a small, but valuable, set of studies that establish the positive impact of interventions that are directed to simultaneously improve growth and psychological development. A meeting held in November 1996 concluded that the next stage of the process should be a review of information on integrated nutrition and development programmes, in order to assess their effectiveness.

In the next stage of work, the team found that, despite the number of programmes that have integrated early child development and health, particularly for children aged 3-5 years old, there has been very little systematic evaluation of such programmes in developing countries. Nonetheless, the review provided a basis for general recommendations for future interventions.

These recommendations, together with the results of the review effort, are summarized in a document that has been externally reviewed, and is being finalized for dissemination in 1998.

With the review as a background document, CHD held an informal consultation in October 1997. The meeting...
brought together individuals with diverse expertise and experiences ranging from applied research on nutrition and cognitive development to the design and management of related intervention programmes in developing countries.

The consultants’ recommendations for future research and development activities in the Division emphasized the importance of developing tools to teach responsive care-giving that will link support for the child’s psychological development with improvements in nutritional care and management of illness in the home. In particular, linking active and responsive feeding practices to nutrition advice, on one hand, and to counselling on developmental needs in early childhood, on the other, provides a means of translating new scientific understanding into improved practices.

**Research and development on appropriate responses to illness**

Delays in care-seeking, seeking care from inappropriate practitioners and not seeking care at all for life-threatening illness all contribute to the high mortality among children under five years old in developing countries. Although there are no quantitative estimates of the specific contributions of these factors to global mortality and morbidity, available information suggests that this is a significant problem. Consequently the Division began work in 1996 to develop feasible and effective interventions to improve household responses to acute illness in infants and young children who require medical care.

The first stage of work was an examination of both published literature and unpublished reports to ascertain current knowledge about efficacious interventions to improve care-seeking, including the scientific basis for such interventions. This identified extensive information on determinants of utilisation of health services and care-seeking that can be subsumed under three main categories. These are the characteristics of: the health care system, the larger social-political environment, and the families themselves and the communities in which they reside - including their socio-cultural, demographic and economic characteristics. It follows that interventions to improve care-seeking should also be directed to these three areas.

Notably absent from the published literature are reports of efficacy trials to test interventions. As a result, although a great deal of activity aimed at improving household management of child health has taken place all over the world, it is very difficult to separate out activities that were specifically designed to improve care-seeking. There has been very little evaluation of the impact of these activities and documentation of the operational work is generally poor. The results of the review are being summarized in a document that will be available in 1998.

Following the review of available information, CHD initiated a research project based on current knowledge about the determinants of care-seeking, and about interventions delivered through education and community action. This intervention research project is designing, implementing and evaluating community-based interventions to improve care-seeking. The results will be used to provide guidelines for developing future interventions.

The project is being organized as a multi-site study in order to test interventions in different social and cultural contexts, and with different health systems. A workshop was held in November 1997 at the London School of Hygiene and
Tropical Medicine with multi-disciplinary teams of investigators from Ghana, Mexico and Sri Lanka.

Formative research in the individual project sites will verify the specific nature of the care-seeking problems, identify the actions that are required to overcome them, and the resources that can be brought to bear. The formative research aims to identify and use mechanisms for linking health services and families, in order to ensure that families receive medically sound advice, and to strengthen the bond between the local health system and the community. The feasibility of using community health workers in this role is one focus of the formative research. It will also examine the feasibility of identifying and using mother support groups or other existing formal groups or informal community networks.

At the conclusion of the formative research in mid-1998, a second workshop will be held to plan the intervention phase of the study and to design the evaluation. In addition to providing technical and financial support for the formative research, CHD is also assisting investigators to identify and secure additional funds for the interventions as it is anticipated that these costs will exceed presently available resources.

**Research on indoor air pollution**

Around 75% of the population of developing countries relies on biomass fuel (wood, dung and fibre residues) or coal for cooking and heating needs. Studies from many countries have demonstrated that this leads to very high levels of indoor air pollution. There is growing evidence that this exposure, particularly among women and children, is associated with increased risk of acute lower respiratory infection among children, chronic obstructive lung disease among adults, and low birth weight. Indoor air pollution was described as “one of the four most critical global environmental problems” in the World Bank's World Development Report. In the 1993 Report, the World Bank estimated that it was responsible for almost 50% of the burden of disease resulting from poor household environments in developing countries.

During the biennium CHD continued its efforts to identify the necessary funding for the implementation of a controlled intervention trial to assess whether, and at what level, reductions in indoor air pollution will lead to significant health benefits. A pilot study was supported in Guatemala to assess the feasibility of using case control methods to quantify the association between indoor air pollution and risk of acute lower respiratory infections.

Four papers were commissioned to present the results from early studies in Guatemala:

- Particulates and carbon monoxide in highland Guatemala: indoor and outdoor levels from traditional and improved wood stoves and gas stoves in three test houses;
- Carbon monoxide as a tracer for assessing exposures to particulates in wood and gas cookstove households of highland Guatemala;
- Smoke exposure of women and young children in highland Guatemala: prediction and recall accuracy; and
- Implications of three Guatemala-based indoor air quality studies for control of acute respiratory infection studies in the developing world.

The Division has supported work towards the development of reliable, simple and low-cost techniques for measuring air pollution in households in developing countries. In addition, the Division is promoting the study of changes in major health outcomes in areas receiving major domestic fuel or
Tools to improve family and community practices

Protocol to identify locally understood terms for signs of illness. The generic IMCI materials provide health workers with a set of questions to obtain information on the sick child's condition, and a set of messages on signs of severe illness that indicate the need for an immediate return to the facility. In view of the evidence that families often do not understand medical questions and advice unless health workers use local language and concepts of illness, these terms must be locally adapted.

The Division has developed an innovative process to assist countries in improving this component of communication between health workers and families. This process is based on earlier ethnographical research and the results of more than 20 applied studies in countries that have used the Division's Focused Ethnographic Studies. The ethnographic method, which has now been simplified and adapted for use to identify terms related to conditions covered by IMCI, is described in the manual, Protocol for Identifying and Validating Local Terms. This protocol is now included in the IMCI Adaptation Guide. The protocol was first field tested in Uganda, where it proved particularly useful, for example, in identifying a local term for distinguishing between fever (elevated body temperature) and a fever that is accompanied by other signs of malaria. (See additional examples in Chapter 2 in the section Adapting the IMCI guidelines for first-level health workers.)

The protocol for adapting generic questions and advice uses a two-step process. In the first step, information is collated from written materials, local health workers and a small sample of caretakers. This forms the basis for adapting a structured interview schedule, which is administered to mothers bringing sick children to a health facility. The instructions on how to analyse the results lead users through a process to select the terms that are likely to be understood by most caretakers in the region where the protocol is applied. These local terms are then incorporated into the adapted IMCI training materials and mother's counselling card. The identified terms can also be used in messages delivered through mass media and other community-based interventions, which complement integrated care in the health facility.

Guidelines for assessing caretaker comprehension. Advice on how to take care of a sick child at home, including feeding advice, instructions on giving antibiotics and instructions on when to return, are essential aspects of the health worker's tasks in a consultation. A Protocol for Assessing Caretaker Comprehension of Home Care Messages has been developed for assessing how well caretakers have understood advice at the time they leave the facility.

The Pakistan National ARI Control Programme conducted a field test of the guidelines in an area where locally adapted home care cards were being introduced as an aid for counselling mothers of sick children. Using this protocol, they found that the mothers they interviewed had an excellent recall of the advice they received on feeding and on giving antibiotics. For example, 60% of the mothers spontaneously recalled the message “to continue feeding.” With the simple prompt to report what they had been told about home care, the percentage of mothers who volunteered the message on continued feeding increased to 100%. Similarly, 94% of mothers were able to report the correct dosage, frequency and duration of antibiotics.

IMCI promotes equity by improving the quality of care and helping remove barriers to effective communication with families.
Caretakers, however, were less able to recall messages on danger signs that require immediate return for care, and advice to avoid common home care practices that may have negative consequences. Only 25% of the mothers spontaneously remembered the message concerning difficult breathing, although over 90% recalled it with prompting. The guidelines were also used in a health worker communication and training project in China, where the results indicated that the home care advice being delivered by health workers, including when to return, was well understood; and follow-up home visits showed that recall remained high.

This information can assist countries in identifying critical weaknesses in the communication of advice that can be addressed through health worker training and other interventions. The tool can also be used to provide direct feedback to health workers who are in training in order to improve their communication skills. The guidelines are presently being revised for use in IMCI.

Protocol for adapting feeding recommendations. Each country adapts the generic IMCI feeding recommendations in order to produce appropriate and culturally acceptable guidelines on counselling mothers on nutrition. The Protocol for Adapting the Feeding Recommendations, included with the IMCI Adaptation Guide, assists users through the steps of investigating national policies and local feeding practices, and adapting and testing specific feeding recommendations. This process has three outcomes:

- **Consensus on the period to be recommended for exclusive breastfeeding and the timing for introducing complementary foods.** Consistent messages need to be promoted through the various efforts in a country to improve nutrition, including the counselling to be done during the sick child visit.

- **Identification of energy- and nutrient-rich complementary foods that should be recommended for different age groups.** These foods must be readily available, affordable, and culturally acceptable for mothers to give their children.

- **The identification of common feeding problems, and culturally appropriate solutions to them.** These include, for example, ways mothers can more actively feed a child and solve specific problems in feeding when the child is sick.

Household trials, described in the protocol, may be conducted if needed to test the feasibility and acceptability of different ways to improve the nutritional content of foods given to children and to find solutions to common feeding problems.

The adapted feeding recommendations are then included in IMCI training materials and the mother’s counselling card, which is used by health workers as they counsel mothers during the clinic visit. The agreed-upon messages can also be delivered through community-based efforts to improve child nutrition, for example, through community health workers and organizations operating feeding centres.

The Protocol for Adapting Feeding Recommendations was used to facilitate the adaptation of feeding recommendations based on available information in several countries. In addition, countries conducted household trials where the need for specific new information was identified, such as in Bolivia, Indonesia, Nepal, Tanzania, Uganda, and Viet Nam. This technique is described in the protocol for the community testing of potential feeding recommendations. As a result of the adaptation work, these countries developed a set of age-specific recommendations on nutritionally adequate foods that are affordable and culturally acceptable, and a list of the most prevalent and nutritionally signifi-
Manual on working with community organizations. Major achievements in reducing childhood mortality require collaboration with persons who can influence family practices within the community. The Division is developing a manual on Working with Community Organizations in order to provide guidance to programmes on how to extend IMCI into the community. The manual will assist planners to: identify and assess potential community support systems; negotiate with community groups to identify the ways in which the behaviours required for IMCI can overlap with the needs and objectives of their groups; determine the inputs of the health system that are necessary to initiate and sustain the support that the groups can give to caretakers; define specific activities from a menu of potential activities; and document and evaluate outputs.

Developed in collaboration with the Centre for International Community Health Studies at the University of Connecticut School of Medicine, USA, the manual will draw from the experiences of projects that have been undertaken in many countries. Initially 20 sites, distributed across the regions of the world, will be selected; and a lead person in each site will be asked to complete a questionnaire and provide information and materials from their projects. Six sites will be identified to provide more in-depth information on how they work with community organizations. This information will contribute to the development of a manual, which will then be field tested.

Guidelines for using ethnography. In 1995 the Division started to develop a tool to assist countries in interpreting and applying information gathered in the Division’s Focused Ethnographic Studies. Practical applications included the adaptation of home care messages to be delivered by health workers, and the development of mothers’ counselling cards.

With the shift of focus from diarrhoea and acute respiratory infections to integrated management of childhood illness, it became clear that the tool under development needed significant modification. Although continuing to focus on diarrhoea and acute respiratory infections, from which the greatest experience in this area can be drawn, the process described will be applied to all technical areas of IMCI. The modified document will describe how to identify and select priority messages, and develop implementation plans to address home care issues. Information to be used in this process will no longer be limited to the results of focused ethnographic studies, but will include other sources available in a country, for example household surveys, health facility surveys, surveys of knowledge, attitudes, and practices, media studies, and sociological studies.

Country activities to improve family and community practices

Using mass media

Using the Radio Guide: A Guide to the Effective Use of Radio Spots in National CDD Programmes developed by the Division in 1994, activities were carried out during the biennium in two WHO Regions. In Africa, the Division worked with the USAID-funded BASICS Project to develop activities first in one country, Senegal, and then to plan for introducing mass media activities in six other countries. Following this plan, BASICS staff, who
had been trained in 1995 by the Division in the use of the Radio Guide, conducted two consecutive workshops for three countries each. Participants included interdisciplinary teams of radio and health specialists from each country. The trainers then conducted follow-up visits to each country to assist

In Egypt, a workshop was conducted at the WHO Regional Office for eight participants, representing radio stations from three major regions of the country and national CDD programme staff. A total of 12 radio spots were produced, covering the most salient and important topics identified from recent household survey and ethnographic studies. Messages on continuing feeding during diarrhoea episodes and appropriate care-seeking were developed into radio spots. Selected spots were pre-tested and then aired on a daily basis during the annual one-month campaign to control diarrhoeal disease in April 1997. Evaluation of the spots began in late 1997, and these results are the subject of a follow-up meeting planned for early 1998. An important additional outcome of this activity has been the commitment and involvement of regional radio programme managers and their staff in the development, broadcasting, and monitoring of radio spots on child health.

Key topics for the mother’s counselling card

- **When to return immediately to the clinic.**
  Local terms are used to help the family recognize what signs and symptoms show that the illness is getting worse, and the need to bring the child back immediately to the clinic.

- **When and what extra fluids should be given.**
  Extra fluids are necessary during illness and can be life-saving for the child. Messages and pictures include information on:
  - Breastfeeding more frequently.
  - Giving locally-recommended home fluids.
  - Giving oral rehydration salts (ORS) solution, if needed, with pictures to remind the mother on how to prepare ORS.

- **How to improve the child’s feeding.**
  The card helps mothers remember the advice given by the health worker on breastfeeding and the recommendations on specific local foods and feeding practices, including frequency of feeds and encouraging the child to eat more.

- **Immunizations.**
  If no permanent record of immunizations is available, the card may be used to record the immunizations given and the date to return for the next immunization.

Improving communication between health workers and families

**Using the mother’s counselling card.** Advising mothers on the home management of child illness and appropriate feeding is an essential component of IMCI.

As part of the adaptation of the IMCI training course, countries develop a *Mother’s Counselling Card* to assist in communicating with mothers. The main purpose of the card is to provide the mother with reminders of the key messages she has received from the health worker. Taking these messages home also encourages other family members to help the mother carry out the advice.

The mother’s card also serves as a counselling aid. Pointing to the pictures while giving advice helps the health worker remember to talk about key points, and at the same time, helps the mother to understand the advice. There can be space to write or mark information specific to a particular child, so that the advice is tailored to each situation. (See the mother’s feeding recommendations on the card used in Uganda at the end of this section.)

As noted previously, countries adapt the mother’s card before producing and using it. In developing the card, countries can use information on local feeding practices and the local terms for illness that have been gathered using the
Protocol for Adapting Feeding Recommendations and the Protocol for Identifying and Validating Local Terms described above. A third, the Protocol for Designing and Pretesting an Adapted Mother’s Card, also included in the IMCI Adaptation Guide, assists countries in refining messages and the design of the card to make it more effective as a communication tool.

Training health workers in communication in China. The national ARI programme in China, with the WHO Collaborating Centre for Epidemiology and Control of Acute Respiratory Infections, at the Capital Institute of Paediatrics, Beijing, China, undertook a project to construct and test a method for improving communication between health workers and families of infants and young children with acute respiratory infections (ARI). The specific objectives of the project, which was supported by AusAID, were to improve the communication skills of doctors in health facilities, and to improve the parents’ understanding of key messages on providing care in the home.

The project started with collecting ethnographic data from eight counties in four provinces, using the Division’s Focused Ethnographic Study for ARI. Staff from the collaborating centre and provincial health personnel conducted the studies. Workshops to analyse the results followed, and locally adapted counselling cards were designed. Training activities, using the adapted materials, were then conducted in which almost 800 village doctors were trained in the case management of ARI with an expanded module on communication. Follow-up training was conducted a month after initial training to help health workers solve problems they had encountered as they put their new knowledge into practice. Evaluations were carried out at two weeks and six months post-training in three provinces. Samples of health workers were observed in clinical consultations, and the mothers were interviewed on exit from the facility and a week later at home in order to assess the communication performance of health workers and the responses of caretakers.

The results of the evaluation showed that most of the village doctors who were trained through the project delivered the key home care messages (from 73% to 94%, depending on the specific messages) and asked caregivers questions to check whether they had understood the advice given (79% on average).

The exit interviews with mothers indicated that most (80%-90%) correctly recalled the messages on key home care practices, and two thirds of those advised on early danger signs were able to recall these warnings. The data from the interviews with mothers at home suggest that knowledge was retained. Mothers mentioned specific elements of supportive home care (e.g. feeding during illness and giving extra fluids) in 80%-85% of interviews and breathing danger signs in 50%-60%. In addition to testing the feasibility and effectiveness of an approach to communication training, the project produced a resource library of training, communication and evaluation materials that are ready for use or to adapt for initiatives in other areas of China.
CHAPTER 5
Managing the implementation of IMCI

HIGHLIGHTS OF 1996-1997

Activities for building the capacity for the implementation of IMCI in countries were held in all six WHO regions. Some examples are:

- National programme manager meetings (AFRO, AMRO, EMRO, SEARO, and WPRO);
- Workshops on planning for IMCI and adapting materials (AFRO and AMRO);
- Courses to prepare course directors, clinical instructors, facilitators, and others to train national and district course facilitators and supervisors (AFRO, AMRO, and SEARO).

Participants from countries with early experiences are now assisting other countries through the process of adapting national materials and initiating country training activities.

Information gained by closely monitoring the implementation of IMCI in six countries (Indonesia, Nepal, Peru, the Philippines, Uganda, and the United Republic of Tanzania) contributed to lessons now applied to improving the introduction of IMCI in other countries and the development of an IMCI Planning Guide.

The Division continued to assist countries with activities to strengthen their CDD and ARI programmes. Countries conducted health facility surveys, household surveys, and programme reviews to focus current activities and to prepare for implementation of IMCI in the future.

Defining an implementation strategy

One of the prominent features of the Division’s overall strategy is its emphasis on providing direct technical support to countries in implementation. The Division, collaborating with the Regional Offices, has a role in building capacity for sustainable activities in countries. This includes introducing new interventions and tools, gaining experience through their use, and identifying the best operational solutions to ensure that minimum standards of quality are maintained for the interventions to have an effect. The Division also uses feedback from these experiences in country to set priorities for additional research and development in order to meet country needs. As a consequence, the Division – through Headquarters and Regional Offices – allocates a considerable proportion of its human and financial resources to technical support to countries.

Approaches to implementation

Key approaches incorporated in the implementation strategy are described below.
Making full use of the working levels of WHO and defining clear functions for each of them.

The Division’s activities fall into areas of work at three levels: at Headquarters, at Regional Offices, and in countries.

Headquarters undertakes the task of global planning and policy formulation, in close collaboration with the Regional Offices. The coordination of research and of the development of new methods and the tools to implement them is also an important function of Headquarters.

In recent years, the introduction of IMCI has raised many questions that are of relevance to particular regions or groups of countries. As a result, Regional Offices are also becoming increasingly involved in the identification of operational research and development topics. The Regional Offices for Africa and for the Americas have both obtained special funding from bilateral donors, which will enable them to play a more prominent role in this area.

Regional Offices have direct and primary responsibility for assisting countries to implement IMCI. All Regions develop plans with countries and for regional activities, and obtain and use resources to implement them. They provide and support country staff where possible, and they offer technical assistance by disseminating technical information, organizing meetings for cross-country exchange or providing technical consultants; and they give limited financial support to planned country activities.

The Division’s Technical Support to Countries component supports the Regional Offices in these tasks. The support is mainly through capacity building, through technical assistance in planning and strategy formulation and through direct collaboration in selected countries.

More than half of the total funds needed for regional and country activities are from global extrabudgetary funds provided by collaborating donor agencies. An encouraging trend in the past two years has been that four Regional Offices (for Africa, the Americas, Europe and the Western Pacific) have been able to raise additional funds. These now constitute a substantial proportion of their regional budgets, and several staff posts are funded from these sources in the African and American regions.

Supporting the development of regional strategies. The Division promotes the development of region-specific strategies and plans for the introduction of IMCI. The nature and content of these strategies vary as a function of needs and resources, overall characteristics of health systems, burden of disease and epidemiological profiles, and the presence and interest of partner agencies within the Region.

During the biennium the Regional Office for Africa and the Regional Office for the Americas established regional task forces for IMCI, held regional review and coordination meetings, and developed strategies through dialogues with countries and major partners in the Region. The Regional Office for Europe likewise developed a regional strategy and plan, and established a task force in early 1998.

Reinforcing the capacity at country level to implement IMCI. An integrated strategy raises a special challenge to ensure the necessary coordination and achieve consensus among concerned Ministry of Health programmes and units. For this purpose, in each country national IMCI working groups are established, which include relevant programme managers and technical staff. A national focal point is identified by the country to facilitate the coordination of IMCI activities.
Building technical and managerial capacity.
Building technical and managerial capacity for implementing IMCI is a prime objective, as it was in the development of national ARI and CDD programmes. The Division trains international, regional and national technical consultants to guide the planning and adaptation of IMCI projects.

The joint WHO/USAID/BASICS Regional IMCI Project for the Americas

In Latin America, more than 565,000 children and infants die each year. Approximately 70-80% of these deaths are caused by diseases addressed by IMCI.

