# A Study of the Effectiveness of the Integrated Management of Childhood Illness (IMCI) Program Developed by WHO and UNICEF as a Key Strategy of Child Survival in Developing Countries

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         1992                    1996                              70

Community            Family

1980          1990

3                              IMCI

Clinical IMCI                              _____

_____ Family Households    Community                              HH/C IMCI

IMCI                          WHO

Health Sector Reform

IMCI                              11

5                                                                      IMCI

1997      IMCI                              HH/C IMCI

Non-

Governmental Organizations NGOs    Private Volunteer Organizations PVOs          HH/C IMCI

IMCI                                              IMCI

WHO/UNICEF    Child Survival    key strategy                    IMCI

IMCI

NGOs/PVOs

HH/C IMCI                    Project HOPE      PVO

IMCI

Tulane University

Project HOPE

Clinical IMCI                    WHO    IMCI

IMCI                                      1996                          6

IMCI                                                          HWs

IMCI

86        94

HWs

HWs

IMCI

HWs

IMCI

MCI

HWs

IMCI                              World Bank                          Health Sector Reform
HSR                        WHO    IMCI                          Cost-Effectiveness  CE

HSR

IMCI

HH/C IMCI                              NGOs/PVOs

USAID                                          2001    1

NGOs/PVOs  CORE                                              HH/C IMCI

HH/C

IMCI                        3                                              1

Community                          2  Community-based

3  UNICEF                16    Key Family

Practices              HH/C IMCI                              Community Health Workers

CHWs                                                                                          Health
Care Seeking


            HWs      CHWs
                              IMCI    Cost-Effectiveness  CE                                          IMCI-
Drugs   CE                                               IMCI


                        CE                              IMCI                          WHO Multi-Country
Evaluation of IMCI Effectiveness, Cost, and Impact  MCE             1999
                                                                                  2004


      IMCI
Community-based
                                                    66                  40                    HH/C IMCI
                                              IMCI   3                          Clinic
IMCI, Health System, and HH/C IMCI
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                        2000    11     IMCI                      1997
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# Acknowledgement

# Acronyms

| | |
|---|---|
| **ARI:** | acute respiratory infections |
| **AIN:** | Atención Integral a la Niñes (AIN: Integrated Care for Children) |
| **BASICS:** | Basic Support for Institutionalizing Child Survival |
| **BPS:** | basic package of services |
| **CAH:** | the Department of Child and Adolescent Health and Development |
| **CDC:** | Centers for Disease Control and Prevention |
| **CDD:** | Control of Diarrheal Diseases |
| **CHV:** | community health volunteer |
| **CHW:** | community health worker |
| **CMCI:** | case management of childhood illness |
| **DIP:** | detailed implementation plan |
| **EBF:** | exclusive breastfeeding |
| **EPI:** | Expanded Program on Immunization |
| **ETANA:** | Equipo Técnico Asesor Nacional: National IMCI Technical Team |
| **GDP:** | gross domestic product |
| **GOBI-FFF:** | Growth monitoring, Oral Rehydration Therapy, Breastfeeding, Immunization, Food, Female Education, and Family Planning |
| **IEC:** | information, education, and communication |
| **IDB:** | the Inter-American Development Bank |
| **IGSS:** | Guatemala Social Security Institute |
| **HH/C IMCI:** | Household and Community IMCI |
| **HSMP:** | Health Services Modernization (Improvement) Program |
| **IMCI:** | Integrated Management of Childhood Illness |
| **LAC:** | Latin America and the Caribbean |
| **MOH:** | Ministry of Health |
| **MCE:** | the Multi-Country Evaluation of IMCI Effectiveness, Cost, and Impact |
| **NGOs:** | non-governmental organizations |
| **ORT:** | oral Rehydration Therapy |
| **PAHO:** | Pan American Health Organization |
| **PHC:** | primary health care |
| **PVO:** | private volunteer organization |
| **SCM:** | standard case management |
| **SIAS:** | the Comprehensive Health Care System |
| **TBA:** | traditional birth attendant |
| **UNICEF:** | United Nations Children's Fund |
| **USAID:** | United States Agency for International Development |
| **VHW:** | volunteer health worker |
| **WHO:** | World Health Organization |

# 1. Introduction

## 1-1  Background of this study

We cannot ignore the fact that every year some 12 million children still die before they reach their fifth birthday, many of them during the first year of life in spite of huge efforts to improve child health and nutrition over the past 25 years.  A World Health Organization (WHO) report shows that in the developing world in 1995, about 7.5 million children under age 5 died from one or, frequently, more than one of five conditions: malaria, malnutrition, measles, acute respiratory infections (ARI) and diarrhea (WHO a. 1998: 61-63).  In the early 1990s WHO and the United Nations Children's Fund (UNICEF) led the development and promotion of a new strategy known as Integrated Management of Childhood Illness (IMCI).  This initiative aims to significantly reduce mortality and morbidity associated with the five major causes of disease in children under-five and to contribute to their healthy growth and development (Tulloch 1999: suppl II 16). Implementation of the IMCI strategy began in 1995.  By June 1999, 63 countries were at different stages of implementation, and at least 12 others had expressed interest but had not yet started activities (WHO b. 1999: 1).  While IMCI programs are being expanded rapidly in the world, studies on the effectiveness of IMCI on child survival are urgently needed.  However, the studies to monitor and evaluate the impact of IMCI have just started; for example, the Multi-Country Evaluation of IMCI effectiveness, cost, and impact (MCE) is being conducted by WHO from 1999 to 2004, and its very preliminary results have just been shown on the WHO website as a progress report (WHO c. 2001: 17).

## 1-2  Objective and methods of this study

The objective of this report was to study the effectiveness of the IMCI program on child health and development through reviewing published articles and available reports in order to summarize them as a collective view to date.  The articles and reports reviewed covered several types of IMCI programs in many developing countries.  As a case study, the implementation process of IMCI in Guatemala was studied.  The published articles were searched through the electronic database MEDLINE and collected in a library of Tulane University in the United States.  Many of the reports were searched and downloaded through websites.  Reports of Project HOPE, which is a private volunteer organization (PVO) based in the United States and has implemented a Child Survival project including IMCI interventions in Guatemala, were collected directly from the headquarters in the US.  Much of the information about IMCI in Guatemala was obtained through personal communication by electronic mail.  Information about the projects in Guatemala by the Basic

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Support for Institutionalizing Child Survival (BASICS) of the U.S. Agency for International Development (USAID) was obtained through contact with Mr. David McCarthy, a representative of the BASICS/IMCI programs. Information of the Comprehensive Health Care System (SIAS)/ Guatemala was provided by Ms.Beatriz Hernández, a coordinator of the SIAS office/the Ministry of Health (MOH) /Guatemala. Information about IMCI in Guatemala was provided by Dr. Francisco Chew (the MOH/Guatemala) and Ms. Peggy Koniz-Booher (URC: PVO/ USA). Dr. Mirta Iraheta Monroy (a pediatrician of Guatemala Social Security Institute: IGSS) and her colleagues at the MOH provided additional information and documentation about SIAS and IMCI in Guatemala.

