CAH Progress Report 2000
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The work of the Department of Child and Adolescent Health and Development (CAH) is based on the firm conviction that all children and adolescents should have the means and the opportunity to develop to their full potential. In addition to basic needs, healthy growth and development and caring human relationships are basic human rights, for children and for adolescents. They need and have the right to appropriate quality health care, and their families must have access to information and support. They need and have the right to opportunities to acquire the skills and information they need to be physically and emotionally healthy as they gain independence.

In 2000, the Department continued its efforts to realize this vision through support for high quality research and development, systematic planning and support for activities and the effective use of monitoring and evaluation. CAH has one of the largest programmes of research within WHO and has established mechanisms for rapidly translating research results into policy and practice. Emphasis is placed on developing evidence-based interventions that can be applied systematically, the process documented and lessons learnt. The appointments this year of a new Executive Director for the Family and Community Health Cluster, and a new Director for the Department, provided opportunities to reassess priorities and to ask new questions while maintaining the best of previous work.

CAH has continued to strengthen catalytic linkages with other WHO departments, UN agencies, bilateral agencies, non-governmental organizations (NGOs), private voluntary organizations and foundations. These partners play an important role in assessing the need for strategies for child and adolescent health and development and in supporting their implementation. Strong collaboration exists with a range of partners inside and outside WHO. It is through these partnerships that CAH is able to build capacity and extend the application of Integrated Management of Childhood Illness (IMCI) and adolescent health and development interventions.

This progress report provides an informative summary of the work of the Department midway through the current biennium. Chapter 1 describes the Department’s global priorities in child and adolescent health, and efforts to address them. Chapters 2–4 summarize the year’s work in three topic areas—promoting a safe and supportive environment, improving health service delivery, and monitoring and evaluation. The final chapter describes collaboration with partners and continuing efforts to expand capacity for sound public health programming at all levels.

A full programme report will be prepared at the close of the 2000–2001 biennium.

The CAH staff in Headquarters, in the Regional Offices and in countries invite you to read this report, make suggestions, and join us in our efforts to mobilize the global community in promoting the health of children and adolescents. In addition, we would like to take this opportunity to thank those who have provided support to our activities, both technical and financial.
CHAPTER 1
Focusing on global priorities in child and adolescent health and development

HIGHLIGHTS OF 2000

- The United Nations General Assembly Special Session on Children, scheduled for September 2001, will agree on an agenda for children and adolescents for the next decade. The Department has coordinated a review of progress toward World Summit for Children goals and served as the focal point within WHO for preparations for the Session.
- The Department is leading the Organization toward a unified approach to promote and protect the health of children and adolescents. Work continued on the development of a WHO wide strategy for child and adolescent health and development.
- The Department established an international forum called FutureThink to inform these strategy development and agenda-setting initiatives. This interdisciplinary group of experts looked forward to the challenges of the next decade, and offered guidance on public health directions.
- Departmental efforts to use the Convention on the Rights of the Child as a mechanism for improving child health moved forward with the preparation of status reports on 12 countries, and capacity-building workshops for WHO staff in two Regions.
- Based on analyses of mortality data and the global burden of disease, the Department renewed its commitment to preventing HIV/AIDS among adolescents, and broadened the scope of its work in the area of neonatal health.

Developing a global agenda for children and adolescents

In December 1999, the United Nations General Assembly established a committee to prepare for a Special Session on Children in 2001 for follow-up to the World Summit for Children. The Preparatory Committee met once in 2000 and will meet twice in 2001 before the Special Session in September 2001. UNICEF was named as the Secretariat for the Special Session with a Bureau of the Committee constituted of representatives from seven countries.

The objectives of the Special Session are to review the implementation of the Plan of Action adopted by the 1990 World Summit for Children, identify what needs to be done to accelerate future progress for children, and agree on a global “New Agenda” for children and adolescents in the 21st century. A report to the Secretary-General reviewing the progress made on the World Summit Goals (WSG), current and future challenges and actions for the future will be discussed and an outcome document produced that describes the New Agenda.

The Department is the WHO focal point for the Special Session and has chaired the WHO inter-cluster and regional working group for the preparation of all health-related inputs. CAH, both headquarters (HQ) and the Regional Office of the Americas (AMRO), has been involved in the Preparatory Committees and the consultations organized by UNICEF.

WHO has stressed the importance of the unfinished agenda of child survival, and raised concerns about the relationship between current overall outcomes (early childhood care, quality of health care, basic education, and adolescent development) and the life course approach. There is a need to strike a balance between targeting all children and adolescents and directing activities towards those with special needs.
Unfinished agenda in reducing child mortality

Children under five years of age account for 30% of the total burden of disease in poor countries. Among the 10.5 million children under five who died in 1999, 99% were in developing countries. Thirty-six percent of these children died in Asia, and 33% in Africa. Regional differences in under-five mortality are shown in Figure 1.

Over 50% of child deaths in developing countries are due to five communicable diseases and malnutrition. There are important differences in the threats to child health by region. In South-East Asia, for example, pneumonia and diarrhoea account for two in five child deaths, while in Africa malaria is also a major cause of death. In addition, mother-to-child transmission of HIV is eroding gains in child survival, particularly in Africa.

Global targets established by the 1990 World Summit for Children have guided the promotion of child health for the last decade. Progress toward these targets has been mixed. There has been notable success in reducing deaths due to diarrhoea and measles, and in eradicating polio. However, progress has been limited in reducing deaths from pneumonia and in achieving targets relating to child nutrition and infant mortality. Increases in exclusive breastfeeding rates are small, and little progress has been made in improving complementary feeding. Poor breastfeeding practices and nutritional deficiencies are major risk factors for most child health problems.

The global equity gap in health is largest among children, and is concentrated in communicable diseases. Children in poor countries are disabled and dying from causes for which we have effective and affordable interventions.

A clear focus on these problems and interventions will lead to significant gains and overall strengthening of the public health system, and push forward efforts to improve child health and development. The burden of communicable diseases in childhood can be drastically reduced through full implementation of Integrated Management of Childhood Illness (IMCI) and EPI Plus, which includes the traditional antigens as well as Hepatitis B, regional vaccines (such as, yellow fever and Japanese encephalitis) and Vitamin A supplementation.

Achieving full implementation, and reaching children living in poverty, will require a two-pronged strategic approach: increasing the efficiency of the health system to provide services of adequate quality, and putting in place mechanisms to better engage families and communities in preventing disease and caring for their sick children. Implementation of these interventions must address three urgent issues:

- **Achieving adequate coverage, particularly for poor populations.** Children are sick and dying because they do not have access to IMCI case management, timely immunization and Vitamin A supplementation. Concerted efforts are needed to strengthen health systems and communities, and to develop and sustain service delivery mechanisms, to reach all children.

- **Developing new technologies and delivery strategies.** New or improved technologies are needed in the prevention and treatment of childhood communicable diseases. Access must be increased through strengthened and innovative delivery mechanisms.

- **Sharpening the focus on family practices.** Families play a critical role in protecting and promoting child health. This role must be strengthened: to prevent and to ensure appropriate recognition, home care and care-seeking for illness. Both
information and affordable drugs and supplies must be available at family and community levels, and all families must have access to basic health services of adequate quality.

Priority research needs to include the development and improvement of technologies and interventions. For example, new vaccines and drugs are required to combat communicable diseases in children. New strategies must be developed and evaluated to slow or reduce the impact of antimicrobial resistance. The effectiveness of specific micronutrients must be evaluated, and ways to promote improved care-seeking and alternative routes of vaccination must be developed and tested. Research is also urgently needed to improve the operational effectiveness of existing strategies, interventions and technologies. Health services and behavioural research are essential to increase the chances of reaching all children.

CAH is working to develop and advocate for stronger programmes to improve child health and development.

Promoting child and adolescent health and development through the Convention on the Rights of the Child

In 2000, the Department maintained its commitment to using the Convention on the Rights of the Child (CRC) as a framework for the development of strategies to improve child and adolescent health and development. The focus this year was on increasing awareness and understanding of the CRC amongst WHO staff and partners at regional and national levels, and on providing sound technical input to the work of the CRC’s monitoring body, the United Nations Committee on the Rights of the Child. There were four primary areas of accomplishment.

First, two regional field-tests of a training course on the CRC in relation to child and adolescent health and development were conducted in the European Region (EURO) in April 2000 and the South-East Asia Region (SEARO) in September 2000. Results of the training were reviewed, and revised materials will be finalized by early 2001. Successful outcomes included increased interest in and activities on child rights, the development of region-specific CRC advocacy materials and future subregional and national training workshops.

Second, CAH provided commentaries on twelve country reports to the United Nations Committee on the Rights of the Child. Based on the data provided, the Committee subsequently issued health-specific recommendations to the countries under review. CAH also coordinated WHO participation in the Committee’s Day of General Discussion on State Violence Against Children.

Third, initial discussions on the use of the CRC in district planning and programming for child and adolescent health were held with Healthlink Worldwide and Save the Children, UK.

Fourth, sessions on child rights were held at the SEARO Intercountry Meeting on Child and Adolescent Health, Bali, and at the EURO meeting of child and maternal health local points, Malta. The Department conducted a workshop at the annual inter-disciplinary course on child rights sponsored by the University of Ghent, Belgium, and made a presentation to the global conference on nursing and midwifery in Manchester, UK.

In addition, CAH continued to play an active role in the ongoing development of a future WHO Strategy on Health and Human Rights.

WHO strategy development and future directions for child and adolescent health and development

CAH is developing a WHO-wide strategy on child and adolescent health and development. The strategy will encompass the principal health and development issues for the 0–19 age group and the major interventions required. It will provide guidance for the next 5 to 10 years on the directions to take in a changing world and delineate new roles and functions of the health and other sectors to meet these challenges.

During 2000, an initial draft of the strategy was prepared and strategic areas identified in collaboration with regional offices. Critical points and priority interventions have been identified along the path to healthy adulthood. Infants must be born healthy. Young children
need to survive the vulnerable period of the first five years. Older children need to be physically, mentally and socially prepared to enter puberty, to adopt healthy and resist risky behaviours. Adolescents need skills, and a safe and supportive environment to achieve responsible adulthood.

To inform the strategy development process, the Department established an international forum to generate new thinking on future challenges. The first step in this initiative was to convene a meeting of FutureThink in November 2000. This brought together 15 child and adolescent health experts (from ten countries) for a wide-ranging discussion on future challenges, new or neglected areas and research needed on emerging health issues. The participants were leaders in international public health with experience in government, universities, WHO partners, health services and international organizations.

The meeting stimulated provocative dialogue that focused on the future, and explored the steps required to meet the challenges. A number of recurring themes emerged during the discussion:

- Life course approaches are the way of the future.
- Country ownership is critical for successful interventions.
- Reaching all children means working with families and the private sector.
- Health is both a human right and a smart investment.
- Build on success.

The meeting concluded with a strong recommendation that WHO/CAH take the lead in addressing holistically the health and development of children in their first two decades of life. It was recognized that WHO must strengthen its work with countries to set priorities, and allocate resources to achieve agreed goals. FutureThink members urged CAH to recognize the growing importance of the private sector and find ways to work together. Reducing inequities in health care delivery and the role of civil society in this process were seen as important activities. It was noted that increasing urbanization and migration may facilitate access to health care, but urbanization can also bring new risks from communicable diseases and continuing environmental degradation. Meeting participants stressed that health is an investment that affects the strength of the economy. At the same time, demonstrable successes must be the foundation for the future and should be safeguarded to allow WHO to further promote the health and development of young children.

Future directions for the Department will build on the critical points and priority interventions that have been identified as influencing healthy childhood and adolescence. CAH will place more emphasis on a life course approach, on improving the health outcomes of the poor, on HIV/AIDS, on neonatal health, and on infant and young child feeding.

Throughout its activities, the Department is committed to addressing poverty and inequity. More than 1.2 billion people, including 600 million children, live on less than $1 a day. Children living in poverty are at higher risk of mortality, morbidity, malnutrition and delayed psychological development. CAH tar-
gets interventions at those diseases that contribute most directly to morbidity and mortality among children living in poor environments.

There are three main areas of activity directly targeting poverty and equity issues in which CAH has been involved during 2000. First, the Department contributed to the global initiative to stimulate a massive effort against the diseases of poverty, in particular HIV/AIDS, tuberculosis, malaria, and childhood illnesses. This initiative, involving all clusters in WHO in addition to UN partner agencies, Member States, and non-governmental organizations (NGOs), seeks to mobilize political will and financial support at all levels. CAH staff participated in developing the technical basis for the initiative, and in advocacy and promotional activities.

Second, IMCI is one of the core interventions to improve health outcomes of the poor to be reviewed in the scaling-up cost analysis carried out by the WHO Commission on Macroeconomics and Health. The Department provided technical input to this ongoing analysis. An example of how IMCI can be used to address inequities is shown in the example from Malaysia.

Third, CAH has contributed to consultations on health and poverty reduction organized by other clusters within WHO and by partners.

Future work in the Department on HIV/AIDS and neonatal health will also directly affect the health of the poor through improved care-seeking, prevention strategies and increased access to quality services. This work will be done in conjunction with other departments to ensure maximum effectiveness. For example, high neonatal mortality and high levels of low birth weight are directly associated with poor maternal nutrition and low utilization of antenatal care, again reflecting the need for a life course approach and recognition of the intergenerational consequences of poverty and malnutrition.

Work on neonatal health will be expanded in 2001. For example, a multicentre project will start in 2001 to study clinical signs predicting severe illness requiring hospitalization of young infants aged 0–59 days. CAH will be collaborating with research groups in several countries, including Bangladesh, Brazil, India, Nepal and Pakistan, in the development and testing of interventions for the promotion of improved family practices for neonatal survival. Interventions will be examined for their impact on the health and survival of neonates, as well as for their cost and promise of sustainability.

HIV/AIDS has been identified as a priority for CAH over the next three years. A strategic response is being developed by CAH in association with the WHO HIV/AIDS Department, which includes scaling-up of existing activities and developing new areas of work. Highights of the work planned include operations research on HIV and infant feeding, increasing young peoples’ involvement in voluntary counselling and testing for HIV/AIDS, HIV prevention among young drug injectors, increasing outreach to vulnerable young people, addressing the issues surrounding adolescent boys and HIV/AIDS, and the development of policy and planning guidelines on adolescents and HIV/AIDS.

Across these priority areas, more will need to be done to target interventions at those most in need. In the case of HIV/AIDS, CAH will be focusing on vulnerable groups of adolescents and reducing mother-to-child transmission of HIV. For neonatal health it will be important to ensure that babies born at home (the majority of whom come from the poorest house-
holds) have appropriate home-care and access to life saving interventions. Through these efforts, CAH aims to reduce the annual 5 million neonatal deaths each year, 98% of which are in developing countries.

**Emphasis on HIV/AIDS in adolescents**

The Department seeks to ensure that by the time they reach age 19, adolescents are physically healthy, have achieved optimal levels of psychological and social development, have adopted healthy behaviours and are able to assume adult responsibilities. Within this broad aim, CAH has a critical role to play in WHO’s response to HIV/AIDS. In most regions, young people determine the nature and diffusion of HIV/AIDS epidemics. Over 50% of the 15 000 new HIV infections that occur daily are among young people aged 15–24 years, an age when HIV risk practices (such as unprotected sex and injecting drug use) are prevalent. Furthermore, children and young people are disproportionately vulnerable to, and affected by, HIV infection and AIDS. At the end of 2000 it was estimated that 1.4 million children under the age of 15 years were living with HIV/AIDS, with 600 000 new HIV infections and 500 000 deaths among children in 2000. By the end of 1999 it was estimated that 13.2 million children under the age of 15 years had been orphaned by AIDS, and 4.3 million had died from HIV/AIDS.

2000 saw the completion of the first phase of the Measurement Project work on HIV/AIDS/STI assessment and surveillance. With the support of the Rockefeller Foundation, this project will consolidate the evidence on factors that protect against risky sexual behaviour and HIV infection among young people and develop instruments for the measurement of these factors.

The Department is also contributing to efforts to strengthen health systems in their response to HIV/AIDS. The focus in 2000 was on adolescent friendly health services (AFHS), to improve delivery of HIV/AIDS services to young people and to strengthen regional networks for research and sharing of information, particularly in Africa.