In response to this challenge, the Regional Office for the Americas and the USAID-supported BASICS project have joined forces to implement a five-year IMCI project. The project combines technical leadership and resources to strengthen and sustain programmes in eight USAID priority countries: Bolivia, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Nicaragua and Peru.

A few of the achievements in 1997 with this partnership are:

- **Country health leaders have been provided information to permit a decision on the adoption of the IMCI strategy.**
  Subregional information visits and orientation workshops were held in eight priority project countries, and a series of IMCI informational materials (brochures, folders, technical promotional materials, posters, and videos) were developed and translated into Spanish and French. Seven countries have officially adopted IMCI as a primary health care activity in the national system.

- **Country plans and strategies were developed for introduction and implementation of IMCI activities.**
  National and local level planning documents in Spanish were developed to assist countries in preparing plans of action. These guidelines were used during combined Regional Office and BASICS missions to standardize the planning process in the Region. Subregional activities were held to develop national operational plans of action in Bolivia, Ecuador, El Salvador, Honduras, Nicaragua and Peru. Subregional training workshops on rapid assessment and surveys were held in Bolivia, Ecuador and Honduras.

- **Generic training materials were adapted and training started.**
  The IMCI course modules were translated into Spanish and French, and seven intercountry adaptation workshops were held. Clinical course materials were adapted to the epidemiological and treatment situation in each country. Subregional and national training workshops for IMCI facilitators were held in six countries, and 147 first-level health facility workers were trained. The Guide for Follow-up after Training was further developed and translated into Spanish. A workshop was held in Bolivia to train 35 participants from nine countries in the methodology. District-level follow-up activities were carried out in Bolivia, Ecuador and Peru.

- **Priorities for operational research were set.**
  Protocols for operational research on IMCI-related issues were developed, and a document titled Investigaciones Operativas Prioritarias para Evaluar AIEPI was prepared.
process, and to develop national capacities for training and follow-up activities. As a result, the Regions of Africa and the Americas have a solid base to provide technical guidance to countries, and other regions will conduct activities during 1998 to improve their ability to provide this assistance.

Increasing collaboration with partners. Over the biennium, good progress has been made in facilitating the coordination, in particular among other international organizations and bilateral development agencies joining together to implement the IMCI strategy. The First Global IMCI Review and Coordination Meeting in Santo Domingo, Dominican Republic, in September 1997, brought representatives of these partners together to coordinate their roles and strengthen their involvement in implementing IMCI. The joint project between the Regional Office for the Americas and USAID is another example of steps to improve collaboration among partners implementing IMCI at the country level.

The IMCI Planning Guide

The IMCI Planning Guide, under development, will assist persons planning for IMCI in a country: the IMCI working group members, the IMCI focal person, national consultants, and external consultants from WHO or other organizations who are assisting national planners.

The planning process is based on the experience gained in the first group of countries that are introducing IMCI. The guide presents different options, as various conditions require countries to carry out steps in different ways. The commitment and collaboration of a variety of health programmes and institutions are needed in order to make decisions on treatment guidelines and implementation strategies. The guide therefore emphasizes activities to build consensus and create a broad base of national support. Some key events are designed to bring people together to assess and achieve consensus, including the IMCI orientation meeting, national IMCI planning workshop and later, district planning workshop. Future workshops on planning will incorporate the use of the IMCI Planning Guide.

The planning process in countries

Countries are encouraged to adopt a gradual process for planning and implementing IMCI in order to gain experience before expanding IMCI coverage and activities. The process involves three phases: introduction, early implementation in a limited area, and finally expansion of activities and geographic coverage.

Introduction phase. In the introduction phase, information about the IMCI strategy is provided for the Ministry of Health, and orientation meetings are held for decision-makers in the health sector, and representatives of relevant academic and training facilities, professional associations, donor agencies, and non-governmental organizations. Key national staff attend an IMCI course in another country, in order to better understand what is involved in training for IMCI.

If the Ministry of Health decides to implement IMCI as a strategy to improve child health, this commitment is formalized by an official written endorsement and the creation of an IMCI working group to plan, manage and coordinate early implementation activities. The working group coordinator needs to be a high level member of the Ministry of Health who can effectively foster coordination among programmes and institutions represented in the working group. A focal person for IMCI in the country, who is available for the day-to-day coordination of IMCI activities, is also identified.
Early implementation phase. Once a commitment has been made, the country begins to gain experience with the strategy through a well-defined set of activities in a limited geographic area. In the early implementation phase, the IMCI working group develops a national plan for IMCI activities, selects two or three districts for early implementation, and coordinates the preparation for IMCI implementation and the adaptation of the clinical guidelines and training materials for the country. Representatives from the selected districts assist in planning for district activities, including several training courses, and follow-up visits after training. They begin steps to ensure that the system supports are available to implement IMCI, including having the necessary drugs available in health facilities.

As the working group implements these activities, how IMCI fits into the overall planning system at both national and district levels is explored: how to link with health sector reforms, what is the cost, and how to build greater district capacity to do IMCI.

Expansion phase. Drawing on experience from the early implementation phase, the country plans how to expand IMCI activities in districts where IMCI activities were implemented on a limited scale and to begin IMCI in other districts.

At the end of the early implementation activities, representatives of the wide range of persons involved in the early implementation experience gather to review it. They identify difficulties encountered and solve problems in the initial districts covered by IMCI, and use what they have learned as a basis to determine how to expand gradually into new geographic areas. They assess their training capacity, including the number of qualified trainers available to help introduce IMCI into other districts and the availability of appropriate training sites.

The implementation of IMCI proceeds gradually in a country

Each step builds systematically on prior steps –
- On the consensus reached on national guidelines and action plans,
- On the technical and managerial capacity that has been developed nationally and in districts,
- On the experience of solving difficulties encountered in improving care in health facilities and in the home, and in efforts to strengthen the health system to support IMCI.

This ambitious strategy is designed to produce change, institutionalize it, and sustain its benefits to improve the health of all children.

New activities also may be added to the national strategy as the result of the review. A country may broaden the range of IMCI activities within the three components of IMCI. Some countries, for example, begin a process to identify interventions to strengthen community involvement in IMCI, or to introduce IMCI into preservice training of health workers.

Building capacity in regions and countries

Although IMCI builds on the foundations of CDD and ARI, it is a much broader strategy than either, involving a range of activities that were given less emphasis in those programmes. It is to be expected therefore that countries introducing IMCI will require technical assistance in the areas of initial orientation and planning, and for the adaptation of the guidelines and training materials. In addition most countries require assistance in the initial training courses to ensure their quality. Providing assistance is critical so that the national trainers who will later be trainers of facilitators have a solid grounding in IMCI, the skills to present and reinforce correct case management, and the skills required for training others. The Division conducts several activities, described below, for persons with different responsibilities for planning and implementation tasks.
Joint planning exercises

It was decided in 1996 that Headquarters staff would participate each year in the review and replanning of regional activities and budgets. The first opportunity for strengthening the planning process was during the mid-term planning for 1996-1997. In each Region the activities carried out during the year were reviewed, and regional strategies were discussed. Plans were made for appropriate intercountry and country activities in order to support the specific needs of countries. Regional budgets, taking account of funds available from all sources, were also discussed during these exercises. The same process was followed recently for the preparation of the 1998-1999 budgets and plans of action, in which all regional offices are now giving increasing priority to capacity building.

At a time when the Programme is meeting new demands on human and financial resources, joint planning exercises have proven to be a valuable way of establishing priorities for regional and country support. They reinforce optimum use of all available resources, and make it easier to standardize the preparation and monitoring of plans.

Global and regional workshops for regional staff, national experts and consultants

IMCI planning and adaptation workshops. As the number of countries that are implementing IMCI increases, a pool of experts is needed to support national IMCI working groups planning for the early implementation phase and adapting the generic IMCI materials. To develop this pool of experts, the Division organized two global planning and adaptation workshops in July 1996 and June 1997 in Geneva, for a total of thirty-three participants. In addition three sub-regional adaptation workshops were organized by the Regional Office for the Americas in El Salvador (June 1997), Argentina (August 1997) and Nicaragua (August 1997), in which a total of 105 persons were trained.

The process of preparing for IMCI implementation is considerably easier when the IMCI working group can rely on national resource persons who have been trained in the IMCI course for first-level health workers and in the specific skills of planning and adaptation. Participants in the workshops, therefore, include national staff and consultants, as well as regional and international consultants.

During the workshops the essential elements of planning for each of the three components of IMCI are reviewed. Participants learn the steps in adaptation, and update their knowledge of the technical basis for the IMCI guidelines. Exercises provide practical experience in guiding the adaptation process, using the study protocols and other materials in-

The rapid rise in interest by national health authorities in IMCI has created an urgent need to increase the capacity in the WHO regions to provide technical assistance.
cluded in the IMCI Adaptation Guide, and building consensus on adapted guidelines. Hands-on practice in modifying the generic training materials takes place in a computer laboratory.

Most of the consultants trained in these workshops have supported IMCI planning and adaptation in one or more countries; some have shared their expertise across regions.

**Intercountry IMCI training for course directors and clinical instructors.** During the biennium the Division assisted Regional Offices and countries in training key persons involved in training national and district trainers, as well as health workers in first-level health facilities. Two international IMCI courses were conducted in 1996 in Ethiopia and Peru in order to create a pool of consultants to assist countries with these activities.

To develop a smaller pool of key IMCI trainers (course directors and clinical instructors) selected participants from the IMCI courses are given additional on-the-job training under the supervision of an experienced WHO staff member or consultant. Most of the first national IMCI courses held in about 30 countries provided opportunities for this additional on-the-job training for more than 60 national and international consultants from Africa, Latin America and South-East Asia. Training courses for key IMCI trainers have also been organized and conducted by the African and American Regions to meet their needs, and more are planned.

It is anticipated that as more countries take up IMCI, the pool of consultants will be enlarged by drawing on trained staff of neighbouring countries.

**Monitoring and evaluation**

WHO surveys designed to evaluate CDD and ARI case management at health facilities and households have been used by countries to collect the information needed for evidence-based programme reviews. The experience gained through these efforts is now being applied to the development of monitoring and evaluation guidelines for IMCI. At the global level, CHD summarizes and disseminates the results of country and regional activities, and has initiated a special documentation effort to ensure that early experiences with IMCI are brought together and used to inform future implementation efforts.

**WHO/UNICEF Regional Interagency Agreement in support of IMCI in the Americas**

The interagency IMCI agreement signed in February 1996 between the Regional Office for the Americas and the UNICEF Regional Office in Bogota, Colombia, was strengthened in 1997 to serve as a framework to implement IMCI in the Region of the Americas. The agreement established lines of action to support a series of additional activities with UNICEF Country Offices and to optimize the use of technical and financial resources. Lines of action include:

- Analysis of the epidemiological situation and efforts to control principal health problems in children
- Analysis of the IMCI strategy and organization at the country level
- Preparation of operational plans of action for country implementation
- Training of health personnel in IMCI
- Support for provision of supplies and logistics for IMCI
- Supervision of health personnel
- Mass communication and health education
- Monitoring and evaluation of country activities

UNICEF also has continued to support the Regional Office for the Americas with ARI and diarrhoea prevention and control efforts in countries not yet implementing IMCI.

**CDD and ARI surveys**

The survey guidelines developed prior to the biennium continue to be used to assess the quality of acute respiratory infections and diarrhoeal disease management in health facilities and in the home: the CDD Health Facility Survey Manual, the ARI Health Facility Survey Manual and the Household Survey Manual: Diarrhoea, Acute
Respiratory Infections and Breastfeeding. During the biennium, eleven countries used these guidelines to conduct surveys.

Health facility surveys assist programme managers in identifying and addressing weaknesses in the quality of CDD and ARI care in health facilities. The results may highlight needs, for example, for additional training, more effective supervision, better systems for distributing drugs or improved communication between health workers and mothers. Surveys are conducted by national programme staff and others involved in programme activities in the country. Using the standardized guidelines, the trained survey teams visit a random sample of health facilities that see an average of at least two children each day with diarrhoea or ARI. For each facility in the sample, surveyors observe case management interactions for children presenting with either diarrhoea or cough and difficult breathing. They then conduct an independent assessment of the child to compare with the results of the assessment completed by the health worker. They interview the child’s caretaker as she leaves the facility, interview the health worker to identify the level of knowledge of case management, and review other aspects of the health facility, including availability of drugs and other supplies. Before leaving the facility, the team reviews the results of the visit and provides feedback to the staff. With the staff they discuss solutions to problems that health workers encounter in their work.

The survey requires a minimum of one week for survey training, two weeks for data collection, and one week for data analysis and preparation of a report by the survey team. In addition, a one-week planning session with the staff of the national programme is needed approximately eight weeks before the survey begins.

The household survey uses a cluster sampling methodology. It focuses on children with diarrhoea or cough or difficult breathing in the two weeks preceding the survey. The surveyors interview caretakers, observe them doing specific tasks (e.g. mixing an oral rehydration salts solution), and gather information on breastfeeding practices. The survey manual includes options to collect additional information needed by the country to address particular problems (e.g. on care-seeking practices, on drugs available in the home, and on sources of potentially harmful treatments given to the sick child).

Depending on the prevalence of diarrhoea and ARI, 6,000 to 12,000 children under five years of age are sampled (30-60 clusters of 100-250 children). Twenty to thirty surveyors are usually needed to complete the data collection within a two-week period, and the full implementation of the survey requires about the same time needed for conducting a health facility survey. (For the results of the health facility and household surveys since 1992, see Annex 6.)

Following are some examples of the use of the results of evaluation activities conducted in 1996-1997:

- Results from health facility surveys confirmed and supported the need for IMCI by showing, for example, that sick children often have more than one illness. Following the health facility and household surveys in Bangladesh, for example, the ARI and CDD programme managers realized the importance of developing a strategy for a gradual transition towards IMCI. Surveys and programme reviews in Iraq and Egypt were also used to guide these countries in the introduction of or preparation for IMCI.

- Results from disease-specific evaluation activities provided guidance to the first-year review of IMCI implementation and plans for expansion in Zambia. For example, the CDD health facility survey results helped to identify appro-
Household survey results in Bangladesh showed that only 8% of all children with diarrhoea were taken to a government health facility. The health facility survey in Nigeria also showed that use of public health services was poor, and this information led to further studies to have a better understanding of care-seeking behaviour in Nigeria. Problems identified through these household surveys are being addressed by the Division’s new care-seeking project.

Surveyors who participated in the CDD health facility surveys in Bangladesh and Iraq analysed the strong relationship between malnutrition and persistent diarrhoea. The survey in Iraq found that malnutrition was associated with 62% of cases with persistent diarrhoea, and in Bangladesh this proportion was 56%. Surveyors also found that persistent diarrhoea and diarrhoea with malnutrition were managed in the same way as acute diarrhoea. They concluded that the nutritional management of these children should be given high priority and that this needs to be effectively addressed in training and support to health facilities. These results confirm the direction taken by the Division to address the important relationship between nutrition and persistent diarrhoea through interventions to improve feeding practices.

Programme reviews

The Division has developed two evaluation tools, Guidelines for Conducting a Focused Programme Review and Guidelines for Conducting a Short Programme Review, to help countries assess the status of national programmes and their progress towards programme objectives and targets. The reviews also identify and propose solutions to constraints to programme implementation.

Programme reviews were conducted in eight countries during 1996-1997: two FPRs, in Iran and Pakistan; and six SPRs, in Egypt, Iraq, Kenya, Malawi, Mongolia and Yemen. Some examples of the ways countries used the results of their programme reviews are:

- Reviews of disease-specific national programmes in Malawi and Pakistan assisted these countries in making a shift towards closer collaboration with other technical programmes and the primary health care programme in planning, implementation and monitoring.
- The programme review team in Pakistan formulated new terms of reference for the national ARI programme, which emphasized its role as providing technical support to the primary health care programme. This focus was also recommended for all other disease-specific control programmes that are implemented through the primary health care system.
Progress in the control of diarrhoeal diseases in Bangladesh

Diarrhoeal disease is a major killer of children in Bangladesh, and poor sanitation and other environmental conditions make diarrhoea difficult to prevent and control. A policy on oral rehydration was written in 1987 and a national CDD Programme was formally launched in 1989 with the support of WHO in an effort to reduce the huge toll diarrhoea takes on young children.

In 1990, a WHO health facility survey was conducted to determine what was needed to improve the care of children with diarrhoea at health facilities. The survey found adequate supplies of oral rehydration salts (ORS), essential for treating children with non-severe dehydration; but case management was poor. The status of dehydration was inadequately assessed; health workers overused antibiotics and intravenous fluids, and gave children harmful anti-diarrhoeal drugs; and advice to caretakers on home care, including instructions on giving ORS solution, was weak or absent. In 1991 a WHO household survey identified related problems in the knowledge of mothers and other caretakers about how to care for their children with diarrhoea at home.

In 1997 a second health facility survey was carried out. It revealed remarkable improvements in the quality of diarrhoea case management; all major indicators showed significant progress compared with the 1990 survey. The follow-up household survey, also conducted in 1997, found similar improvements in home care.

Implementing a focused strategy to improve case management. The achievements between 1990 and 1997 required varied approaches by the national CDD Programme. The Programme began by developing a strategy to address each of the recommendations of the health facility survey, and by focusing their small staff and very limited resources to improve case management in health facilities. They then expanded their reach into the community to improve home care.

As a result, in the last six years the national Programme successfully carried out several major initiatives:

These included:

- The Programme developed the capacity of national and district-level staff to enable them to plan and implement strategies to improve care.
- The Programme implemented a systematic training strategy to improve the skills of health workers and their supervisors.
- The Programme implemented a systematic training strategy to improve the skills of health workers and their supervisors.

The small national staff was strengthened by adding persons who had participated in the health facility survey and were committed to implementing its recommendations. Focal points were designated for the CDD programme at district level to coordinate programme activities and supervise case management in health facilities, and by the end of 1994 all districts in the country had a CDD coordinator. Tools to monitor the quality of case management, including self-monitoring tools for health workers, were developed.

Ingredients for success in the Bangladesh National CDD Programme

- Assessing the quality of case management of diarrhoea, and developing strategies to systematically correct problems.
- Strengthening the capacity of national staff and district focal points.
- Improving the quality of training on case management, and expanding training activities to achieve wider coverage.
- Strengthening advice to caretakers on home care for diarrhoea and better nutrition.
- Ensuring that health facilities have the needed supports for good case management, including setting up oral rehydration treatment (ORT) corners, where needed.
- Implementing a health education strategy beyond the health facility with partners working in the community.
- Influencing health policies to support better care, such as policies to prohibit the use of harmful anti-diarrhoeal drugs for children.
ing case management. The strategy also emphasized the need to achieve a high coverage in training, without losing quality.

This required an expansion of the number of skilled trainers and training sites. Case management training began on a large scale in 1991 with the establishment of a Diarrhoea Training Unit in Mymensingh Medical College Hospital. Nine training units have now been established at medical colleges, where full-time training physicians conduct training for medical doctors, undergraduate students, interns, and other health care providers. The Programme also organized two workshops, in collaboration with WHO, to strengthen the teaching of diarrhoea case management to medical students.

The Programme reviewed its activities and as a result revised its plan to address barriers to the full realization of its strategy.

In October 1991, a WHO focused programme review was conducted in collaboration with UNICEF. In addition to refocusing the emphasis on how to improve case management through the training of health workers, the review addressed home care. The results of a WHO household survey, conducted in 1990, had found poor home care for children with diarrhoea, and it identified the specific tasks caretakers did not know how to do. During the review, a working group on communications was established to work with local non-governmental organizations (NGOs) to improve family practices through their networks within the community. The review team also developed a plan to address the availability and wide use of harmful antidiarrhoeal and antiemetic drugs.

The Programme initiated activities to improve the communication skills of health workers.

As families are responsible for the major task of managing diarrhoea, the Programme was concerned that caretakers were receiving little or no advice on home care. In 1992 they adapted and translated WHO training materials on interpersonal communication skills, and included – in all case management training – instruction and practice exercises on advising caretakers. The importance of continued feeding during diarrhoea episodes was strongly emphasized, and the ability of a facility to provide supplemental food to diarrhoea cases was often a prerequisite for holding a training course.

The Programme established Oral Rehydration Treatment (ORT) corners in health facilities in order to provide rehydration to children found to have some dehydration and to provide caretaker education on home care and the prevention of diarrhoea.

ORT corners were established in health facilities at thana and district levels to promote and facilitate oral rehydration treatment, and to provide health and nutrition education to mothers. Many ORT corners provide food, khichuri, as part of the treatment of children with diarrhoea, and this activity includes opportunities to educate caretakers on nutrition.

The Programme developed a communication strategy with partners working in the community in order to strengthen the health education components of CDD.

Messages, consistent with the efforts to improve care at the health facility, were developed. Working with UNICEF and local NGOs, the Programme found avenues to deliver the messages more widely in communities, as well as through health facilities.
The Programme initiated activities to influence drug policies.

Due a large extent to the Programme’s efforts, the Government of Bangladesh issued a policy on the use of drugs in the treatment of diarrhoeal diseases, strongly discouraging the use of anti-motility drugs in children and promoting rational use of antibiotics.

Identifying achievements in the results of the 1997 health facility survey. The results of the 1997 health facility survey provide strong evidence that these interventions had an impact on the improvement of the quality of diarrhoea case management at health facilities (Figure 19). In 1997, twenty-eight percent of diarrhoea cases were correctly managed (assessed, treated, and caretakers advised), compared to less than 3% in 1990. ORT corners were found in all but four facilities (89%), usually well organized and functional; virtually all (96%) were regularly supplied with ORS and most (71%) had health education materials. The performance of trained staff in most of the key tasks assessed in the 1997 survey was better than that of untrained staff, indicating the importance of the training strategy carried out by the national programme since 1992.