## 2. Basic concepts and strategies of IMCI

### 2-1 Background of IMCI

In the past decade, major progress has been made to reduce and contain childhood mortality and morbidity through several strategies. Following the Alma Ata Declaration in 1978, the primary health care (PHC) approach promoted community participation and inter-sectoral collaboration as key strategies towards the attainment of "Health for All" by the year 2000. UNICEF summarized that the implementation of the Growth monitoring, Oral Rehydration Therapy (ORT), Breastfeeding, Immunization, Food, Female Education, and Family Planning (GOBI-FFF) strategy was a major factor in the "Child Survival Revolution" resulting in improved immunization status to 80 per cent in 1990, improved use of ORT and nutrition promotion world-wide. These efforts were further accelerated in the 1990's following the World Summit for Children where world leaders committed to the improvement of the health and nutrition status of children, and the nearly universal adoption of the Convention on the Rights of the Child and the Convention on the Total Elimination of Discrimination Against Women. Furthermore, the implementation of the Bamako Initiative, community based care, community based nutrition intervention, the Baby Friendly Hospital Initiative and the Safe Motherhood Initiative have all contributed towards improved maternal and child health (UNICEF a. 1999: 2).

In spite of the past efforts to improve child health, mortality rates are still unacceptably high and at least three out of four of children who are taken to health facilities are suffering from one of five conditions: malaria, malnutrition, measles, ARI and diarrhea. Other major causes of child mortality are related to pregnancy and childbirth, sepsis, neonatal tetanus and AIDS (WHO a. 1998:61-63). The 1996 UN Secretary General's Report on the Review of Progress towards Meeting the Mid-Decade Goal of the World Summit for Children concluded that progress towards meeting the under-five mortality rates and malnutrition reduction goals have been inadequate, and that further efforts were urgently needed to ensure basic health care and well being for millions of children (UNICEF a. 1999: 2). A lot has been learned from disease-specific control programs such as the control of Diarrheal Diseases (CDD), ARI programs, and the Expanded Program on Immunization (EPI) in the past 20 years, as shown in WHO and UNICEF web sites (WHO d and UNICEF b). However, as there is considerable overlap in the signs and symptoms of several of the major childhood diseases, a single diagnosis for a sick child is often inappropriate (WHO e). For example, cough and/or fast breathing as a presenting complaint may be associated with pneumonia, severe anemia, malaria, and malnutrition (WHO f. 1-2). In fact, most sick children present with signs and symptoms related to more than one of these five conditions. Tulloch noted that surveys of the management of sick children reveal that many are not properly assessed and treated and that their

parents are poorly advised (Tulloch 1999: SSII16). In addition to the technical limitation of diagnosis and treatments based on disease-specific control programs, the presence of multiple disease-specific programs contributed to a number of administrative, political and technical difficulties in the delivery of health services. A report of private volunteer organizations (PVOs) and non-governmental organizations (NGOs) mentioned that; ''the administrative difficulties have been particularly evident in decentralized health systems. Government health workers and PVOs/NGOs working at the district level have found their time consumed by endless cycles of meetings, courses and official visits from program managers based in the capital, each one focused on just one health problem or intervention such as ARI, diarrhea, immunization, breastfeeding, or malaria. In many cases health workers at the district and community levels do not have time to apply the recommendations from one course or official visit before another one comes along.'' (Winch et al. 2001: 11)

In response to this progress and problems in child survival and nutrition strategies, WHO and UNICEF started developing Integrated Management of Childhood Illness (IMCI) in 1992 and launched it in 1996. The challenge to IMCI is to combine these lessons into a single more efficient and effective approach to managing childhood illness. Already a number of other agencies, institutions and individuals; such as The World Bank, UNDP, USAID, BASICS, PVO/NGOs, and academic institutions such as Johns Hopkins University and London University, are contributing to this initiative as well as the Ministries of Health in many developing countries (WHO e).

## 2-2   Basic concepts and strategies of IMCI

A WHO report shows that the IMCI strategy combines improved management of childhood illness with aspects of nutrition, immunization, and other important factors influencing child health, including maternal health. The objectives of the strategy are to reduce death and the frequency and severity of illness and disability, and to contribute to improved growth and development (WHO f. 1999: 2). It uses an approach that addresses not only individual diseases but also **the sick child as a whole**. The curative component of IMCI is adapted to address the most common life-threatening conditions for children in each country focusing on diarrhea, pneumonia, measles and malaria (where applicable) as well as management of severe malnutrition and nutritional counseling (WHO g). The strategy includes a range of other preventive and curative interventions, which aim to improve practices both in the health facilities and at home as shown in Table 1. In addition to the leading causes of childhood mortality, the generic WHO/UNICEF guidelines address other commonly associated conditions such as anemia and ear infection. The IMCI Adaptation Guide also adds more common condition and diseases such as wheeze and HIV/AIDs as shown in Table 1 (WHO f. 1999: 2-3).

There are three components to IMCI, and interventions in all three components encompass

both curative and disease prevention/health promotion activities:

1) Improving case management skills of health workers through the provision of guidelines on IMCI, adapted to the local context, and activities to promote their use;

2) Improving the health system by a) ensuring the availability of essential drugs and other supplies, b) improving the organization of work at the health facility level, and c) improving monitoring and supervision;

3) Improving family and community practices through education of mothers, fathers, other child caretakers and members of the community with a focus on health seeking behavior, compliance, care at home, and on overall health promotion.

WHO shows the range of possible IMCI planning and management activities as shown in Table 2 (WHO h. 1999: 2).

## 2-3    The first component: Improving case management skills of health workers

It was decided to focus initially on improving care at the first level health facilities where millions of children arrive each day.  A set of generic guidelines (often referred to as an IMCI algorithm) for management of childhood illness at this level was completed in 1996.  During development of elements, the generic guidelines were improved or validated by research and field-testing.  These activities have been summarized in a series of 12 articles (WHO i. 1997: 7-128). The primary objective of the generic integrated case management guidelines was effective treatment of ARI, diarrhea, measles, malaria, and malnutrition by health workers at first-level health facilities as shown in Table 1.  Gove shows the technical basis and overview of the IMCI guidelines that rely on detection of cases based on simple clinical signs, without laboratory tests, and offer empirical treatment.  A careful balance has been struck between sensitivity and specificity using as few clinical signs as possible, which health workers of diverse backgrounds can be trained to recognize accurately (Gove s et al.1997: 7-24).

The guidelines consist of IMCI case management charts and recording forms.  The case management steps are shown in Table 3 (ibid 8-9).  At first, for all sick children, trained health workers ask caretakers about the child's problem, then check for "general danger signs": whether the child is able to drink or breastfeed, the child vomits everything, the child has had convulsions, and the child is lethargic or unconscious.  The danger signs suggest that immediate referral or admission to hospital is needed.  Then the health workers ask caretakers about major symptoms shown in Table 4, and check for malnutrition and anemia, immunization status and for other problems (WHO t 2000: 17).  The guidelines pay particular attention to improving the communication and counseling skills of health workers including age-specific counseling about breastfeeding and complementary feeding, homecare for illness, and when the child should be brought in for follow-up (Tulloch 1999: SII 17).