Materials for the training of health care providers in HIV/AIDS and STI were developed. These modules will be finalized in 2001 and included in the existing *Orientation programme on adolescent health for health care providers* that is being implemented at country level in collaboration with WHO Regional Offices, UN and NGO partners.

The Department also made considerable progress in 2000 in the development of guidelines for the clinical management of HIV/AIDS. For children, work is under way on guidelines for the assessment and management of children with HIV living in high HIV prevalence countries. Support will be provided to countries in adapting generic guidelines for integration into routine paediatric care. In 2001, guidelines will be developed on the clinical and psychosocial management of adolescents living with HIV/AIDS.

**Addressing the challenges of newborn health and infant feeding**

Significant progress has been achieved during the past twenty years in reducing mortality in childhood. Progress in reducing neonatal mortality was not so marked. Over 4 million infants still die every year before completing their first month of life. Neonatal deaths account for 40–70% of deaths in infancy.

Promoting increased neonatal survival requires interventions that address the main causes of mortality in the first four weeks of life: infections, delivery-associated problems, low birth weight and congenital malformations. Although some of the necessary interventions will best be delivered during pregnancy and childbirth, interventions will also have to ensure the provision of improved care for the neonate at the health facility and the household levels.

In those developing countries where neonatal mortality is the highest, home-care is often inadequate and neonates are not taken to health facilities—or are taken only when it is already too late for effective treatment to be instituted. New interventions are needed to address these problems. Such interventions will have to reach all families in the community and promote the appropriate care of the neonate. They include early initiation of exclusive breastfeeding, thermal protection and hygiene, and improving the recognition of illness and the utilization of appropriate health services. Services required include the detec-
tion and management of birth asphyxia, prematurity and low birth weight, feeding problems, and infections.

During 2000, CAH increased attention to interventions to improve care for the neonate. Research is under way to inform the preparation of guidelines for the management of sick neonates brought to a first level health facility. Such neonates may have been delivered outside a health facility and the caretaker considered them to be unwell, or they were well at birth and became ill in the following days or weeks.

For the prevention of mother-to-child transmission of HIV/AIDS, policy guidelines and tools for training have been developed. Training to strengthen counselling of mothers on infant feeding in areas of high HIV prevalence is under way in six countries. Priority attention will now be given to scaling-up these activities, with a focus on developing human resources for advocacy, orientation, planning and training.

**CAH: Expanding in scope while maintaining focus**

Given the broad scope of child and adolescent health and development, and therefore of the Department’s work, it is essential to use the limited resources available in a rational manner and without losing sight of the ultimate objective of having a significant impact. The Department uses a model of programme development that links the needs for research, development, implementation and evaluation in a systematic and sequential manner.

CAH staff at HQ work closely with WHO Regional Offices to strengthen child and adolescent health and development activities at all levels. In 2000, CAH continued to refine and improve mechanisms for effective coordination of activities. These mechanisms include five key managerial elements:

- Joint preparation of work plans by regional and HQ staff during annual visits to Regional Offices. In most of the regions the visits were conducted as a joint exercise with the participation of staff responsible for child and adolescent related work, and in some regions, with staff responsible for nutrition and infant feeding.
- Coordination of work with the regions by CAH regional focal points based at HQ who have major responsibility for follow-up and advising on regional and country activities.
- Annual meetings—in May 2000, the CAH Regional Advisors’ meeting brought together global WHO staff working in both child and adolescent health. The meeting was structured to allow plenary discussions on topics relevant to the entire programme area, as well as parallel tracks on issues pertaining to children or adolescents. The meeting resulted in important recommendations for all staff and has proved to be an effective managerial tool.
- Semi-annual reports by Regional Offices on progress made, and adjustments of the work plans if necessary.
- Ongoing informal monitoring of key joint activities via electronic communication.

The remainder of this report is organized by the major areas of work of the Department during the year. Related activities are presented by topic area, reflecting the CAH commitment to maintaining links across research, development, implementation and evaluation.

Beginning in 2001, CAH will restructure its work to reflect a life course approach. Research and development teams will be responsible for work on neonatal health and infant and young child feeding, child health and development, and adolescent health and development. Research, and monitoring and evaluation will be coordinated across the Department and lessons learned from the implementation of interventions will be provided through technical support to regions and countries.
Meeting the challenge of antimicrobial resistance

Increasing resistance to antimicrobial drugs is a major public health problem. One strategy for limiting the development of resistance is to reduce unnecessary and inappropriate antimicrobial use. In collaboration with the US Agency for International Development (USAID) Applied Research on Child Health (ARCH) Project being implemented by Boston University and the John Hopkins University School of Public Health in Baltimore (USA), CAH has rapidly expanded its programme of clinical research over the past two years in an effort to identify safe and efficacious treatments for major childhood illnesses that require fewer antibiotics than required by existing standards.

- A multicentre trial of the efficacy of short course treatment with oral amoxycillin for non-severe pneumonia and its relationship with antimicrobial resistance began enrolment in 1999 in the outpatient departments of six hospitals in Pakistan. The study compares: i. the proportion of clinical cure with 3 days versus 5 days of oral amoxycillin therapy; and ii. the proportion of resistant Streptococcus pneumoniae and Haemophilus influenzae isolates two weeks after start of therapy in the two therapy groups. Data collection will be completed by April 2001 and results available by September 2001.

- A protocol to investigate the efficacy of short course treatment with oral cotrimoxazole for non-severe pneumonia and its relationship with antimicrobial resistance was finalized in 2000. Two sites have been identified, one in Bangladesh and one in Indonesia. The study objectives are to: i. determine the clinical efficacy of a 3-day course of oral cotrimoxazole in the treatment of non-severe pneumonia compared to the standard 5-day course of oral cotrimoxazole; and ii. monitor the emergence of resistant strains of Streptococcus pneumoniae and Haemophilus influenzae in the two therapy groups. Delays have been experienced in gaining local ethical clearance and data collection should begin mid-2001.

- Results of a pilot study supported by the International Clinical Epidemiology Network (INCLEN) and WHO to differentiate sore throats due to viral infections from those needing antibiotic treatment were analysed in a workshop held in Bangkok (Thailand) in October 2000. Following this analysis, a proposal for a larger study was finalized in the same workshop. This will be a multicentre study conducted in at least four countries (Brazil, Croatia, India, and Latvia). Patient recruitment in this study will begin in early 2001.

- Other studies investigating regimens requiring reduced amounts of antibiotics are under way for the management of pneumonia and meningitis (see Annex 1).

Antimicrobial resistance has a significant impact on current health care expenditure and health of the population. However, there is little information available about the cost and effectiveness of various strategies that may prevent the emergence of antimicrobial resistance and/or limit the transmission of resistant organisms, or resistance determinants. Given the disparate nature of evidence concerning strategies to combat antimicrobial resistance, CAH is collaborating with the Global Forum for Health Research (GFHR) and the University of East Anglia (UK) to:

i. review current knowledge concerning the cost and/or effectiveness of interventions aimed at reducing the emergence and transmission of antimicrobial resistance; and

ii. explore the feasibility of and issues involved in, the development of an economic model to assess the cost-effectiveness of interventions to address antimicrobial resistance.

Two reports have been produced: Interventions against antimicrobial resistance: A review of the literature and Interventions against antimicrobial resistance: Modelling cost-effectiveness. The next phase of this project will include the development of a model using available data from an experimental site, and a project to pilot test the model under real conditions.
CHAPTER 2

Promoting a safe and supportive environment

The home and community environments in which a child lives are crucial to their health, growth and development. As the child grows through infancy, childhood and adolescence, the relative importance of the family, health care, and physical and social environments evolves. In 2000, the Department promoted research, designed materials, and expanded regional and country capacity to work with communities to devise, test and implement health promotion, prevention and care interventions.

Nutrition, growth and development

In 2000, CAH focused on this critical area through the promotion of breastfeeding, the development and testing of interventions to improve infant and young child feeding, research on micronutrient intake through supplementation and the production of materials for the promotion of child and adolescent development. Research studies are described in detail in Annex 1.

Promoting and improving breastfeeding

The Department continued to make significant investments in the promotion and improvement of breastfeeding. Activities included the following:

- Completion of the draft of a compact and accessible paper on the composition of human milk, and how it differs from animal and artificial milks. The demand for this paper has increased as a result of recommendations that HIV positive mothers should, if feasible, give their infants replacement feeds and avoid breastfeeding. A revised version is expected by mid-2001.
Initiation of work on the development of *Guidelines for breastfeeding peer counselling* interventions. This tool will be used to assist those regions and countries where the promotion of breastfeeding is likely to be of major importance in community IMCI. This will complement community support components of the Baby Friendly Hospital Initiative (BFHI). The first draft of the guidelines is currently undergoing expert review.

Production of *Mastitis: Causes and management* as part of a series of technical documents intended to improve health care providers’ skills in breastfeeding promotion.

**Interventions to improve infant and young child feeding**

The Department produced a technical document on complementary feeding, worked on community-based interventions, training on infant feeding in emergencies, continued the evaluation of IMCI feeding counselling, and developed, in collaboration with the Department of Nutrition, Health and Development (NHD), a draft Global Strategy.

Research is under way to examine the process and impact of large-scale, community-based interventions to improve infant and young child feeding in India and Peru. The information derived from the study will be used in the development of guidelines to assist the design of similar community-based nutrition activities in other settings.

In collaboration with UNICEF and the WHO Departments of NHD and Reproductive Health and Research (RHR), the Department is coordinating the development of a *Global strategy on infant and young child feeding*. As part of this process, NHD, CAH and collaborating agencies organized a Technical Consultation on Infant and Young Child Feeding in March 2000. The objectives of the meeting were to assess the strengths and weaknesses of current feeding policies and practices, to review barriers to policy implementation, to review key interventions, and to contribute to the development of a comprehensive strategy to guide WHO Member States and the international community on policies and actions for infant and young child feeding in the years to come. Country consultations on the draft of the strategy have been held in China, the Philippines, the United Kingdom, and Zimbabwe, and are planned for three additional countries. These will be followed by regional consultations, after which the strategy will be further revised and presented to the WHO Executive Board in January 2002.

Two training modules on infant feeding for humanitarian aid workers were developed: a 1–2 hour module for generalist aid workers, and a 3–4 hour module for health and nutrition workers. A first set of revisions have been

### Improving breastfeeding and complementary feeding in rural Haryana, India 2000

A randomized, controlled trial is under way in eight rural communities, covering a population of approximately 40,000 people. The intervention, carried out in four communities, evolved through formative research and the active involvement of the local government, NGOs and community members. Locally appropriate feeding messages and channels for intervention delivery were identified. Anganwadi workers (local community health workers) were trained in interpersonal communication and counselling skills, and in the use of communication materials.

After its first six months of implementation, the trial found that Anganwadi workers are an effective channel for the delivery of feeding message, reaching over half of the families and providing counselling in 80% of encounters. On the other hand, although private practitioners are widely used by families, they were not effective in delivering counselling (Table 1).

**Table 1. Evaluation of counselling coverage in previous three months among mothers with children under 2 years, by delivery channel**

<table>
<thead>
<tr>
<th>Delivery channel</th>
<th>Coverage of mothers with children of target age</th>
<th>Encounters in which counselling was delivered</th>
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<tbody>
<tr>
<td>Anganwadi home visit</td>
<td>54</td>
<td>80</td>
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<tr>
<td>Community weighing session</td>
<td>44</td>
<td>80</td>
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<td>Mother support groups</td>
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To complement the coverage obtained from the channels above, community-wide activities have been organized. “Baby shows”, “School Rallies”, “Street Plays” and “Nutrition Village Fairs” were held, promoting awareness and motivating mothers to adopt appropriate infant feeding practices.

Early results show an increase in exclusive breastfeeding and a decrease in diarrhoea incidence in the intervention villages.
made in collaboration with the Emergency Nutrition Network, and a second draft of the materials was field-tested by a group concerned with emergency preparedness convened by IBFAN Africa in Swaziland in September 2000. The next draft should be ready for presentation to the Infant Feeding in Emergencies Working Group at the ACC/SCN meeting in April 2001, with the aim of finalizing the documents by the end of 2001.

The manual Complementary feeding: Family foods for breastfed children was developed in collaboration with NHD to provide practical information to first-level health care providers on how to identify: a) improved complementary foods among those available to families; and b) appropriate infant feeding practices to recommend to caretakers. Using the manual as a base, a course for health care providers is being designed to provide them with the knowledge and skills required for counselling caretakers on complementary feeding.

Data collection was completed in the second of a two-site evaluation of the impact of the feeding counselling promoted through IMCI. In the first site, Brazil, where the duration of breastfeeding is short and complementary foods are introduced early, counselling was associated with the prevention of growth faltering among children older than 6 months. Data collected from Pakistan, where the duration of breastfeeding is long and the introduction of complementary foods is later than recommended, is now being analysed.

**Infant feeding in relation to mother-to-child transmission of HIV/AIDS**

Ten to twenty percent of children with HIV infected mothers become infected through breastfeeding. This has resulted in a slowing down of activities to protect, promote and support breastfeeding in countries with high HIV prevalence. A reduction in breastfeeding can lead to increased risk of other infections among infants of both infected and uninfected mothers. Many health care providers are ill-informed about all aspects of infant feeding, and lack the skills to counsel mothers in areas of high HIV prevalence.

The importance of this issue was reflected in CAH’s activities in 2000, which included:

- In collaboration with UNICEF and UNAIDS, CAH has developed materials for a three-day HIV and infant feeding counselling: A training course (HIVC), to be used in sequence with Breastfeeding counselling: A training course (BFC).

- The Department collaborated with the Africa Centre for Population Studies and Reproductive Health at Mtubatuba, KwaZulu Natal, and the University of Natal, South Africa, to examine the risk of postnatal transmission of HIV in exclusively breastfed infants. CAH’s main contribution was training counsellors in the research area in both BFC and HIVC. One aim of this activity was to build capacity by developing a team of trainers; this was achieved and both courses have already been repeated by local trainers.

- The IMCI team in the African Regional Office (AFRO) organized an intercountry meeting for anglophone countries in Harare to introduce an advanced draft of the HIVC materials. Participants from seven countries (Botswana, Kenya, Malawi, United Republic of Tanzania, Uganda, Zambia and Zimbabwe) were trained and plans prepared for implementing HIV and infant feeding activities. The final version of the course in English was printed in the last quarter of 2000. A French translation is under way, coordinated by UNICEF. The course has been introduced in conjunction with BFC courses in Botswana, Nigeria, South Africa (Durban), United Republic of Tanzania, Zambia and Zimbabwe. A course combining HIVC and BFC has been developed in Zimbabwe, and is being tried in Uganda, where there is already a team of fully trained BFC trainers.

- BFC courses have been conducted in collaboration with partners: with LINKAGES in Bolivia, and with BASICS in Nigeria, where HIVC was also introduced. Informal meetings have been held with both organizations to strengthen collaboration, particularly regarding community outreach.

- Three meetings were held with the collaboration of WHO (CAH and RHR).
UNICEF, UNAIDS and UNFPA, concerning the prevention of mother-to-child transmission of HIV. The objective is to develop a consistent approach to infant feeding in the context of HIV.

**Improving micronutrient intake through supplementation**

Given the limited availability of zinc in the diet of most infants and children in developing countries, and the limited access of families to zinc rich foods, supplementation appears an effective strategy to improve intake of this important micronutrient. Research supported by the Department in 2000 focused on exploring the health effects of improving zinc intakes through daily supplementation and key factors that will affect the impact of such interventions, such as caretakers’ adherence to supplementation regimes.

- The impact of daily zinc supplementation to prevent malaria in children was studied in Burkina Faso. Cross-sectional surveys of zinc and placebo groups showed no differences in falciparum malaria, but zinc supplementation was significantly associated with reduced prevalence of diarrhoea.

- The effects of zinc supplementation on risks of pneumonia and diarrhoea are being studied in a large randomized trial in India, partly supported by the European Union. Specific attention is being paid to measuring caretakers’ adherence to recommendations to give daily zinc supplements to young children and the factors supporting or constraining the adherence to treatment. Early results indicate a high level of adherence supported by perceptions of significant health benefits associated with supplement use.

- Two large double blind randomized controlled trials to evaluate the impact of daily zinc supplementation on childhood mortality were initiated in New Delhi (India) and Pemba (Zanzibar) with support from the UN Foundation and USAID.