A key component in diarrhoea case management is appropriate home care, focusing on three major rules: increase fluids; continue feeding; and seek care immediately if danger signs occur. The 1997 survey showed very encouraging findings: the large majority of caretakers were advised on the need to increase fluids (79%) and continue feeding (90%). Half of the caretakers (47%) received correct and complete advice on all of the three rules, compared to only 1% of the caretakers in 1990. These represent important results beyond the specific content of the advice. They suggest that efforts to improve communication skills may have contributed to a change in how health workers and caretakers work together in caring for the sick child.

Supervision has been notably strengthened by the designation of the CDD coordinators at district level. In 1997, 48% of the health workers reported that they had received at least two visits by a supervisor in the past three months, and that the supervisor observed or reviewed aspects of case management with the staff and checked the availability of ORS and drugs.

In the 1997 survey the proportion of cases with bloody diarrhoea given a recommended antibiotic was 62%, compared to only 46% in 1990. As the training emphasized the rational use of drugs, an impressive finding was that the proportion of observed cases that were given an antibiotic when not indicated decreased from 23% in 1990 to 0% in 1997. While nearly half of all patient records reviewed in 1990 showed that one or more of an anti-motility, anti-emetic, anti-spasmodic, or other non-recommended drug had been given to a child, the figure for 1997 was less than 1%.

---

**FIGURE 19**
Comparison between results of two health facility surveys, Bangladesh, 1990 and 1997

<table>
<thead>
<tr>
<th>Percent of cases observed:</th>
<th>1990</th>
<th>1997</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cases correctly assessed</td>
<td>3</td>
<td>47</td>
</tr>
<tr>
<td>Cases correctly rehydrated</td>
<td>4</td>
<td>33</td>
</tr>
<tr>
<td>Caretakers correctly advised</td>
<td>1</td>
<td>47</td>
</tr>
<tr>
<td>Dysentery cases given appropriate antibiotic</td>
<td>46</td>
<td>62</td>
</tr>
<tr>
<td>Cases correctly managed</td>
<td>3</td>
<td>28</td>
</tr>
</tbody>
</table>
Finding improvements in home care in the results of the 1997 household survey. The 1997 household survey found that the variety of efforts by the Programme and its partners to improve communication with families at health facilities and in the community were effective. In particular, the survey found that 62% percent of mothers and other caretakers reported that they had given more fluids to their sick child, compared to only 25% in the 1991 survey. Of these caretakers, 53% reported that they had given their child Oral Rehydration Salts (ORS) solution, compared to only 11% in 1991. These findings are significant: giving more water and other fluids to replace what has been lost during diarrhoea is the most critical element of care to save lives of children with diarrhoea. Interviews found that most caretakers (80%) could also identify at least two signs of when to seek care from a health worker for a child with diarrhoea.

The survey revealed additional areas needing improvement. In particular, more attention needs to be given to helping mothers learn to measure a litre of water in order to mix the ORS solution correctly, and they need to be encouraged to continue to give food and to offer it more frequently to the child who is sick.

Making a difference with strong collaboration. The progress documented by the surveys is the result of the work of the national Programme and its effective collaboration with several partners. The Division has actively supported and has provided technical assistance to the Bangladesh CDD Programme since before it was formally established in 1989, and since 1991 this has included a full-time Medical Officer posted in the country. Many of the changes mentioned above were made possible because WHO has also been the executing agency for the CDD component of the World Bank Fourth Population and Health Project (1992-1997). This enabled WHO to work with the Government to provide technical support, knowing that adequate resources were available for implementing activities. Government action, political will, committed national health staff, WHO technical support, and World Bank resources together have been highly synergistic.

Building the IMCI strategy on experiences of control programmes for specific diseases. The conclusion from the experience of the past seven years is that a well planned and implemented strategy, dedicated and skilled national and district staff, appropriate technical assistance, and sufficient resources can have a significant impact on the health system’s handling of a major health problem. These lessons from the experience of a specific disease control programme can now be applied to the implementation of integrated management of childhood illness.

Documenting early experiences with IMCI implementation

Beginning in 1995, CHD has worked with regional and country staff to document early experiences with IMCI implementation. The lessons learned from these experiences have been used to improve the IMCI implementation strategy and the guidance offered to countries. The monitoring has focused on six countries: Indonesia, Nepal, Peru, Philippines, Uganda and the United Republic of Tanzania. The results of the first 18-month efforts are summarized in a separate document titled Documentation of Experience in Seven Countries; and results for the whole of the biennium are now being compiled.

IMCI monitoring and evaluation

Monitoring and evaluation of the implementation of IMCI builds on the CHD
experience with health facility and household surveys, but with some shift in emphasis. One important shift is from an emphasis on special national evaluation activities to strengthening the collection and use of information at facility and district levels. A technical working group has been established in collaboration with UNICEF, and guidelines and tools are currently in development.

The approach is guided by the following principles:

- Monitoring and evaluation are critical for making decisions at the district level. Health systems are being decentralized in many countries, and with decentralization districts have an increasing role in planning and budgeting activities and services.

- District-level monitoring should complement rather than duplicate other efforts to strengthen district management and supervision.

- Monitoring information serves as a rapid alert system for district health teams, and should contribute to their efforts to solve problems.

- Evaluation activities should help district health teams to assess progress towards their objectives, assess and strengthen routine monitoring, and reinforce supervision.

The technical working group has drafted two sets of indicators: a limited number of core indicators recommended for use in all monitoring and evaluation activities (Table 15), and a supplemental list that can be used to meet specific country needs or in operations research. This list and the proposed guidelines and tools are being reviewed by a broad range of technical partners. The goal is to have feasible tools that can be used by district and national staff to improve their planning and management of IMCI implementation, and to have consensus among partners and donors on the use of indicators that will satisfy reporting requirements.

### TABLE 15
Topical list of core IMCI indicators*

<table>
<thead>
<tr>
<th>Topic</th>
<th>Focus</th>
<th>Indicator(s)</th>
</tr>
</thead>
</table>
| Health workers’ skills (at first-level health facilities) | Assessment | 1. Child assessed for four general danger signs  
2. Child assessed for the presence of cough, diarrhea, and fever  
3. Child’s weight checked using a growth chart  
4. Child’s vaccination status checked  
5. Caretaker of child under two years of age asked about breastfeeding and complementary foods  
| Correct treatment and counselling | 6. Child needing referral is referred  
7. Child needing oral antibiotic and/or antimalarial is prescribed drug(s) correctly  
8. Caretaker of child with diarrhea and no dehydration is advised to give extra fluids and continue feeding  
9. Child leaves facility with all needed vaccinations  
10. Caretaker of child who is prescribed ORS and/or oral antibiotic and/or an antimalarial knows how to give the treatment |
| Health system supports for IMCI | Supervision | 11. Health facility received at least one supervisory visit during the previous four months  
12. Health facility has all essential equipment and materials for IMCI  
13. Health facility has all essential IMCI drugs available  
14. Health facility has the equipment and supplies to provide full vaccination services  
| Drugs, equipment and supplies | IMCI training coverage | 15. Health facilities with at least 80% of health workers who manage children trained in IMCI  
16. To be determined at country level |
| Caretaker satisfaction | Nutrition | 17. Child under 4 months of age is exclusively breastfed  
18. Child aged 6-9 months receives breastmilk and complementary foods.  
| Child care at family and community levels | Immunization | 19. Child 12-23 months of age who is vaccinated against measles before 12 months of age |

*These proposed indicators may need to be revised when more IMCI interventions to improve child care at family and community levels become available.
CHAPTER 6
Developing the technology for improving child health

HIGHLIGHTS OF 1996–1997

- The technical basis for the IMCI guidelines in first-level facilities was published as a supplement to the Bulletin of the World Health Organization (Integrated management of childhood illness: A WHO/UNICEF initiative, Supplement No. 1 to Volume 75, 1997).

- Multi-centre studies to evaluate the efficacy and safety of reduced osmolality oral rehydration salts (ORS) solution in children with acute non-cholera diarrhoea and in adults with cholera were completed in May 1997.

- A study published in 1996 evaluated the efficacy of nalidixic acid and metronidazole in the treatment of non-dysenteric persistent diarrhoea. The findings indicate that there is no benefit in the routine use of nalidixic acid or metronidazole in the treatment of persistent diarrhoea. CHD instead promotes the use of nutritional interventions for children with persistent diarrhoea.

- A study in a peri-urban area of Peru found that community-based interventions could achieve a decrease in the use of antibiotics and anti-diarrhoeal drugs for children with uncomplicated watery diarrhoea, even without wide support of physicians for the change. It was thought, however, that without the full participation of physicians these changes in family practices could not be sustained.

- The results of a Pakistan study on the clinical relevance of antibiotic resistance were published in 1997. It found that cotrimoxazole performed poorly in comparison to amoxycillin in treating severe cases of pneumonia. This confirmed the WHO position not to recommend cotrimoxazole for treatment of severe pneumonia. The study also provided strong evidence that laboratory surveillance to determine resistance patterns is of limited value in relation to managing pneumonia, although it is of greater value for identifying appropriate antimicrobials for meningitis.

- Studies in the Philippines and the Gambia demonstrated that oral chloramphenicol does not result in effective therapeutic levels in young infants and in malnourished children with pneumonia. It is, therefore, recommended that only injectable chloramphenicol be used to treat young infants and sick malnourished children; a dose of 75 mg/kg per day, in three divided doses, is sufficient, except for children with meningitis.

- Linking vitamin A supplementation to immunizations in early infancy was shown to be safe in a study concluded in 1997. The doses used (25 000 IU at 6, 10, and 14 weeks) combined with maternal supplementation (200 000 IU within 40 days of delivery) resulted in only limited increases in serum retinol by the age of 6 months.

- The findings of accumulated studies on zinc supplementation, reviewed in 1996, suggest that this intervention leads to substantial health benefits: increasing growth, reducing the duration of diarrhoea, and reducing the frequency of respiratory infections.
Research to improve case management

Integrated Management of Childhood Illness

From 1992-1995 a set of studies was commissioned by CHD to improve and validate the guidelines for IMCI and the WHO/UNICEF training course for teaching these guidelines to health workers in first-level facilities. In order to ensure that the results of these technical studies were readily and widely available, CHD in collaboration with the principal investigators of the studies prepared a special Supplement to the Bulletin of the World Health Organization, which was published in December 1997. (For details of this research, see the Supplement to the Bulletin.)

Technical basis for the first-level IMCI guidelines

A selection of topics on integrated case management covered in the Bulletin of the World Health Organization, Supplement No. 1 to Volume 75, 1997:

- Overview of the case management guidelines
- Evaluations of the performance of the case management algorithm:
  - in an area with seasonal malaria (the Gambia)
  - in an area with high malaria transmission (Kenya)
  - identification of children requiring referral to hospital (Bangladesh)
  - sensitivity and specificity of assessment and classification (Uganda)
  - indicators of severe malnutrition and low weight-for-age (data from Kenya, Nepal, Bolivia, and Togo)
  - indicators for moderate and severe anaemia (Kenya, Uganda, the Gambia, and Bangladesh)
- Health worker performance in field trials of the course for first-level health workers (Ethiopia and the United Republic of Tanzania)

Management of acute respiratory infections (ARI)

ARI case management studies in Pakistan.

The relationship of in vitro antimicrobial resistance and in vitro clinical failure of treatment was studied in Pakistan in 1992, with assistance from WHO, the Centers for Disease Control, Atlanta, USA, and USAID. This study compared the clinical efficacy of amoxycillin and cotrimoxazole for the treatment of non-severe and severe pneumonia. The 1992 data were reanalysed, and this study was finally published in 1997.

At the time of the study some degree of resistance was present in about half of the clinical isolates of S. pneumoniae and H. influenzae. A total of 595 children 2 to 59 months old were randomized to receive cotrimoxazole or amoxycillin in a double-blind fashion. Blood cultures were obtained in all children, who were hospitalized for at least three days and monitored in a standard way. At the end of the study, 147 children had positive blood cultures for S. pneumoniae and H. influenzae, 131 of which were successfully transported to CDC for minimum inhibitory concentration (MIC) analysis. The study drew the following conclusions:

- There was no difference in treatment failure rates between the amoxycillin and cotrimoxazole groups in non-severe pneumonia.
- The clinical outcome of severe pneumonia was significantly worse in children treated with cotrimoxazole than in those treated with amoxycillin. This finding was particularly evident among children who were bacteraemic, in whom the failure rate was 50% for those treated with cotrimoxazole, compared to 10% for those treated with amoxycillin, regardless of the etiologic agent.
- There was a high rate of positive blood cultures with non-typable H. influenzae, which is unusual and apparently peculiar to Pakistan. The overall failure rate among children with H. influenzae was high, suggesting that this is not an artefact but an interesting finding that may be related to the specialized transport medium used, or to the local strains of H. influenzae circulating in Pakistan.
Almost half of the isolates were resistant to cotrimoxazole at the 2µg/ml level, while very few were resistant to amoxycillin. In no analysis was the MIC level of blood isolates to the assigned drug predictive of clinical failure.

Since the above study was completed, in vitro resistance to cotrimoxazole among isolates of S. pneumoniae and H. influenzae has continued to rise in Pakistan. Pakistani investigators completed two other relevant studies with assistance from the Applied Diarrhoeal Disease Research Project (ADDR) and UNICEF:

- A single cell study of community treatment of ARI in northern Pakistan has monitored treatment failure rates and documented a rise in overall treatment failure rates from 8% to around 15% over a three year period.

- A double-blind study conducted in eight sites compared standard versus double dose oral cotrimoxazole in over 1 100 children 2–59 month old with non-severe pneumonia and found similar failure rates (approximately 18%) in both groups. These are significantly higher than those seen in the 1992 efficacy study.

The Pakistan study provides strong evidence that surveillance for in vitro antimicrobial resistance to cotrimoxazole is of very limited value. If resistance is important, MIC levels, normally the gold standard for such exercises, are at best an indirect guide to the presence of resistance and are not at all helpful at an individual level. Despite doubts about their value, surveillance exercises to measure levels of antibiotic resistance amongst strains of H. influenzae and S. pneumoniae are likely to continue.

**Results from pharmacokinetic studies.**

Three pharmacokinetic studies of oral chloramphenicol palmitate in sick, severely malnourished children were conducted in the Gambia and Pakistan. The study in Pakistan was conducted in 14 severely malnourished and 14 well nourished children suffering from severe pneumonia.

Each child was given 25 mg/kg of chloramphenicol every six hours for five days, which resulted in wide variability in the chloramphenicol serum levels of these children. In general, the mean serum levels were lower in malnourished than well-nourished children, although there were no significant differences between the two groups.

Two studies conducted in the Gambia, one in 36 patients and another in 16 patients, showed similar results. There was a great deal of variability in chloramphenicol serum levels among children, and in general sick, malnourished children achieved lower serum levels than well-nourished children. It was concluded that sick malnourished children requiring chloramphenicol should be treated with the injectable form.

Two studies of intramuscular chloramphenicol in young infants were conducted in 20 Gambian and 10 Filipino children, and one study of oral chloram-
phenicol was conducted in 20 Filipino children. All children were less than 3 months old. There was wide variability in the chloramphenicol serum levels obtained in Filipino children who received oral chloramphenicol. Therapeutic levels, however, could be achieved in children who received intramuscular chloramphenicol. It was concluded that oral chloramphenicol should not be used in young infants less than 3 months of age. If chloramphenicol use is indicated, these children should be treated with the injectable form.

Several other pharmacokinetic studies have been completed and the analysis of their results is underway: studies of oral cotrimoxazole in young infants have been completed in Vietnam and Guatemala; studies on giving amoxycillin two versus three times daily have been completed in Pakistan and Brazil; and a study of standard versus double dose oral cotrimoxazole has been completed in Pakistan. A similar study in Ethiopia is still enrolling patients.

Management of severe pneumonia. The current recommended treatment for severe pneumonia is hospital admission and intramuscular penicillin. Severe pneumonia is defined as cough with lower chest wall indrawing without danger signs. The Pakistan study described above (see the section ARI case management studies in Pakistan) showed oral amoxycillin to be quite effective for the treatment of severe pneumonia. If amoxycillin were as effective as IM penicillin for the treatment of severe pneumonia, it would allow fewer injections and hospital admissions, resulting in major savings in hospital resources and bed space. A proposal development workshop for a multi-centre study involving hospitals in seven different countries (Colombia, India, Mexico, Pakistan, South Africa, Viet Nam, and Zambia) will be held in Durban, South Africa in early May 1998. The Division and the Applied Research on Child Health Project (ARCH) will jointly support this workshop and the multi-centre study. The research protocol should also incorporate an estimate of the relative costs of the two regimes.

Addressing antibiotic resistance. In 1996 the Division set up and co-ordinated with the ARCH project a number of formal and informal consultations on the subject of antimicrobial resistance. The result has been the development of a coherent research strategy and sensible guidelines to enable countries to address the issue. This strategy has been endorsed by many organizations, including the International Union Against Tuberculosis and Lung Diseases. The strategy is based on the assumption that, over the coming years, there will be a shift away from cotrimoxazole towards amoxycillin for the first-line treatment of acute pneumonia. Projects on some of the clinical research issues mentioned in this strategy have been initiated in collaboration with ARCH:

- A proposal development workshop was held in Canberra, Australia in July 1997 to design a multi-centre study to investigate the case management of non-severe pneumonia, with and without wheeze. Investigators from eight countries (Brazil, India, Myanmar, Pakistan, Paraguay, Peru, South Africa, and Viet Nam) participated in the development of this proposal. As a first step in the implementation of this large project, an observational study involving four sites (India, Peru, South Africa and Viet Nam) will be initiated in early 1998. Results are expected in October 1998.
- Clinical trials to investigate either the efficacy of a twice daily dose of amoxycillin, or the efficacy of shorter course treatment with amoxycillin (3-day course compared with a 5-day course) have either been initiated or
CHAPTER 6. DEVELOPING THE TECHNOLOGY FOR IMPROVING CHILD HEALTH

are being developed in Brazil, Pakistan, Ghana and South Africa.

- Plans have been made to conduct workshops in early 1998 to develop additional multi-centre studies to investigate: the relationship between antimicrobial resistance and clinical failure in patients with severe pneumonia (in collaboration with the Regional Office of the Americas), and the efficacy of oral amoxycillin in the management of severe pneumonia (in collaboration with ARCH).

The findings from studies in Pakistan, discussed above, as well as requests from Ministries of Health, led to a decision that a priority would be the development of guidelines for national programmes on how to establish or revise policies on antibiotics, particularly for treatment of pneumonia. A number of informal meetings and discussions were held in 1997 to identify the information necessary to develop such guidelines. Research projects were initiated to collect missing information or complete currently available information. A first draft of a document to provide guidance to governments on how to use available technical knowledge to review and if necessary revise these policies will be ready for review in mid-1998.

It is recognised that widespread antibiotic use contributes to the development of antimicrobial resistance, but remarkably little is known about the patterns of prescribing and use that are most likely to lead to the development and spread of antibiotic resistance. Community studies to identify risk factors for the development and spread of antibiotic resistance are needed. This is a very challenging area and many aspects need to be investigated, including:

- The effect of occasional use compared with full course use; and
- The number and diversity of antibiotics available.

Major issues in antibiotic resistance

- Improving recommendations for standard case management
  
  There is evidence of increasing levels of resistance of *S. pneumoniae* and *H. influenzae* to cotrimoxazole, penicillin, and chloramphencicol, the drugs most frequently used for the management of pneumonia. The efficacy of alternative antibiotic regimens needs to be evaluated. Questions requiring research include:

  - What course of amoxycillin is least likely to lead to the emergence of resistant strains, while remaining efficacious?
  - Is oral amoxycillin equivalent or superior to intramuscular penicillin for the management of severe pneumonia?
  - Is amoxycillin superior to cotrimoxazole for the treatment of non-severe pneumonia in a high resistance setting?
  - Is the combination of penicillin and gentamicin superior to chloramphenicol for the treatment of (very) severe pneumonia?

- ARI case management in the presence of HIV
  
  - Does concurrent infection with HIV modulate the response to standard case management?

- Improving specificity of the case management algorithm for ARI
  
  - Which children presenting with cough and fast breathing, with and without wheezing, need antibiotics?
  - In a population with a high prevalence of HIV, should the ARI case management guidelines be modified?

- Developing tools to monitor the emergence of resistance and guidelines for changing standard treatment
  
  Collection of accurate data on the rate of antimicrobial resistance among nasopharyngeal isolates has proved to be too expensive or to require a level of laboratory support difficult to obtain in many developing countries. Interpretation of such data has also proven to be very difficult, given the uncertain relationship between *in vitro* resistance and clinical outcome for pneumonia. Furthermore, clinicians and senior decision-makers are more likely to be influenced by data on clinical outcome than laboratory data. Therefore it is important to explore ways of producing clinical data relevant to antimicrobial resistance. Examples of questions that require further research are:

  - What is the best way to organise and structure systems for monitoring resistance?
  - What is the relation between levels of *in vitro* resistance to an antimicrobial and the incidence of treatment failures?
  - Can surveillance for antimicrobial resistance be accomplished by monitoring trends in treatment failures?
  - What decision rules should national policy-makers use to determine when to change recommendations for standard treatment?
While CHD is not planning to fund research in relation to these aspects of antimicrobial resistance, the Division will advocate for others to do so.

At the end of 1997, USAID convened a meeting in Washington on infectious diseases to which several WHO programmes were invited. One of the four themes of this meeting was antimicrobial resistance. In preparation, with CHD the WHO Divisions of Emerging and Other Communicable Diseases Surveillance and Control (EMC), Action Programme on Essential Drugs (DAP), Global Tuberculosis Programme (GTB) and Malaria Control (MAL) prepared a broad strategy document on approaches to control of the emergence and spread of antimicrobial resistance. The research strategy developed by CHD, mentioned above, was incorporated into this overall strategy.