These generic materials cannot be used without substantial adaptation at country level, based on the country-specific situation. The IMCI adaptation guide developed by WHO summarizes the evidence behind the generic IMCI guidelines and gives some options that might be considered in different circumstances. It includes, for example, modifying classification of appropriate foods and fluids, and the introduction of local terms for communicating clearly with caretakers. The adaptation process may also bring into consideration additional diseases such as dengue hemorrhagic fever and Chagas disease (Ibid. SII 17). If translation is required, it is supposed to follow this order: first translate the list of key words, then the adapted chart and the adapted recording forms, and then the adapted modules. The IMCI adaptation guide provides translations of common IMCI terms into French, Spanish and Russian (WHO u. 1998). An 11-day training course was also developed for first-level facility health workers who are able to read and learn from written materials. The course combines classroom work and hands-on clinical practice built around the IMCI guidelines and algorithms (Gove s et al.1997: 10-11).

## 2-4 The second component: Improving the health system

IMCI focuses on essential elements of the health system that must be in place to ensure the effectiveness of child health interventions. The second component of IMCI addresses issues such as drug availability, IMCI planning and management, organization of work at health facility level, health information systems, and health sector reform. After reviewing the experience of the first countries to adopt and implement the IMCI interventions, WHO and UNICEF made recommendations for improving the health system to support IMCI as shown in Table 5 (Lambrechts T et al. 1999: 588). WHO emphasizes that the introduction of IMCI in every country should be coordinated with health sector reform efforts promoted by the government and donor agencies (WHO j. 1999: 4). Many aspects of health sector reform are relevant to, and consistent with, IMCI strategies and activities. WHO suggests that the IMCI strategy can play an important role in most aspects of health sector reform, in particular through 1) improving the cost-effectiveness of essential child health care services, 2) strengthening the capacity for decentralized management at district level, 3) improving the quality of child health care, 4) supporting the new role of the Ministry of Health, 5) improving private health care provision for young children, 6) cost saving, and 7) strengthening drug supply and management (Ibid. 2).

## 2-5 The third component: Improving family and community practices

Although the IMCI strategy includes interventions at multiple levels (first-level care, referral-level care, health system, and family and community), the only tools available in 1996 were the IMCI clinical guidelines and the course for the in-service training of first-level health workers. At

the First Global Review and Coordination Meeting on IMCI held in Santo Domingo, Dominican Republic, in 1997, it was recognized that improving the quality of care of sick children at the health facility level would have only a limited impact on the reduction of child morbidity and mortality (UNICEF a. 1999: 3 and WHO k). Tulloch mentioned that better health worker skills alone will, however, have a limited impact if efforts are not made to improve family and community practices related to child health and to strengthen fundamental aspects of the health system (Tulloch J 1999: SII 18).

UNICEF has taken the lead in working with WHO and other partners through an Inter-Agency Working Group to develop strategies for improving home and community health care for children. Based on the Inter-Agency meetings held in October 1997, April 1998, November 1998, and June 1999, a working paper (''Draft'') which outlines the key strategies for improving family and community practices was published in December 1999 (UNICEF a. 1-17). The goal and the objectives set by the working group are shown in Table 6. In order to achieve these objectives, the draft shows the key strategies and the key activities of each strategy, including guides on the level of implementation and the monitoring and evaluation (Ibid. 5-14). The most noteworthy effort of the working group was that a consensus has been reached on sixteen family practices, which are based on scientific evidence and country experience, to improve care of children at the household and community levels in order to enhance child survival, growth and development shown in Table 7 (Ibid. 11).

Furthermore, the consensus on the sixteen family care practices was confirmed at the UNICEF-led International Workshop on Improving Children's Health and Nutrition in Communities held in Durban, South Africa, during June 2000. The Durban Workshop produced a global consensus that the community component of IMCI is essential to any improvement in child morbidity and mortality in the next decade (Casazza L 2000).

Implementation of this component, referred to as Household and Community IMCI (HH/C IMCI), is a complex undertaking and depends on multiple sectors. While implementation of the first component of IMCI has been progressing in many countries, WHO and UNICEF are providing technical support to a limited number of countries to implement HH/C IMCI. On the other hand, NGO/PVOs have been leading the development of a framework for planning and implementation of HH/C IMCI. They are the members of Child Survival Collaboration and Resources Group (CORE Group) that is a network of more than 35 non-profit organizations based in the United States and is working together to promote and improve primary health care programs for women and children and the communities (The CORE Group web site). The CORE Group and USAID (Child Health Research Project and BASICS II) sponsored a workshop in Baltimore, Maryland, from January 17(19, 2001 entitled ''Advancing PVO/NGO Technical Capacity and Leadership for Household and Community IMCI.'' During the workshop participants reflected on the framework and made suggestions for how to refine it. The framework addresses the issue of ''how'' Community IMCI

can be implemented at the community level (Winch et al. 2001: 1-102). A report written by the participants at the CORE workshop shows that they defined HH/C IMCI as "the optimization of a multisectoral platform for child health and nutrition that includes three linked requisite elements." The three elements of HH/C IMCI are: Element 1, improving partnerships between health facilities (and services) and the communities they serve, Element 2, increasing appropriate and accessible care and information from community-based providers, and Element 3, integrated promotion of key family practices critical for child health and nutrition (Ibid. 18). The report explains that multisectoral platform addresses social, economic, and environmental factors that facilitate or hinder the adoption of the Key Family Practices. It provides an opportunity for NGOs and other organizations to work with local governments and other partners to develop innovative approaches to the promotion of child health, nutrition, and development (Ibid. 18).

## 2-6    Current situation of implementing IMCI

IMCI implementation in a country proceeds in three phases. The first phase is activities for the introduction of IMCI, which leads to a decision by the Ministry of Health on whether to move forward with further preparations and planning. The second phase is for early implementation, in which each country adapts the generic IMCI clinical guidelines to its own epidemiological and cultural characteristics and begins implementation in a limited number of areas. The third phase, which is focused on expansion, draws on the experience gained during early implementation to introduce a broad range of IMCI activities and increase access to them (Lambrechts et al. 1999: 582). Implementation of the IMCI strategy began in 1995 when a small number of countries expressed interest in trying out the approach. By the end of June 1999, 63 countries had started to implement the strategy. Twenty countries (first phase) were just starting to explore the process while 31(second phase) were already adapting the generic materials to their needs or had completed this step and were training health workers in selected districts. Twelve countries (third phase) had moved into a phase of expansion with the aim of achieving broad coverage with training and of introducing the other components of the strategy (Tulloch J 1999: SII 17-18). By June 1999, at least 12 others had expressed interest but had not yet started activities (WHO l. 1999: 1). A map for the status of IMCI implementation as of June 2001, which was copied from WHO/Child and Adolescent Health and Development/IMCI Internet home page, is shown in Figure 1 (WHO m). The list of countries in different phases is shown in Table 8 (WHO l. 1999:1). The IMCI coverage rate of all developing countries, as of June 1999, is 39% (63/161). The rate is calculated using the list of IMCI countries in the WHO report (Ibid.1). The regional coverage rates in developing countries are Sub Saharan Africa 46% (21/46), Middle East and North Africa 30% (6/20), South Asia 63% (5/8), East Asia and Pacific 26% (7/27), Latin America and Caribbean 39% (13/33), and CEE/CIS and Baltic States 41% (11/27). If the 12 countries that had expressed interest are included,

the total coverage rate is 47% (75). (Ibid.1)

WHO IMCI guidelines and tools are available for several sectors such as first-level facilities, referral-level facilities, health system, family and community, and program manager. The list of WHO guidelines, tools, and documents available on the website, such as the IMCI training course for first-level workers, adaptation of guidelines and materials for countries, follow-up after IMCI training, IMCI in the community, IMCI inpatient training guide, IMCI outpatient training guide, and IMCI generic treatment charts, is shown in Table 9 (WHO n). WHO and UNICEF recommendations for IMCI implementation for each IMCI component are also shown in a report of a review on the experience of the first countries to adopt and implement the IMCI interventions (Lambrechts T et al. 1999: 582-594). WHO suggested the tasks for planning and implementing activities to improve family and community practices as shown in Table 10 (WHO o. 1999: 4).