In addition, the Department commissioned a review of effective interventions to improve iron status in 0–19 year olds. The project was designed in close coordination with NHD, and with inputs from various units in the WHO Communicable Diseases Cluster. The review, to be finalized by the end of 2001, will identify the most cost-effective interventions to respond to various epidemiological scenarios and identify areas requiring further research or development. The outcome will be a set of programmatic recommendations on the actions countries can take to reduce anaemia with a particular focus on strategies to improve iron intake.

**Psychosocial development in children**

The IMCI module *Care for development* was developed and field-tested. This module is designed for use in training first-level health care workers. It integrates counselling on activities to support child growth and psychosocial development within the existing IMCI guidelines for feeding counselling. Following a first field-test, the materials were revised to incorporate job aids and a video that models a demonstration of the counselling encounter. Local adaptation of the materials is now being examined as part of the IMCI adaptation process in Syria. A field-test of the materials, after their incorporation into IMCI training, will be carried out in South Africa in the first quarter of 2001.

**Adolescent development**

Work in this area in 2000 focused on the development of an evidence base of protective and risk factors that mediate the health risk

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**Two double blind randomized trials to evaluate the impact of daily zinc supplementation on childhood mortality**

Two double blind randomized trials to evaluate the impact of daily zinc supplementation on childhood mortality have been initiated in New Delhi (India) and Pemba (Zanzibar). A total of 65,000 children, between 2 and 24 months, will be recruited to the study conducted in India. They will receive either 10 mg of zinc plus 12.5 mg of iron or 12.5 mg of iron alone. In Zanzibar a multifactorial design will be used to assess the effects of iron and the possible interaction of zinc and iron in 35,000 children aged 2 to 35 months old receiving (i) 10 mg of zinc, (ii) 12.5 mg of iron, (iii) 10 mg of zinc plus 12.5 mg of iron, and (iv) placebo. Both sites are at the initial phase of the study, conducting mapping and census exercises. Rapidly dissolving tablets of zinc, iron, zinc plus iron, and placebo have been developed by two pharmaceutical companies. A field-test of these tablets is being performed in three countries (India, Nepal and Zanzibar) prior to the final choice of the tablets. Results of the field-tests should be available in January 2001 and recruitment should be initiated in March 2001.
behaviours of adolescents, and on the development and production of materials designed to heighten awareness of the health issues facing adolescent boys.

A WHO technical consultation involving UNICEF and academic institutions was held in Geneva in March 2000 to discuss the strengths of the associations of protective and risk factors with health risk behaviours in adolescents. The consultation resulted in the design of a matrix for tabulating the data by risk and protective factors organized by setting (home, school, community), and their influence on adolescent risk behaviours (unsafe sex, smoking, alcohol use, suicide, violence), to be used as the basis for compiling a multi-country evidence base. Country-specific tables will be fed into the evidence table and used to identify key indicators of protective and risk factors for adolescent development. The methodology was formulated and reviewed by a technical network so that data from 43 countries can be organized according to this matrix.

The Department initiated work on a public health planners’ guide that describes counseling interventions for adolescents. The draft document includes a step-by-step guide to identifying the needs for psychological services for 10 to 19 year olds, and how to generate support for these services.

During 2000, four documents on adolescent boys were produced in English and Spanish and widely distributed, including as part of the mailing for the UNAIDS World AIDS Campaign Men can make a difference.

- **What about boys?** is a literature review on the health and development needs of adolescent boys.
- **Boys in the picture** is an advocacy document on the need to consider adolescent boys in programming.
- **Working with adolescent boys. Programme experiences** presents the results of a survey among organizations in four major regions of the world that captures experiences and lessons learned with regard to working with boys.
- **Working with adolescent boys. Workshop report** summarizes information from a meeting held among representatives of UN agencies and NGOs with programmatic interests in adolescent boys.

Two WHO Regional Offices also carried out activities on adolescent boys. EURO conducted a survey of programme experiences with adolescent boys which has now been published, and AMRO undertook a nine-country qualitative study on sexual and reproductive health of adolescent males, with an emphasis on the role of masculinity. A survey tool is being developed based on the qualitative study findings and will be tested in several countries in Latin America in 2001.

In collaboration with AMRO, the Department provided support to a consortium of NGOs in Latin America to develop a set of manuals for health educators working directly with adolescent boys on health and development issues. The manuals cover sexual and reproductive health, mental health, substance use, fatherhood and violence.

The Department co-organized a meeting on the health and development needs of adolescent boys and young men in collaboration with RHR and UNAIDS.

**Individual and family responses to illness and health concerns**

The Department’s work in this area focused on interventions to improve care-seeking behaviour for neonates, family responses to IMCI treatment recommendations, and help-seeking by adolescents.

**Care-seeking for the neonate**

Deaths in the first 28 days of life account for almost 60% of all infant deaths in developing countries. As the majority of infants in these countries are born at home, improvements in facility-based health services will address only part of the problem and must be complemented by interventions at the home and community levels.

A paper published in 1999 indicated the importance of community-based interventions for neonatal survival. The Department is establishing common methodologies for further trials in this area, and in 2001 will take on a catalytic role in bringing researchers together.

CAH commissioned a review to examine the information available on the impact of community-based interventions to improve
neonatal survival that can be implemented in primary care settings in developing countries. Results are expected in June 2001.

Building on the analysis of data collected during 1998 as part of a randomized, placebo-controlled trial on the effects of vitamin A supplementation linked to immunizations in early infancy (The Lancet 1998; 352:1257–63), a study in India explored the events associated with neonatal and infant deaths in a peri-urban cohort of 4000 births.

Events associated with neonatal and infant deaths in a peri-urban cohort of 4000 births in India, 1998

Secondary analysis of data collected in 1998 through a randomized, placebo-controlled trial on the effectiveness of vitamin A supplementation found that neonatal deaths accounted for 50% of all infant deaths in the study. Most of the neonatal deaths took place in the first week after birth. Two-thirds of the babies who died had been born at home.

For nearly 60% of the neonates who died in the first week, the deaths occurred within 24 hours of the mother’s recognition that the child was ill. Signs of illness were subtle. The signs reported by mothers were: refusal to feed, cold to touch, weakness and excessive crying, in addition to fever, convulsions, diarrhoea, vomiting, and fast or difficult breathing. Health care was not sought outside the home for 42% of the neonates who died. When care was sought, private providers were preferred (71%). Half of the health care providers from whom care was sought did not have a formal medical education.

The need for hospitalization was often not recognized by health providers. For 36 out of 41 infants who died in the first week, the verbal autopsy revealed signs of a clear need for hospitalization (sepsis, pneumonia or meningitis, congenital malformation, birth asphyxia, or prematurity). Among these infants, only four were advised hospitalization. Among those who died between eight and 28 days, only two out of nine neonates with features suggestive of sepsis/pneumonia/meningitis were advised hospitalization. Even when advice for hospitalization was provided, caretakers often did not follow it: only four out of 10 neonates and 18 of 33 older infants were taken to hospital following the health care providers’ advice. Common reasons for non-adherence were: perception that the child was not severely ill; perceived improvement in the infant’s condition; inability to go to the hospital for financial reasons or due to care taking responsibilities for other children; reluctance to go due to previous unpleasant experiences, or family advice not to go.

The findings suggest that interventions to improve care-seeking and adherence to treatment recommendations in such communities, although important to reduce mortality, will also require significant investments in improving the quality of the available health services in order to lead to important reductions in mortality.

An evaluation of the impact of a community-based participatory intervention to improve essential newborn care was supported in rural Nepal, in collaboration with the UK Department for International Development (DFID). The study looks at whether significant measurable improvements in newborn care and reductions in neonatal mortality can be made in poor rural communities of Nepal through a community-based participatory intervention involving facilitators and user groups. It is expected that the study will lead to the development of a generalizable, low-cost and potentially sustainable community-based method to implement and evaluate interventions to reduce neonatal mortality.

Family responses to IMCI treatment recommendations

The success of IMCI in reducing child mortality is highly dependent on how well a family carries out the health care provider’s recommendations for treatment. A study in Sudan has documented family responses to the recommendations for follow-up consultations and referral to hospitals delivered by IMCI-trained health care providers at first level health facilities.

Information on the most important determinants of whether families carry out the recommendations identified in this study will be complemented by data from ongoing research in Brazil and a study to be started in the Philippines. These data will contribute to the development of interventions to improve communication at the health facility, increase adherence to treatment (including follow-up and referral recommendations) and address social and other barriers to care.

Improving help-seeking

A project is under way to define strategies for influencing adolescent help-seeking. The project draws on materials and work being carried out by WHO Regional Offices, UN and other partners to understand the various dimensions of help-seeking by adolescents. A review of interventions is also under way. A draft schema and document have been produced and are now being expanded through the addition of region-specific factors.
Family responses to recommendations for follow-up consultations and referral, Sudan 2000

The adherence of caretakers to recommendations for referral or follow-up was studied among a total of 5745 children aged 2–59 months attending primary level health facilities in Masalamia District, Sudan. Of the 1190 children recommended for follow-up, 681 (57%) were identified as having returned to the appropriate health facility. All but seven of these attended within four days of the due date. Two hundred and eighty-one (55%) of the households of children who did not return were visited to ascertain reasons for non-adherence. Seventy-eight of these households reported either that the health care provider had been to the house or that they had returned to the facility. The major reason cited for non-return at the recommended follow-up date was that the child was better.

Among the 136 children referred to a higher level facility, 90 (66%) were seen at one of the hospitals participating in the study. Eighty-six of these children presented within 4 days of the referral recommendation. The households of the remaining 46 children were visited to determine the reasons for non-adherence and the health status of the child. Eight of these caretakers reported that they had, in fact, taken the child to a hospital. Four indicated hospitals that were not participating in the study, while the other four stated that they had visited participating hospitals.

The response of the communities to the implementation of IMCI seems to have been favourable. Caretakers have commented on the introduction of follow-up visits and their perception that this was a sign of improved services. Five communities have, without outside prompting, renovated their health facilities at their own expense.

CHAPTER 2
SAFE ENVIRONMENTS

Home and community environments

In 2000, the Department focused on three main areas of work to improve home and community environments: the reduction of indoor air pollution; the development, planning and implementation of IMCI in the community; and promoting safe and supportive environments for adolescents.

Reducing the health impact of indoor air pollution (IAP)

Recently published estimates show that IAP in developing countries contributes nearly two million excess deaths and some four percent of the global burden of disease—the majority arising from acute lower respiratory infections (ALRI) among young children.

CAH collaborated with USAID (Environmental Health project) and the World Bank to organize a consultation in Washington in May 2000 on research and policy priorities in reducing the health impact of IAP. Key priorities identified for action included strengthening research on health effects and identifying effective interventions. It was also agreed that there is enough existing evidence to justify and guide immediate robust action.

The feasibility assessment for a study on the effects of electrification on household fuel use, pollution exposure and ALRI in South Africa has been completed. Comparison of two communities near Mafeking, one having had grid electricity for several years, the other still relying mainly on wood and kerosene, showed that the electrified site had significantly lower 24 hour mean kitchen levels of respirable particulates (RSP) and carbon monoxide (CO), as well as personal CO. Overall levels of RSP in the non-electrified village exceeded air quality guidelines, but were not as high as typically seen in poorer, biofuel dependent areas using open fires.

A review of the health risks and impact of IAP in developing countries, *Indoor air pollution in developing countries: A major environmental and public health challenge*, was published as part of a special edition of the Bulletin of the World Health Organization on health and the environment. Extending the recent work on the evidence linking IAP with ALRI, this review assessed the current state of knowledge on the risk of a range of other childhood and adult conditions.

Work has progressed in conjunction with the UK-based NGO Intermediate Technology on the development and evaluation of interventions to reduce IAP in poor rural commu-
nities in Kenya. The baseline assessment of energy use and pollution was completed and various interventions installed during 2000. These included the Upesi ceramic wood stove (already commercially available), plus a range of other measures developed in participation with families including hoods with chimneys, larger and better-positioned windows and more space between the eaves. Cultural concerns about privacy for women and security against animals were taken into account in planning the interventions. Post-intervention monitoring of pollution began in October 2000 and is due for completion in mid-2001.

Supporting planning and implementation of IMCI in the community

The Interagency Working Group (IAWG) on Household and Community IMCI provides a global forum for defining needs and developing tools that are subsequently owned by participating organizations and agencies, sharing tools across agencies, and updating information on country experiences. In collaboration with a subgroup of the IAWG, an assessment tool has been developed to inform planning decisions for community IMCI. The assessment is designed to take place at national, district, and community levels, and leads directly to planning decisions. The tool is under revision to make it more user-friendly and comprehensive, based on field experiences in Ecuador, Nicaragua and Peru.

Experiences in planning and implementing the community component are varied. Documenting these experiences is crucial to inform other countries and global partners engaged in community IMCI. A framework for documentation has been developed, revised, and is currently being applied in three countries (Egypt, United Republic of Tanzania and Uganda). Results of these field-tests will demonstrate the usefulness of the framework, to the country of application and beyond. AFRO has taken the lead on developing planning materials and holding intercountry meetings to share experiences.

The introduction, planning and implementation of interventions at community level continues to be the most complex area of IMCI. Activities, whether planned first at the national level or at the community level, are receiving increasing attention and support from WHO and its partners. Countries currently implementing the community component of IMCI are shown in the table. In SEARO, a review is under way to identify community-based interventions with proven results for improving family and community practices. The findings from the review will be used to refine the regional strategy.

Community Health Workers (CHWs) play an important role in promoting home-care and timely care-seeking, and in building links with the health system. AMRO and SEARO are currently promoting the implementation of training courses for CHWs. In AMRO and the Western Pacific region (WPRO), training materials were developed and used to improve the skills of thousands of primary and community health workers in recognizing illness and advising caretakers on appropriate home-care. An example of an innovative approach to community IMCI is illustrated by the example from Mongolia.

Finally, capacity building for the community component of IMCI is a critical task. To address this, a Package for briefing and use by national and international consultants is under development in collaboration with the IAWG and will be available by mid-2001.

Promoting safe and supportive communities for adolescents

A safe and supportive environment is part of what motivates young people to make healthy choices. In 2000, the Department focused on defining measurable parameters of safe and supportive communities for adolescents, and on projects for especially vulnerable youth and the prevention of substance use.

Factors identified to define safe and supportive communities for adolescents include the

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<td>Acute lower respiratory infection (ALRI)</td>
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Table 3. Countries with ongoing IMCI community component, by WHO Region

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degree of connectedness of the adolescent to the family and community, opportunities available for adolescents and degree of religious affiliation.

In collaboration with UNICEF, WHO has developed a draft Rapid assessment and response guide on especially vulnerable young people (RAR). A joint WHO/UNICEF/UNDP RAR training workshop was conducted in Latvia in February 2000 for representatives from Estonia, Latvia, Lithuania and Poland. With UNICEF support, RAR was implemented in these four countries plus Bulgaria. Each site assessed substance use and sexual behaviour among especially vulnerable young people, including street youth and ethnic minority populations. A RAR Evaluation Workshop was held in Latvia, December 2000, to evaluate the methodology and guide implementation in the five countries.

The Department joined hands with the WHO Tobacco Free Initiative (TFI) to launch a project on the prevention of tobacco use among young people, particularly those not attending school. The project includes the development and testing of a range of tools, including a RAR instrument and a youth-led community intervention guide. A RAR instrument development workshop was held at the Centre for Research on Drugs and Health Behaviour in London, May 2000. Work has commenced on developing both a core generic RAR guide and a youth tobacco RAR adaptation guide.

Injecting drug use plays a critical role in the dynamics of HIV/AIDS epidemics in many countries. Central and Eastern Europe and the Newly Independent States, for example, have recently experienced explosive HIV epidemics among drug injectors. Evidence indicates that increasingly younger people are becoming drug injectors in many developing and transitional countries; in some countries the majority are below the age of 25. In 2000, the Department worked to establish the evidence-base for effective HIV prevention policies and programmes targeting young drug injectors. The Department participated in the organizing committee of the WHO co-sponsored Global Research Network (GRN) on HIV Prevention in Drug Using Populations. In association with GRN and the US National Institute on Drug Abuse (NIDA), a Prevention indicators database is being developed to map the global situation of HIV/AIDS among drug users and HIV prevention strategies implemented in countries. Data have already been collected from 40 countries. In addition, CAH and NIDA cosponsored a research meeting on HIV/AIDS and substance use among street children in September 2000, with the aim of strengthening international research collaboration and research capacity in developing countries.
IMCI activities for improving Health and community practices in Mongolia

IMCI is a high priority for by the Mongolian government and was first introduced in June 1999. The early implementation phase was concluded at the end of 2000.