Management of wheeze. A large number of children under age five years presenting with wheeze may be given antibiotics according to the standard guidelines for managing pneumonia, now included in the IMCI guidelines. Even though the children continue to breathe fast after a single dose of a fast acting bronchodilator, however, they may not be suffering from pneumonia and may not need treatment with antibiotic. A study is planned to improve the specificity of the ARI standard case management guidelines for children with wheeze as part of the large multi-centre study to investigate the case management of non-severe pneumonia. The objective of this study is to develop new management guidelines for wheezing children that would result in less antibiotic use.

Management of diarrhoea

Reduced osmolarity ORS solution. Data collection was completed in May 1997 in the multi-centre studies to evaluate the efficacy and safety of reduced osmolarity ORS solution in children with acute non-cholera diarrhoea and in adults with cholera. A total of 300 adults with cholera and 675 children were recruited. A workshop to analyse the data and to prepare manuscripts for the publication of the results took place in Ho Chi Minh City, Viet Nam in June 1997. The conclusions from the analyses performed at this workshop were as follows:

- In children with acute non-cholera diarrhoea, the use of reduced osmolarity ORS solution is associated with a 40% reduction in the need for unscheduled intravenous therapy, while having no apparent effect on stool output and illness duration.

- In adults with cholera, there is no difference between reduced osmolarity ORS solution and standard WHO ORS solution with regard to stool output or need for unscheduled intravenous therapy.

- When data from the study conducted in children and the study conducted in adults are combined, use of reduced osmolarity ORS solution is associated with a significantly higher incidence of biochemical hyponatremia; the risk is higher for patients with cholera. The significant reduction in incidence of unscheduled intravenous therapy with reduced osmolarity ORS solution applies for children but not for adults with cholera.

Widespread use of reduced osmolarity ORS solution, by its effect in reducing the need for unscheduled IV infusion, could provide not only significant simplification in the hospital management of acute diarrhoea, but also reduction in iatrogenic transmission of blood borne diseases. However, the balance between the benefit of reduction in unscheduled IV infusion and the risk of increased incidence of hyponatremia, especially in cholera patients, should be taken into account when a choice of ORS solution is made. This balance, and therefore the choice of ORS solution, may differ between countries.
The Division is currently developing guidelines based on the outcome of this research that will be reviewed by an expert consultation and made widely available in 1998.

**Oral rehydration therapy in severely malnourished children.** Accumulated experience over a number of years has revealed that some changes in the management of diarrhoea may be needed for children who are severely malnourished. Many signs normally used to assess dehydration are unreliable in children with severe malnutrition, making it difficult or impossible to detect dehydration reliably or to determine its severity. Dehydration is therefore frequently over-diagnosed and its severity over-estimated in these children. In addition, because of the major electrolyte abnormalities found in severely malnourished children, full strength ORS should not be used. As total body potassium is low and total body sodium is high, the rehydration solution should contain less sodium and more potassium than standard WHO ORS. Magnesium, zinc and copper should also be provided to correct deficiencies of these minerals. A clinical trial, supported by the Division, was started at the ICDDR,B in Dhaka, Bangladesh in November 1997 to evaluate this new treatment approach. Results should be available in 1999.

**Management of persistent diarrhoea.** Results from two studies, in India and Peru, to evaluate treatment guidelines for use in outpatient settings were reviewed in an informal meeting held in November 1996 with the two principal investigators. Despite methodological differences between the two cohort studies, the meeting conclusions emphasized the similarities in their findings. The most important of the consistent findings were:

- A rate of treatment success at day 7 of approximately 60%;
- A lack of association between the use of animal milk and an increased risk of treatment failure.

A double-blind clinical trial evaluating the efficacy of nalidixic acid and/or metronidazole in the treatment of non-dysenteric persistent diarrhoea was completed and published in 1996. The results showed that there were no clinically significant differences by treatment group with regard to the main outcome variables: diarrhoea duration, stool frequency, recovery by day 3, 5 and 7, and weight gain at day 7 and 14. In conclusion, these findings suggest that there is no benefit in the routine use of nalidixic acid or metronidazole in the treatment of persistent diarrhoea. These studies were supported by the Division and ARCH (formerly known as the Applied Diarrhoeal Diseases Research project, ADDR).

**Management of dysentery.** *Shigella* organisms, the most common cause of dysentery, are increasingly resistant to the most affordable antibiotics, creating an urgent need to determine the safety and efficacy of other antimicrobial agents for the treatment of dysentery in children. The Division has undertaken a multicentre study to evaluate the safety and efficacy of short course treatment with ciprofloxacin in collaboration with Bayer (Pty) Ltd, Johannesburg, South Africa. Data collection began in September 1996 in Durban, South Africa and in October 1996 in Harare, Zimbabwe. However, the study that was supposed to be completed in July 1997 had to be prolonged until July 1998 because of a lower than expected recruitment rate due to the reduced incidence of dysentery due to *S. dysenteriae* type 1 at the two sites. To ensure that the originally calculated sample size would be reached by July 1998 it was also agreed with Bayer, and in consultation with the principal investigators from the two sites,
that an additional site in Bangladesh would be included in this multi-centre study.

**Inappropriate use of drugs.** A study to evaluate the efficacy of a community-based intervention to decrease the use of anti-diarrhoeal drugs and of antibiotics for uncomplicated episodes of watery diarrhoea in children under five years of age was completed in a peri-urban community of Lima, Peru. Results of a pre- and post-comparison show a significant decrease in the use of medicines overall in the intervention community, despite limited participation of physicians. The fact that the intervention achieved its objectives suggests that efforts directed at community members may be worthy of support. However, without the full participation of the physicians in the promotion of rational drug treatment for diarrhoea, this behaviour change may be difficult to sustain.

**Management of severe malnutrition**

**Domiciliary care of severe malnutrition.** Severe malnutrition is an important cause of death in children under five and a major risk factor of death among children hospitalized for other conditions. The proper clinical management of these patients, as described in the new WHO document *Management of severe malnutrition*, requires that these patients be hospitalized for at least three weeks. However, this is rarely possible, either because beds are not available in hospital for these patients, or because caretakers, usually mothers, cannot afford to stay in the hospital with their malnourished child for such a long period. Therefore, the average hospitalization of a severely malnourished child does not exceed one week, and patients are discharged still severely malnourished.

The Division has initiated the development of guidelines for the management of these children at home, after a short one to ten day hospitalization. As a first step, a survey will be conducted in Brazil to explore the problems associated with hospital and domiciliary care of these children.

**Vitamin and mineral mixes.** In collaboration with Nutriset, a private company, UNICEF, and the WHO Nutrition unit, CHD has undertaken the development of vitamin/mineral mix formulations that could be used in the management of severe malnutrition, and in the management of persistent diarrhoea. These

---

**Children die needlessly from diarrhoea, also in developed countries**

Oral rehydration therapy (ORT) is the well-established therapy for the treatment and prevention of life-threatening dehydration due to diarrhoea. Its effective use has saved millions of lives of children around the world. In developed countries, however, ORT is grossly underused.

Contrary to the recommendations of WHO, of the American Academy of Pediatrics (AAP), and of the Centers for Diseases Control and Prevention (CDC), health care providers in the United States:

- Overuse intravenous hydration,
- Prolong rehydration,
- Delay reintroduction of feeding, and
- Inappropriately withhold ORT, especially with children who are vomiting.

Experts predict that the appropriate use of ORT in the United States, as one country example, could substantially reduce diarrhoea mortality and decrease hospitalizations of children by 100 000 per year in the next five years.

**Principles of ORT for treating dehydration**

- Early and adequate rehydration therapy using oral rehydration salts solution (ORS).
- Replacement of ongoing fluid losses from vomiting and diarrhoea with ORS.
- Frequent feeding of appropriate foods as soon as dehydration is corrected.

ORT, using oral rehydration salts solution, can safely correct dehydration without the need for intravenous therapy in all but the most severe cases.

From a scientific symposium on ORT at Johns Hopkins University School of Hygiene and Public Health (November 1996), reported in *Pediatrics*, 100(5):10, 1997.
formulations should be inexpensive and easy to use. The composition of the vitamin/mineral mix for the management of severe malnutrition was finalized in a meeting held in Geneva in September 1997, and a consultant was hired to develop a manual describing the process for manufacturing this vitamin/mineral mix. A formulation has also been developed and should be tested soon for acceptability and ease of use by caretakers. This formulation is identical in composition to the vitamin/mineral mix used in the study to evaluate persistent diarrhoea treatment guidelines for use in outpatient settings. The cost of a daily dose of this vitamin/mineral mix is only US$0.02.

Management of meningitis

Bacterial meningitis is an important cause of childhood morbidity and mortality, in addition to the five major killer diseases of children less than five years that are the main targets of IMCI.

Differences exist in the management of bacterial meningitis from one place to another. The Division jointly with the Division of Emerging and other Communicable Diseases Surveillance and Control (EMC) therefore convened a meeting in June 1997 in Geneva on antimicrobial and support therapy for bacterial meningitis in children. The purpose of the meeting was to review current practices and make recommendations. Four issues regarding the management of bacterial meningitis in children in developing countries were considered by the meeting:

- The choice of antimicrobial therapy for bacterial meningitis and the implications of antimicrobial resistance,
- The pharmacokinetics and current use of chloramphenicol,
- The role of dexamethasone in bacterial meningitis, and
- Fluid management in bacterial meningitis.

Research concerning the first two of these is covered elsewhere in this report. Research on the last two is reported below.

Fluid requirement in bacterial meningitis. A study, supported by The Royal Australian College of Physicians and conducted in Goroka, Papua New Guinea, is con-

Management of the child with severe malnutrition

The management of severe malnutrition is divided into three phases:

- Initial treatment
  Initial treatment begins with admission to hospital and lasts until the child’s condition is stable and the child can eat, which is usually 2-7 days. Life-threatening problems are identified and treated, specific deficiencies are corrected, metabolic abnormalities are reversed and feeding is begun.

  The principal tasks, in order of priority, are to:
  - Treat or prevent hypoglycemia and hypothermia,
  - Treat or prevent dehydration and restore electrolyte balance,
  - Treat incipient or developed septic shock, if present,
  - Start to feed the child,
  - Treat infection, and
  - Identify and treat other problems, including vitamin deficiency, severe anaemia and heart failure.

- Rehabilitation
  Intensive feeding is given to recover most of the lost weight, and emotional and physical stimulation is increased. The mother is trained to continue care at home, and preparations are made for discharge of the child. The principal tasks are to:
  - Encourage the child to eat as much as possible,
  - Stimulate emotional and physical development, and
  - Prepare the mother to continue to care for her child after discharge.

- Follow-up
  After discharge the child and family are followed to prevent relapse and ensure continued physical, mental and emotional development. Although much improved at the time of discharge, the child usually remains stunted and mental development is delayed. Management of these conditions and preventing the recurrence of severe malnutrition require sustained improvement in feeding of the child and in other parenting skills.

  Planned follow-up of the child at regular intervals after discharge is essential. This should include an efficient strategy for tracing children who fail to attend follow-up appointments. Such children are at increased risk of recurrence of malnutrition or of developing other serious illness.

From The management of severe malnutrition (to be published in 1998).
Comparing two regimes for the treatment of inpatients with bacterial meningitis. One group of patients is receiving 50% of fluid maintenance (mostly breast milk) as currently practised in Papua New Guinea, and the other is receiving 100% of normal fluid maintenance. Patients given 100% of normal fluid maintenance volumes are receiving 5% dextrose plus half-normal saline, and 10 mmol/l of potassium chloride. The outcome variables of main interest are severe neurological sequel and mortality.

Dexamethasone as adjuvant therapy in bacterial meningitis. A double-blind placebo controlled trial in children 0-14 years old with bacterial meningitis, being conducted in Blantyre, Malawi, is evaluating the efficacy of adjuvant dexamethasone in reducing neurological sequel (deafness) and mortality. Injectable chloramphenicol and penicillin are being used as the first-line antimicrobials. The Blantyre Coma Score is being used to assess coma, and severity of the disease is assessed grading the coma as 0-2, 3-4 and 5. Fluids are being administered at maintenance levels until shock or hypovolemia has been corrected. Assessment of nutrition status, HIV status, malaria parasitemia as well as treatment of seizures have been standardized. Severe viral infections are excluded. Patients are being followed up for six months. Results from this study are expected in 1998.

Improving resistance to infection

Zinc research

Results from recent studies have suggested that zinc deficiency may be highly prevalent in developing countries and that substantial health benefits can be obtained from zinc supplementation in deficient areas.

Zinc supplementation and improved growth.

A randomized, double-blind, placebo-controlled trial in rural Mexico, sup-
ported in collaboration with the Applied Diarrhoeal Diseases Research Project (ADDR) examined the effects of improving the infant’s nutrition through supplementation with a micronutrient mix including zinc. Infants aged 8-14 months were supplemented daily for 12 months. Effects on growth, appetite and food consumption were examined. Supplementation was associated with significant increase in longitudinal growth: infants who started supplementation before the age of 12 months grew 1.2 cm more than the controls over the same period. Supplemented infants also displayed significantly increased appetite (measured as active search for food) and tended to have larger energy intakes than controls.

**Zinc supplementation and disease prevention.**

Results from a randomized, double-blind, placebo-controlled trial supported by the Division in India, in collaboration with the Thrasher Research Fund, became available during the biennium. Zinc supplementation (2 mg/kg/day) delivered over a period of 6 months reduced by 49% the incidence of persistent diarrhoea among children older than 11 months (95% confidence interval 24-66%) and by 43% (95% confidence interval 7-66%) the incidence of radiologically confirmed pneumonia.

**Zinc supplementation effects on diarrhoeal and pneumonia morbidity.** In collaboration with USAID, CHD has supported a meta-analysis of the effects of zinc supplementation on diarrhoea and pneumonia morbidity among preschool children. The meta-analysis is being conducted at the Johns Hopkins University using data from trials conducted in Bangladesh, Guatemala, India, Indonesia, Mexico, Pakistan, Peru and Viet Nam. In addition to providing financial support for the work, CHD has also identified external advisers to assist in reviewing the methods and conclusions from this work. It is planned that the first results will be available in March 1998 and the final results will be presented at an international meeting in April 1998.

**Zinc supplementation and acute diarrhoea.**

In a community based study conducted in India, supplementation of children with 20 mg/day of elemental zinc during acute diarrhoea caused a 37% reduction in proportion of episodes that lasted longer than 7 days and a three-fold decrease in the frequency of watery stools. These findings of a favourable impact of zinc supplementation on outcome of acute diarrhoea are consistent with results from previous trials conducted in India and Bangladesh. However, in these studies stool output, the most objective variable to demonstrate a genuine anti-diarrhoeal effect, was not measured.

While the decision to give zinc in hospital treated children is easier to make, clear cut demonstration of a benefit, using objective criteria is necessary to advocate use within primary health care settings because of the major challenges of logistics, supplies and need for upgrading training. Therefore, a multi-centre study to investigate the impact of zinc supplementation on the reduction of stool output and thereby the risk of dehydration was initiated in three countries, namely Egypt, India and Viet Nam. Data collection was started in late 1997 and will continue for two years. So, results should be available in early 2000.

**Zinc supplementation and malaria.** Recently, a study conducted in Papua New Guinea has shown that zinc supplementation had an impact on malaria morbidity. In this placebo-controlled community based trial among children aged 6 to 60 months, participants were matched for malarial parasite density, age, sex, nutritional status, and mosquito net use. Supplemented children were given 10 mg of zinc six days a week. After monitoring for 10 months, researchers noted a 29% decrease in overall health centre attendance, a 38% decrease in reported fevers, a 40% reduction in fever associated with *P. falciparum* parasitemia and a 32%
reduction in malaria attributable fever at parasite densities greater than 5000/µl. It is important now to confirm these results in another setting. The Division is planning to support a double-blind community-based trial to investigate the effects of zinc supplementation on malaria morbidity among children under five years in an holoendemic area of West Africa.

Vitamin A research

A multi-centre randomized, double-blind, placebo-controlled trial to assess the safety and benefits of linking vitamin A supplementation to immunization contacts in the first year of life was completed in the biennium. It involved the follow-up of approximately 9500 infants through monthly home visits from birth to twelve months of life. It was conducted in collaboration with the Ministry of Health of Ghana, the All India Institute of Medical Sciences (New Delhi, India), the Instituto de Investigación Nutricional (Lima, Peru), the Johns Hopkins University (Baltimore, USA), the London School of Hygiene and Tropical Medicine (London, United Kingdom) and USAID.

The trial tested an intervention consisting of maternal supplementation within the first four weeks after delivery with 200 000 IU of vitamin A and infant supplementation with 25 000 IU of vitamin A at 6, 10, and 14 weeks, together with the delivery of DPT/OPV, and at 9 months, with measles vaccine. Results of the trial will be published in early 1998.

Vaccine research

**Rotavirus vaccine.** CHD, with USAID and the United States National Vaccine Program, has supported a trial of the live oral rhesus-human tetravalent vaccine (RRV-TV) vaccine among nearly 2500 infants in Venezuela. The vaccine was developed by the US National Institutes of Health and produced by Wyeth-Lederle Vaccines and Pediatrics. Three doses of vaccine (4x10^7 pfu) were given between doses of DTP and oral polio vaccine, and infants were observed for 20 months for episodes of rotavirus diarrhoea.

The results of this study show that immunization with RRV-TV has a major effect on severe episodes of diarrhoea (Figure 20). Immunization reduced admission to hospital for rotavirus diarrhoea by 70% and clinically severe illness by 88%, although all episodes of rotavirus diarrhoea were reduced by only 48%. These encouraging results show that the vaccine is as effective in this population as in the United States, where routine use of the vaccine for infants has been formally recommended. They suggest that the vaccine could be used in developing countries with socioeconomic conditions similar to those of Venezuela. Further evaluation of the vaccine is needed, however, to document its efficacy in less developed countries where earlier candidate vaccines performed poorly. Such studies are being planned by the Global Programme on Vaccines and Immunization.

**Cholera Vaccine.** Together with the manufacturer (Swiss Serum and Vaccine Institute), CHD has supported the first field trial of the live oral cholera vaccine, CVD 103-HgR, in Indonesia. The vaccine consists of a classical strain of *V. cholerae* O1 that lacks genes which encode the toxic A subunit of cholera.
toxin, but produces normal amounts of immunogenic B subunit. The safety and immunogenicity of the vaccine have been established in trials in North and South America, and Asia, some of which were supported by CHD. Studies in North American volunteers have shown that a single dose of vaccine evokes high level protection against experimental cholera and protects against shedding of *V. cholerae* O1 in faeces. Despite these encouraging preliminary findings, the trial in Indonesia, which began in 1993, ended in 1997, and involved 66 000 adults and children given a single dose of vaccine, failed to show significant protection against proven episodes of cholera. The explanation for the failure of the vaccine to protect under field conditions is unclear. It is possible that an oral vaccine based on *El Tor* strains from the current pandemic would prove effective and such vaccines are being developed.

**Haemophilus influenzae type b (Hib) vaccine.**

Pneumonia and meningitis are the most common manifestations of infection by *Haemophilus influenzae* type b (Hib) in developing countries, where they are mostly seen in children under 12 months of age. The mortality and morbidity from Hib meningitis and pneumonia are much higher than in developed countries. Protein-polysaccharide conjugate vaccines have controlled Hib disease in industrialized countries, but their efficacy in developing countries has not been determined.

CHD supported, with the UK Medical Research Council (MRC) in the Gambia, UNICEF, USAID, UNDP and the Children’s Vaccine Initiative (CVI), a study in the Gambia to determine the efficacy of an Hib conjugate vaccine for the prevention of pneumonia and other invasive disease due to Hib. Between 1993 and 1995, 42 848 infants were randomized to receive Hib polysaccharide-tetanus protein conjugate vaccine (PRP-T, *ActHIB*, Pasteur Mérieux) mixed with diphtheria-tetanus-pertussis vaccine (DTP) or DTP alone at the age when Gambian infants normally receive DTP. Information on the efficacy of the vaccine is presented in Table 16 below.

PRP-T conjugate Hib vaccine prevented most cases of meningitis and pneumonia due to Hib in Gambian infants. The reduction in the overall incidence of all pneumonia proven by x-ray in vaccines suggests that more than 20% of episodes of radiological pneumonia in young Gambian children are due to Hib. The introduction of Hib vaccines into developing countries should substantially reduce childhood mortality due to pneumonia and meningitis.

After the completion of the study, Pasteur Mérieux announced a plan for the donation to UNICEF of one million doses of the vaccine per year for 2-4 years to support studies leading to the introduction of Hib vaccines into developing countries. It was decided that one million doses would be used to supply vaccine for the Gambia for a period of five years. In a collaborative effort involving CHD, the WHO Global Programme for Vaccines, the Children’s Vaccine Initiative, the Gambian Government and the UK Medical Research Council in the Gambia, a study was started at the end of 1996 to examine all aspects of the introduction. These include the training requirements, the impact on the EPI programme, vaccine wastage, vaccine effectiveness and the extent of herd immunity.