# 3. Effectiveness and problems of IMCI in developing countries

The objectives of IMCI are to reduce death and the frequency and severity of illness and disability, and to contribute to improved growth and development (WHO f. 1999: 2). The final impact of IMCI will be the decline of mortality and morbidity to child illnesses. However, as it takes many years to measure the impact of IMCI on mortality and morbidity, reports from evaluation research with rigorous experimental designs are not available yet. Thus, the objective of this document is to summarize available reports and articles on the effectiveness of IMCI projects in order to estimate the potential effectiveness of IMCI on child survival and development. The reference reports and articles were chosen based on designs adequate to determine whether project/ program goals have been achieved and/or trends are moving in the right direction, rather than probability designs (Victora CG et al. 1998: 8).

The IMCI evaluation team of WHO suggests four categories of evaluation indicators: provision, utilization, coverage, and impact. A logical order leads from provision to impact. Adequate provision means that the services must be available and accessible to the target population, and that the quality of services must be appropriate. Once services are available, the population may make use of them, in this case by bringing their children to the health services. Utilization will then result in a given population coverage. Finally, the achieved coverage may lead to an impact on health or behavior. Any important shortcomings at the early stages of this chain will result in failures to achieve comprehensive goals (Ibid. 6-7). The list of indicators proposed by the WHO team is shown in Table 11.

The following section is divided into three levels of IMCI program: national, clinic, and family and community instead of being divided into those four types of indicator categories because many reports and articles quoted in this report used multiple indicators crossing-over the four categories.

## 3-1 National level: Implementation of IMCI and the cost-effectiveness

The implementation of IMCI is carried out in a phased manner, beginning with introduction of the IMCI strategy, then a period of early implementation in selected districts, and finally expansion.

WHO has closely monitored the experience in six "early-use" countries (Gambia, Kenya, Ethiopia, Bangladesh, Uganda, and Tanzania). The report, which reviewed early experience after the second phase (early implementation) had been completed, shows that the documentation of implementation experience in these countries until the end of 1996 (over approximately 18 months of implementation) suggests that achieving consensus on the adapted guidelines takes time, and that this consensus is critical (WHO p. 1997: 126). The experienced problems in the countries are mainly based on the adaptation process and the limitations of the IMCI guidelines and training

materials. Some of these problems are described in the next section (3-2 Clinical level). In the report WHO describes that these early experiences have generated a very high level of interest in IMCI and a high demand for technical assistance. Achieving consensus among stakeholders at each step is essential and takes time, and sustainability will require active partnership with other agencies, in particular UNICEF, the World Bank, bilaterally supported health projects, and NGOs (Ibid. 126).

The cost-effectiveness of IMCI implementation is very important in developing countries. In March 1999, Inter-agency Task Force (IATF), with members from the World Bank, WHO, and USAID, began to develop a simple and reliable tool to estimate the costs of introducing and implementing IMCI in a country. Weissman, who presented in the CORE Group meeting in January 2001 as described in the section 3-3-1, summarized the development and design of the IMCI costing tool. There are two types of cost, the price of implementation start-up costs and the recurrent costs of the program encountered in the introduction and expansion phases (Kelly LM et al. 2001: s141 presented by Weissman). The start-up cost includes the costs such as orientation meetings, national and district level planning meetings, review meetings, adaptation of IMCI guidelines, and training courses. The recurrent cost includes the costs of case management and treatment and IMCI-specific overhead costs, and provides the cost per child of treating specific diseases. The preliminary costing tool had been field-tested in Bolivia by January 2000. The cost per IMCI training course during the Bolivian implementation was US$10,900 for two 11-day training workshops and US$4,600 for two 5-day meetings. The course in Peru was estimated to cost US$2,000 per trainee. The highest average treatment cost among IMCI diseases per case is about US$4.50 for severe dehydration and severe persistent diarrhea in Bolivia (Ibid. s141-144 presented by Weissman).

The WHO Multi-Country Evaluation of IMCI Effectiveness, Cost and Impact (MCE) team also has developed the MCE costing tools and methods to document the economic aspects of IMCI implementation and to measure its cost-effectiveness as described in the following section 3-4. The tools and methods have been field-tested, but the results are not available yet (WHO c. 2001: 14-15).

## 3-2  Clinic level

### 3-2-1  WHO studies in six early IMCI implementation countries: IMCI algorithm and the training course

The IMCI guidelines are based on both expert clinical opinion and research results and rely on detection of cases based on simple clinical signs, without laboratory tests, and offer empirical treatment (Gove S et al.1997: 7-24).

In 1993, WHO completed the development of a draft algorithm for IMCI. The algorithm has

been refined through research and field tests in the Gambia, Kenya, Ethiopia, and Tanzania (Ibid. 8). The pretest version of the algorithm differed from the final version since it includes an examination of all children for Bitot's spot, the classification of dehydration (including absence of tears, dry mouth, and dry eyes with distinction between "dry" and "very dry"), and the malaria algorithm for low-risk areas (based on a rectal temperature of ≥38°C, or feels hot, and no runny nose or measles) (Simoes EAF et al. 1997: 44).

An 11-day training course was developed for first-level facility health workers who are able to read and learn from written materials. A draft version of the course was pretested in Ethiopia, in July 1994, using the same guidelines and training materials as were subsequently used in the study in Uganda. After the pretests, the case management charts and modules (written exercise, group discussions, drills, role plays, and exercises based on photographs and video) were revised, and a separate case management chart and training module were added for young infants (1 week to 2 months old). The full course was field-tested in Tanzania in February 1995, and the revised materials were made available to countries for closely monitored use in November 1995 (Gove S et al. 1997: 10-11).

Since articles and reports on evaluation research for the effectiveness of the IMCI algorithm and training course have not been published in sufficient numbers yet, it is important to review evaluation research on the drafts to assess the effectiveness, taking the difference of the drafts from the final version into account.