The community practices component was given substantial emphasis during the early implementation phase, as care practices in Mongolian households are recognized as having a critical influence on child survival, growth, development, and protection. Despite continuing high levels of literacy, parents often lack skills in child care. Emphasis was placed on parents and other home-based caregivers providing essential care for their children.

Activities undertaken to improve child care during the adaptation of IMCI included:

- Culturally and socially appropriate feeding recommendations were developed and tested to promote sound feeding practices, including breastfeeding and the recommendation of energy-and nutrient-rich complementary foods.
- A study was conducted to identify local terms and enhance effective communication of health care providers with care takers.
- A mother's card, using the identified local terms and the newly developed and tested feeding recommendations, was designed to facilitate the communication of health care providers and caretakers and to provide basic messages about home care and child feeding.

Achievements in the community practices component during 2000 included:

- 400 health care providers were trained in IMCI case management courses with a strong emphasis on counselling mothers on treatment, home care and feeding
- The Participatory Hygiene and Sanitation Transformation (PHAST) Initiative developed by WHO was incorporated into IMCI. The objectives of the PHAST initiative are to: improve hygiene and sanitation practices; prevent the spread of infectious diseases; and support the initiative of local people to improve hygiene and sanitation of water supplies and latrines. The Mongolian version of PHAST training materials was developed. Training of trainers was conducted in November 2000, who have since trained almost 100 participants, including doctors trained in IMCI, primary and secondary schoolteachers, caretakers in kindergartens, district inspectors for hygiene and sanitation from 'aimags' (regions), and heads of 'bags' (village) administration.
- 1180 mothers attended one or two day courses on childcare, including feeding, during which they received IMCI Mother's cards.
- A 45-day summer camp for 300 children with malnutrition and/or rickets was organized. During the camp mothers with children spent each day at one of five selected places, where the children played and received nutritious food. Mothers participated in lectures on childcare.
- Three TV spots on oral rehydration salts have been developed and broadcast.
Progress in the implementation of the IMCI strategy in 2000

What is IMCI?
IMCI, or Integrated Management of Childhood Illness, is a broad, locally adapted strategy developed by WHO and UNICEF to improve child health and reduce child mortality. IMCI includes both preventive and curative elements, and is implemented at family and community levels as well as by the health system.

How is IMCI implemented?
IMCI implementation takes place in three stages. 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, and review their experience before planning for expansion. In the expansion phase, countries increase the range of IMCI interventions, and increase their coverage. An important challenge during this phase is maintaining quality while expanding coverage.

How many countries are implementing IMCI?
The Department is monitoring 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.

FIGURE 3
Global monitoring of IMCI implementation
Countries achieving selected milestones by the end of each year since 1997 are presented in the Figure 3. The map shows the number of countries currently implementing IMCI, by phase, at the end of 2000.

**What are some highlights of IMCI implementation activities in 2000?**
- Regional and country initiatives broadened IMCI to address child growth and psychosocial development (AMRO and EURO), child abuse and neglect (EURO), neonatal care (AMRO and EURO), and HIV/AIDS (AFRO).
- New emphasis was given to the community component of IMCI, and experience gained in all Regions.

**What are the plans for improving IMCI in 2001?**
In 2001, the Department will work across HQ, regional and country levels to continue to improve IMCI. Drawing on lessons learned from implementation experience as well as early results from the Multi-Country Evaluation of IMCI Effectiveness, Cost and Impact (MCE), two specific activities are envisaged:
- A review of the appropriateness and effectiveness of at least some elements of the IMCI case management guidelines. This has begun in the form of a review of the guidelines with respect to the management of severe malaria.
- An analytic review of the strategy as a whole: the performance of various IMCI tools and interventions; the scope of the strategy in addressing the major public health challenges in child health; and how the challenges of scaling-up to full coverage can best be met. This initiative started with a consultative meeting convened by AFRO.

**How do we know IMCI works?**
The following data provide a rich example of how IMCI is working well in one country context.

**Brazil**
Brazil began to introduce IMCI as a strategy to improve child health indicators in 1997. Priority was given to states in the northeastern part of the country. During 2000, the MOH started to measure progress in IMCI implementation in three states: Ceará, Pará, and...
Pernambuco. Three surveys, one in each state, were conducted simultaneously in September 2000 in collaboration with AMRO. Overall 663 sick children were observed. Slightly more girls attended facilities in Ceará and Pará, and slightly more boys in Pernambuco.

Survey findings show encouraging results after two to three years of IMCI implementation. In Ceará, for example, in 67% of the 30 health facilities visited, at least 60% of those staff who managed children were trained in IMCI. Children were systematically assessed for an average of 6.8 clinical signs regardless of why they were brought to the facility, demonstrating that many health care providers performed integrated assessment (Figure 5). Fourteen cases of pneumonia were encountered and 11 of them were correctly identified and treated (in 1996, only 6 out of 18 cases of pneumonia were correctly identified and treated in a survey covering the same three states and three additional states1).

Misuse of antibiotics was limited to 14% of the children observed. Figure 6 shows mothers’ understanding of home care management for their sick child after their encounter with the health care provider.

The MOH is now organizing feedback workshops at all levels of the health system in the three states involved in order to identify feasible ways to strengthen implementation of the IMCI strategy. The evaluation also helped reinforce national capacity in survey methodology. More evaluations are scheduled in other states during 2001, using national expertise.

CHAPTER 3
Improving health service delivery

HIGHLIGHTS OF 2000

The administration of reduced osmolarity ORS to children led to an improved clinical response (reduced stool output, less vomiting and fewer infusions needed) than in children receiving standard oral rehydration salts (ORS).

There was rapid expansion of the research programme to address antimicrobial resistance (see Special Report).

Both amoxycillin and cotrimoxazole provide equally effective therapy for non-severe pneumonia—irrespective of the choice of antibiotic, good follow-up of children is essential to prevent worsening of illness.

Further progress was made on the development of IMCI guidelines for the clinical management of children with HIV/AIDS.

Adolescent-specific technical content was incorporated in a range of WHO standards and guidelines, including those for the management of sexually transmitted infections.

About 25 000 health care providers in over 80 countries have now been trained in IMCI case management using nationally adapted clinical guidelines, and over 8000 health workers from 70 countries have been trained in breastfeeding counselling.

A comprehensive set of materials for IMCI pre-service training is nearing completion, and has been informed by the experience of medical and nursing schools in developing countries.

Guidelines for child care in small hospitals without specialized staff were completed and are being disseminated.

Preparatory work for the global consultation on Adolescent Friendly Health Services included a literature review, two regional consultations, analytical case studies of outstanding initiatives in developed countries, and an overview of lessons learned in other areas.

All WHO Regional Offices had developed specific plans of action on adolescent health and development. Five Regional Offices have already developed, or are developing, regional strategies to support countries in planning national adolescent health and development activities.

A tool to estimate the costs involved in the implementation of IMCI in a country or district was completed and field-tested, and capacity-building has begun.

Health services can only partially influence the health and development of children and adolescents, but play an important role in protecting health, treating diseases and limiting disability. Access to appropriate health services is vital for the child’s inherent right to life and development. In 2000, the Department promoted research, designed materials, and expanded regional and country capacity to plan, implement and evaluate their health services and delivery strategies for children and adolescents.

Case management guidelines and standards for clinical practice

The Department’s work in this area focused on supporting appropriate adaptation of the IMCI case management guidelines at country level, improving the guidelines for HIV/AIDS, diarrhoea, pneumonia, meningitis and neonatal health, and defining clinical management practices to meet the special needs of adolescents.

Adaptation of the IMCI case management guidelines to epidemiologic and country contexts

Final revisions were made to the IMCI adaptation guide which will be finalized and printed in early 2001. Any future modifications or additions to the guide will be prepared and distributed as separate “technical updates.”

A database containing information on country adaptations of the IMCI guidelines was initiated to review the differences between the generic guidelines and the options of the IMCI adaptation guide. The adaptations and modifications occurring in countries implementing IMCI will be documented as a response to the changes in epidemiology or experiences in implementation.
Case management guidelines for HIV/AIDS

Progress has been made in developing IMCI guidelines for the clinical management of HIV/AIDS in countries with high HIV prevalence. In collaboration with AFRO, a regional consultation was held in South Africa, with the participation of public health professionals from Botswana, Ethiopia, Kenya, Mozambique, Namibia, South Africa, Zambia and Zimbabwe, international experts and WHO staff. The consultation addressed four issues: i. the burden of disease due to HIV/AIDS and the implications for implementation of IMCI; ii. the experience with HIV/AIDS algorithm in countries; iii. interim country guidelines for HIV/AIDS adaptations of IMCI; and iv. recommendations on research and development on HIV in relation to IMCI. The final report of this meeting is available and guidelines are being developed. Consultants and health professionals from countries interested in HIV/AIDS adaptations of IMCI will be trained in March 2001.

CAH in collaboration with AFRO is supporting a research project to evaluate the HIV component of the IMCI algorithm in KwaZulu-Natal, South Africa. The project started in November 2000, data collection should be completed by mid-2001 and results available by September 2001.

Case management guidelines for diarrhoea and dysentery

CAH continued to support studies to improve the case management of diarrhoea and dehydration for targeted groups of sick children. Highlights of the research programme included:

- Results from a randomized clinical trial conducted in Bangladesh, demonstrating that a specially designed oral rehydration salts solution for severely malnourished children (ReSoMal) and standard WHO oral rehydration salts (ORS) solution had similar efficacy.

- Findings of a meta-analysis of randomized controlled trials comparing the effects of reduced osmolarity ORS solutions with standard WHO ORS solution in children with acute diarrhoea, which indicated that reduced osmolarity ORS solution is associated with 33% fewer unscheduled infusions compared with standard WHO ORS solution, as well as lower stool output and less vomiting in children.

- Completion of data collection in the multicentre clinical trial to evaluate the efficacy of a short-course treatment of dysentery due to _S. dysenteriae_ type 1 with ciprofloxacin.

- Results from a series of secondary analyses of data collected in a 1995 multicentre study on persistent diarrhoea have important implications for the management and measurement of persistent diarrhoea.

Antimicrobial resistance and the management of pneumonia

Efforts to address the growing global crisis due to antimicrobial resistance were supported by USAID and in many instances carried out in collaboration with the USAID Applied Research on Child Health (ARCH) Project. This work is described in the Special Report.

The Department continued to conduct research and development activities to improve the clinical management of pneumonia. Highlights of the research activities include:

- Continued progress was made in the multicentre clinical trial to compare the efficacy of injectable penicillin with oral amoxycillin in the treatment of severe pneumonia in children.

- Results of preliminary analyses in a descriptive study to investigate the case management of non-severe pneumonia in South Africa and Viet Nam, in children with and without wheezing, indicate that children with non-severe pneumonia had chest X-ray evidence of pneumonia (75% in South Africa and 48% in Viet Nam). The presence of chest X-ray findings on such a high proportion of the children enrolled in the study implies that a bacterial process was the underlying cause (or a complication) of many of the cases of WHO-defined pneumonia in the children enrolled into the study at these two sites.
Results from Pakistan in a multicentre double blind clinical trial evaluating the clinical efficacy of oral cotrimoxazole versus oral amoxycillin twice a day for treatment of childhood pneumonia show that clinical treatment failure in the amoxycillin group was 16% as compared with 19% in the cotrimoxazole group. This indicates that amoxycillin and cotrimoxazole provided equally effective therapy for non-severe pneumonia. Irrespective of antibiotic choice, good follow-up of children is essential to prevent worsening of illness.

There was continued progress in research designed to increase the specificity of treatment guidelines for children with wheezing diagnosed as WHO-defined, non-severe pneumonia. A model research proposal was developed, reviewed and finalized during a workshop held in Geneva in December 2000. A multicentre study involving 6 countries (Colombia, Egypt, Ghana, India, Pakistan and Thailand) will soon be initiated.

Ongoing research to develop a monitoring tool to identify clinical treatment failures in children with non-severe pneumonia. A team from Aga Khan Health Services, Pakistan has been implementing a protocol in 14 first level health facilities in Chitral, Pakistan.

A multicentre clinical trial to compare the efficacy of chloramphenicol with that of ampicillin plus gentamicin in the management of very severe pneumonia in children aged 2 to 59 months was initiated in eight centres in six countries: Bangladesh, India, Mexico, Pakistan, Yemen and Zambia.

Case management of meningitis
Three studies are under way to improve guidelines in this area. The first study saw progress during 2000 in the investigation of the clinical efficacy and safety of a short course treatment with ceftriaxone (5 days versus 10 days) in the management of children with bacterial meningitis. Second, the Department is supporting a study to develop rational fluid therapy guidelines for febrile children with bacterial meningitis, severe pneumonia and severe malaria as part of the development and validation of the in-patient management algorithm for severe febrile diseases. Third, results are now available for a pharmacokinetic study of oral cotrimoxazole in infants less than 3 months of age with serious bacterial infections in Guatemala and Viet Nam. The results suggest that even though some infants absorbed cotrimoxazole well enough to benefit from the treatment, there was no way to predict sufficient absorption. Recommending oral cotrimoxazole in infants under 3 months of age with pneumonia and other serious bacterial infections therefore does not seem warranted without further studies to determine the cause of the slow absorption and ability to exclude such children.

Case management guidelines for neonatal health
Because mortality in the neonatal age group has remained high in many places, countries have been pressing for the inclusion of the first week of life into the IMCI algorithms. In collaboration with RHR, an extended neonatal algorithm covering the first week of life and a protocol to test this adaptation have been developed. Several sites in developing countries have been identified for the introduction of the protocol.

Clinical management practices to meet the special needs of adolescents
CAH continued to develop expert review and discussion papers on clinical management practices to meet the special needs of adolescents. Papers on Unsafe abortion, Sexually transmitted infections, Pregnancy care and Nutrition were completed during 2000 and are being printed for distribution. They have also been accepted for publication in peer-reviewed journals. Final revisions are being made to the papers on Contraception and Lung health. In addition, an edited version of the paper Strategies, policies and practices for immunization: A review (jointly developed by CAH and the Department of Vaccines and Other Biologicals, VAB and published in 1999) was published in the Weekly Epidemiology Record.

The Department also made substantive technical contributions to the development
and revision of clinical management guidelines under development by RHR and the Department of HIV/AIDS in relation to the following guidelines:

- Integrated Management of Pregnancy and Childbirth (IMPAC)
- Medical eligibility criteria for contraception
- Guidelines for the management of sexually transmitted infections
- Guidelines on abortion

These papers will also form the basis for the development of job aids for primary health care workers, which is now underway.

**Improving the performance of health care providers**

The Department’s work in 2000 focused on improving the performance of three major groups of health care providers: those currently responsible for the case management of children under five; those enrolled in pre-service training programmes for health care providers; and those who provide or supervise health services that include adolescents in their target populations.

**Improving and maintaining the IMCI skills of existing health workers**

By the end of 2000, some 25,000 health care providers from approximately 80 countries had been trained in IMCI. This training was conducted by countries using nationally adapted clinical guidelines. Building national capacity is essential for sustaining and expanding activities; each country must have a critical mass of facilitators skilled in IMCI orientation, planning, adaptation of training guidelines, training of trainers for clinical courses, follow-up after training, and monitoring and evaluation. Regional teams continue to support countries in the introduction, early implementation and expansion of IMCI.

Four IMCI intercountry clinical courses were organized to develop technical expertise to assist with IMCI implementation within regions. Participants included representatives from countries, as well as from national, regional and international partner organizations.

Follow-up visits to reinforce new skills acquired during training and to solve problems are an essential component of IMCI training. In 2000, many countries sustained high coverage levels with at least one visit after training. Some countries began to strengthen routine supervision by incorporating the principles and tools of follow-up visits. In addition, 15 national and international consultants were trained in the Follow-up after IMCI training procedures in workshops in Malawi and Niger, expanding capacity within the African region and globally.