<table>
<thead>
<tr>
<th>Morbidity prevented</th>
<th>Vaccine efficacy (95% confidence interval)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Invasive disease (mostly meningitis and pneumonia)</td>
<td>95% (47 – 100)</td>
</tr>
<tr>
<td>Hib pneumonia</td>
<td>100% (55 – 100)</td>
</tr>
<tr>
<td>Any pneumonia proven by x-ray</td>
<td>21% (4.6 – 35)</td>
</tr>
</tbody>
</table>
Streptococcus pneumoniae vaccine. Given the success of protein-polysaccharide vaccines against Hib, similar technology has been applied to construct a conjugate vaccine against *S. pneumoniae*. Two vaccine manufacturers have developed pneumococcal vaccines, covering the 9-11 most common serotypes. These vaccines are sufficiently advanced for evaluation in phase 3 trials. WHO, in collaboration with USAID and the National Institute of Allergy and Infectious Diseases of the US National Institutes of Health (NIH), plans to support one phase 3 trial in which vaccine efficacy in preventing severe pneumonia or death from pneumonia would be evaluated. Another trial of a pneumococcal conjugate vaccine will be conducted in South Africa, supported by one of the vaccine manufacturers (Wyeth Lederle Vaccines and Pediatrics). WHO has been asked to play an advisory role, and one staff member will serve on the International Steering Committee for the study. A phase 2 study at the site is nearly complete and a component of the study, looking at the impact of the vaccine on nasopharyngeal carriage, was supported by the Division and the US National Vaccine Program.

Development of a standard pneumococcal ELISA. The Division has collaborated with the United States Centers for Disease Control and Prevention (CDC) and the United States Food and Drug Administration to develop and evaluate a standard ELISA assay for measuring type-specific pneumococcal antibodies. The assay will be used in all laboratories involved in the study of pneumococcal vaccines and will greatly facilitate comparison between studies of the measurement of pneumococcal antibodies and their relation to protection against invasive disease. As part of this effort, the Division and USAID have supported the development of a set of quality control sera for use in standardization of the pneumococcal ELISA at the Institute of Child Health, London. These sera will be provided to all laboratories that use the standard ELISA for measuring pneumococcal antibodies.

Planning for vaccine development, evaluation and use. CHD has collaborated with the Children’s Vaccine Initiative (CVI), USAID, the WHO Global Programme on Vaccines and Immunization (GPV), and the United States Centers for Disease Control and Prevention (CDC) to review the status of development of Hib and pneumococcal conjugate vaccines. These reviews have served as the basis for coordinated planning of the further development, evaluation and use of these vaccines. This plan will guide the work of the collaborating agencies in informing other interested organizations and soliciting financial support for the work.

---

### Improving resistance to disease: expected contribution of new research to IMCI guidelines

<table>
<thead>
<tr>
<th>Research area</th>
<th>Expected contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zinc trials</td>
<td>Guidelines on the use of zinc in the treatment of diarrhoea</td>
</tr>
<tr>
<td></td>
<td>Recommendations for the development of public health interventions for the promotion of improved zinc status, given its confirmed significant role in the prevention of diarrhoea and pneumonia, and promotion of growth</td>
</tr>
<tr>
<td>Vitamin A trials</td>
<td>Guidelines on the use of early infancy immunization contacts for the delivery of vitamin A supplementation</td>
</tr>
<tr>
<td>Rotavirus vaccine trials</td>
<td>Recommendations on the use of rotavirus vaccine in developing countries to prevent severe diarrhoea</td>
</tr>
<tr>
<td>Cholera vaccine trials</td>
<td>Recommendations on the use of CVD 103-HgR vaccine to control endemic cholera</td>
</tr>
<tr>
<td>Hib vaccine trials</td>
<td>Recommendations on the use of Hib vaccine in developing countries to prevent pneumonia and meningitis</td>
</tr>
<tr>
<td>Pneumococcal vaccine trials</td>
<td>Recommendations on the use of pneumococcal conjugate vaccine in developing countries to prevent severe pneumonia or pneumonia deaths</td>
</tr>
</tbody>
</table>
CHAPTER 7

Building partnerships and developing resources for child health and development

HIGHLIGHTS OF 1996-1997

- A reorganization in WHO in 1996 brought new opportunities to work together with other units in Family and Reproductive Health with common interests, for example, in the health of infants, gender issues, nutrition and breastfeeding policies.

- Family and Reproductive Health established the WHO Technical Working Group on Breastfeeding, chaired by CHD, in order to coordinate WHO’s policies and technical support to countries in areas related to infant feeding.

- Twice yearly CHD conducts a one-week briefing in Geneva for individuals and representatives of international and bilateral agencies, and non-governmental organizations. The Division presents work being done with national programmes and the latest information from its research and development activities. Included is an introduction to the IMCI guidelines and the strategy for their implementation.

- CHD published IMCI Information in early 1997, a package of nine inserts, each describing an aspect of the IMCI strategy and its components. Over 4 000 copies have been distributed to agencies and organizations collaborating on IMCI, and to individuals interested in learning more about the strategy. The first update to the package came out in August 1997 and included a report on the global progress in implementing IMCI.

- CHD produced the colour brochure Improving Child Health – IMCI: The Integrated Approach to advocate a more integrated strategy to reduce childhood deaths due to the five major causes (pneumonia, diarrhoea, malaria, measles and malnutrition).

- This biennium has seen the development of closer links with non-governmental organizations (NGOs) as an effort to expand partnerships in the IMCI strategy globally and in countries. Meetings have been held with NGOs running community-based projects, and staff have held briefings for representatives from major international organizations, including the International Federation of Red Cross and Red Crescent Societies, Plan International, Médecins sans Frontières, and Norwegian People’s Aid. In the regions, SEARO moved forward in collaboration with CARE, Family Welfare India, and SWACH to develop and test a new training package for community health workers (CHWs). AFRO is working with CARE in Kenya, also on improving CHW skills; and AMRO has developed close ties with the NGO Global 2000, Plan International and CARE to implement IMCI in several countries in the region.

- The First IMCI Global Review and Coordination Meeting, held in September 1997 in Santo Domingo, Dominican Republic, strengthened partnerships for improving child health. More than 100 participants from international and bilateral agencies, NGOs, and countries implementing IMCI came to Santo Domingo to coordinate efforts to expand global support for IMCI.
Our partners within WHO

Family and Reproductive Health

Since the beginning of the biennium, CHD has been a part of the programme area of Family and Reproductive Health (FRH). This organizational shift provides a means for closer collaboration with related programmes under FRH: Adolescent Health (ADH); Reproductive Health, Technical Support (RHT); Special Programme of Research, Development and Research Training in Human Reproduction (HRP); Women’s Health (WHD); and Nutrition (NUT).

This collaboration has proved fruitful in several areas. It has increased the Organization’s ability to coordinate the development of policies, for example, on breastfeeding promotion, breastfeeding and HIV, and growth reference charts. The Maternal and Newborn Health and Safe Motherhood programme (in RHT) and the Division are working together to ensure that guidelines for the newborn of age less than one week are consistent with the IMCI interventions for infants starting at one week.

Working groups

IMCI task force. The initial development of case management guidelines for IMCI at first-level health facilities was coordinated by CHD and carried out in collaboration with eleven other WHO programmes and UNICEF. This group comprised the original IMCI task force, and its members continue to provide input on updated policies and research findings and review relevant sections of the IMCI Adaptation Guide at each revision.

More recently, a smaller group has been involved in the development of IMCI guidelines for referral-level care. This group includes staff from UNAIDS, plus four WHO programmes: Control of Tropical Diseases (Malaria and Applied Field Research), Expanded Programme on Immunization, Nutrition, and Maternal and Newborn Health and Safe Motherhood. CHD gratefully acknowledges the contribution of all programmes. This collaboration is expected to continue and evolve as countries with particular needs begin to implement IMCI.

Technical Working Group on Breastfeeding.

A new interprogrammatic Technical Working Group on Breastfeeding was formed during the biennium, with the role of coordinating and strengthening the work of the Organization in this area. For some years, responsibility for breastfeeding has been divided among several WHO divisions. In 1997, reorganization in WHO resulted in all units concerned with breastfeeding being brought into the programme area of Family and Reproductive Health.

The reorganization provided a suitable opportunity to form the new working group, with members from the Division of Child Health and Development...
TABLE 17
Collaborating on IMCI with other technical programmes

<table>
<thead>
<tr>
<th>Programme</th>
<th>What IMCI offers</th>
<th>What IMCI needs</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDD/ARI</td>
<td>• More effective case management</td>
<td>• CDD and ARI case management policies compatible with IMCI</td>
</tr>
<tr>
<td></td>
<td>• Greater emphasis on nutritional aspects of diarrhoea case management</td>
<td></td>
</tr>
<tr>
<td>Malaria</td>
<td>• Improved case management for children</td>
<td>• Policy on antimalarial drugs compatible with IMCI</td>
</tr>
<tr>
<td></td>
<td>• Promotion of bednets</td>
<td></td>
</tr>
<tr>
<td>EPI</td>
<td>• Case management of measles</td>
<td>• Vaccine availability</td>
</tr>
<tr>
<td></td>
<td>• Avoidance of missed opportunities</td>
<td>• Vaccination policies compatible with IMCI</td>
</tr>
<tr>
<td></td>
<td>• Encouragement of routine vaccination</td>
<td></td>
</tr>
<tr>
<td>Nutrition</td>
<td>• Opportunity to improve practical child feeding advice</td>
<td>• Collaboration in developing feeding advice</td>
</tr>
<tr>
<td></td>
<td>• Counselling on breastfeeding and complementary feeding</td>
<td>• Micronutrient, breastfeeding and complementary feeding policies compatible with IMCI</td>
</tr>
<tr>
<td></td>
<td>• Treatment of malnourished children</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Vitamin A, iron supplementation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Treatment of helminths</td>
<td></td>
</tr>
<tr>
<td>Maternal and perinatal health</td>
<td>• Breastfeeding counselling</td>
<td>• Guidelines for illness in first week of life compatible with IMCI</td>
</tr>
<tr>
<td></td>
<td>• Case management for sick young infants</td>
<td>• Clear guidance on available maternal health services</td>
</tr>
<tr>
<td></td>
<td>• Opportunity to enquire about the mother’s health and provide services</td>
<td></td>
</tr>
<tr>
<td>Essential drugs</td>
<td>• Clear policy on drugs for childhood illness</td>
<td>• Availability of essential drugs for IMCI (including pre-referral injectable drugs)</td>
</tr>
<tr>
<td></td>
<td>• Rationalization of drug use (including decreased use of antibiotics)</td>
<td>• Drug use policies compatible with IMCI</td>
</tr>
</tbody>
</table>

(which holds the Chair); the Nutrition Programme; the Special Programme of Research, Development and Research Training in Human Reproduction; and the Division of Reproductive Health (Technical Support). The group meets monthly to share information on current and proposed activities related to breastfeeding and to assist with the development of appropriate programmatic responses to public health needs based on WHO breastfeeding policies.

A particularly urgent need is for the development of guidelines for policy makers and health workers on HIV and infant feeding. The Technical Working Group on Breastfeeding has formed a subgroup addressing this issue including members from WHO’s Office of HIV/AIDS and Sexually Transmitted Diseases, and from UNAIDS; it collaborates also with UNICEF. CHD has been asked to coordinate the development of a training module for health workers on counselling on infant feeding for those mothers who are living with HIV. The module will be based on the health worker guidelines, and will be compatible with existing training materials on breastfeeding counselling.

Other issues with which the group is concerned include the progress of the Baby Friendly Hospital Initiative, expansion of training in breastfeeding counselling, promotion of the implementation of the International Code of Marketing of Breastmilk Substitutes, the breastfeeding databank, economic aspects of breastfeeding, and the development of technical documents on specific aspects of breastfeeding.

WHO Gender Working Group. CHD is a participant in the informal WHO Gender Working Group. This group meets at regular intervals to discuss ways to raise awareness about gender issues in WHO in general and methods of ensuring that
considerations about gender are included in specific programmes.

Consideration of gender has led the Division to reflect on its activities from this perspective. IMCI, the principal strategy of CHD, promotes a gender-equal approach, meaning that no distinction is made between the treatment of girl and boy children. That being said, a few relevant points should be emphasized:

- Studies on gender bias in care-seeking for young children examined to date show no consistent pattern across countries. If, however, formative research shows a gender bias in a country where CHD is working, this bias will be given priority in developing and implementing interventions.

- Interventions to improve care-seeking currently under development will target primary caregivers, usually female, but also primary decision-makers, often male.

- The Counsel the mother section of the IMCI guidelines – and related training materials for first-level health workers – includes the task to “counsel the mother about her own health”, as it is recognized that this critical element of family health is often neglected.

The Division is continuing to review available information on child health and health care to determine whether patterns of gender discrimination can be identified that could guide the development of specific health facility-based or community interventions.

Our international partners

UNICEF

CHD has worked closely with UNICEF in 1996-1997. UNICEF country offices played a major part in the planning and implementation of IMCI, for example, in El Salvador, Peru, Indonesia, the Philippines, Uganda, and Tanzania. IMCI has been written into UNICEF plans for long-term country support for these and other countries into the next biennium.

It was important that a common strategy be agreed upon between WHO and UNICEF on how each organization would support IMCI. Meetings during 1997 led to the formulation of a Joint Statement. The Statement, distributed to all WHO and UNICEF Regional and country offices, represents the common ground and intent of the two organizations.

Following the First Review Meeting on IMCI in Santo Domingo in September 1997, a process was set in motion to agree on practical responsibilities for WHO and UNICEF. In December 1997 it was agreed to establish joint working groups in three areas: community action, health system strengthening, and monitoring and evaluation. UNICEF will take leadership in the first of these areas; WHO will take the major responsibility in the second and third areas.

Effective joint action depends on the staff of both organizations having a full understanding of IMCI. Some UNICEF country and regional office staff were trained in intercountry courses in Africa and South-East Asia. More training places will be made available during 1998-1999.

The World Bank

CHD gave considerable attention to close collaboration with the World Bank during the biennium. In the Bank’s World Development Report 1993, IMCI...
CHAPTER 7. BUILDING PARTNERSHIPS AND DEVELOPING RESOURCES

was identified as one of the potentially most cost-effective public health and clinical interventions. The IMCI approach is now included in the World Bank’s *Health, Nutrition, and Population Sector Strategy*.

The World Bank is one of the largest financiers of child health programmes in developing countries. At country level, the introduction of IMCI as part of Bank-supported projects provides an opportunity for the strategy to be part of broader health and development efforts. This in turn provides a potential for synergy between multiple coordinated efforts, and increases the likelihood for impact on health outcomes.

A CHD staff member is seconded to work in the Human Development Department of the World Bank in Washington, and through this liaison has been able to provide valuable input into World Bank projects in a number of countries. IMCI has been introduced with WHO technical input to the ministries of health, and in some instances directly to Bank projects, in 14 countries, where there are prospects for Bank support to IMCI (Table 18).

**International Society of Paediatric Oncology**

During the biennium, the Division initiated a collaborative agreement with the International Society of Paediatric Oncology (known by its initials in French as SIOP), and the first year has been highly successful. Members of SIOP are coordinating an initially small project on the management of childhood cancer. This involves a trial in Malawi of simplified therapy for Burkitt’s lymphoma, the creation of a training network for paediatric oncologists in India, and the preparation of generic guidelines on common cancer treatment adapted to the context of developing countries.

---

**TABLE 18**

**World Bank support to IMCI**

(14 countries, as of December 1997)

<table>
<thead>
<tr>
<th>Country</th>
<th>Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>Maternal and Child Health, and Nutrition</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>Health and Population 5</td>
</tr>
<tr>
<td>Brazil</td>
<td>Health Reform</td>
</tr>
<tr>
<td>Dominican Republic</td>
<td>Health Reform</td>
</tr>
<tr>
<td>Egypt</td>
<td>Health Reform</td>
</tr>
<tr>
<td>Gambia</td>
<td>Participatory Health, Population, and Nutrition</td>
</tr>
<tr>
<td>India</td>
<td>Reproductive and Child Health</td>
</tr>
<tr>
<td>Indonesia</td>
<td>Child Health and Nutrition</td>
</tr>
<tr>
<td>Madagascar</td>
<td>Health and Nutrition</td>
</tr>
<tr>
<td>Mauritania</td>
<td>Health Reform</td>
</tr>
<tr>
<td>Peru</td>
<td>Training</td>
</tr>
<tr>
<td>Philippines</td>
<td>Early Child Development</td>
</tr>
<tr>
<td>Republic of Tanzania</td>
<td>District Health Systems</td>
</tr>
<tr>
<td>Uganda</td>
<td>District Health Systems</td>
</tr>
</tbody>
</table>

. . . the relatively low technology involved make[s] the management of the sick child a high priority in countries with child mortality rates of more than thirty deaths per 1,000 children under the age 5.


More than half of the disease burden in Sub-Saharan Africa and South Asia can be addressed effectively through local adaptation of interventions such as immunization, food fortification, targeted nutrition programs, integrated management of childhood illness, family planning, maternal and perinatal health, and school health.

Benefiting from the Associate Professional Officer programme

The presence of a staff member in a country is an important factor in facilitating the planning and implementation of CHD supported activities. Associate Professional Officers (APOs) play an important role in providing this support, and they have contributed to the work of the Division since the early 1980’s.

To date 75 APOs, sponsored by ten different countries, have worked or are working in over 30 countries. During the 1996-1997 biennium alone, fifteen APOs were working in the field (Figure 21), while an active search continued with donor countries to identify suitable candidates for a number of vacant posts. Some countries that do not belong to the APO programme support instead Time-Limited Posts, which provide similar experiences for young professionals. (For a list of participants in these programmes, see Annex 2. Headquarters, regional and country staff in 1996-1997.)

The recruitment process. The recruitment of an Associate Professional Officer is initiated by a country’s request for such technical assistance from WHO. In response, WHO approaches governments who participate in the APO programme in order to identify a sponsor and a candidate for the post. Candidates proposed by the sponsoring government then need to be approved by WHO and the requesting country.
Candidates are usually young professionals for whom the assignment is a first opportunity to be active in the area of international public health. Most sponsoring governments select from among their own national candidates, but increasingly opportunities are also given to non-nationals. This has enabled professionals from all regions to participate in the programme.

**The work of an APO.** Most APOs are posted for two to three years in a country where they work closely with national programmes under the guidance of the Office of the WHO Representative. Those APOs assigned to CHD work areas help national programmes to plan and implement activities for the control of diarrhoeal diseases and acute respiratory infections, and more recently also to implement the broader strategy for Integrated Management of Childhood Illness. They are in valuable positions to bring timely attention to national needs and to match these needs with the technical and other resources available from WHO and its partners within the country. A few APOs have also contributed to specific assignments in the Division’s headquarters in Geneva.

**Benefits for all participants.** Participation in the APO programme benefits all parties concerned. The recipient countries benefit from an additional person to work with the national team, and APOs have made important contributions to activities to improve child health. APOs themselves gain a lot from their work. They typically carry out a variety of tasks: they work closely with national programme staff on planning and implementing activities, and gain hands-on experience in programme management. At the same time, they act as a liaison between the national programme and WHO. This enables them to become familiar with the functions of the Organization, in general, and its activities in child health, in particular, and to develop skills in working with national counterparts. In this way, CHD increases the pool of trained experts from which it can later draw. The governments of sponsoring countries also benefit. They strengthen their linkages with the recipient country and with WHO, and contribute to the valuable development of young professionals.

Since the beginning of the Division’s involvement with the APO programme, eleven former APOs have joined CHD as staff members, at WHO headquarters, or in regional or country offices. Numerous others have served and continue to serve as short-term consultants, assisting countries to plan activities, carry out surveys and training activities, or conduct programme reviews.

CHD greatly appreciates its participation in the APO programme and hopes to increase the number of APOs in the future.
Collaborators in research and development

The Division has developed strong ties to scientists in developing countries, as well as in developed countries, beginning with the original research conducted on diarrhoeal diseases in the 1980s. Presented here are a few examples of the Division’s partners in research and development, and the major areas of work.

WHO Collaborating Centre for Epidemiological and Environmental Aspects of Diarrhoeal Diseases

The Collaborating Centre was established in 1982 at the London School of Hygiene and Tropical Medicine. It conducts and supports research on a wide range of topics on child health in collaboration with overseas partners. The Centre supported field projects in Africa, Asia and Latin America during the 1996-1997 biennium. The main areas of research include:

- Vitamin A deficiency and child health,
- Health provider performance,
- Promotion of improved health seeking behaviours,
- Promotion of improved hygiene practices,
- Promotion of breastfeeding, and
- Malaria prevention.

An important component of the Centre’s work is the development of tools to facilitate the conduct of high quality research and interventions in child health. Examples include research on the measurement of cause-specific child mortality and the development of technical guidelines for the management of severe malnutrition.

USAID-Funded Child Health Research Project

To help achieve its strategic objectives to reduce childhood mortality and morbidity, the United States Agency for International Development (USAID) has created and supported the Child Health Research Project (CHR). CHR conducts applied research on diarrhoeal and respiratory diseases, malaria, measles and malnutrition. It identifies and evaluates new technologies for improving case management and prevention of these illnesses, including methods of managing child health programmes and community-based interventions to improve family practices. CHR seeks to strengthen the problem-solving capacity of developing country institutions, and to have research findings guide improvements in national health policies and the practices of health professionals. Four collaborating partners, each with complementary roles, implement the project.

Harvard University: Applied Research on Child Health (ARCH) Project addresses priority research and programme questions to improve public health in developing countries. Strengthening of the institutional and individual research capacity of national counterparts is central to all project activities. The ARCH Project under CHR supports efforts to answer policy-relevant child health research questions by investing research monies in the national scientific community and providing technical assistance in problem identification, proposal development, study implementation, data analysis, and research dissemination.