*The Gambia*

The draft IMCI algorithm was tested in 440 Gambian children aged between 2 months and 5 years at the outpatient department of the Medical Research Council Laboratories in Fajare, Gambia, between May 1993 and April 1994. The children were first assessed by a trained field worker using the algorithm, and then by a pediatrician whose clinical diagnosis was supported by laboratory investigations and a chest X-ray. Comparison of the fieldworkers' diagnoses with a pediatrician gave acceptable levels of sensitivity and specificity for the diagnosis of pneumonia, dehydration, measles and malnutrition. While the algorithm dealt with the majority of presenting complaints, the most common problems not addressed by the algorithm chart were skin rashes, mouth problems, and eye problems. Diagnosis of otitis media was missed by field workers in a substantial proportion of children with this condition. The main failure of the algorithm was in the diagnosis of malaria, which was based on a history of fever based on the draft IMCI algorithm. The specificity of fever in the diagnosis of malaria was only 9%, so that reliance on this symptom to diagnose malaria would have led to massive over-treatment with antimalarials, especially in the low transmission dry season. Several attempts were made to improve the specificity of the diagnosis of malaria by using additional symptoms and signs, in addition to that of fever. In this study, a history of chills or sweats proved of no value to discriminate between children with malaria and non malaria fevers,

while shaking of the body was significant for clinical malaria, but had a low sensitivity, and intermittent fever was inversely related with the presence of malaria. Because of the difficulty of diagnosing malaria on the basis of signs and symptoms alone, microscopy should be used whenever possible. Among the children admitted by the physician, 45 % had been recommended for admission by the algorithm. The biggest discrepancy lay in admissions for pneumonia. Some of the children with pneumonia admitted by the physician could have been managed as outpatients, although their recovery might have been delayed (Weber MW et al. 1997: 25-32).

*Kenya*

The IMCI draft algorithm was tested in Nyanza Province, Kenya at Ministry of Health Hospital as a primary referral facility. During the 14-month study period (June 1993 to September 1994), 1975 children aged between 2 months and 5 years were enrolled in the outpatient clinic. The study on the classification of childhood illness by minimally trained health workers using the IMCI algorithm compared to a fully trained pediatrician with some laboratory and radiological support reveals a range of sensitivity (51-100%) and specificities (0-98%). The IMCI algorithm directly addressed 86% of all primary main complaints among children and was found to be sensitive with the exception of classification of diarrhea (51%) and referral for hospital admission (42%). The classification of fever and ear problems had low specificities (0% and 2%, respectively). Although the overall sensitivity for detection of pneumonia was high (97%), health worker sensitivity was relatively low for detection of chest indrawing (57%) and for fast breathing (64%). The health worker classified almost half of all enrolled children as having pneumonia and malaria. There also substantial overlap in classification of illness between fever and malnutrition. Danger signs defined by IMCI were uncommon, and only 15% of the children were referred for admission by the physician. The overall sensitivity for referral by the health worker was only 42% compared to the physician (Perkins BA et al. 1997: 33-42).

*Ethiopia*

The performance of six primary health workers who are outpatient clinic nurses was evaluated after following a 9-day training course based on the draft IMCI training materials within the Gonder District, Ethiopia, in August 1994. The health workers were trained in the entire process of case management: assessment, classification, treatment of sick children (aged 2 months to 5 years, a total of 449 sick children), and counseling of the mothers. Immediately following the training, a 3-week study was conducted in the primary health centers to determine how well these workers performed compared with three pediatricians' assessment of the children using the IMCI algorithm without laboratory results. Most of the complaints (87%) volunteered by the mothers were covered by the IMCI charts of algorithm. Overall, the health workers performed well in the clinic. The assessment of commonly seen signs or easily identifiable signs was good, with sensitivities of 67-71%, whereas

the assessment of uncommonly seen signs or less easily quantifiable signs has a fair or poor sensitivity of 20-45%. The classification of pneumonia, diarrhea with signs of dehydration, and malnutrition showed very high sensitivities of 76-98%. The classification of febrile illnesses had a very low sensitivity due to problems in using the draft algorithm. Of 39 children classified as having severe disease, nine were misclassified, mostly by one nurse due to inaccurate observation of chest indrawing. Overall, correct treatment was delivered to a high proportion of children. Antimicrobial treatment was especially good, with 95-98% of children receiving correct treatment. No child in this study received unnecessary antibiotics, one major advantage of the IMCI classification being the clear identification of children who do not require antibiotics (Simoes EAF et al. 1997: 43-53).

*Tanzania*

The IMCI training course developed by WHO/UNCEF for health workers was field tested in Arusha, United Republic of Tanzania, in February and March 1995. Three types of first-level facility health workers (a total of 23), medical assistants (8), rural medical aides (8), and maternal and child health aides (7), participated in the 11-day training course combining classroom work and daily inpatient and outpatient clinical sessions. The objectives of the field test were to determine the effectiveness of the course in preparing participants to manage sick children correctly, and to suggest improvements in the course materials and teaching procedures. Trained facilitators observed and documented health workers' performance using key clinical skills and whether they completed the exercises in the modules correctly. These facilitators determined the competence of the participants in correct case management. The course was effective in training medical assistants using the training methods laid out in the facilitator guide. They were able to read the modules without difficulty and completed the whole course in the given time. The rural medical aides and maternal and child health aides experienced considerable difficulty in reading the modules in English and in doing the written exercises. Overall, the results show that the participants were able to assess, classify and treat most sick children correctly by the end of course, and that most were able to provide adequate counseling to the mother. Finally, specific improvements were suggested and subsequently incorporated into the guidelines and training materials (WHO q. 1997: 55-64).

*Uganda*

A draft IMCI algorithm (June 1994 version) was used by medical assistants to assess and classify the illnesses of 1,226 children aged 2-59 months in the outpatient clinic of Kabarole District Hospital in western Uganda from August 1994 to January 1995. Clinical assessments were carried out by two medical assistant trained in IMCI and four general medical officers who had 7-13 years of clinical experience. The classification of each child's illness, as determined by the IMCI, was compared with the medical officer's assessment based on clinical evaluation, laboratory results, and

the WHO Radiology Working Group's interpretation. After a week's training, medical assistants successfully used the assessing and classifying portion of the IMCI algorithm. The algorithm was able to classify the presenting illnesses in 93% of the children seen. Of those 69% were classified into more than one symptom category, and this confirms the importance of an integrated approach in diagnosis and treatment of sick children. Seven percent were not classified in any symptom category, 8% had a danger sign, and 16% were classified into a severe category recommending urgent hospital referral by the IMCI. Overall, the specificity of the algorithm for major disease categories was very good, but the sensitivity and positive predictive values were variable. The researchers conclude that this is an important advance in the care of children in primary health care facilities in developing countries. They found that the IMCI algorithm referred fewer children for admission to hospital than did the hospital's medical officers (Kolstad PR et al. 1997: 77-85).

The studies in six countries summarized above show that the guidelines can be expected to succeed in assisting health workers at first-level health facilities identifying most of these conditions with high sensitivity in spite of varying the range as shown in Table 12 (The Child Health Project 1998). The average specificity varies across clinical conditions. Identified problems are described below.

*WHO conclusions*

Based on the field tests of the IMCI guidelines in six countries, WHO/Division of Child Health and Development concluded that the IMCI guidelines can lead to appropriate management of sick children by health workers in first-level facilities, and summarized that:

1) Health workers trained in IMCI performed well compared to pediatricians who sometimes had access to radiology and laboratory results, and most children received the specific treatments they needed.

2) Ethiopia and Tanzania studies that assessed the performance of health workers who had been trained in the full case management process showed substantial success in their communication with mothers and in teaching them how to deliver treatments at home.

3) The post-training observations carried out in Ethiopia and the limited experience with follow-up after district-level training suggest that health workers can and do apply what they have learned when they return to their health facilities.