In June 2000, the Department convened an informal consultation involving WHO staff at all levels and technical experts to identify effective approaches for maintaining the im-

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**Clinical presentation of and susceptibility to sexually transmitted infections (STI) in children and adolescents**

**Clinical presentation**

There are differences in the epidemiology of STI in adolescents and adults, and though clinical presentations are similar, adolescents are regarded as being more biologically susceptible to infection and at increased risk of morbidity. Some of these differences have been obscured through the common practice of reporting adolescents (10–19 years) in the same category as “youth” (15–24 years) and through general inattention to young females who are married and pregnant. At the time of puberty and adolescence the female genital tract undergoes changes in response to increasing levels of ovarian hormones. Along with the anatomical and physiological changes the vaginal epithelium begins to secrete mucus. The mucus secretion causes the adolescent girl to develop a white vaginal discharge, which is physiological. Generally, therefore, vaginal discharge is a poor predictor of the presence of either gonococcal or chlamydial infection.

**Susceptibility**

In pre-pubescent girls the columnar epithelium extends from the endo-cervical canal to the porto-vaginalis of the cervix. This cervical ectropion, normally present in 60–80% of sexually active adolescents, is associated with an increased risk of *C. trachomatis* infection. Also *N. gonorrhoea*, which infects columnar epithelium, readily colonises this exposed surface. Exposure to oncogenic pathogens such as human papilloma virus enhances the risk of dyskaryosis and carcinoma at an early age. Additionally, because cervical mucus production and humoral immunity are absent until ovulation begins, the risk of complications are higher in the immature adolescent exposed to infection as opposed to the physically mature woman. Ascending infection and subsequent pelvic inflammatory disease (PID) are consequently more frequent in sexually active pre-pubescent adolescents and those in early puberty.

*Source: Extract from CAH input into the revised WHO Guidelines for the management of sexually transmitted infections*
proved performance of health care providers after IMCI training. The objectives were to review existing approaches to maintaining performance and to identify research priorities for the development of new interventions and tools to do so. Following the consultation two other activities were initiated: i. development of an inventory and analysis of approaches to supervision promoted by WHO; and ii. a review of factors influencing the performance of trained staff, to be carried out in collaboration with the Centers for Disease Control (CDC), USA.

**Training in breastfeeding counselling**

CAH actively supports and encourages countries in activities designed to improve the breastfeeding counselling skills of health professionals. As of December 2000, more than 8000 health care providers from 70 countries had been trained in breastfeeding counselling, and training materials had been translated into numerous local languages. Among the 70 countries implementing training with *Breastfeeding Counselling: A training course (BFC)*, 31 are still in the early introduction phase, and have introduced *BFC* as part of the *BFHI* or with IMCI. Twenty-six countries have repeated the training several times, and in another 11 countries (Armenia, Brazil, China, Ecuador, Iran, Macedonia, Philippines, Sri Lanka, Turkey, Viet Nam, and Zimbabwe) the training has been expanded and is now used widely. In several countries, IMCI and *BFC* are linked, with coordinated planning and shared trainers.

**Alternative approaches to IMCI training**

The “original” WHO/UNICEF IMCI case management course requires 11 consecutive days of full-time training, following a strict agenda and standard quality criteria concerning such things as the number of hours of clinical practice and the ratio of facilitators to trainees. As more experience has been gained, and as IMCI has been adapted for use among various types of health workers, a number of alternative agendas and approaches have been developed. In 2000, the Department made considerable progress in identifying, evaluating and refining various approaches designed to achieve the same IMCI learning objectives as the standard IMCI training course. Almost all regions tried alternative approaches to the standard 11-day training course during 2000.

- AFRO developed a six-day IMCI case management course and pre-tested it in Arusha, United Republic of Tanzania.
- Many countries in AMRO are experimenting with courses of five to nine days’ duration, and similar efforts have been initiated in EURO.
- In the Eastern Mediterranean Region (EMRO), the Egyptian national IMCI secretariat prepared a 6-day training course for senior physicians in collaboration with Alexandria University. The Department is now supporting an evaluation of its effectiveness in comparison with the standard 11-day training schedule.
In SEARO, the Department collaborated with the Ministry of Health in Indonesia to field-test an IMCI distance learning strategy and specially designed materials.

In WPRO, the Philippines have developed an alternative approach to the 11-day training course, called on-the-job training (OJT). The duration of OJT is 12 days, composed of 9 days of module work and outpatient sessions in the health centre (3 full days per week for 3 weeks) and 3 days of in-patient sessions in the regional IMCI training site. The pilot has been implemented in Sarangani province during 2000 and will be reviewed in February 2001.

The Department also provided technical assistance to the USAID funded Centre for Human Resources Quality Assurance Project for the development of an interactive computer-based learning programme on IMCI. Work has now begun on the development of standard methods and tools to compare the effectiveness of different approaches to IMCI training.

**Improving IMCI skills among future generations of health care providers**

In 1998, after experience had been gained with the IMCI in-service training course, the Department and ministries of health implementing IMCI agreed that for reasons of cost and sustainability, IMCI should be integrated into the curricula of pre-service training institutions for health professionals. An important and necessary component of this effort was the development of guidelines for inpatient care of children, and these guidelines have now been completed (see section on referral care below). IMCI pre-service training has been an important focus of the Department’s work over the past two years.

The development of IMCI pre-service materials has been carried out in close collaboration with governments, medical schools in five collaborating countries and teaching institutions for nurses and other health professionals. Regular assistance was provided by regional WHO staff and consultants. The major accomplishments in 2000 are summarized briefly below.

- Preparation of a comprehensive set of materials to support the introduction of IMCI into pre-service training, including:
  - A *Model Handbook on IMCI*. This document presents the IMCI guidelines in a condensed fashion, suitable for review by academic staff and students. This document was printed and distributed to all WHO regions in 2000.
  - *Management of the child with a serious infection or severe malnutrition*. This publication provides the guidelines for child care at the first referral level in developing countries. The guidelines were developed to help teaching institutions incorporate IMCI into academic programmes, and discussions are under way with the Regional Offices about how best to introduce the guidelines and support their use.
  - Draft guidelines to help consultants, government authorities and training institutions to introduce and support IMCI teaching. This guide is designed to assist WHO consultants, MOH staff and teachers to plan, implement, review and evaluate IMCI pre-service training. This guide will recommend activities at both national and teaching institution levels to orient key decision-makers, plan and conduct the first round of teaching IMCI, and review and evaluate IMCI teaching.
- Accumulation of experience in the introduction of IMCI in pre-service settings, including:
  - The development of plans and the initiation of IMCI teaching in five collaborating medical schools. Four out of five schools have also assessed the IMCI knowledge and skills of students.
  - Review meetings on the implementation of IMCI teaching in three collaborating institutions. Reviews in the remaining two collaborating institutions are planned for early 2001.
— In Mongolia, IMCI was incorporated into the training programme for family doctors and paediatricians.

— Extensive consultation and provision of technical assistance in response to regional and country requests. Examples of activities include national- and school-specific orientation and planning workshops for IMCI pre-service training. Training workshops have been conducted in five medical schools in Egypt and Morocco and orientation meetings took place in Myanmar, Namibia, Nigeria, South Africa, United Republic of Tanzania and Zambia. The workshop in the Philippines in June 2000 resulted in the creation of a national IMCI pre-service training task force and identified the preliminary steps needed to move forward on a national level.

■ A systematic effort to incorporate IMCI into the major textbooks used in the pre-service training of health professionals, which has met with considerable success.

■ CAH contributed to the revision of the textbook *Principles of medicine in Africa* and is contributing to the revised *Primary child care II*.

— A *Model chapter on IMCI* was drafted to help editors incorporate information about IMCI into local and international textbooks. The final model chapter on IMCI will be made available on diskette to interested regions and countries.

— Two collaborating universities in Egypt and Nepal made plans to revise their textbooks to incorporate IMCI. Several other universities (including Indonesia) expressed interest in revising their textbooks.

Faculty members and materials developers in Viet Nam were trained to adapt and translate pre-service training materials in breastfeeding counselling. They were also trained in techniques to strengthen the teaching of breastfeeding counselling in schools of midwifery. The revised curriculum is based on *Breastfeeding counselling: A training course*. Preliminary discussions also began in Cambodia to embark on a similar process.

Building health worker skills in adolescent health and development

Health professionals need special skills to work effectively with adolescents. Identifying these skills, and developing teaching and learning materials to support their acquisition, is an important area of work for CAH. Activities in 2000 included:

■ Further development of the Orientation programme on adolescent health for health care providers. Steady progress was made on all ten modules of the programme, a package of methods and tools to evaluate the programme was developed, and final revisions were made to the technical content. Publication of these modules is expected in mid-2001. Demands from the field necessitated the unofficial translation of the draft modules into French and Spanish. Using the French version, an intercountry training of trainers programme brought together participants from Senegal, and Guinea Conakry.

■ Collaboration with the WHO Department of Organization of Health Services De-
livery (OSD) on a technical and programmatic review of the key elements of a teaching/learning package for adolescent health and development for nursing and midwifery pre-service curricula. A tool is being developed to assess the extent to which adolescent health and development has been integrated into these curricula.

A literature review to identify the core competencies needed by nurses and midwives to effectively meet the health and development needs of adolescents. This review was undertaken by the University of Chicago, Illinois (WHO Collaborating Centre). Integration of adolescent health and development will be attempted in schools of nursing and midwifery in Botswana, Jordan, and South Africa.

Technical input throughout the year to the Eu-TEACH initiative (European network for teaching effective adolescent health care), which is preparing a training package on adolescent health for use by health care providers in Europe.

**Strengthening health systems**

Even with fully competent health professionals in place, needed improvements in health and development can only be achieved with concurrent attention to critical aspects of the health system. The Department focused on three areas in 2000. The first area is the availability of essential drugs and equipment, as well as modifications in facilities and the organization of work to ensure that they are “friendly” both to adolescents and to mothers with children. The second is the availability and quality of referral care for children and adolescents with severe illness, or needing specialized care. The third is improving the planning and management of health services for both children and adolescents.

**Availability and management of essential drugs for IMCI**

A paper titled *IMCI drug treatment recommendations, National Essential Drug Lists, and standard therapeutic guidelines: A comparison in six countries* was prepared in collaboration with Regional Offices and the six participating countries. The review highlighted differences among the three elements and indicates that there is a need to harmonize these and similar discrepancies as a basis for promoting sustained drug availability for IMCI at country level.

Initial planning was undertaken for the development of a pilot project to improve drug availability through joint problem identification and problem solving approaches by drug management and disease control personnel working on IMCI at national and district levels.

The *IMCI drug management course* became available in 2000. SEARO organized an intercountry workshop to introduce the tool for 18 representatives from seven countries in the Region. The training was found to be appropriate for those settings where drug availability is hampered by poor drug management at the health facility level.

**Improving referral and emergency care for children**

If IMCI is to reduce mortality, the strategy must address the quality and availability of referral and emergency care. In 2000, the Department finalized and began dissemination of guidelines for referral care, and continued to explore how existing IMCI guidelines for settings where no referral is possible might be improved. In addition, and as described in the earlier section on responses to illness and health concerns, studies are under way to describe family and community responses to referral, and barriers to adherence to referral recommendations.

In 2000, the Department published and began dissemination of standards for child care in small hospitals. A survey of paediatric care in small hospitals in seven developing countries, conducted by the Department, was published in the *Lancet*.

The survey identified the poor quality of care received by seriously-ill children. These findings formed the basis for the development 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*, which describes the standard paediatric care that should be provided in small hospi-
Quality of hospital care for seriously ill children in less-developed countries

Findings
Initial patient assessment was often inadequate and treatment delayed. Most emergency treatment areas were poorly organized and lacked essential supplies; families were routinely required to buy emergency drugs before they could be given. Adverse factors in case management, including inadequate assessment, inappropriate treatment, and inadequate monitoring occurred in 76% of inpatient children. Most doctors in district hospitals, and nurses and medical assistants in teaching and district hospitals, had inadequate knowledge and reported practice for managing important childhood illnesses.

Interpretation
Strengthening care for sick children referred to hospital should focus on achievable objectives with the greatest potential benefit for health outcome. Possible targets for improvement include initial triage, emergency care, assessment, inpatient treatment, and monitoring. Priority targets for individual hospitals may be determined by assessing each hospital.

Source: Excerpt from The Lancet 2001; 357: 106–10

Management, planning and financing of child and adolescent health services
The Department made significant progress in 2000 in documenting the challenges and issues associated with this area of health service delivery. The success of these efforts in the longer term will depend upon the identification and recruitment (if possible, through collaboration) of appropriate technical expertise.
For child health, the Department has documented the IMCI planning process in countries and developed tools to strengthen planning for IMCI implementation at the national and subnational levels. This planning process will improve country capacity for implementation, and assist countries in using IMCI as a tool to address inequities in health services.

Important initiatives to strengthen district planning took place at regional and country levels. In AMRO, an IMCI organization course at the District level was developed, and was field-tested in October 2000. District planning guidelines were also developed in several countries including Indonesia, Uganda, and Viet Nam.

As more countries move into the expansion phase of the IMCI strategy, the challenges associated with reaching rapid and sustainable coverage have become more apparent. Countries undertook efforts to analyze the determining factors for building capacity and sustainable implementation at the district level. In Uganda the following were seen as critical for sustainable implementation: team building among staff in health centres; upgrading of health facilities to reflect minimum standards; involvement of village health committees in planning IMCI interventions and promoting their benefits; and activities to mobilize communities to seek care from trained providers.

A costing model for child health interventions was also developed in collaboration with the World Bank, USAID, the USAID project BASICS, and PHR/Abt Associates. After the final field-test of the tool in Nepal in June 2000, the Department convened a workshop in July in Geneva to introduce the new instrument to selected staff from HQ and Regional Offices. Participants concluded that the tool meets an important need of health planners to project the costs associated with IMCI implementation and can be applied to respond to a variety of questions.

For adolescent health, the Department initiated the development of programming guidelines. These guidelines will help countries translate knowledge of the principles of effective programming into intersectoral policies and action plans for adolescent health and development. A draft outline was developed and reviewed by several countries actively involved in planning activities.

### Table 4. Basic components of adolescent friendly health services as defined in the AFRO regional consultation, 2000

<table>
<thead>
<tr>
<th>Clinical services</th>
<th>Services should have appropriate referral pathways within the health system and linkages with activities in other sectors.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• General (TB, Malaria, endemic diseases, injuries, accidents, dental care)</td>
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<tr>
<td></td>
<td>• Reproductive health (contraceptives, STIs, pregnancy, post-abortion care management)</td>
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<tr>
<td></td>
<td>• Voluntary Confidential Counselling and Testing (VCCT)</td>
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<td></td>
<td>• Management of sexual violence</td>
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<td></td>
<td>• Mental health services, including substance use</td>
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<tr>
<td></td>
<td>• Information and counselling on development during adolescence, sexual and reproductive health, nutrition, hygiene, substance use (tobacco, alcohol, drugs)</td>
</tr>
<tr>
<td>Activities to support/ generate demand for services</td>
<td>• Development/recreational activities such as sports, games, audio visuals</td>
</tr>
</tbody>
</table>

### The IMCI Costing Tool

**What is it?**
A tool to estimate the costs involved in the implementation of IMCI in a country or district.

**Aim**
To contribute to planning and budgeting for the introduction, implementation and expansion of IMCI.

**Structure**
Four Costing Models:

1. **Start-Up:** Provides an estimate of the cost of introducing IMCI.
2. **Recurrent:** Estimates the annual recurrent cost of providing child health care according to IMCI guidelines.
3. **Expansion:** Estimates how much it would cost to expand IMCI to any number of additional districts.
4. **Community:** Estimates the costs related to the introduction, recurrent costs and expansion of IMCI's community component.

**Intended users**
Trained health programme managers, health planners, and consultants at any level.
At the close of 2000, all WHO Regional Offices had developed specific plans of action on adolescent health and development. Five Regional Offices have already developed, or are developing, regional strategies to support countries in planning national adolescent health and development activities.

**Linking health services and the community**

Improving family practices and ensuring quality health services at health facilities are an enormous task, but are not enough. In 2000, the Department explored the use of community health workers, planned and supported activities to identify and meet the public health needs of children aged five-to-nine and adolescents, both in and out of school.