ICDDR,B: Centre for Health and Population Research, Bangladesh is a leading international health research institute in the developing world. In addition to its mandate for conducting child survival and family planning research, the ICDDR,B provides training to scientists from around the world and essential medical services for thousands of Bangladeshis. ICDDR,B counts among its many
**List of institutions collaborating in research and development activities**

**AFRICAN REGION**
- Centre Muraz, Bobo Dioulasso, Burkina Faso
- Health Research Unit, Ministry of Health, Accra, Ghana
- Noguchi Memorial Institute for Medical Research, Accra, Ghana
- Medical Research Council, Banjul, Gambia
- Ethio-Swedish Children’s Hospital, Addis Ababa, Ethiopia
- Department of Paediatrics, The College of Medicine, Blantyre, Malawi
- Paediatrics & Child Health Department, Faculty of Medicine, University of Natal, Congella, South Africa
- Department of Paediatrics and Child Health, University of Cape Town, South Africa
- Department of Microbiology, The South African Institute for Medical Research, University of Witwatersrand, Johannesburg, South Africa
- Clinical Epidemiology Unit, University of Zimbabwe, Harare, Zimbabwe

**REGION OF THE AMERICAS**
- Maternal & Child Health Unit, Instituto de Saude, Sao Paolo, Brazil
- Universidade Federal de Pelotas, Pelotas, Brazil
- Hospital Martagao Gerteira, Salvador, Brazil
- Instituto Materno Infantil de Pernambuco, Recife, Brazil
- Instituto de Nutrición de Centro América y Panamá (INCAP), Guatemala City, Guatemala
- Division of Epidemiology & Health Services Research, Instituto Mexicano del Seguro Social, Mexico DF, Mexico
- Instituto de Investigación Nutricional, Lima, Peru
- Division of Nutritional Sciences, Cornell University, Ithaca, USA
- Center for International Community Health Studies, University of Connecticut, Farmington, USA
- Department of International Health, School of Hygiene and Public Health, Johns Hopkins University, Baltimore, USA
- Center for Vaccine Research, School of Hygiene and Public Health, Johns Hopkins University, Baltimore, USA
- Department of Epidemiology and Public Health, Yale University School of Medicine, New Haven, Connecticut, USA
- Center for Occupational and Environmental Health, University of California, Berkeley, California, USA
- California Polytechnic State University, San Luis Obispo, California, USA
- Rollins School of Public Health, Emory University, Atlanta, USA
- Instituto de Biomedicina, Caracas, Venezuela

**EASTERN MEDITERRANEAN REGION**
- Gastroenterology Unit, Cairo University, Cairo, Egypt
- Pediatric Department, Alazhar University, Cairo, Egypt
- Pakistan Institute of Medical Sciences, Islamabad, Pakistan

**EUROPEAN REGION**
- Departamento de Salud Internacional, Escuela Nacional de Sanidad, Instituto de Salud Carlos III, Madrid, Spain
- Institute of Child Health, University of Istanbul, Turkey
- Department of Public Health Sciences, University of Edinburgh Medical School, Edinburgh, Scotland
- Centre for Human Nutrition, London School of Hygiene and Tropical Medicine, London, UK
- Department of Epidemiology and Population Health, London School of Hygiene and Tropical Medicine, London, UK
- Department of Public Health, The University of Liverpool, Liverpool, UK
- Istituto per l’Infanzia, Bureau for International Cooperation, Trieste, Italy

**SOUTH-EAST ASIA REGION**
- ICDDR,B, Dhaka, Bangladesh
- National Institute of Health Research and Development, Jakarta, Indonesia
- Infectious Diseases Hospital, Jakarta, Indonesia
- All India Institute of Medical Sciences, New Delhi, India
- Centre for Intersectoral Community Health Studies, Kan, Sri Lanka

**WESTERN PACIFIC REGION**
- Capital Institute of Pediatrics, Beijing, China
- Shanghai First Maternity & Infant Health Hospital, Shanghai, China
- Institute of Medical Research, Goroka, Papua New Guinea
- College of Public Health, University of The Philippines, Manila, Philippines
- Research Institute for Tropical Medicine, Manila, Philippines
- Children’s Hospital No. 1, Ho Chi Minh City, Viet Nam
achievements the development of oral rehydration therapy (ORT), the characterization of the new cholera strain O139, and the development of successful family planning and health services delivery programmes.

**Johns Hopkins: Family Health and Child Survival Project** improves the use and effectiveness of child survival technologies in developing countries by implementing operations and policy research. Research, conducted by JHU faculty and students in collaboration with developing country institutions, focuses on diarrhoeal and acute respiratory diseases and other serious diseases of childhood, on micronutrient supplementation, on improving methodologies for measuring child mortality and morbidity, and on improving the delivery of child survival interventions.

**CHD** formulates global guidelines and policies for diarrhoeal and respiratory disease control. Among CHD’s research achievements and technical contributions to the project are the research and development of interventions for the prevention and treatment of diarrhoea and respiratory illnesses, and the development of the Integrated Management of Childhood Illness strategy.

**Our collaborators in implementation in countries**

Our major collaborators in implementation are the Ministries of Health of countries implementing CDD, ARI, breastfeeding, and IMCI activities, and their partners, including bilateral agencies and non-governmental organizations. The USAID project BASICS has supported country implementation activities in Latin America and Africa, as well as collaborating on the development of training, evaluation, and other IMCI tools.

The U.K. Department for International Development (DFID) has also supported country activities in Africa, and the Australian Agency for International Development (AusAID) has provided support to IMCI activities in some Asian countries. More details on collaboration in specific activities can be found in earlier sections of this report.

UNICEF has been a major collaborator in the implementation of IMCI in countries, as well as a partner in developing the global strategy.

**The First Global Review and Coordination Meeting on Integrated Management of Childhood Illness**

The **First Global Review and Coordination Meeting on Integrated Management of Childhood Illness**, held in Santo Domingo, 9-12 September 1997:

Call upon international, multi- and bilateral governmental agencies, national and local leaders, governmental and non-governmental organizations concerned with health and development, members of the health community at all levels (including private health practitioners), community organizations and members, in summary, all those with an interest in improving child health:

- to acknowledge the major contribution that can be made by the IMCI Strategy to improving child health and to promote its application;
- to provide the political commitment, financial and other support necessary for the full potential of the Strategy to be realized;
- to take advantage of the potential contribution of different partners, taking into account their respective expertise and experience, in order to support the implementation of IMCI with the greatest possible efficiency;
- to work actively towards the implementation of the full recommendations of this First Global Review and Coordination Meeting on Integrated Management of Childhood Illness.

For the complete Call for Action, see the report of the meeting (WHO/CHD/97.11)
A meeting of Childhood Illness was held in Santo Domingo, Dominican Republic, from 9 to 12 September 1997. Around 130 public health practitioners, paediatricians and researchers from 26 countries, international and bilateral agencies, and non-governmental organizations took part.

The purpose of the review was to give an opportunity to those who were working on the IMCI strategy – in both implementation and research and development – to see and learn from what had happened so far. This provided a base for coordinating activities and for defining areas of collaboration.

The agenda covered the whole scope of IMCI activities. The progress in implementation was reviewed, looking at the experience of several countries. There were presentations and discussions on various phases and aspects of the process of introducing IMCI into countries, and the roles of major international organizations, including WHO, UNICEF and the World Bank, were reviewed. The research and development needs for the IMCI strategy were the subject of important sessions, and a high level of consensus on complementary activities was achieved in this field among the various concerned groups.

The meeting agreed upon and culminated in the presentation of The Santo Domingo Call for Action on Integrated Management of Childhood Illness. The practical commitment, and constructive criticism and thinking, promised well for close collaboration towards common efforts to reduce child mortality through this strategy.

### Child Health Dialogue

The Division continued its regular collaboration on the ARHTAG publication Child Health Dialogue. This newsletter, which contains a great deal of information drawn directly from the Division guidelines, is issued quarterly and has a worldwide circulation of almost 200,000. It presents technically accurate information clearly and simply, making this information accessible to a wide variety of health workers and others interested in child health. The newsletter is published in ten languages: English, Chinese, French, Gujarati, Hindi, Portuguese, Spanish, Tamil, Urdu, and Vietnamese. The Division is also looking for local partners to prepare adapted and translated versions into Russian and Swahili.

The Division is also looking for local partners to prepare adapted and translated versions into Russian and Swahili.

ARHTAG, with CHD and others, is developing a strategy to match this newsletter and their other publications to the needs of new users, for example, staff and students in medical training institutions in developing countries.

### The IMCI Information package

In order to effectively support or advocate for IMCI activities, decision makers at the international, national and local levels need to be informed about the strategy and its requirements. To meet this need, the Division developed a briefing packet entitled IMCI Information. Nine information sheets, four to six pages each, introduce the three IMCI components, explain the rationale for the strategy, and briefly describe important IMCI topics such as planning, adaptation, training of first-level health staff, the role of IMCI in the community, research priorities, and development projects. The package is designed so that its contents may be tailored to a particular audience as well as regularly updated to reflect ongoing development and implementation activities.

The IMCI Information package is currently available in English and Russian.
The information sheet presenting the rationale for an integrated strategy has also been translated into French and Spanish; and the entire information package will be available in those languages in early 1998. To date over 4,000 copies of the package have been distributed to key personnel at WHO Regional and country offices, ministries of health, non-governmental organizations, universities, international and bilateral organizations such as UNICEF, the World Bank, Swedish International Development Cooperation Agency (Sida), USAID, and others interested in child health.

The package served as an essential means for sharing information during the First Global Review and Coordination Meeting on IMCI in Santo Domingo, and has been presented in two parts in the newsletter NU published by the Unit for International Child Health at Uppsala University, Sweden. IMCI Information may be accessed through the CHD website on the Internet http://www.who.ch/chd. (See the section in this chapter on The CHD Internet Website for more information.)

**Information on IMCI**

The IMCI Information package contains nine information sheets on the following:

- Management of childhood illness in developing countries: Rationale for an integrated strategy
- Planning national implementation of IMCI
- Adaptation of the IMCI technical guidelines and training materials
- IMCI training course for first-level health workers: Linking integrated care and prevention
- Follow-up after training: Reinforcing the IMCI skills of first-level health workers
- The role of IMCI in improving family and community practices to support child health and development
- IMCI research priorities: Investigating methods to prevent and manage childhood illness
- Update on development projects to support IMCI
- Integrated Management of Childhood Illness: Global status of implementation

The information package will be updated and reissued periodically.

**Brochure: Improving child health**

To advocate for a more integrated strategy to reduce deaths from the major childhood illnesses, the Division produced the brochure Improving Child Health – IMCI: The Integrated Approach. The final document, a 22-page full-colour description of IMCI and related CHD activities, is presented in a journalistic, conversational style for a wide audience. The brochure is used to help orient staff of ministries of health and donor organizations, and to raise awareness among the general public of the critical health problems being addressed through the IMCI strategy. The brochure is a companion document to the more technical IMCI Information package. It is currently available in English, with a French translation in preparation.

Selected visuals and extracts from the text of the brochure were made into a 3-metre by 4-metre collapsible display. This display is for use during large assemblies such as coordination meetings and conferences of health professionals.

**Poster: IMCI brings it all together**

Recognizing a need for something smaller than the display described above, that could also be widely distributed, CHD produced a small poster. IMCI brings it all together tells in one swift glance the main components of IMCI and the now well-known pie chart showing the distribution of 11 million annual childhood deaths, addressed by the IMCI strategy.
CHD briefings

CHD conducts technical briefings on a regular basis for those who wish to be better acquainted with its current policies and activities. These briefings give participants an up-to-date overview of the Division’s approaches to planning and management of child health programmes in developing countries, and to its research and development projects. The briefings also provide an opportunity to establish closer working relationships with partner organizations that send representatives and to identify future consultants for country support activities from among participants.

During the biennium, the Division organized four five-day briefings. These were attended by a total of 73 participants, representing multilateral, bilateral and non-governmental organizations (NGOs), plus those who attended out of their own interest. The agenda for the briefings, revised to reflect the Division’s broad mandate, covers topics presented by the Division staff, including an orientation to the IMCI guidelines and implementation strategy; ARI, CDD, and breastfeeding activities in countries; and the Division’s research and development projects. Exercises provide opportunities for interaction as participants use IMCI training materials and selected evaluation and communication tools developed by the Division.

Since the introduction of the IMCI strategy, there has been an increased interest in the briefings, particularly among partner organizations that wish to acquaint their staff with the recent developments in IMCI. This has facilitated collaboration among CHD and other agencies and has strengthened relationships with major NGOs.

Organizations and agencies who sent staff to participate in CHD briefings in 1996-1997 include: ARHTAG; USAID-funded BASICS project; Unit for International Child Health at Uppsala University, Sweden; Centres for Disease Control, Atlanta, USA; CESAL, Spain; Department for International Development (DFID), UK; International Federation of the Red Cross and Red Crescent Societies; Plan International; Swedish International Development Cooperation Agency; UNICEF, and USAID. The Division will continue conducting these briefings as a major channel for sharing information on important issues in child health and the work of the Division.

The CHD Internet Website

CHD continues to expand the use of technology to make information more widely available and to improve general office efficiency. The Internet website http://www.who.ch/chd now contains the Division’s information materials (IMCI Information package, the brochure, and...
FIGURE 23

CHD IntraNet

NEWS: Click to send a News item
January-February 1998

- CHD retreat discussions of 4 and 5 February 1998
- Topics of discussion for the CHD Retreat 4-5 February 1998
- Technical Working Group on Breastfeeding chaired by Felix

December 1997

- WHO Travel Advisory
- New contact nos. for WR Cambodia Fax: 855 23 21 62 11, Tel: 855 23 21 66 10
- Meeting with our colleagues from UNICEF on 11-12 December in Geneva

November 1997

- New AFRO fax number, effective 17 November, (263) 4 791 214 or 790 145
- We have just opened a cchMail account for Dr Antoine Kabore, IMCI Regional Adviser, AFRO in Harare, temporary office. He has a local address so if you wish to send him a message, simply type KABORE (not INET) or if sending via Internet mail, address to KaboreA@who.ch. Antoine will be accessing his mail via dialup from Harare.
- Now available on CHD IntraNet, online English-French/French-English dictionary and French thesaurus, dictionary with verb conjugation. See under Web links.

the poster), plus samples of the generic treatment charts for IMCI. Readers can also find various documents such as treatment guides, breastfeeding materials and the newsletters CHD Update and ARHTAG's Child Health Dialogue. Also on the website is the catalogue of documents currently available from the Division including past documents on diarrhoeal diseases and acute respiratory infections. More and more documents are now being made available on the website for direct downloading and printing.

The site also contains an Intranet page specially focused on internal office use. The Intranet contains Frequently Asked Questions (FAQ's), news announcements, travel schedules, contact information for WHO HQ and field staff, minutes of meetings, event calendars, quarterly financial reports, etc. Information is for internal use and is only accessible to WHO/CHD users.

Funding for CHD

The resources available to the Division from all sources since 1978, and during the 1996-1997 biennium, are shown in Table 19; and contributions are summarized in Figure 24. During the biennium, seventeen donors contributed to the support of the Division. Total resources available to the Division decreased by 6.5% compared to the previous financial period, largely due to the loss mid-biennium of the contributions of one donor country and the conclusion of two long-standing agreements with the World Bank and with UNDP. Regular budget resources, on the other hand, increased by 6.9%; this increase was
## TABLE 19


<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Global and Interregional</td>
<td>5 409 776</td>
<td>1 692 821</td>
<td>1 915 900</td>
<td>2 171 767</td>
<td>1 990 080</td>
<td>1 895 091</td>
</tr>
<tr>
<td>Regions</td>
<td>7 420 014</td>
<td>2 884 970</td>
<td>3 043 531</td>
<td>3 060 575</td>
<td>3 657 300</td>
<td>4 142 570</td>
</tr>
<tr>
<td><strong>Total regular budget</strong></td>
<td>12 829 790</td>
<td>4 577 791</td>
<td>4 959 431</td>
<td>5 232 342</td>
<td>5 647 380</td>
<td>6 037 661</td>
</tr>
<tr>
<td><strong>Other sources</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Australia</td>
<td>969 319</td>
<td>709 880</td>
<td>855 580</td>
<td>1 243 380</td>
<td>1 821 470</td>
<td>2 576 823</td>
</tr>
<tr>
<td>Austria</td>
<td>25 013</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>338 641</td>
</tr>
<tr>
<td>Belgium</td>
<td>188 306</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Canada (CIDA)</td>
<td>1 297 188</td>
<td>501 536</td>
<td>426 218</td>
<td>802 517</td>
<td>776 431</td>
<td>510 949</td>
</tr>
<tr>
<td>China</td>
<td>150 000</td>
<td>50 000</td>
<td>50 000</td>
<td>50 000</td>
<td>55 000</td>
<td>65 000</td>
</tr>
<tr>
<td>Denmark (DANIDA)</td>
<td>3 211 141</td>
<td>1 294 292</td>
<td>1 332 522</td>
<td>1 225 661</td>
<td>646 987</td>
<td>716 717</td>
</tr>
<tr>
<td>Finland</td>
<td>1 129 099</td>
<td>1 170 286</td>
<td>1 641 970</td>
<td>470 036</td>
<td></td>
<td></td>
</tr>
<tr>
<td>France</td>
<td>229 833</td>
<td>97 984</td>
<td>664 070</td>
<td>70 840</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Germany</td>
<td>31 928</td>
<td></td>
<td></td>
<td></td>
<td>30 423</td>
<td>509 574</td>
</tr>
<tr>
<td>India</td>
<td>100 000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Italy</td>
<td>101 062</td>
<td>1 274 722</td>
<td>490 017</td>
<td>571 430</td>
<td>433 348</td>
<td>522 505</td>
</tr>
<tr>
<td>Japan</td>
<td>870 000</td>
<td>370 632</td>
<td>291 006</td>
<td>379 247</td>
<td>600 000</td>
<td>1 131 500</td>
</tr>
<tr>
<td>Kuwait</td>
<td>10 000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Luxembourg</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>247 795</td>
<td>748 946</td>
</tr>
<tr>
<td>Morocco</td>
<td>7 475</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Netherlands</td>
<td>2 942 001</td>
<td>1 329 679</td>
<td>1 638 898</td>
<td>1 578 480</td>
<td>2 304 899</td>
<td>2 729 542</td>
</tr>
<tr>
<td>Nigeria</td>
<td>6 680</td>
<td></td>
<td>2 698</td>
<td></td>
<td></td>
<td>2 390</td>
</tr>
<tr>
<td>Norway</td>
<td>466 391</td>
<td>299 406</td>
<td>1 780 980</td>
<td>2 348 898</td>
<td>2 510 774</td>
<td>3 584 621</td>
</tr>
<tr>
<td>Sweden (SIDA/SAREC)</td>
<td>5 159 975</td>
<td>1 598 786</td>
<td>1 784 977</td>
<td>2 883 317</td>
<td>629 121</td>
<td>880 167</td>
</tr>
<tr>
<td>Switzerland</td>
<td>2 002 840</td>
<td>520 833</td>
<td>1 729 685</td>
<td>942 242</td>
<td>1 623 999</td>
<td>1 411 961</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>1 349 700</td>
<td>2 355 757</td>
<td>2 270 625</td>
<td>2 615 321</td>
<td>1 646 340</td>
<td>1 572 540</td>
</tr>
<tr>
<td>United States of America</td>
<td>4 774 300</td>
<td>2 209 841</td>
<td>2 076 223</td>
<td>5 533 503</td>
<td>4 147 500</td>
<td>1 700 000</td>
</tr>
<tr>
<td><strong>Total other sources</strong></td>
<td>49 078 140</td>
<td>22 141 939</td>
<td>23 959 967</td>
<td>27 847 869</td>
<td>24 765 149</td>
<td>22 436 329</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>61 907 930</td>
<td>26 719 730</td>
<td>28 919 398</td>
<td>33 080 211</td>
<td>30 412 529</td>
<td>28 473 990</td>
</tr>
</tbody>
</table>

### Contributions for special activities – not included in programme budget

- Australia: 433 990
- Switzerland: 102 000
- Ciba-Geigy: 1 066 360
- Other: 6 189
- Interest: 2 341 525

* Including US$ 511 667 pledged.
Table 20 presents the financial position of the Division as of 31 December 1997. This summary table shows that the Division was able to allow for a sufficient carryover of US$ 5 million to the next biennium (considered essential); an exceptional carryover of US$ 2 million to meet Programme Support Costs (PSC) anticipated in 1998-1999 that had not previously been budgeted; and an additional US$ 0.8 million surplus. Some of this surplus is due to underspending or deferral of activities to the coming biennium; some is due to cost savings, for example through purchase of less expensive airline tickets and more careful scrutiny of all expenditures, made possible at HQ by greater delegation of financial management.

Table 21 shows actual obligations for 1994-1995, the revised budget (May 1997) and actual obligations for 1996-1997, by programme component. Obligations incurred up to 31 December 1997 were US$ 26.5 million. This represents a decrease of US$ 4.4 million (14.2%) compared with obligations for 1994-1995, and a decrease of US$ 2.4 million (8.4%) compared with the revised budget for 1996-1997.