4) The guidelines enabled health workers to manage a very high proportion of presented clinical problems (86% in Kenya, 87% in Ethiopia, and 93.5% in Uganda) (WHO p. 1997: 119).

Issues of the guidelines that the six studies in the WHO report identified that require further attention are:

1) Performance of lower chest wall indrawing as a sign for referral:

Lower chest wall indrawing is defined as the inward movement of the bony structures of the lower chest wall during inspiration, which the guidelines use as a clinical sign of severe pneumonia. The studies summarized above reported difficulties with health workers' identification of lower chest wall indrawing and with referral decisions based on this clinical sign. Chest indrawing is also one of the more difficult clinical sighs to teach and repeated clinical practice is needed to identify its presence or absence in an inpatient setting. Variations in the clinical definition of severe chest indrawing in young infants or of definite chest indrawing in older infants and young children can have substantial impact on the performance of the IMCI criteria for detecting severe pneumonia. Indications for referral of children with severe pneumonia and the appropriateness of treating certain children with severe illness at first-level health facilities are important research questions (Ibid. 119-120).

2) Specificity of the clinical signs of malaria in settings of low malaria prevalence:

In high malaria risk settings without microscopy, the IMCI guidelines recommend presumptive treatment for malaria of all children with a fever upon presentation at the health facility or a history of fever during the current illness. There is a need for increased specificity in the clinical signs leading to a classification of malaria in settings with low malaria prevalence. In the initial draft IMCI guidelines, an attempt was made to improve the specificity of the malaria classification in a low risk setting by requiring that the fever be either intermittent or accompanied by chills, sweats or shaking of the body. In the Gambia, during the low malaria risk season, this combination of signs was not predictive of malaria. The guidelines were modified to exclude malaria treatment if a fever is accompanied by a runny nose, measles or another apparent cause of the fever. Research is ongoing to improve the performance of the guidelines in low malaria risk settings (Ibid. 120-121).

3) Performance on clinical signs in the detection of anemia:

The clinical signs for the detection of severe anemia requiring referral to hospital for possible transfusion should be as sensitive and specific as possible. A low sensitivity risks missing referral for a potentially life-saving treatment (transfusion) that is usually only available in hospital. Low levels of specificity will result in unnecessary referrals that burden the families and referral facilities (Ibid. 121).

4) Performance on the guidelines in identifying children requiring referral:

Examples and discussions were shown in the next section (3-2-2).

Furthermore, WHO emphasizes that using inappropriate terms, such as fever, convulsions, and fast breathing, can cause problems with sensitivity or with specificity in case detection, resulting in cases being missed or in significant over-treatment (Ibid. 124).

## 3-2-2 Referral

*Bangladesh*

The study in Bangladesh used the final version of the IMCI algorithm to provide a computerized analysis of its performance, based on clinical signs observed by a pediatrician (Gove S et al. 1997: 9).  The objective of the study was to evaluate and improve the IMCI guidelines with respect to identifying young infants (aged 1 week to 2 months) and children (aged 2 months to 5 years) requiring referral to a hospital in an area of low malaria prevalence.  A total of 234 young infants and 668 children who presented at a children's hospital in Dhaka, Bangladesh, were prospectively sampled and examined by pediatricians from September 1994 through February 1995.  Two experienced pediatricians evaluated the enrolled patients, using a standardized history and physical examination form covering the signs included in the IMCI algorithm, and several other signs familiar to the doctors.  To measure the sensitivity and specificity of the IMCI guidelines for identifying young infants and children ''needing referral,'' a computer program used the collected data to generate IMCI diagnosis and referral decisions.  The results of the computer program based on the IMCI algorithm were compared to a pediatrician's judgment of a ''need for hospital admission'' as a standard.  The IMCI's sensitivity for a pediatrician's assessment in terms of referrals was 84-86%, and the specificity was 54-64%.  The most frequent provisional diagnoses in patients whose need for admission was missed by the algorithm were diarrhea and dysentery.  Many of these referrals may have been missed because the IMCI guidelines rate the severity of illness for each individual condition, while the study pediatricians apparently assessed the overall condition of each child.  Half of these patients were judged by the pediatrician to be malnourished or anemic, and this seems to have influenced the decision to admit.  Malnutrition interacts with diarrhea and other diseases to increase the duration, severity and mortality of the illness, which suggests that nutritional status should be considered in referring or admitting a sick child to hospital.  Increased sensitivity of the IMCI algorithm to severe malnutrition would also have increased the referral rate, even without better integration of the information for each child.  The most frequent provisional diagnosis in patients needlessly referred by the algorithm was pneumonia.  Much of the algorithm's over-referral of young infants and children was due to the low specificity of chest indrawing in identifying patients with a provisional diagnosis of pneumonia who, according to the pediatricians, did not need admission to hospital.  Overall, the results show that the IMCI has good sensitivity for correctly referring young infants and children requiring hospital admission in a setting with a low prevalence of malaria.  The moderate specificity will results in considerable over-referral of patients

not needing admission (Kalter HD et al. 1997: 65-75).

*Comparison of the effectiveness of referral by the IMCI guidelines among 5 countries*

WHO compared the results of the effectiveness of referral by health workers from the field tests of the IMCI guidelines in 5 countries (Gambia, Kenya, Ethiopia, Bangladesh, and Uganda) as shown in Table 13 (WHO p. 1997: 121-124). The studies in these countries show data on the proportion of children referred based on various versions of the IMCI guidelines compared to a pediatrician's assessment for hospital admission. The practices of the pediatrician who had access to a laboratory and radiology in several studies are used as the ''gold standard'' admission (referral) practice to evaluate the appropriateness of referral by health workers trained in the IMCI guidelines. Overall, the proportion of children referred by health workers tended to be lower than that of children referred by the ''gold standard'' pediatrician. The health worker is not expected to be able to refer only those children requiring admission, and some over-referral was expected because the IMCI guidelines are designed to refer children who need an urgent evaluation by an expert clinician with laboratory support (Ibid. 122-123). Some under-referral occurred, in part because health workers missed key clinical signs such as chest indrawing or bipedal edema, or because they did not refer serious conditions requiring hospitalization that were not specifically addressed in the draft IMCI guidelines. Some over-referral related to some symptoms, such as chest indrawing in children with a wheezing illness or with pneumonia who were judged not to be severely ill, febrile convulsions, croup, edema, wasting, viral syndromes, and certain sick young infants, also occurred (Ibid. 123).

The substantial variation in rates of referral in the studies reflects several factors such as the study settings and the case mix of children. The substantially lower rate of referral in Ethiopia may be explained by the fact that this was the only study using health centers not attached to a hospital (Ibid. 122). For health workers who work in peripheral facilities where referral is difficult or impossible, course adaptations and additional training and supplies to expand the level of care available for the severely ill child may be necessary (Ibid. 123).

Training health workers to identify and refer severely ill children to hospital can have a substantial impact on childhood mortality if adequate treatment is received in hospital. A key consideration in developing the IMCI guidelines was that they should be safe. This meant reducing to a low level the number of children who need potentially life-saving treatments that are only available in hospital, but who are not referred. To achieve adequate sensitivity in detecting severely ill children who require referral, criteria must be used that inevitably lead to some children being referred unnecessarily (Ibid. 121-122).