**Summary of planned activities in the “Response Phase” of adolescent action research projects in Bulgaria, Costa Rica, Malawi, Malaysia, Sri Lanka and Tunisia**

These projects are designed to build capacity in local communities to plan, implement and evaluate locally relevant activities outside the formal health system to improve adolescent health. Each site has successfully completed an “assessment phase” in which they identified local needs and resources, and prepared a proposal for implementing the “response phase”.

The types of activities planned in the six countries for the “response phase” can be broadly categorized under the following themes:

- Establishing a coordinating group on adolescent health
- Gaining endorsement of the project from parents and the community
- Establishing links between the education and health sectors
- Training health care providers
- Providing education for teachers and school staff
- Informing adolescents about the project
- Developing sexual and reproductive health services for school-going adolescents

**Community health workers**

To increase the impact of the IMCI strategy on infant morbidity and mortality it is essential to reach beyond the health facility, and to strengthen the link between the facility and the community. Community health workers (CHWs) are a potentially strong mechanism to do this. A study was carried out in Sergipe, Brazil to determine the potential of CHWs. Barriers to extending IMCI to the community through CHWs were identified: CHWs receive inadequate training; have poor support and supervision; are paid low salaries without fringe benefits or job security; and may not be recognized as legitimate care-givers in the community. Facilitating factors, supporting CHWs’ use were also identified: good relationships with mothers; and knowledge of the community and local people. Preliminary analysis of the data suggests that CHWs have great potential in extending the IMCI strategy into the community, but in order to achieve the full potential, their skills must be reviewed and tasks redefined. This also implies improving training support and supervision, and increasing the participation of the local health team, including CHWs, doctors and nurses, in community activities.

**School health services**

Schools provide an important opportunity for addressing the health needs of huge numbers of children. The Department is committed to moving forward with the development of a minimum package of health services for school-going children, and will begin this work after completing an epidemiological review of the factors hindering the health and development of older children that is currently under way in collaboration with the Institute of Child Health, London, UK.

**Improving accessibility and availability of health services for adolescents in the community**

The Department continued efforts to support the delivery of health services on-site in settings where adolescents gather.

For example, technical support was provided to teams in Bulgaria, Costa Rica and Malaysia to implement the “response phase” of action research projects for school-going
adolescents. This follows an "assessment phase" that was completed in each site in 1999. In addition, technical input was provided to Malawi, Sri Lanka and Tunisia for the preparation of proposals for the response phase. By the end of 2000, proposals had been received and projects initiated in Sri Lanka and Tunisia (with locally available resources in the former). This work will continue in 2001.

The Department provided ongoing support to NGOs in the Philippines (Families and Children for Empowerment and Development) and in Uganda (Uganda Youth Development Link, Kampala) to implement demonstration projects to improve access to health care among adolescents living on the street, and added a third NGO site to this initiative (Casa Alianza in Honduras). In addition, proposals were invited from regional advisers for CAH and Mental Health and Substance Dependence (MSD) in four WHO Regions (AFRO, AMRO, EURO, and SEARO) to extend the project. Two regions had submitted proposals by December 2000.

Work also continued on efforts to assist adolescents who have been displaced, either within their own country or as refugees. For example, a global mapping document on what is being done for internally or externally displaced adolescents was presented to the Inter-agency Working Group on Refugee Health convened by UNHCR. The Department also provided technical input to the UNFPA training course for coordinators and managers of refugee camps on better meeting the health and development needs of adolescents, and field-tested an assessment tool for adolescents in refugee situations. Draft components of an intervention package were developed, widely circulated to practitioners and are being field-tested in a refugee camp in the United Republic of Tanzania.
Progress in regional planning and capacity building for adolescent health and development activities

WHO support to countries for the implementation of adolescent health and development activities is primarily through its Regional Offices. During the past decade, Regional Offices steadily increased attention to the area: in the 1990’s four out of six regions supported technical and policy discussions at Regional Committee meetings. This prompted regional consensus together with resolutions and concomitant pledges for greater attention to the age range 10 to 19 years.

Progress was rapid in AMRO where specific support to country offices was complemented by regional capacity building. One significant outcome was the development of national policies and plans for adolescent health and development in most countries in the region.

More recently, other Regional offices began to develop regional strategies for adolescent health and development, often with key regional and country partners. Such strategies consolidate planning relevant to adolescents in sexual and reproductive health, HIV/AIDS/STI, substance use, mental health and health promotion, and propose specific objectives to guide regional and country activities. Strategy development has required regional review of the health and development needs, national and NGO responses to these, and the articulation of specific objectives for focused and accelerated action.

- AFRO elaborated a regional strategy which will be presented to the Regional Committee in 2001;
- EURO has documented the situation of young people as background for preparing its strategy;
- SEARO developed a regional strategy in 1999; and
- WPRO prepared a framework and five year plan in 2000.
Over the past year, systematic Regional Office/HQ joint planning and support for adolescent health and development were strengthened. Concerns vary across the regions, though sexual and reproductive health, including HIV/AIDS, feature in all. There are two principal limiting factors: lack of sufficient capacity at regional level to meet country needs; and an absence of operational guidelines on successful interventions. This has resulted in the use of varied approaches to respond to the distinct situations and needs of each region.

In 2000, joint CAH/Regional planning and support for adolescent health and development have:

- been instrumental in promoting: i. research and development activities (for example, regional consultations in AFRO and AMRO on adolescent friendly health services); ii. support to neglected sub-populations of adolescents (boys in AFRO, AMRO and WPRO); and iii. review of existing content in the pre-service training of health professionals;
- supported regional strategy development processes in AFRO, EURO and WPRO and initiated plans for such a process in EMRO;
- facilitated the elaboration of national strategy and policy development in Haiti and Nepal, and supported planning of systematic technical support to country programming in Cuba, Haiti (AMRO); Ukraine (EURO); India, Indonesia, Nepal, Sri Lanka (SEARO); China, Kiribati, Malaysia, Mongolia, Viet Nam (WPRO);
- contributed to activities which figure as part of the longer term plans of AMRO and WPRO;
- stimulated adaptation of existing programme support tools (the counselling skills training facilitators guide was updated and translated into Russian by EURO) and production of new ones (the Health education for adolescents booklets were printed in EMRO);
- provided impetus for the development and support of interprogramme activities (in WPRO an adolescent health and development working group includes staff from three divisions; in AFRO and SEARO responsibility for life skills is supported by other departments with CAH/ADH support) and interagency collaboration (EURO, an interagency group on Youth Health Development; SEARO participated in a regional working group of ten organizations active in life skills).

The implementation of the 2000–2001 joint plans provides an important basis for the identification of research and development needs and those areas where concentrated and/or accelerated support to build human capacity in countries is required.
CHAPTER 4
Monitoring and evaluation

The Department is committed to using monitoring and evaluation to strengthen public health programming. In 2000, the focus was on four specific areas of work: expanding the epidemiologic base; monitoring and evaluation at country level; strengthening the evidence base for strategies and interventions; and monitoring of, and advocacy for, global goals.

Expanding the epidemiologic base for child and adolescent health

This work area aims to develop, maintain and improve the epidemiologic information available about health, development and diseases, including protective and risk factors. Four epidemiologic reviews were carried out in 2000, on:

- the contribution of malnutrition to cause-specific mortality among children under five (in collaboration with NHD and Johns Hopkins University, USA);
- cause-specific morbidity and mortality associated with acute respiratory infections (in collaboration with WHO/VAB);
- diarrhoeal diseases (in collaboration with the University of Virginia and CDC, in the USA); and
- HIV among under-fives (in collaboration with UNAIDS).

In 2001, these reviews will serve as the basis for developing improved estimates of country, age, sex and cause-specific morbidity and mortality. In addition, CAH will coordinate a consultative process to identify and resolve methodological issues related to competing causes of mortality among children under five.

CAH also recognized the need for a broad epidemiologic review of the issues and problems that affect the health and development

HIGHLIGHTS OF 2000

- Epidemiologic reviews were completed for ARI and diarrhoea, and will be used to support improved estimates of child morbidity and mortality due to these causes.
- Experience was gained with the IMCI health facility survey (HFS) in three regions; the tool is now being finalized.
- IMCI indicators have been incorporated into all major population-based and health facility instruments used in developing countries, increasing the probability that ministries of health will have consistent and useful data on child health.
- The first phase of the Measurement Project for adolescent health and development was concluded, having defined and applied a programming and measurement framework, identified a core set of protective and risk factors and how they can be measured, and expanded capacity among a network of participating sites.
- The Multi-Country Evaluation of IMCI Effectiveness, Cost and Impact (MCE) received significant new support in 2000 from the Bill and Melinda Gates Foundation. Early results from the United Republic of Tanzania indicate substantially better quality of care in IMCI districts than in non-IMCI districts.
In Eritrea, the Ministry of Health (MOH) carried out a survey to assess the preparedness of health services for the IMCI strategy. The survey was conducted in November 2000 with technical support from John Snow International through the TASC project, with funding from USAID. The 29 facilities visited had a median attendance of 200 patients per month, approximately 25% of whom were children under five years of age. Fifty-six per cent of the children seen were male (not statistically significant).

The evaluation showed that health facilities have the infrastructure needed to support the implementation of the IMCI strategy. Many facilities (76%) reported at least one supervisory visit during the last six months. On the day of survey, most facilities (94%) had all the essential oral drugs recommended in the national adaptation of the IMCI clinical guidelines, and the capacity to provide daily vaccination services. Nalidixic acid and erythromycin, though also recommended in the national adaptation of the IMCI guidelines, were absent from the health facilities because they are not presently included in the MOH essential drug list. The MOH will take actions to improve availability of injectable drugs for treatment of severely ill children and to improve availability of equipment and supplies to deliver quality care. Figure 7 shows the limited availability of materials for diagnosis and prevention of malaria.

Figure 8 shows the proportion of sick children for whom each of nine assessment tasks were performed by the health care provider. An average of three assessment tasks were performed for each child seen. Less than one percent of children under two years of age were assessed for feeding practices. More than 50% of the children with a diagnosis of malaria or pneumonia (based on gold standard assessment) were misdiagnosed and 38% of the children observed received unneeded antibiotics. The decision taken by the MOH to train first-level health care providers in the use of the IMCI guidelines is therefore appropriate, and should lead to rapid improvements in the quality of case management.
of children between the ages of five and nine, as a basis for identifying programme priorities. A plan for conducting this review was developed with the Institute for Child Health, University of London, UK. The work will begin in early 2001 with the preparation of a conceptual framework for the review.

For adolescents, a project plan was developed to review the current status of epidemiologic estimates. This plan was reviewed in an informal consultation with the Division of Adolescent and School Health of the CDC, and several exchange visits between CAH and CDC staff were conducted. As a first step, available data on adolescent mortality and disability adjusted life years (DALYs) are being compiled and analyzed.

**Monitoring and evaluation at country level**

The aim of this work area is to identify needs, and promote and coordinate the development of consistent guidelines, tools and approaches for use at the country level. Activities during 2000 included:

- defining ongoing interventions and outcomes, and how they can be measured;
- developing indicators, tools and guidelines for use by countries and programs in monitoring and evaluating strategies and interventions; and
- providing input and promoting consistency in major data collection tools.

CAH has made progress on the refinement and use of indicators and evaluation tools for child health. In 1998 and 1999, household- and facility-based indicators were identified and agreed with partners. These indicators are now widely used. In 2000, a set of indices was developed in collaboration with the CDC and is currently being tested. These indices have been developed to measure changes in the quality of care and to assess the facility readiness to handle rare events that are not usually encountered during routine surveys. Work is also underway to define additional process indicators to track progress in the implementation of family and community health interventions.

After being field-tested in Bolivia and Peru in 1999, the health facility survey (HFS) tool developed in collaboration with partners underwent a thorough revision. Ministries of health and partners in seven countries used the revised working draft during the year 2000. In addition, the facility-based IMCI indicators were measured in Morocco by the MOH and USAID, using a slightly different methodology.

In Bangladesh, Eritrea and Paraguay, HFSs have been conducted to collect baseline information before implementation of the IMCI strategy. In north-eastern Brazil, Ecuador and Paraguay the HFS has been used as a routine tool after an average of two years of IMCI implementation. In the United Republic of Tanzania and Uganda, the survey was used to compare the quality of care in districts with and without IMCI (in the United Republic of Tanzania) or with varying levels of IMCI implementation (in Uganda). In Bangladesh, United Republic of Tanzania, and Uganda, the survey was part of the research protocol for the MCE. Regional capacity in the use of the HFS methodology and instruments has been built in AFRO and AMRO, but needs to be expanded.

The HFS tool supports measurement of all priority and supplemental IMCI indicators at facility level. It is designed to assess: i. the quality of care delivered to sick children in outpatient facilities; ii. caretaker satisfaction and understanding of key messages after visiting these facilities; iii. health system support at the facility level; and iv. facility utilization by sick children. The results can be used as a basis for reinforcing good performance or to identify areas for improvement. At regional and global levels, the results are used as a basis for tracking changes in the quality of care delivered to sick children and for improving IMCI tools and guidelines.

For the evaluation of household-level indicators, CAH has worked closely with partners to ensure that these measures are included in the existing survey tools used widely in developing countries, as well as in the household survey tool developed for use in the MCE. For example, by the end of 2000, over 60 revised *Multiple Indicator Cluster Surveys (MICS 2)* had been conducted. The MICS is a household survey methodology developed by UNICEF to measure progress towards the end-decade goals for children. The Care of illness module in the MICS 2 provides results on a wide range
of child health indicators, including the IMCI indicators. Other instruments such as the Knowledge, Practices and Coverage Survey (KPC2000+) developed by the USAID-sponsored Child Survival Technical Support Project and CORE Monitoring and Evaluation Working Group, and the Demographic and Health Survey developed by the MEASURE DHS+ Project (MACRO International) have been harmonized to generate compatible data on household-level indicators for IMCI. This approach increases the probability that ministries of health will have consistent and useful data on child health indicators available over the coming years at minimum cost.

CAH will continue to strengthen coordination and guidance on the use of existing tools for evaluation of child health programmes with partners. Experience has shown that the definition of indicators and the development of data collection tools are a continuing process, requiring ongoing monitoring, analysis and technical support.

The year 2000 saw the conclusion of the first phase of the Measurement Project for adolescent health and development, designed to improve the monitoring and evaluation of programmes at country level. Seven countries are participating in this activity: Bangladesh, Brazil, Egypt, Malaysia, Sri Lanka, Thailand and Uganda. The Measurement Project has been implemented in partnership with UNICEF, with support from the Rockefeller Foundation. In its first two years of implementation, the project facilitated a paradigm shift in thinking about adolescents and measurement. The interactive learning process used in the project led participating sites to recognize the critical role of the social environment in adolescent development, and the need to view adolescents as active human resources who can function in pro-social ways. This recognition resulted in higher priority being given to the measurement of protective and risk factors as antecedents for health risk behaviours. An example of the types of measures being developed and tested by project sites is shown in the sidebar.

During Phase I the Measurement Project achieved the following:

- development and application of a programming and measurement framework linking interventions to intermediate protective and risk factors and related health outcomes;
- identification of a core set of protective and risk factors as common antecedents for behaviours with undesirable health outcomes;
- development and validation of measures, indicators, tools and methods at country level, addressing key interventions, protective factors and risk behaviours;
- identification of data sets from 30 developing countries that include reliable and valid measures for specific problem behaviours and their determinants, and the protective and risk factors that mediate risk behaviours such as unsafe sex, violence and substance use;
- in collaboration with UNICEF, identification and definition of goals, targets and indicators for adolescent health and development for the UN General Assembly Special Session on Children;
- establishment of a network of individuals and institutions who contributed to and benefited from project activities.

**Strengthening the evidence base for strategies and interventions**

The aim of this work is to develop, maintain and strengthen the evidence available about the effectiveness, cost and impact of strategies and interventions in child and adolescent health and development. Activities in 2000 focused on child health, the work plan calls for the addition of adolescent health activities in 2001.

*The Multi-Country Evaluation of IMCI Effectiveness, Cost and Impact (MCE)* received significant new support in 2000 from the Bill and Melinda Gates Foundation. These resources will allow CAH to do the evaluation more fully, in a wider range of countries, and in some cases to lend support to ministries of health in their efforts to expand and strengthen IMCI.