Obligations for Research and Development activities were US$ 7.3 million. This was US$ 1.9 (20.7%) less than had been planned, but only US$ 0.6 million (8%) less than in the previous biennium. Overall expenditures on Technical Support to Countries were US$ 16.1 million, which was US$ 3.6 million (12%) less than in the previous biennium. Regional allocations were agreed during joint Headquarters-Regional Office planning.
## TABLE 21

<table>
<thead>
<tr>
<th>I. Research and Development</th>
<th>Actual obligations 1994-1995</th>
<th>% of total</th>
<th>Revised budget 1996-1997 (May 1997)</th>
<th>% of total</th>
<th>Actual obligations 1996-1997</th>
<th>% of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global and Interregional</td>
<td>7 937</td>
<td>25.7</td>
<td>9 171</td>
<td>31.8</td>
<td>7 308</td>
<td>27.6</td>
</tr>
<tr>
<td>II. Technical Support to Countries</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Global and Interregional</td>
<td>5 019</td>
<td>16.3</td>
<td>4 852</td>
<td>16.8</td>
<td>4 326</td>
<td>16.4</td>
</tr>
<tr>
<td>Regional</td>
<td>14 682</td>
<td>47.6</td>
<td>11 889</td>
<td>41.2</td>
<td>11 805</td>
<td>44.6</td>
</tr>
<tr>
<td>Subtotal</td>
<td>19 701</td>
<td>63.9</td>
<td>16 741</td>
<td>58.0</td>
<td>16 130</td>
<td>61.0</td>
</tr>
<tr>
<td>III. Programme Management and Support</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Global and Interregional</td>
<td>3 212</td>
<td>10.4</td>
<td>2 954</td>
<td>10.2</td>
<td>3 016</td>
<td>11.4</td>
</tr>
<tr>
<td>Total Global and Interregional</td>
<td>16 168</td>
<td>52.4</td>
<td>16 977</td>
<td>58.8</td>
<td>14 650</td>
<td>55.4</td>
</tr>
<tr>
<td>Total Regional</td>
<td>14 682</td>
<td>47.6</td>
<td>11 889</td>
<td>41.2</td>
<td>11 805</td>
<td>44.6</td>
</tr>
<tr>
<td><strong>GRAND TOTAL</strong></td>
<td><strong>30 850</strong></td>
<td><strong>100.0</strong></td>
<td><strong>28 866</strong></td>
<td><strong>100.0</strong></td>
<td><strong>26 455</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

Meetings at the beginning of the biennium and revised once mid-biennium. Allocation levels were based on needs of countries, sound plans, available funds from all sources including regional and country regular budget, and the capacity of regional offices to provide the necessary technical support to activities. Some regions were very successful at raising region-specific extrabudgetary funds to complement allocations from Headquarters. *Programme Management and Support* costs were US$ 0.06 million more than anticipated.
In 1996-1997 the Division supported fully or partially the organization of the following meetings:

**Consultative Meeting on the Implementation of the Integrated Management of Childhood Illness (IMCI) in the African Region**
31 January–3 February 1996, Brazzaville, Congo

**Annual Conference of the International Lactation Consultants Association**
Breastfeeding: the cross cultural connection, Plenary address: Breastfeeding activities of WHO
11–14 July 1996, Kansas, USA

**Workshop on Integration of all Breastfeeding, Maternal and Child Nutrition Issues into Pre-service Training of the Medical School**
14–15 August 1996, University of Zimbabwe, in collaboration with Wellstart International

**National Symposium Celebrating 25 years of ORT use in the United States**
ORT: The solution that saves
13–14 November 1996, Johns Hopkins School of Public Health, Baltimore, USA, in collaboration with American Academy of Pediatrics, USAID, and UNICEF

**Conference on Zinc for Child Health**

**Meeting on the Multi-site Study of the Effectiveness of Promotion of Appropriate Breastfeeding and Complementary Feeding**
24–27 November 1996, Johns Hopkins School of Hygiene and Public Health, Baltimore, USA, in collaboration with Johns Hopkins University and USAID

**World Alliance for Breastfeeding Action (WABA) Global Forum and International Colloquium on Training in Breastfeeding Programmes**
2–6 December 1996, Bangkok, Thailand, in collaboration with UNICEF

**Regional IMCI Working Group**
10–14 February 1997, Montevideo, Uruguay

**Second Regional Meeting on the Implementation of the Integrated Management of Childhood Illness (IMCI) in the African Region**
25–28 February 1997, Brazzaville, Congo

**Conferencia Internacional Aleitamento Materno (International Conference on Breastfeeding for pediatricians, obstetricians and general practitioners)**
18–19 April 1997, organized by the National Baby Friendly Hospital Initiative in collaboration with UNICEF, the Escola Nacional de Saúde Pública, and the Direcção General de Saúde, Lisbon, Portugal

**Symposium on Zinc Supplementation**
15–16 May 1997, International Centre for Diarrhoeal Disease Research, Bangladesh, Dhaka, Bangladesh, in collaboration with ICDDR,B and UNICEF

**WHO/UNICEF Meeting to Plan for IMCI Evaluation**
5–6 June 1997, WHO, Geneva

---

**The Conference on Zinc for Child Health**

- Reviewed the evidence that zinc can improve the treatment of severe malnutrition, and acute and persistent diarrhoea, and can reduce the incidence of malaria.
- Identified needs for additional research, for example, on the prevalence of zinc deficiency and the related burden of disease, and the effects of zinc supplementation on child health and during pregnancy.
- Identified the need to find ways to improve dietary intake of zinc supplementation of children in developing countries, and recommended specifically that zinc be included in the treatment of severe malnutrition.

13–14 November 1996
ANNEX 1

Consultative Meeting on Child Growth and Development

- Reviewed the evidence for the efficacy and effectiveness of interventions to improve child growth, psychological development, and integrated interventions.
- Recommended that the Division undertake a project to develop and test a combined nutrition and development counselling package for mothers and other child caregivers.
- Recommended that the Division facilitate the establishment of a research consortium to address operational research questions in this newly emerging area of child health.

1–3 October 1997

During 1996–1997 the Division was also invited to participate in a variety of different types of meetings organized by international professional associations, non-governmental organizations, universities, and scientific unions. These provide opportunities to disseminate information about CHD activities in research, development and implementation, and to reach potential partners. It is not possible, however, to respond to all of these requests. Some of the meetings attended are included in the following list:

- Technical Advisory Group Meeting of Plan International
  23–26 January 1996, Cavite, Philippines

- Symposium on the Management of Diarrhoeal Diseases
  12–14 March 1997, Salvador, Bahia, Brazil

- XIXth International Congress of Nutrition
  International Union of Nutritional Sciences,
  26–31 July 1997, Montreal, Canada

- V National Breastfeeding Conference (V Encontro Nacional de Aleitamento Materno)
  Keynote address Breastfeeding: the best investment
  17–20 September 1997, Londrina, Brazil

- Global Congress on Lung Health, 29th World Conference of International Union Against Tuberculosis and Lung Disease (IUATLD/UITCMR)

- XI Rencontres Franco-Africaines de Pédiatrie
  10 October 1997, Hôpital Saint Vincent de Paul, Paris, France

Conference on Global Strategies for the Prevention of HIV Transmission from Mothers to Infants
3–6 September 1997, sponsored by the American Society for Microbiology and the Office of AIDS Research, National Institutes of Health, USA, and cosponsored by the Joint United Nations Programme on AIDS (UNAIDS) and others, Washington, USA

First Global Review and Coordination Meeting on the Integrated Management of Childhood Illness
9–12 September 1997, Santo Domingo, Dominican Republic

WHO/UNICEF Five-Country Project for CDD/ARI
21–23 September 1997, Copenhagen, Denmark

Consultative Meeting on Child Growth and Development
1–3 October 1997, World Health Organization, Geneva

Interagency Working Group on IMCI
District-Level Monitoring and Evaluation
16, 17 and 23 October 1997, Arlington, and New York, USA

Preliminary Interagency Meeting to Plan for Studies on IMCI Costs
20 October 1997, Washington, USA

Workshop on Improving Child Health at Community and Household Levels and Improving Quality of Care at Facility Level
21–22 October 1997, UNICEF, New York, USA, in collaboration with UNICEF

Workshop on Testing the Effectiveness of Interventions to Improve Care-Seeking for Sick Children
5–10 November 1997, London School of Hygiene and Tropical Medicine, London, UK

WHO/UNICEF Five-Country Project for CDD/ARI
21–23 September 1997, Copenhagen, Denmark

First Global Review and Coordination Meeting on the Integrated Management of Childhood Illness
9–12 September 1997, Santo Domingo, Dominican Republic

WHO/UNICEF Five-Country Project for CDD/ARI
21–23 September 1997, Copenhagen, Denmark

Consultative Meeting on Child Growth and Development
1–3 October 1997, World Health Organization, Geneva

Interagency Working Group on IMCI
District-Level Monitoring and Evaluation
16, 17 and 23 October 1997, Arlington, and New York, USA

Preliminary Interagency Meeting to Plan for Studies on IMCI Costs
20 October 1997, Washington, USA

Workshop on Improving Child Health at Community and Household Levels and Improving Quality of Care at Facility Level
21–22 October 1997, UNICEF, New York, USA, in collaboration with UNICEF

Workshop on Testing the Effectiveness of Interventions to Improve Care-Seeking for Sick Children
5–10 November 1997, London School of Hygiene and Tropical Medicine, London, UK

During 1996–1997 the Division was also invited to participate in a variety of different types of meetings organized by international professional associations, non-governmental organizations, universities, and scientific unions. These provide opportunities to disseminate information about CHD activities in research, development and implementation, and to reach potential partners. It is not possible, however, to respond to all of these requests. Some of the meetings attended are included in the following list:

- Technical Advisory Group Meeting of Plan International
  23–26 January 1996, Cavite, Philippines

- Symposium on the Management of Diarrhoeal Diseases
  12–14 March 1997, Salvador, Bahia, Brazil

- XIXth International Congress of Nutrition
  International Union of Nutritional Sciences,
  26–31 July 1997, Montreal, Canada

- V National Breastfeeding Conference (V Encontro Nacional de Aleitamento Materno)
  Keynote address Breastfeeding: the best investment
  17–20 September 1997, Londrina, Brazil

- Global Congress on Lung Health, 29th World Conference of International Union Against Tuberculosis and Lung Disease (IUATLD/UITCMR)

- XI Rencontres Franco-Africaines de Pédiatrie
  10 October 1997, Hôpital Saint Vincent de Paul, Paris, France
ANNEX 2

Headquarters, regional and country staff in 1996-1997

AMRO
Dr Y. Benguigui, Regional Adviser
Mr C. Drasbek, TO
Dr A. Permin, STP/MO, Brazil
Dr S. Aldighieri, APO, Ecuador

EMRO
Dr M. Lichnevski, Regional Adviser
Dr L. Al Kindi, MO
Dr S. Ramaboot, MO, Pakistan
Dr P. van de Kar, APO, Pakistan
Dr F. Bustreo, STP/MO, Sudan

EURO
Dr V. Mangiaterra, Regional Adviser
Dr T. Madaras, STP/MO
Dr M. Östergren, STP/MO

SEARO
Dr V. Kumar, Regional Adviser
Mr R. Peck, TO
Dr K.B. Singh, MO
Dr W. Aldis, MO, Bangladesh
Dr F. de Haan, MO, Indonesia
Dr H. de Valk, MO, Indonesia
Dr J.B.L. Liyanage, APO, Nepal

WPRO
Dr K. Yamamoto, MO
Dr S. Suomela, MO
Dr M. Virtanen, APO
Dr M. Rimon, APO, Cambodia
Dr S. Pieche, MO, China
Mr F.D. Rousar, Field Development Officer, Fiji
Dr A. Meulenbroek, APO, Laos
Dr N. Danielsson, APO, Viet Nam

AFRO
Dr A. Kaboré, Regional Adviser
Dr G. Bartley, TO
Dr L. Loco, MO
Dr D. Oluwole, STP/MO
Dr E. Mason, MO
Dr S. Musinde, MO
Dr A. Ries, MO
Dr P. Habimana, MO, Botswana
Dr L. Christiansen, APO, Ethiopia
Dr M. Schick, MO, Malawi
Dr M. Aragon Lopez, STP/MO, Mozambique
Dr F. Meuke, MO, Nigeria
Dr M. Alli, MO, Tanzania
Dr S. Verver, APO, Tanzania
Dr S. Glismann, APO, Uganda
Dr H. Huijts, APO, Zambia

AO – Administrative Officer
APO – Associate Professional Officer
MO – Medical Officer
STP – Short-Term Professional
TO – Technical Officer
ANNEX 3

New research projects in 1996-1997

97007 FCP
Pooled-analysis of trials evaluating effects of zinc supplementation on diarrhoeal and pneumonia morbidity in preschool children
Dr RE Black
Department of International Health
School of Hygiene and Public Health
Johns Hopkins University
Baltimore, MD USA

97015 FCP
Feasibility assessment for case-control study on health effects of air pollution from indoor biomass cooking in rural Guatemala
Dr Rachel Albalak
Emory University
Atlanta, GA 30322 USA
Institute of Nutrition of Central America and Panama (INCAP)
Guatemala GUATEMALA

96024 FCP
Breastfeeding and protection of children under 6 months against infectious diseases mortality and pneumonia/ALRI morbidity: a meta-analysis
Dr C Victora
Faculdade de Medicina
Universidade Federal de Pelotas
96030-000 Pelotas, RS BRAZIL

96019 FCP
Intervention study to test the nutritional counselling component of the management of childhood illness package in Pelotas, Brazil
Dr C Victora
Faculdade de Medicina
Universidade Federal de Pelotas
96030-000 Pelotas, RS BRAZIL

97006 FCP
Multi-site study of the effectiveness of promotion of appropriate breastfeeding and complementary feeding
Dr MK Bhun
Department of Paediatrics
All India Institute of Medical Sciences
New Delhi 110029 INDIA

97011 FCP
A community-level efficacy trial to evaluate the effect of the adoption of appropriate complementary feeding practices on energy and nutrient intake
Dr H Creed-Kanashiro
Instituto de Investigación Nutricional
Lima 18 PERU

97012 FCP
Community-based intervention to enhance health seeking for young children
Dr P Arthur
Kintampo Health Research Centre
Kintampo GHANA

97013 FCP
Improving health seeking behaviour from IMCI diseases in Kotmale, Sri Lanka
Drs Amarasiri de Silva and Ananda Wijekoon
Centre for Intersectoral Community Health Studies
Kandy SRI LANKA

93020 EDP
An evaluation of the impact of the national CDD Programme on severe childhood morbidity and mortality from diarrhoea in the Philippines
Dr JC Baltazar
College of Public Health
University of the Philippines Manila
Manila PHILIPPINES

95008 EDP
Evaluation of the effect of vitamin A on the cognitive and psychomotor development of infants in their first year of life
Dr CF Lanata
Instituto de Investigación Nutricional
Lima 18 PERU

93012 FCP
Children’s fluid intake during diarrhoea: a comparison of questionnaire response with data from observation
Dr K Zaman
International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B)
Dhaka 1000 BANGLADESH

95008 EDP
Pooled-analysis of trials evaluating effects of zinc supplementation on diarrhoea and pneumonia morbidity in preschool children
Dr RE Black
Department of International Health
School of Hygiene and Public Health
Johns Hopkins University
Baltimore, MD USA

96024 FCP
Breastfeeding and protection of children under 6 months against infectious diseases mortality and pneumonia/ALRI morbidity: a meta-analysis
Dr C Victora
Faculdade de Medicina
Universidade Federal de Pelotas
96030-000 Pelotas, RS BRAZIL

96019 FCP
Intervention study to test the nutritional counselling component of the management of childhood illness package in Pelotas, Brazil
Dr C Victora
Faculdade de Medicina
Universidade Federal de Pelotas
96030-000 Pelotas, RS BRAZIL

97006 FCP
Multi-site study of the effectiveness of promotion of appropriate breastfeeding and complementary feeding
Dr MK Bhun
Department of Paediatrics
All India Institute of Medical Sciences
New Delhi 110029 INDIA

97011 FCP
A community-level efficacy trial to evaluate the effect of the adoption of appropriate complementary feeding practices on energy and nutrient intake
Dr H Creed-Kanashiro
Instituto de Investigación Nutricional
Lima 18 PERU

97012 FCP
Community-based intervention to enhance health seeking for young children
Dr P Arthur
Kintampo Health Research Centre
Kintampo GHANA

97013 FCP
Improving health seeking behaviour from IMCI diseases in Kotmale, Sri Lanka
Drs Amarasiri de Silva and Ananda Wijekoon
Centre for Intersectoral Community Health Studies
Kandy SRI LANKA
97014 FCP
A community-based intervention to enhance health seeking for young children in Hidalgo, Mexico
Drs Homero Marines and Sofia Villa
Division of Epidemiology and Health Services Research
Instituto Mexicano del Seguro Social
Mexico 06725 DF MEXICO

97004 HSM
Evaluation of zinc supplementation as adjunct to oral rehydration therapy in acute non-cholera diarrhoea
Dr MK Bhan
Department of Paediatrics
All India Institute of Medical Sciences
New Delhi 110029 INDIA

97005 HSM
Controlled clinical trial on the efficacy of oral zinc supplementation in acute dehydrating diarrhoea in infants and young children
Dr M El-Mougi
Pediatric Department
Alazhar University
Cairo EGYPT

97008 HSM
Evaluation of zinc supplementation as adjunct to oral rehydration therapy in acute non-cholera diarrhoea
Dr Pham Ngoc Than
Children's Hospital No. 1
Ho Chi Minh City VIET NAM

96016 HSM
The use of steroids in acute bacterial meningitis
Dr Elisabeth Molyneux
Department of Pediatrics
College of Medicine
Chichiri, Balantyre MALAWI

97002 HSM
Clinical effectiveness of oral cotrimoxazole versus oral amoxycillin twice a day for treatment of childhood pneumonia
Dr Shamin A Qazi
Children's Hospital
Pakistan Institute of Medical Sciences (PIMS)
Islamabad PAKISTAN
ANNEX 4

New documents arising out of the work of the Division 1996-1997

Documents


Documentation of IMCI experience in seven countries, July 1995 - December 1996. CHD/97.16.

IMCI Information package.


Resources for improving family and community practices. WHO/CHD/97.10.

Report of the first global review and coordination meeting on IMCI, Santo Domingo, Dominican Republic, 9-12 September 1997. WHO/CHD/97.11.

Manuals and guidelines
The IMCI adaptation guide (working draft 4), June 1997.

Evaluating the impact of national CDD programmes. WHO/CHD/97.2.

Integrated Management of Childhood Illness. Training course for health workers at first-level facilities (modules A to L). WHO/CHD/97.3.

Aider les mères à allaiter. F. Savage King and B. de Benoist. WHO/CHD/96.8, WHO/AFRO/NUT/96.1.

Guidelines for conducting a short programme review. WHO/CHD/97.10.
Guidelines for conducting a focused programme review. WHO/CHD/97.5.

Procedures for local adaptation of ARI home care advice. WHO/CHD/96.7.

Guidelines for conducting follow-up after training. WHO/CHD/97.15.

Updates
Update no. 21, March 1996 – “Not enough milk”.
Update no. 22, November 1996 – “Hepatitis B and breastfeeding”.

Technical papers
Evidence for the ten steps to successful breastfeeding. WHO/CHD/97.13.
**ANNEX 5**

New papers arising out of research supported by the Division in 1996-1997

**1996**


Of the 273 caretakers of children advised hospital admission, only 66 (24.2%) complied. … Our findings highlight an urgent need to develop treatment algorithms for sick young infants at a domiciliary level wherever hospitalization is not feasible.


Our findings suggest that modest intakes of milk are well tolerated as a part of mixed diet during persistent diarrhoea.


...better health is integral to the Bank’s fundamental goals to reduce poverty and raise living standards.


We conclude that rice-based ORS does not reduce stool output when compared with standard ORS in children with acute, non-cholera diarrhoea, especially when food is given immediately after rehydration. Gore SM, et al. Lancet, 1996, 348:193-194.


In the first 6 months of life, failing to initiate breastfeeding or ceasing to breastfeed resulted in an 8- to 10-fold increase in the rate of diarrhoeal mortality.


**Kalter HD**, Burnham G, Kolstad PR, Bossai M, Schillinger JA, Khan NZ, Saha S, de Wit V, Kenya-Mugisha N, Schwartz B and Black RE. Evaluation of clinical signs to diagnose anaemia in...


We found that breast milk not only added to the total diet of young toddlers but also potentiated the beneficial effects of complementary foods consumed by increasing their growth-promotion capacity.


Vitamin D or calcium deficiency may be important predisposing factors for pneumonia in children aged under 5 years in developing countries. Efforts to prevent vitamin D deficiency or calcium supplementation may result in significant reductions in morbidity and mortality from pneumonia in these children.


Pérez-Schael I, Guntiñas MJ, Pérez M, Pagone V, Rojas AM, Gonzalez B, Cantó W, Hoshino Y and Kapikian AZ. Efficacy of the rhesus rotavirus-based quadriva...


The combination of epidemiologic and ethnographic methods was essential for understanding the complex relations between pacifier use and breastfeeding.