The modules in the full IMCI training course explain that health workers should also refer sick children who have problems that they are not able to manage, regardless of the child's IMCI classification. Because the sensitivity of referral by health workers is very low (46-74%), WHO

emphasizes that the efforts of careful training based on the modules will avoid some missed referrals involving conditions not specifically addressed by the guidelines (Ibid. 123). WHO also concluded that close monitoring during country implementation and operational research to examine the referral practice of health workers after IMCI training are clear priorities (Ibid. 123).

### 3-2-3  Performance of health worker

A study was carried out to prepare for the implementation of IMCI in health facilities in southeastern Benin, in 1999. The performance of health workers (HWs) untrained by IMCI guidelines was compared to the performance of an IMCI-trained study clinician using IMCI guidelines. The study found serious deficiencies in the care children were receiving: incomplete assessment of children's signs and symptoms, incorrect diagnosis and treatment of potentially life-threatening illnesses, inappropriate prescription of dangerous sedatives, missed opportunities to vaccinate, and failure to refer severely ill children for hospitalization (Rowe AK et al. 2001: 1625-1635).

Studies of performance of IMCI-trained HWs were reported from Kenya, Uganda, and Ethiopia.

*The Kenya-Finland Primary Health Care Program*

During 1996-1997, in Western Province, Kenya, the levels of performance of IMCI-trained HWs were assessed by Centers for Disease Control and Prevention (CDC), the Kenya-Finland Primary Health Care Program, and the MOH of Kenya (Odhacha A et al. 1998: 998-1001). The levels of performance achieved by the HWs at the end of training (ET) and maintained during the first 3 months post-training (PT) with monthly or bimonthly clinical supervision were measured by supervisors. Supervisors used observation checklists to record the care provided to sick children aged 2-59 months, then reassessed the children to evaluate the accuracy of HWs' classifications. Correct classifications were based on signs and symptoms recorded by supervisors. A total of observed 117 children were included in the analysis (Ibid. 998-999).

As a result, overall scores for the completion of assessment tasks were 81% at ET and 75% at PT. The classification scores for the more common moderate and mild diseases were 79% at ET and 78% at PT; on the other hand, the scores for the severe diseases were very low: 31% at ET and 24% at PT. The treatment scores for the more common moderate and mild diseases were 72% at ET and 67% at PT; on the other hand, the scores for the severe diseases were very low: 32% at ET and 26% at PT. Finally, overall counseling scores were 69% at ET and 67% at PT. In general, performance levels reached at ET were maintained PT. Overall, HWs performed well at ET in completing assessment tasks and in classifying and treating moderate diseases, but performed poorly classifying and treating severe diseases (Ibid. 999-1000).

*Uganda: The quality of IMCI counseling by health workers*

The IMCI guidelines have been implemented in 42 of 45 Ugandan districts since 1995. A study of the quality of IMCI counseling in Uganda was presented in the CORE Group meeting in 2001 as described in the next section (section 3-3-1). In Mukono District, Uganda, more than 50% of health workers have been trained in IMCI care management. A standardized methodology for assessing the IMCI counseling by IMCI-trained health care providers to mothers was developed and field-tested. In 2000, a cross-sectional study was conducted in 23 health units in Mukono. As a result, most IMCI counseling sessions (73%) scored higher than the cut-off point predicting the mother's satisfaction. The mean scores were significantly lower for health workers in hospitals compared to those in the lower-level health units. Factors affecting the quality of IMCI counseling included type of health unit, cadre of health workers, number of supervisory visits, and number of patients seen per day (Kelly LM et al. 2001: s132 presented by Charles Karamagi).

*Ethiopia: Time required for case management*

The outline of the Ethiopia study was described in the previous section (3-2-1). The performance of six primary health workers was evaluated following a 9-day training course on IMCI. Immediately following this training, a 3-week study was conducted to determine their performance. The total amount of time spent on each patient came down from almost 20 minutes to 18 minutes over the 3-week period. About half of this time was spent in the assessment and classification of the child, a few minutes on treatment, and the rest on advising the mother. It was clear that health workers learned and improved during the three weeks of the study, and reduced their dependence on the assessment recording form that was initially designed as a teaching aid for use during the training period and in the first few weeks after training. A follow-up interview with the six participants, a year later, revealed that it took about three months of constant working with the IMCI algorithm charts to become thoroughly familiar with them. At this time they reported that they could complete the management of one child in 5-10 minutes (Simoes EA et al. 1997: 43-53).

## 3-2-4  Drug costs based on the IMCI guidelines

Early information on drug costs from several countries suggests that those associated with IMCI are less than the costs of current practice (Tulloch, 1999: SII 19). Studies from Uganda and Kenya on drug costs are presented below.

*Uganda*

A study was conducted to examine the medical assistants' use of the IMCI algorithm, and compare how treatment following IMCI guidelines would differ from that which was prescribed by the hospital medical officers in the outpatient department of Kaborale District Hospital in western

Uganda, in 1994 (Kolstad RP et al. 1998: 691-699). This is the second report from the same study in Uganda as described in the above section (3-2-1). A systematic sample of children aged 2-59 months were first seen by one of the Ugandan medical assistants who had been trained in an intensive 5-day course of the IMCI guidelines. A complete history and physical examination using a standard medical format was then carried out by one of the hospital's medical officers. The medical officers prescribed treatment and referred children for hospital admission based on their clinical judgment and the laboratory and X-ray examinations. The IMCI classifications assigned through computer analysis of the medical assistants' assessment were used to determine what drugs would have been prescribed if treatment had followed the guidelines. The IMCI prescribing recommendations were limited to 11 drugs mostly in tablet form, while the medical officers used more than 50, encompassing a wide range of preparations. The cost of treatments for the medical officers' prescribed drugs not addressed by IMCI guidelines was excluded to compare with those of the medical assistants (Ibid. 692-695).

The IMCI guidelines would have dispensed drugs to 1,133 children at a total cost of US$204.73 (US$0.17 per child) based on the least expensive tablet formulation available, and of US$ 374.12 based on the usage of syrups instead of tablets. On the other hand, for the same children medical officers prescribed drugs costing US$1,003.68 (US$0.82 per child) based on only the IMCI drugs, and US$1,110.63 based on all prescribed drugs by the officers. In conclusion, adoption of the IMCI guidelines could reduce pharmaceutical costs for children by more than half (Ibid. 695-697).

*Kenya*

A study to determine the potential impact of using the IMCI guidelines on treatment costs was carried out in all the rural health facilities in two districts in Western Province, Kenya, 1994 prior to the introduction of the IMCI guidelines (Boulanger LL et al. 1999: 852-860). All sick children aged 2-59 months who were seen at the health facilities were eligible for inclusion in the survey. All consultations of health workers with the children were observed, and the diagnoses of illnesses were recorded. Consequently each child was re-examined by a clinical officer using the IMCI guidelines, and the diagnoses and recommended treatment were identified. The cost both of drugs prescribed by health workers and of drugs for the treatment using the IMCI guidelines were estimated. The health workers identified a total of 1,335 illnesses (average 1.8 per child); on the other hand, based on the results of the examinations using the IMCI guidelines, a total of 2,068 illnesses (average 2.8 per child) were identified. The total cost of the drugs prescribed was US$ 329.88 (1996 US$) and the average was US$ 0.44 per child. Antibiotics were the most costly drug category, and accounted for US$ 254.34 (77%) of the total drug cost. The estimated costs of treating the IMCI-diagnosed illnesses ranged from US$ 116.23 (average US$ 0.16 per child, based on a formulary of larger-dose tablets and a home remedy for cough) to US$ 289.28 (average US$

0.39 per child, based on a formulary of syrups or pediatric-dose tablets and a commercial cough preparation). In conclusion, although use of the IMCI guidelines identified nearly twice as many illnesses as the number previously diagnosed by the health workers, even the high-cost estimate of drugs resulting from optimal use of these guidelines was less than the cost of the drugs actually prescribed (Ibid. 852-860).