The MCE is evaluating the behavioural, nutritional and mortality impact of IMCI in a total of 8–10 country settings. The objectives are both to document the effect of IMCI inter-
The Measurement Project: An Example from Malaysia

The programming and measurement framework for project planning and measurement of protective and risk factors in Malaysia is shown in the diagram. The framework was applied to design, monitor and evaluate specific interventions, within various settings.

Using this framework, the Malaysian researchers undertook a situation analysis to identify appropriate behavioural goals for adolescents (intermediate outcome indicators). The risk or protective factors underlying each of these behavioural goals were then explored. Rapid assessments, including qualitative interviews, were conducted with adolescents, their families, community members and specific service providers. This was followed by the design and implementation of a quantitative survey to measure the prevalence of risk and protective factors and associated problem behaviours. Some of the variables measured are shown below in Table 5. The results are now being used to plan specific interventions.

Table 5. Risk and protective factors emerging from research in Malaysia

<table>
<thead>
<tr>
<th>Risk factors</th>
<th>Protective factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ever missed class or school</td>
<td>Felt connected to parents</td>
</tr>
<tr>
<td>Ever misbehaved with parents and/or siblings</td>
<td>Parents gave attention to their children’s companion</td>
</tr>
<tr>
<td>Friends who smoke cigarettes</td>
<td>Had dinner everyday with the family</td>
</tr>
<tr>
<td>Friends who agree with smoking</td>
<td>Performed prayer with parent/s at least once a day</td>
</tr>
<tr>
<td></td>
<td>Satisfied with day to day life</td>
</tr>
<tr>
<td></td>
<td>Rarely or never felt boredom</td>
</tr>
<tr>
<td></td>
<td>Rarely or never felt depressed in last year</td>
</tr>
<tr>
<td></td>
<td>Never felt like running away from home in last year</td>
</tr>
<tr>
<td></td>
<td>Good to fair academic performance</td>
</tr>
<tr>
<td></td>
<td>Perceived smoking high risk to health</td>
</tr>
</tbody>
</table>
MCE sites that were operational in 2000 are summarized in Table 6.

The year 2000 has been an important year for the MCE. The teams in Bangladesh, United Republic of Tanzania and Uganda have adapted instruments, trained surveyors, and collected, cleaned and analyzed data on costs, on household behaviours, and on the quality of care in health facilities. The evaluation proposal for Peru has been approved. In Bolivia, preparations for the development of the evaluation have begun. Intensive discussions about the selection of additional sites have been carried out, and feasibility visits made to three potential countries. A case study of MCE progress in the United Republic of Tanzania is shown.

Development of the MCE methodology has continued: tools and plans of analysis for HFS have been refined; the costing methodology has been completed; and protocols developed for describing referral care. Further progress has also been made in defining and measuring adequate IMCI implementation.

### Table 6. Multi-Country Evaluation of IMCI Effectiveness, Cost and Impact (MCE):
Country overview in 2000

<table>
<thead>
<tr>
<th>Design</th>
<th>Bangladesh</th>
<th>Peru</th>
<th>U.R. Tanzania</th>
<th>Uganda</th>
</tr>
</thead>
<tbody>
<tr>
<td>Randomized trial of HFs with and without IMCI</td>
<td>Comparison of districts with different levels of IMCI</td>
<td>Pre-post comparison, 2 IMCI &amp; 2 non-IMCI</td>
<td>Comparison of districts with different levels</td>
<td></td>
</tr>
<tr>
<td>Mortality assessment</td>
<td>Demographic Surveillance</td>
<td>Vital statistics</td>
<td>Demographic Surveillance</td>
<td>Survey</td>
</tr>
<tr>
<td>Household coverage surveys</td>
<td>Completed</td>
<td>Not needed in design</td>
<td>Completed</td>
<td>Completed</td>
</tr>
<tr>
<td>Health facility assessments</td>
<td>Completed</td>
<td>Conducted earlier</td>
<td>Completed</td>
<td>Completed</td>
</tr>
<tr>
<td>Costing</td>
<td>Underway</td>
<td>Not in Phase I</td>
<td>Underway</td>
<td>Underway</td>
</tr>
<tr>
<td>Partners</td>
<td>ICDDR,B; MOH</td>
<td>Instituto de Salud del Nino, MOH</td>
<td>Ifakara Centre, MOH, TEHIP</td>
<td>Johns Hopkins, Makerere, MOH, USAID</td>
</tr>
</tbody>
</table>

### Monitoring of and advocacy for global goals

As a part of the WHO contribution to the upcoming Special Session on Children, CAH has participated in reviews and updates of targets and indicators. Staff provided technical assistance on evaluation and on the definition and measurement of targets and indicators to numerous groups both within and outside WHO.

CAH continues to be responsible for monitoring progress toward goals in IMCI implementation. Country progress in achieving milestones is reported each year through the Regional Offices, and used to update the global map presented in the Special Report on IMCI implementation. The list of milestones was originally developed in 1997, and will be reviewed and expanded in 2001 in light of the continued development of the IMCI strategy and implementation experience.
Progress in the MCE: An example from the United Republic of Tanzania

*Ifakara Health Research and Development Centre, Ifakara, U.R. Tanzania in collaboration with The Ministry of Health, U.R. Tanzania, Tanzania Essential Health Interventions Project (TEHIP), WHO–United Republic of Tanzania*

- The evaluation design for the MCE-Tanzania compares two districts implementing IMCI with two districts that are not implementing IMCI. In the two IMCI districts (Rufiji and Morogoro), implementation started in 1996 with support from the MOH, WHO, and the Tanzania Essential Health Interventions Project. District Health Management Teams have trained and supervised health care providers, improved the drug distribution system, and distributed insecticide-treated nets for the prevention of malaria at community level.

- Baseline data on family practices and care-seeking for sick children were collected through household surveys. The results demonstrated that IMCI is addressing the most common major health problems of children in the IMCI districts: malaria, pneumonia and diarrhoea. The prevalence of anaemia was very high, with almost 10% of children between the ages of six and 12 months having life-threatening anaemia (see Figure 10). Results on care-seeking were encouraging: between 35% and 45% of children in these two districts who had been ill in the previous two weeks were taken first to a formal health provider (see Figure 11).

**FIGURE 10**
Anaemia among children under 5 in rural U.R. Tanzania, July–August 1999

(N = 1749 children in 4 districts)

**FIGURE 11**
Appropriate care-seeking for ill children in rural U.R. Tanzania, August 1999

Children ill in previous 2 weeks: first provider from formal health services

Comparison of IMCI: non IMCI using logistic regression adjusting for clustering, p = 0.71

In August 2000, a health facility survey was carried out in IMCI and non-IMCI districts. The results indicate that children seeking care at health facilities in IMCI districts are more thoroughly assessed (Figure 12) and received better quality care (Figure 13) than children seeking care in comparison districts where IMCI has not yet been implemented. Just over half of the sick children brought to the facilities were boys in IMCI (52%) and non-IMCI (53%) districts. Over 90% of the caretakers were mothers.

- Complete data on the costs of IMCI implementation at national, district, health facility and household levels have been collected and are now being analyzed.
- The period of formal evaluation will begin once IMCI implementation in the two intervention districts has been certified as meeting minimum standards of adequacy. From that time forward, a period of at least two years will be needed before the final impact measurements can be made to determine reductions in mortality and improvements in nutrition.

**FIGURE 12**  
Mean score on index of integrated assessment to children seeking care from first-level facilities in IMCI versus non-IMCI districts, rural U.R. Tanzania, August 2000

**FIGURE 13**  
Selected indicators of the quality of care received by children in first-level facilities with and without IMCI, rural U.R. Tanzania, August 2000
CHAPTER 5
Building partnerships and expanding capacity

HIGHLIGHTS OF 2000

- Partnership with the World Bank remained strong, with joint planning and capacity building. CAH continues to second a staff member to the Bank, allowing constant and consistent exchange of information and ideas.
- Technical collaboration with the International Labour Organization led to a new convention that will improve conditions for breastfeeding mothers.
- Close collaboration continues with UNICEF in a range of child and adolescent health and development activities.
- The first meeting of the combined Roll Back Malaria and IMCI Task Force met in Harare for joint planning and coordinated scaling-up of interventions.
- Regional capacity building efforts focused on strengthening capacity for IMCI implementation and operational research.
- In 2000, 18 countries, agencies, and foundations provided direct financial and technical input to the Department’s work, and numerous others provided input directly to regions or countries. CAH is grateful for the continued commitment of its partners to the ongoing business of the survival, growth, and development of children and adolescents.

Catalyzing and supporting partners to implement child and adolescent health strategies

CAH works closely with other WHO departments, UN agencies, bilateral agencies, NGOs, private voluntary organizations (PVOs) and foundations to develop joint strategies and strategic approaches to planning, identification of research agendas, and support to regions and countries. Activities in 2000 included:

- Work with the World Bank to improve global child health outcomes (see sidebar).
- A meeting in Durban, South Africa, which brought together representatives of governments, NGOs and PVOs, bilateral agencies, foundations, UNICEF, the World Bank and WHO to share country experiences and develop strategies for expansion of interventions to improve family- and community-based practices in child health.
- Work on developing a regional strategy for adolescent health in Europe by an interagency group of UNAIDS, UNFPA, UNICEF and WHO.
- Joint work with the Nutrition Department in EURO, which resulted in the development of a Food and Nutrition Action Plan, emphasizing the promotion of breastfeeding and appropriate complementary feeding, as well as Guidelines on feeding and nutrition of infants and young children focusing on the countries of Central and Eastern Europe.

Joint global and regional activities with partners led to accelerated implementation of effective interventions at country level. For example, the Department strengthened its partnership with Roll Back Malaria (RBM) and produced a framework for RBM/IMCI collabo-
ration in AFRO. The framework was used to develop joint RBM/IMCI country plans of action, including standard indicators for monitoring and evaluation.

CAH also collaborated with LINKAGES, UNICEF, NGOs and partners involved in humanitarian aid work, the Emergency Nutrition Network, and IBFAN, to plan and develop modules on Infant feeding in emergencies, for use at country level in acute situations and in emergency preparedness activities.

For the last three years, CAH has acted on behalf of WHO as Secretary of the Working Group on Breastfeeding and Complementary Feeding at the ACC/SCN. During 2000, CAH worked with the International Labour Organization (ILO) to improve working conditions of breastfeeding mothers. In coordination with RHR and NHD, CAH presented a statement at the 88th session of the ILO conference in June 2000. A new Convention was adopted that extends the minimum duration of maternity leave from 12 to 14 weeks and includes protection measures to ensure that a pregnant or breastfeeding woman is not obliged to perform work harmful to her health or that of her in-

**Working in partnership with the World Bank to improve child health outcomes**

In January 2000, AFRO and the Africa Child Health Team of the World Bank convened a meeting with CAH staff, the regional IMCI team and UNICEF to discuss acceleration of efforts to improve child health outcomes in Africa. Evidence was presented that child health indicators are not improving in many countries of the region, and are even deteriorating in some. Investing in child health remains a top priority for the Bank, and many governments have identified IMCI as an appropriate strategy along with other interventions to improve child health (such as immunization, early childhood development, and nutrition). Opportunities for joint work in the preparation and supervision of projects were identified: in the African Region alone, over fifteen projects in different countries could benefit from CAH’s technical input in the foreseeable future.

CAH and the Bank conducted a review of lessons learned through past collaboration. A key finding was the constraint associated with different modes of planning and operations, making it difficult for WHO staff and consultants to effectively contribute in the preparation of Bank supported projects. A joint workshop Building Capacity for Technical Support in Child Health: A Training Seminar was organized in September 2000 to increase the pool of resource persons able to act as an effective interface between CAH and the World Bank. There were 18 participants, including CAH staff from headquarters and Regional Offices, and selected consultants. The objectives of the workshop were to provide participants with a sound understanding of the World Bank’s priorities, strategies and project cycle and to familiarize them with the tasks involved in project preparation and supervision. The workshop was the first of its kind in the cooperation between WHO and the World Bank and could be replicated for other main intervention areas, such as reproductive health and communicable disease control.

A CAH staff member has been seconded to the World Bank since 1995 to identify opportunities for cooperation and contribute in policy dialogue. At present, more than thirty countries have included the IMCI strategy in projects supported by the World Bank. The Department (including regional and country teams) has allocated specific resources in the workplan to ensure that technical support can be provided to ministries of health in the preparation and management of these and future projects.

**Collaboration with Roll Back Malaria (RBM)**

The first joint meeting of the RBM and IMCI taskforces was held in Harare, in September 2000. The meeting brought together national RBM and IMCI programme managers, ministry of health officials, experts and partners (DFID, GTZ, BASICS and SARA projects, UNICEF, USAID, World Bank).

This meeting was a significant step forward in the collaboration between RBM and IMCI. An important challenge identified by participants was to ensure that collaboration leads to accelerated scaling-up of activities at the national, district and more importantly community level.

In a meeting organized soon afterwards by AFRO in November 2000, representatives from DFID, the USAID BASICS project, UNICEF, the World Bank and WHO, contributed to the development of a strategy for scaling-up RBM/IMCI implementation in the region.

Participants agreed that the guiding principle for scaling-up is a focus on interventions with the greatest impact on morbidity and mortality. In addition, participants concluded that scaling-up of RBM/IMCI implementation should draw on the synergies that can be created among countries and with other initiatives.
fant, and strengthens the entitlement to paid breaks for breastfeeding.

**Capacity building among WHO staff and partners at all levels**

New tools are introduced in countries with technical support from WHO staff or expert consultants, and the process of introduction is carefully documented in order to develop feasible and effective implementation strategies. As soon as early experiences have been gained, activities are planned for rapid capacity building at all levels, with an emphasis on national capacity.

Activities include intercountry courses, consultant training workshops and on-the-job training activities to increase the pool of staff and consultants qualified to assist and guide national counterparts. IMCI teams in AFRO and AMRO for example, can now call on more than 100 consultants, specializing in different aspects of the IMCI strategy. The increasing reliance on national consultants is an important indicator of success of CAH’s capacity building strategy.

Examples of activities in 2000 to build capacity include:

- The annual 4-week course *Breastfeeding: Practice and policy* at the Institute of Child Health, London, in collaboration with UNICEF.

- Training on HIV and infant feeding was introduced to 15 consultants from different countries in Africa, in a course held in Harare in April 2000. The course provides guidelines and skills in counselling HIV positive mothers. Follow-up courses have been held in five countries and more will be held in 2001.

- The IMCI regional consultation held in November 2000 in Alexandria, Egypt which brought together 41 senior officials from ten countries implementing IMCI in EMRO including representatives from partner organizations. Participants had an opportunity to: share experiences of IMCI implementation; discuss the major challenges; visit health facilities implementing IMCI, as well as Alexandria University where IMCI has been incorporated into basic medical training.

- A similar meeting was convened by the CAH team in SEARO, combining child and adolescent health and development perspectives.

- A first draft of a briefing package was developed for consultants working with countries and partners on community IMCI. This package will be finalized in mid-2001.

- A meeting to plan a curriculum for use by consultants in AFRO specializing in adolescent health and development was held in August 2000.

Significant efforts to strengthen regional capacity for operational research were also undertaken in 2000. Two workshops were held in the African Region, one on results of completed and ongoing studies of IMCI, and the other on the formulation of new research proposals. In AMRO, an operational research guide was developed to equip health staff with the basic methodological tools to carry out low-cost, short-term research studies related to IMCI implementation.

The role of partners is crucial to ensure coherent and consistent support for child health activities in countries. The Department therefore invested in building capacity of interested partners in the concepts underlying the IMCI strategy and in the application of IMCI tools.

- Within the World Bank, there is increasing recognition of the important role that CAH can play in providing technical assistance in project preparation and supervision. The training seminar resulted in an increased pool of staff and consultants able to strengthen collaboration (see sidebar).

- A five-day orientation workshop was held in Washington for 20 participants of the American Red Cross, mostly project managers from countries. The interactive workshop was designed to discuss practical applications of the IMCI strategy in the various types of Red Cross projects. Facilitators included IMCI staff from three regions (AFRO, AMRO, EURO) and HQ.
CAH continued to respond to requests from training institutes and national paediatric associations to conduct presentations and educational sessions on IMCI.