## Results of CDD and ARI surveys

### TABLE 1
**Indicators of the quality of diarrhoea case management from health facility surveys**, 1992–1997

<table>
<thead>
<tr>
<th>Country</th>
<th>Year</th>
<th>Facilities surveyed</th>
<th>Correctly assessed</th>
<th>Correctly rehydrated</th>
<th>Correctly advised</th>
<th>Correctly managed</th>
<th>Correctly treated for dysentery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burundi</td>
<td>1992</td>
<td>74</td>
<td>2</td>
<td>13</td>
<td>3</td>
<td>NA</td>
<td>45</td>
</tr>
<tr>
<td>China</td>
<td>1992</td>
<td>25</td>
<td>47</td>
<td>0</td>
<td>38</td>
<td>NA</td>
<td>0</td>
</tr>
<tr>
<td>Colombia</td>
<td>1992</td>
<td>73</td>
<td>30</td>
<td>48</td>
<td>12</td>
<td>NA</td>
<td>33</td>
</tr>
<tr>
<td>Congo</td>
<td>1992</td>
<td>48</td>
<td>8</td>
<td>15</td>
<td>4</td>
<td>NA</td>
<td>33</td>
</tr>
<tr>
<td>Dominican Republic</td>
<td>1992</td>
<td>62</td>
<td>6</td>
<td>27</td>
<td>3</td>
<td>NA</td>
<td>64</td>
</tr>
<tr>
<td>Malaysia</td>
<td>1992</td>
<td>80</td>
<td>33</td>
<td>37</td>
<td>12</td>
<td>NA</td>
<td>20</td>
</tr>
<tr>
<td>Mexico</td>
<td>1992</td>
<td>75</td>
<td>39</td>
<td>37</td>
<td>11</td>
<td>NA</td>
<td>33</td>
</tr>
<tr>
<td>Panama</td>
<td>1992</td>
<td>57</td>
<td>38</td>
<td>0</td>
<td>10</td>
<td>NA</td>
<td>25</td>
</tr>
<tr>
<td>Rwanda</td>
<td>1992</td>
<td>61</td>
<td>16</td>
<td>74</td>
<td>11</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Turkey</td>
<td>1992</td>
<td>24</td>
<td>24</td>
<td>0</td>
<td>3</td>
<td>NA</td>
<td>50</td>
</tr>
<tr>
<td>Bolivia</td>
<td>1993</td>
<td>93</td>
<td>24</td>
<td>22</td>
<td>11</td>
<td>NA</td>
<td>33</td>
</tr>
<tr>
<td>Brazil</td>
<td>1993</td>
<td>192</td>
<td>8</td>
<td>6</td>
<td>1</td>
<td>NA</td>
<td>24</td>
</tr>
<tr>
<td>Indonesia</td>
<td>1993</td>
<td>70</td>
<td>43</td>
<td>25</td>
<td>16</td>
<td>12</td>
<td>35</td>
</tr>
<tr>
<td>Jordan</td>
<td>1993</td>
<td>60</td>
<td>63</td>
<td>7</td>
<td>14</td>
<td>11</td>
<td>64</td>
</tr>
<tr>
<td>Malawi</td>
<td>1993</td>
<td>62</td>
<td>21</td>
<td>51</td>
<td>1</td>
<td>1</td>
<td>14</td>
</tr>
<tr>
<td>Peru</td>
<td>1993</td>
<td>150</td>
<td>22</td>
<td>44</td>
<td>8</td>
<td>NA</td>
<td>59</td>
</tr>
<tr>
<td>Kenya</td>
<td>1994</td>
<td>37</td>
<td>40</td>
<td>46</td>
<td>41</td>
<td>27</td>
<td>64</td>
</tr>
<tr>
<td>Myanmar</td>
<td>1994</td>
<td>42</td>
<td>68</td>
<td>45</td>
<td>66</td>
<td>NA</td>
<td>60</td>
</tr>
<tr>
<td>Nepal</td>
<td>1994</td>
<td>16</td>
<td>35</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>53</td>
</tr>
<tr>
<td>Senegal</td>
<td>1994</td>
<td>61</td>
<td>36</td>
<td>21</td>
<td>14</td>
<td>5</td>
<td>40</td>
</tr>
<tr>
<td>Venezuela</td>
<td>1994</td>
<td>54</td>
<td>30</td>
<td>65</td>
<td>11</td>
<td>NA</td>
<td>45</td>
</tr>
<tr>
<td>Zimbabwea</td>
<td>1994</td>
<td>80</td>
<td>51</td>
<td>6</td>
<td>26</td>
<td>12</td>
<td>45</td>
</tr>
<tr>
<td>Benin</td>
<td>1995</td>
<td>64</td>
<td>20</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Egypt</td>
<td>1995</td>
<td>53</td>
<td>54</td>
<td>47</td>
<td>39</td>
<td>31</td>
<td>14</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>1995</td>
<td>62</td>
<td>70</td>
<td>20</td>
<td>30</td>
<td>27</td>
<td>65</td>
</tr>
<tr>
<td>Indonesia</td>
<td>1995</td>
<td>59</td>
<td>43</td>
<td>0</td>
<td>18</td>
<td>13</td>
<td>38</td>
</tr>
<tr>
<td>Madagascar</td>
<td>1995</td>
<td>50</td>
<td>30</td>
<td>0</td>
<td>6</td>
<td>3</td>
<td>61</td>
</tr>
<tr>
<td>Morocco</td>
<td>1995</td>
<td>54</td>
<td>40</td>
<td>36</td>
<td>45</td>
<td>23</td>
<td>39</td>
</tr>
<tr>
<td>Guinea</td>
<td>1996</td>
<td>61</td>
<td>73</td>
<td>8</td>
<td>74</td>
<td>58</td>
<td>85</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>1997</td>
<td>45</td>
<td>47</td>
<td>33</td>
<td>47</td>
<td>28</td>
<td>62</td>
</tr>
<tr>
<td>Iraq</td>
<td>1997</td>
<td>59</td>
<td>50</td>
<td>11</td>
<td>20</td>
<td>13</td>
<td>29</td>
</tr>
<tr>
<td>Sudan</td>
<td>1997</td>
<td>60</td>
<td>53</td>
<td>24</td>
<td>27</td>
<td>21</td>
<td>89</td>
</tr>
<tr>
<td>Viet Nam</td>
<td>1997</td>
<td>62</td>
<td>78</td>
<td>67</td>
<td>77</td>
<td>61</td>
<td>100</td>
</tr>
<tr>
<td>Zambia</td>
<td>1997</td>
<td>60</td>
<td>30</td>
<td>19</td>
<td>4</td>
<td>4</td>
<td>26</td>
</tr>
<tr>
<td><strong>Minimum</strong></td>
<td></td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Median</strong></td>
<td></td>
<td>37</td>
<td>22</td>
<td>12</td>
<td>13</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td><strong>Maximum</strong></td>
<td></td>
<td>78</td>
<td>74</td>
<td>77</td>
<td>61</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

*Results given as percentage of diarrhoea cases under five years of age whose case management in health facilities was observed.*

*b Combined CDD/ARI survey.

*c Not measured in original survey (NA).*
## TABLE 2
**Selected indicators of ARI programme implementation from health facility surveys, 1992–1997 (part 1)**

<table>
<thead>
<tr>
<th>Country</th>
<th>Year</th>
<th>Facilities surveyed</th>
<th>Facilities capable of providing standard case management</th>
<th>Health workers trained in standard case management</th>
<th>Facilities with first-line antibiotics</th>
</tr>
</thead>
<tbody>
<tr>
<td>India</td>
<td>1992</td>
<td>53</td>
<td>94</td>
<td>87</td>
<td>94</td>
</tr>
<tr>
<td>Papua New Guinea</td>
<td>1992</td>
<td>33</td>
<td>27</td>
<td>33</td>
<td>2</td>
</tr>
<tr>
<td>Philippines</td>
<td>1992</td>
<td>85</td>
<td>52</td>
<td>83</td>
<td>52</td>
</tr>
<tr>
<td>Colombia</td>
<td>1993</td>
<td>49</td>
<td>67</td>
<td>36</td>
<td>55</td>
</tr>
<tr>
<td>Thailand</td>
<td>1993</td>
<td>38</td>
<td>87</td>
<td>44</td>
<td>87</td>
</tr>
<tr>
<td>Viet Nam</td>
<td>1993</td>
<td>80</td>
<td>45</td>
<td>59</td>
<td>45</td>
</tr>
<tr>
<td>China</td>
<td>1994</td>
<td>68</td>
<td>57</td>
<td>88(^b)</td>
<td>98-100</td>
</tr>
<tr>
<td>Dominican Republic</td>
<td>1994</td>
<td>28</td>
<td>35</td>
<td>26</td>
<td>82</td>
</tr>
<tr>
<td>Pakistan</td>
<td>1994</td>
<td>40</td>
<td>25</td>
<td>29</td>
<td>38</td>
</tr>
<tr>
<td>Sudan</td>
<td>1994</td>
<td>60</td>
<td>57</td>
<td>64</td>
<td>68</td>
</tr>
<tr>
<td>Zimbabwe(^c)</td>
<td>1994</td>
<td>80</td>
<td>29</td>
<td>23-27</td>
<td>97</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>1995</td>
<td>35</td>
<td>85</td>
<td>66</td>
<td>94</td>
</tr>
<tr>
<td>Indonesia</td>
<td>1995</td>
<td>60</td>
<td>51</td>
<td>18</td>
<td>63</td>
</tr>
<tr>
<td>Morocco</td>
<td>1995</td>
<td>55</td>
<td>71</td>
<td>47</td>
<td>79</td>
</tr>
<tr>
<td>Paraguay</td>
<td>1995</td>
<td>30</td>
<td>60</td>
<td>46</td>
<td>60</td>
</tr>
<tr>
<td>Viet Nam</td>
<td>1995</td>
<td>52</td>
<td>NA</td>
<td>65</td>
<td>NA</td>
</tr>
<tr>
<td>Malaysia</td>
<td>1996</td>
<td>24</td>
<td>NA</td>
<td>50</td>
<td>100</td>
</tr>
<tr>
<td>Nicaragua</td>
<td>1996</td>
<td>44</td>
<td>87</td>
<td>77</td>
<td>90</td>
</tr>
<tr>
<td>Tunisia</td>
<td>1996</td>
<td>54</td>
<td>71</td>
<td>62</td>
<td>100</td>
</tr>
<tr>
<td>Iran</td>
<td>1997</td>
<td>79</td>
<td>42</td>
<td>54</td>
<td>76</td>
</tr>
<tr>
<td><strong>Minimum</strong></td>
<td></td>
<td>18</td>
<td>2</td>
<td>27</td>
<td>2</td>
</tr>
<tr>
<td><strong>Median</strong></td>
<td></td>
<td>52</td>
<td>55</td>
<td>79</td>
<td>55</td>
</tr>
<tr>
<td><strong>Maximum</strong></td>
<td></td>
<td>88</td>
<td>87</td>
<td>100</td>
<td>87</td>
</tr>
</tbody>
</table>

\(^a\) Proportion of facilities with at least one health worker trained in standard case management (where training includes practice) and with a regular supply of antibiotic(s) recommended for the home treatment of pneumonia.

\(^b\) Definition of training did not include hands-on practice.

\(^c\) Combined CDD/ARI survey.

\(^d\) Not available (NA).
### TABLE 3

**Indicators of the quality of ARI case management from health facility surveys**, 1992–1997 (part 2)

<table>
<thead>
<tr>
<th>Country</th>
<th>Year</th>
<th>Facilities Surveyed</th>
<th>Pneumonia cases managed correctly</th>
<th>Caretakers correctly advised</th>
<th>ARI cases who should not receive antibiotics but were given them</th>
</tr>
</thead>
<tbody>
<tr>
<td>India</td>
<td>1992</td>
<td>53</td>
<td>25</td>
<td>82</td>
<td>18</td>
</tr>
<tr>
<td>Papua New Guinea</td>
<td>1992</td>
<td>33</td>
<td>42</td>
<td>53</td>
<td>15</td>
</tr>
<tr>
<td>Philippines</td>
<td>1992</td>
<td>85</td>
<td>69</td>
<td>63</td>
<td>32</td>
</tr>
<tr>
<td>Colombia</td>
<td>1993</td>
<td>49</td>
<td>33</td>
<td>25</td>
<td>14</td>
</tr>
<tr>
<td>Thailand</td>
<td>1993</td>
<td>38</td>
<td>16</td>
<td>11</td>
<td>34</td>
</tr>
<tr>
<td>Viet Nam</td>
<td>1993</td>
<td>80</td>
<td>61</td>
<td>78</td>
<td>31</td>
</tr>
<tr>
<td>China</td>
<td>1994</td>
<td>68</td>
<td>73</td>
<td>75</td>
<td>8</td>
</tr>
<tr>
<td>Dominican Republic</td>
<td>1994</td>
<td>28</td>
<td>42</td>
<td>29</td>
<td>56</td>
</tr>
<tr>
<td>Pakistan</td>
<td>1994</td>
<td>40</td>
<td>7</td>
<td>7</td>
<td>53</td>
</tr>
<tr>
<td>Sudan</td>
<td>1994</td>
<td>60</td>
<td>7</td>
<td>34</td>
<td>70</td>
</tr>
<tr>
<td>Zimbabwe(^a)</td>
<td>1994</td>
<td>80</td>
<td>29</td>
<td>28</td>
<td>31</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>1995</td>
<td>35</td>
<td>40</td>
<td>43</td>
<td>29</td>
</tr>
<tr>
<td>Indonesia</td>
<td>1995</td>
<td>60</td>
<td>2</td>
<td>4</td>
<td>65</td>
</tr>
<tr>
<td>Morocco</td>
<td>1995</td>
<td>55</td>
<td>31</td>
<td>61</td>
<td>40</td>
</tr>
<tr>
<td>Paraguay</td>
<td>1995</td>
<td>30</td>
<td>10</td>
<td>17</td>
<td>12</td>
</tr>
<tr>
<td>Viet Nam</td>
<td>1995</td>
<td>52</td>
<td>17</td>
<td>48</td>
<td>NA</td>
</tr>
<tr>
<td>Malaysia</td>
<td>1996</td>
<td>24</td>
<td>33</td>
<td>45</td>
<td>24</td>
</tr>
<tr>
<td>Nicaragua</td>
<td>1996</td>
<td>44</td>
<td>26</td>
<td>37</td>
<td>18</td>
</tr>
<tr>
<td>Tunisia</td>
<td>1996</td>
<td>54</td>
<td>20</td>
<td>52</td>
<td>62</td>
</tr>
<tr>
<td>Iran</td>
<td>1997</td>
<td>79</td>
<td>30</td>
<td>34</td>
<td>37</td>
</tr>
<tr>
<td>Minimum</td>
<td></td>
<td></td>
<td>2</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Median</td>
<td></td>
<td></td>
<td>30</td>
<td>40</td>
<td>31</td>
</tr>
<tr>
<td>Maximum</td>
<td></td>
<td></td>
<td>73</td>
<td>82</td>
<td>70</td>
</tr>
</tbody>
</table>

\(^a\) Results given as percentage of ARI cases under five years of age whose case management in health facilities was observed.

\(^b\) Combined CDD/ARI survey.
TABLE 4

<table>
<thead>
<tr>
<th>Country</th>
<th>Year</th>
<th>Children enrolled</th>
<th>Care-seeking</th>
<th>Increased fluids</th>
<th>Continued feeding</th>
<th>All 3 rules</th>
<th>Increased fluids</th>
<th>Continued feeding</th>
<th>Both</th>
<th>Drug use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mexico</td>
<td>1992</td>
<td>NA</td>
<td>28</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>36</td>
<td>66</td>
<td>23</td>
<td>59</td>
</tr>
<tr>
<td>Philippines</td>
<td>1992</td>
<td>7 274</td>
<td>13</td>
<td>86</td>
<td>96</td>
<td>12</td>
<td>69</td>
<td>88</td>
<td>63</td>
<td>NA</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>1992</td>
<td>10 077</td>
<td>29</td>
<td>78</td>
<td>85</td>
<td>23</td>
<td>37</td>
<td>77</td>
<td>29</td>
<td>71</td>
</tr>
<tr>
<td>Tanzania, UR of</td>
<td>1992</td>
<td>7 134</td>
<td>3</td>
<td>82</td>
<td>97</td>
<td>3</td>
<td>54</td>
<td>90</td>
<td>49</td>
<td>58</td>
</tr>
<tr>
<td>Lao PDR</td>
<td>1993</td>
<td>4 111</td>
<td>20</td>
<td>42</td>
<td>77</td>
<td>9</td>
<td>62</td>
<td>49</td>
<td>31</td>
<td>88</td>
</tr>
<tr>
<td>Papua New Guinea</td>
<td>1993</td>
<td>4 936</td>
<td>14</td>
<td>71</td>
<td>72</td>
<td>8</td>
<td>62</td>
<td>58</td>
<td>37</td>
<td>59</td>
</tr>
<tr>
<td>Uganda (rural)</td>
<td>1993</td>
<td>4 275</td>
<td>54</td>
<td>62</td>
<td>57</td>
<td>25</td>
<td>48</td>
<td>41</td>
<td>23</td>
<td>52</td>
</tr>
<tr>
<td>Uruguay</td>
<td>1993</td>
<td>NA</td>
<td>33</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>30</td>
<td>48</td>
<td>14</td>
<td>42</td>
</tr>
<tr>
<td>Egypt</td>
<td>1994</td>
<td>11 798</td>
<td>70</td>
<td>77</td>
<td>91</td>
<td>57</td>
<td>74</td>
<td>92</td>
<td>70</td>
<td>76</td>
</tr>
<tr>
<td>Viet Nam</td>
<td></td>
<td>1994-1996 (4 surveys)</td>
<td>24 328</td>
<td>56</td>
<td>77</td>
<td>97</td>
<td>46</td>
<td>83</td>
<td>93</td>
<td>75</td>
</tr>
<tr>
<td>Mongolia</td>
<td>1995</td>
<td>3 973</td>
<td>69</td>
<td>86</td>
<td>61</td>
<td>40</td>
<td>69</td>
<td>74</td>
<td>51</td>
<td>71</td>
</tr>
<tr>
<td>Pakistan</td>
<td>1995</td>
<td>5 128</td>
<td>70</td>
<td>58</td>
<td>53</td>
<td>26</td>
<td>62</td>
<td>53</td>
<td>34</td>
<td>88</td>
</tr>
<tr>
<td>Sudan</td>
<td>1995</td>
<td>7 133</td>
<td>18</td>
<td>46</td>
<td>53</td>
<td>18</td>
<td>137</td>
<td>55</td>
<td>35</td>
<td>NA</td>
</tr>
<tr>
<td>Egypt</td>
<td>1996</td>
<td>11 855</td>
<td>72</td>
<td>59</td>
<td>61</td>
<td>41</td>
<td>50</td>
<td>58</td>
<td>35</td>
<td>66</td>
</tr>
<tr>
<td>Lao PDR</td>
<td>1996</td>
<td>4 837</td>
<td>19</td>
<td>36</td>
<td>65</td>
<td>7</td>
<td>56</td>
<td>45</td>
<td>24</td>
<td>88</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>1997</td>
<td>8 389</td>
<td>80</td>
<td>70</td>
<td>61</td>
<td>42</td>
<td>62</td>
<td>61</td>
<td>44</td>
<td>41</td>
</tr>
</tbody>
</table>

Minimum                   | 3       | 36                | 53            | 3               | 30              | 41          | 14              | 41               |
Median                    | 31      | 71                | 69            | 24              | 59              | 60          | 35              | 68               |
Maximum                   | 80      | 86                | 97            | 57              | 83              | 93          | 75              | 88               |

Footnotes:
- Proportion of caretakers who know the three rules of home case management: (1) to give increased amounts of fluid; (2) to continue feeding; and (3) to seek treatment outside the home for a child with diarrhoea when appropriate.
- Not available (NA).
- Rates reflect unweighted means across the four surveys.
### TABLE 5

<table>
<thead>
<tr>
<th>Country</th>
<th>Year</th>
<th>Children enrolled</th>
<th>Caretakers knowing when to seek care for cough</th>
<th>Children with ANA* taken to an appropriate care provider</th>
<th>Children with cough given antibiotics</th>
<th>Children with cough or ANA given harmful drugs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Philippines</td>
<td>1992</td>
<td>7 274</td>
<td>44</td>
<td>49</td>
<td>37</td>
<td>10</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>1992</td>
<td>10 077</td>
<td>35</td>
<td>80</td>
<td>22</td>
<td>20</td>
</tr>
<tr>
<td>Tanzania, UR of</td>
<td>1992</td>
<td>7 134</td>
<td>26</td>
<td>74</td>
<td>14</td>
<td>17</td>
</tr>
<tr>
<td>Lao PDR</td>
<td>1993</td>
<td>4 111</td>
<td>18</td>
<td>33</td>
<td>56</td>
<td>25</td>
</tr>
<tr>
<td>Papua New Guinea</td>
<td>1993</td>
<td>4 936</td>
<td>15</td>
<td>84</td>
<td>26</td>
<td>9</td>
</tr>
<tr>
<td>Uganda (rural)</td>
<td>1993</td>
<td>4 275</td>
<td>41</td>
<td>56</td>
<td>16</td>
<td>4</td>
</tr>
<tr>
<td>Egypt</td>
<td>1994</td>
<td>11 798</td>
<td>57</td>
<td>78</td>
<td>20</td>
<td>38</td>
</tr>
<tr>
<td>Viet Nam (4 surveys)</td>
<td>1994</td>
<td>24 328</td>
<td>39</td>
<td>43</td>
<td>27</td>
<td>11</td>
</tr>
<tr>
<td>Mongolia</td>
<td>1995</td>
<td>3 973</td>
<td>36</td>
<td>79</td>
<td>84</td>
<td>NA</td>
</tr>
<tr>
<td>Pakistan</td>
<td>1995</td>
<td>5 128</td>
<td>67</td>
<td>89</td>
<td>23</td>
<td>56</td>
</tr>
<tr>
<td>Sudan</td>
<td>1995</td>
<td>7 133</td>
<td>48</td>
<td>76</td>
<td>45</td>
<td>16</td>
</tr>
<tr>
<td>Viet Nam</td>
<td>1995</td>
<td>10 025</td>
<td>40</td>
<td>63</td>
<td>43</td>
<td>4</td>
</tr>
<tr>
<td>Egypt</td>
<td>1996</td>
<td>11 855</td>
<td>50</td>
<td>77</td>
<td>19</td>
<td>32-44</td>
</tr>
<tr>
<td>Lao PDR</td>
<td>1996</td>
<td>4 837</td>
<td>14</td>
<td>30</td>
<td>35</td>
<td>10</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>1997</td>
<td>8 389</td>
<td>48</td>
<td>20</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td><strong>Minimum</strong></td>
<td></td>
<td></td>
<td>14</td>
<td>20</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td><strong>Median</strong></td>
<td></td>
<td></td>
<td>40</td>
<td>74</td>
<td>26</td>
<td>14</td>
</tr>
<tr>
<td><strong>Maximum</strong></td>
<td></td>
<td></td>
<td>67</td>
<td>89</td>
<td>84</td>
<td>56</td>
</tr>
</tbody>
</table>

*ARI needing assessment.

Appropriate is defined in each country as those providers who are expected to assess and treat pneumonia correctly with an appropriate antibiotic.

Harmful drugs are identified by each country.

Rates reflect unweighted means across the four surveys.