IMCI was introduced in the Board and Annual Review Meetings of Memisa Medicus Mundi, an NGO with a wide network in several European countries, which concentrates on strengthening health services delivery in developing countries.
Annex 1
CAH Clinical Research in 2000

This Annex provides brief descriptions of clinical research planned, in progress or completed during 2000. The studies have been organized by the chapter of the Progress Report in which they are mentioned, and within chapters, by topic area.

Chapter 2. Promoting a Safe and Supportive Environment

Zinc supplementation

The impact of daily zinc supplementation to prevent malaria in children was studied in Burkina Faso. Six hundred eighty five children were divided into two randomized treatment groups receiving either a daily dose of 12.5 mg of zinc or a placebo six days a week for six months. Results showed no difference in *falciparum* malaria incidence, mean temperature and mean parasite densities during malaria episodes, and malaria parasite rates, mean parasite densities and mean haematocrit during cross-sectional surveys between zinc and placebo groups. On the other hand, zinc supplementation was significantly associated with reduced prevalence of diarrhoea.

Two double blind randomized controlled trials to evaluate the impact of daily zinc supplementation on childhood mortality have been initiated in New Delhi (India) and Pemba (Zanzibar). A total of 65 000 children, between 2 and 24 months, will be recruited to the study conducted in India. They will receive either 10 mg of zinc plus 12.5 mg of iron or 12.5 mg of iron alone. In Zanzibar a multifactorial design will be used to assess the effects of iron and the possible interaction of zinc and iron in 35 000 children aged 2 to 35 months old receiving (i) 10 mg of zinc, (ii) 12.5 mg of iron, (iii) 10 mg of zinc plus 12.5 mg of iron, and (iv) placebo. Recruitment should be initiated in March 2001. Study results will be available in January 2003.

Caretakers’ adherence to recommendations to give daily zinc supplement to young children is being studied as part of a large randomized trial in India, partly supported by the European Union. The trial examines the effects of zinc on risks of pneumonia and diarrhoea.

Mother’s perceptions of the zinc supplement and factors associated with compliance are being investigated in the same study (see sidebar in Chapter 2). Around three-quarters of mothers reported that their children liked the supplement; the common indicators used by them to gauge this were that the child drank it eagerly (92%), opened mouth readily (24%), did not vomit it out (10.5%) or did not resist when it was given (8%). The indicators for children’s dislike of the supplement were the reverse i.e. the child had to be forced to drink it, spat it out, turned face away or vomited it out. Mothers of children who resisted the supplement also tried to administer it with honey, milk, a salty snack, sugar or biscuits.

Mothers who felt that the supplement benefited the child said that their child was very playful (40%), remained healthy during this period (26%) or did not fall ill (29%), ate well (26%) and had gained weight (20%). Other less frequently reported reasons were that episodes of specific illnesses (diarrhoea, pneumonia, cough, cold or fever) had decreased and that the child cried less frequently. The mothers who felt that the supplement did not benefit their child said that the child’s appetite, morbidity or growth did not improve after supplementation.
Almost all mothers (98%) felt that the supplement should be recommended for all children in the community as it made children healthy and strong and prevented illness. Two-thirds reported that they had not given the supplement on some days, because the child was ill (43%), the mother forgot (57%) or, the child did not like it (20.6%).

Mothers reported a high level of compliance with the supplement and this was confirmed by checking the volume of zinc syrup left in the bottles that were handed to the mothers each month (see Table above).

### Chapter 3. Improving Health Service Delivery

#### Diarrhoea and dysentery

- A randomized clinical trial conducted in Bangladesh, investigating the management of dehydration in severely malnourished children was completed and analysed. Results demonstrated that a specially designed oral rehydration salts solution for severely malnourished children (ReSoMal) and standard WHO oral rehydration solution (ORS) solution had similar efficacy. However, compared to those receiving standard ORS solution, children receiving ReSoMal had significantly better potassium status. The results of this study will be published in 2001.

- A meta-analysis of randomized controlled trials comparing the effects of reduced osmolarity ORS solutions with standard WHO ORS solution in children with acute diarrhoea was performed in collaboration with the Cochrane Infectious Disease Group. Results of this meta-analysis showed that reduced osmolarity ORS solution is associated with 40% fewer unscheduled infusions compared with standard WHO ORS solution. In trials reporting stool output and vomiting, data suggests less stool output and less vomiting in children receiving reduced osmolarity ORS solution when compared to those receiving standard WHO ORS solution. Some trials reported hyponatremia, but there was no obvious difference between the two treatment groups. Results of this meta-analysis and other studies on reduced osmolarity ORS solutions will be reviewed in an expert meeting early in 2001, and new recommendations for ORS formulation are expected.

- Data collection in the multicentre clinical trial to evaluate the efficacy of a short-course treatment of dysentery due to *S. dysenteriae* type 1 with ciprofloxacin was completed in 2000. Analysis of the data from the three sites (Bangladesh, South Africa and Zimbabwe) and preparation of a draft manuscript of the results will take place at a workshop in Zimbabwe in February 2001.

- A multi-centre study on persistent diarrhoea, completed in 1995, provided data for a number of secondary analyses to evaluate guidelines for the management of persistent diarrhoea. One analysis confirmed that stool frequency can be used as a marker of stool output in children with persistent diarrhoea, in settings where measurement of stool output is not feasible. This analysis also suggested that children with 10 or more loose or watery stools during the first 24 hours on treatment with the first line diet can be placed directly on the second line diet; thereby, reducing significantly hospital stay for a large number of children. Another secondary analysis confirmed that systemic infection was common in hospitalized children with persistent diarrhoea. Anorexia associated with systemic infection, except in bacteremia, can

### Consumption of zinc syrup based on volume of syrup left in the bottle at the end of the month

<table>
<thead>
<tr>
<th>Month of Follow-up</th>
<th>1st</th>
<th>2nd</th>
<th>3rd</th>
<th>4th</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calculated number of daily doses taken in 30 days</td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
</tr>
<tr>
<td>1st</td>
<td>24.9 (10.8)</td>
<td>23.0 (12.5)</td>
<td>22.4 (13.1)</td>
<td>21.6 (15.4)</td>
</tr>
<tr>
<td>2nd</td>
<td>27.0 (19, 31)</td>
<td>25.0 (15, 30)</td>
<td>23.5 (14, 30)</td>
<td>22.0 (11, 28)</td>
</tr>
</tbody>
</table>

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**ANNEX 1**

**CLINICAL RESEARCH**

Consumption of zinc syrup based on volume of syrup left in the bottle at the end of the month
be overcome by aggressive and continued feeding with food appropriate in quality and adequate in amount.

**Antimicrobial resistance and management of pneumonia**

- The multi-centre clinical trial to compare the efficacy of injectable penicillin with oral amoxycillin in the treatment of severe pneumonia in children is progressing in six of the original sites (Colombia, Ghana, India, Mexico, Pakistan, Viet Nam), but not in Zambia which has had decreasing patient enrolment. An interim analysis was performed in April 2000 by the Data Safety and Monitoring Board (DSMB) that confirmed the originally calculated sample size. Therefore, patient recruitment in this study, jointly supported by CAH and the USAID Applied Research on Child Health (ARCH) Project, Boston University, USA, will continue until December 2001.

- A descriptive study to investigate the case management of non-severe pneumonia, with and without wheezing, was conducted in two countries: South Africa and Viet Nam. This study was jointly supported by the ARCH Project. Data collection was completed in these two sites and a preliminary analysis performed. Failure rate among children with non-severe pneumonia is considerably less than expected. In addition, the amount of antimicrobial use prior to presentation at the hospital is low in South Africa (11%), but quite high in Viet Nam (44%). Preliminary findings from the data collected in these two sites indicate that children with non-severe pneumonia had chest X-ray evidence of pneumonia (75% in South Africa and 48% in Viet Nam). The presence of chest X-ray findings on such a high proportion of the children enrolled in the study implies that a bacterial process was the underlying cause (or a complication) of many of the cases of WHO-defined pneumonia in the children enrolled into the study at these two sites. Given the high likelihood of the presence of bacterial infection in children presenting with non-severe pneumonia, it would not be appropriate to enrol children with non-severe pneumonia into a placebo controlled trial, as originally conceived.

- A multi-centre double blind clinical trial looking at the clinical efficacy of oral cotrimoxazole versus oral amoxycillin twice a day for treatment of childhood pneumonia has been completed in Pakistan. 1459 children, aged 2–59 months, with non-severe pneumonia recruited from the outpatient departments of seven hospitals and one community health service were randomized. 98% of the children were successfully followed-up for at least one week after starting the treatment. The clinical treatment failure in the amoxycillin group was 16.1% as compared with 18.9% in the cotrimoxazole group. The treatment failure rate was more likely in infants, who had history of difficult breathing or those who had been ill longer before presentation. Both amoxycillin and cotrimoxazole provided equally effective therapy for non-severe pneumonia (see Table below). This means that irrespective of the choice of antibiotic, good follow-up of children is essential to prevent worsening of illness.

- Work progressed to increase specificity of treatment guidelines for children with wheezing diagnosed as WHO-defined, non-severe pneumonia. A model research proposal was developed, reviewed

### Primary outcome for children by study antibiotics

<table>
<thead>
<tr>
<th>Clinical Outcome</th>
<th>Amoxycillin (n = 725) n (%)</th>
<th>Cotrimoxazole (n = 724) n (%)</th>
<th>Total (n=1459) n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical cure</td>
<td>608 (83.9)</td>
<td>595 (81.1)</td>
<td>1203 (82.5)</td>
</tr>
<tr>
<td>Treatment failure</td>
<td>117 (16.1)</td>
<td>139 (18.9)</td>
<td>256 (17.5)</td>
</tr>
<tr>
<td>Change of antibiotic needed</td>
<td>98 (13.5)</td>
<td>121 (16.5)</td>
<td>219 (15.0)</td>
</tr>
<tr>
<td>Lost to follow-up</td>
<td>16 (2.2)</td>
<td>14 (1.9)</td>
<td>30 (2.0)</td>
</tr>
<tr>
<td>Non study antibiotics used</td>
<td>3 (0.4)</td>
<td>3 (0.4)</td>
<td>6 (0.4)</td>
</tr>
<tr>
<td>Death</td>
<td>—</td>
<td>1 (0.1)</td>
<td>1 (0.07)</td>
</tr>
</tbody>
</table>
and finalized during a workshop held in Geneva in December 2000. A multicentre study involving 6 countries (Colombia, Egypt, Ghana, India, Pakistan and Thailand) will soon be initiated. The main objectives of this study are to: i. follow the clinical course of children 1–59 months presenting in the out patient department (OPD) with wheeze along with cough and difficult breathing; ii. define the clinical characteristics of children with wheeze; and iii. determine how many children treated for wheeze relapse within 7 days. This research is being conducted in collaboration with the ARCH Project.

A multicentre clinical trial to compare the efficacy of chloramphenicol with that of ampicillin plus gentamicin in the management of very severe pneumonia in children aged 2 to 59 months was initiated in eight centres in six countries: Bangladesh, India, Mexico, Pakistan, Yemen and Zambia. This research is being carried out in collaboration with the ARCH Project and the Johns Hopkins University, USA. Completion of data collection is expected in mid-2002.

Research is in progress to develop a monitoring tool to identify clinical treatment failures in children with non-severe pneumonia. A team from Aga Khan Health Services, Pakistan has been implementing a protocol in 14 first level health facilities in Chitral, Pakistan. It is expected that data collection will be completed by April 2001 and results will be available by middle of 2001.

A multicentre trial of the efficacy of short course treatment with oral amoxycillin for non-severe pneumonia and its relationship with antimicrobial resistance started enrolment in November 1999 in the OPD of six hospitals in Pakistan. The study compares: i. the proportion of clinical cure with 3 days versus 5 days of oral amoxycillin therapy; and ii. the proportion of resistant Streptococcus pneumoniae and Haemophilus influenzae isolates two weeks after start of therapy in the two therapy groups. Data collection will be completed by April 2001 and results available by September 2001.

A protocol to investigate the efficacy of short course treatment with oral cotrimoxazole for non-severe pneumonia and its relationship with antimicrobial resistance has been finalized. Two sites, one each in Bangladesh and Indonesia have been identified. The study objectives are to: i. determine the clinical efficacy of a 3-day course of oral cotrimoxazole in the treatment of non-severe pneumonia compared to the standard 5-day course of oral cotrimoxazole; and ii. monitor the emergence of resistant strains of Streptococcus pneumoniae and Haemophilus influenzae in the two therapy groups. Delays have been experienced in gaining local ethical clearance and data collection should begin mid 2001.

Results of a pilot study supported by INCLEN and WHO to differentiate between sore throat due to viral infections from those needing antibiotic treatment were analysed in a workshop held in Bangkok (Thailand) in October 2000. Following this analysis, a proposal for a larger study was finalized in the same workshop. This will be a multicentre study conducted in at least 4 countries (Brazil, Croatia, India, and Latvia). Patient recruitment is expected to start in early 2001.

**Meningitis**

Work progressed to investigate the clinical efficacy and safety of a short course treatment with ceftriaxone (5 days versus 10 days) in the management of children with bacterial meningitis. The study drug will be available in early March 2001, paving the way to start the project by mid 2001. CAH will conduct this trial in collaboration with Johns Hopkins University.

CAH is supporting a study to develop rational fluid therapy guidelines for febrile children with bacterial meningitis, severe pneumonia and severe malaria as part of development and validation of inpatient management algorithm for severe febrile diseases. Phase I of development of guidelines for fluid therapy in children with severe febrile illnesses has been completed in Chandigarh, India. Complete data was collected on 61 children with acute
malaria cases fulfilled the study criteria. The data suggests that there is a significant increase in total body water and extracellular water in both the conditions. The plasma volume is not significantly changed on average. Children with meningitis who died had received significantly lower volume of intravenous fluids during first 48 hours, whereas the children with severe pneumonia who died had lower body water, plasma volume and higher plasma osmolality. This data suggests a need for further study of fluid therapy for these serious illnesses by comparing liberal fluids and normal maintenance requirement.

Results are now available for a pharmacokinetic study of oral cotrimoxazole in infants less than 3 months of age with serious bacterial infections. 79 infants 0–90 days old with pneumonia and other serious bacterial infection (meningitis) were studied in Guatemala and Viet Nam. Cotrimoxazole was administered as a single oral dose of 10 mg/kg sulfamethoxazole and 2 mg/kg trimethoprim (0–7 days old), or 20 mg/kg sulfamethoxazole and 4 mg/kg trimethoprim (≥8 days old). The absorption characteristics of cotrimoxazole were different in the infants of the two centres. Even though some infants absorbed cotrimoxazole well enough to benefit from the treatment, there was no way to predict sufficient absorption. Recommending oral cotrimoxazole in infants under 3 months of age with pneumonia and other serious bacterial infections does not seem warranted without further studies to determine the cause of the slow absorption and ability to exclude such children.
Annex 2

New papers arising out of research supported by CAH in 2000

Aggleton P, Ball A and Mane P. (Guest Editors) Special Issue: Young people, sexuality and relationships. *Sex and Marital Therapy*, 2000, Vol. 15, No. 3.


Annex 3
New documents arising out of the work of CAH in 2000

Documents concerning child health and development
HIV and infant feeding counselling: A training course.
Director’s guide. WHO/FCH/CAH/00.2.
Trainer’s guide. WHO/FCH/CAH/00.3.
Participant’s manual. WHO/FCH/CAH/00.4.
Overhead figures. WHO/FCH/CAH/00.5.
IMCI handbook. WHO/FCH/CAH/00.12.
Management of the child with a serious infection or severe malnutrition. Guidelines for care at the first-referral level in developing countries. WHO/FCH/CAH/00.1.
Mastitis: Causes and management. WHO/FCH/CAH/00.13. (E, S)

Documents concerning adolescent health and development
Boys in the picture. WHO/FCH/CAH.00.8. (E, F, S, P)
Programming for adolescent health and development: What should we measure and how:

What about boys? WHO/FCH/CAH/00.7. (E, F, S)
Working with boys. Programme experiences. WHO/FCH/CAH/00.10.

Programme Reports

Note: Arabic (A); English (E); French (F); Spanish (S); Portuguese (P). All documents are in English, unless otherwise stated.