## 3-3  Family and community level

Indicators to evaluate the effectiveness of IMCI for family and community level are the same as those to evaluate the clinic-level IMCI as shown in Table 11. For this level, mainly Utilization, Coverage, and Impact indicator categories are used to evaluate depending on each project setting. On the other hand, the sixteen key family practices shown in Table 7 are also appropriate to be used as a set of indicators for evaluation purposes. Promotion of these practices is critical for child survival and a cornerstone of the family and community IMCI programs. The questioning remains, however, which individual interventions are effective in reducing child mortality and morbidity at the household and community levels and what the best way is to deliver packages of proven interventions on a large scale (Kelly LM 2001: s146).

Since there are not established IMCI model interventions at the family and community level, reports and articles on several types of interventions which estimate the effectiveness of family and community IMCI were collected. It is also important to note that the main objectives of IMCI interventions are to treat child illnesses effectively and in a timely manner and thereby reduce mortality from treatable illnesses rather than to prevent the illnesses.

### 3-3-1  Experiences of the CORE Group

Most research on IMCI has focused on the performance of health workers in health facilities, referral between health facilities, and costing. There has been very little evaluation research conducted specifically on the third component of IMCI called "household and community IMCI" (HH/C IMCI).

In January 2001, USAID (Child Health and Research Project and BASICS II) and the CORE Group sponsored a meeting in Baltimore, Maryland. At a workshop from January 17-19, 2001 entitled "Advancing PVO/NGO Technical Capacity and Leadership for Household and Community IMCI," presentations by PVOs were planned to illustrate different parts of the framework of HH/C IMCI as it stood at that time. In the weeks after the workshop, the revised framework was presented at a meeting on January 22-24, 2001 on research related to HH/C IMCI hosted by Johns Hopkins University. One of the primary objectives of the meeting was to review the results of recent research on child health and nutrition intervention at HH/C level (Kelly LM et al. 2001: 111-154).

Although the report summarized the meeting is not intended to be a report of comprehensive survey of NGO experiences with HH/C approaches or lessons learned in NGO child survival programs, the experiences of HH/C IMCI in many countries are shown clearly and briefly, showing many important aspects. In this section, summaries of experiences presented in the CORE Group meeting are quoted.

### 3-3-1-1　Nutritional interventions

An important aspect of IMCI is its focus on nutrition. Every child receives a nutritional assessment and, when appropriate, the caregivers are given individual advice and counseling on the proper feeding of the child at home, including breastfeeding. (Lambrechts T et al. 1999: 590). Considerable emphasis is given to counseling in the IMCI approach. This includes age-specific counseling about breastfeeding and complementary feeding, home care for illness, and when the child should be brought in for follow-up (Tulloch, 1999: SII 17). Simple cards designed to support communications with mothers, are highly appreciated by both health workers and caregivers (Ibid. 590). A training course in breastfeeding counseling developed by WHO and UNICEF is already available (WHO/UNICEF, 1993).

The summary of presentations on the nutritional interventions is shown in Table 14. The following summary was written by referring to the document of the CORE Group's meeting (Kelly LM et al. 2001: s111-154), the names of presenters are described in the end of each paragraph.

*Bangladesh: community based strategies to promote breastfeeding*

In Bangladesh, 95% of mothers deliver at home. Therefore, a community-based intervention to promote breastfeeding was carried out by peer counselors selected in the community who were trained with a simplified WHO/UNICEF breastfeeding counseling training course. In conclusion, the project members found that the counseling is an effective way to increase rates of exclusive breastfeeding (EBF) in Bangladesh (Kelly LM et al. 2001: s 119-120 presented by Dr. Rukhsana Haider).

*Peru: Nutritional counseling through health services*

A study was designed to examine the effectiveness of interventions through health centers to improve nutrition and feeding practices in the community. The conclusion of the midterm evaluation is that changing feeding behavior in the community through interventions in government health services is possible and is likely to be sustainable, but success of these programs is dependent on available resources, personnel mobility, and demand for services from the community (Kelly LM et al. 2001: s 120-121 presented by Dr. Mary Penny).

*India: Community nutritional counseling*

A community based intervention to improve breastfeeding and complementary feeding practices in children aged less than 2 years through counseling by health workers is being implemented. Locally relevant feeding messages (IMCI guidelines) and channels for deliveries them were identified. The midterm evaluation study showed that high improvement in mothers' knowledge has been achieved. EBF practices have improved substantially. Complementary feeding practices have improved but are still below the recommended level. Use of multiple channels improved the coverage but a significant proportion is still not reached (Kelly LM et al. 2001: s121 presented by Dr. Nita Bhandari).

*Honduras: Community-based preventive health and nutrition program*

*Atención Integral a la Niñes* (AIN: Integrated Care for Children) was established in 2000 as the national community health program of the Health Secretariat. The goal is to reduce child mortality by reducing mild and moderate malnutrition and the severity and duration of illness episodes. In preliminary outcomes, participation rates are extremely high with over 90% of mothers participating on a monthly basis, and household practices are improving. Over a period of nine months, children classified as malnourished fell from 19% to 14%. An important recent addition is disease detection, treatment, and referral for all children less than five years of age, using a modified IMCI protocol (Kelly LM et al. 2001: s 121-122 presented by Dr. Marcia Griffiths).

### 3-3-1-2　Illness management and care seeking in the home and community

Countries where IMCI is being implemented are now encouraged to prioritize issues that should be addressed to improve care seeking behavior and to include these priorities in their national IMCI strategy (Lambrechts T et al. 1999: 590). The summary of presentations in this section is shown in Table 15.

*Ethiopia: Home treatment for malaria*

Trained mother-coordinators (MCs), who were selected by their neighbors, taught their neighboring mothers to recognize possible malaria and to promptly give chloroquine (using simple charts to explain the proper dosage and delivery of medicine) and by ensuring that all MCs had supplies of chloroquine to distribute to all families with young children. In 1997, a randomized study in an area with a total population of over 70,000 was carried out and showed that deaths in children aged less than five years were reduced by over 40%. Verbal autopsy confirmed that mortality due to malaria could indeed be reduced by home care (Kelly LM et al. 2001: s126-127 presented by Dr. Gebreyesus Kidane).

*India: Deworming and administrating vitamin A and albendazole*

An ongoing DEVTA Project which aims at improving nutrition status and reducing the rate of mortality of children aged less than five years with routine deworming of preschool children, coupled with periodic large-dose administration of vitamin A and 400 mg of albendazole to children aged between 6 months and 6 years. Anganwadi workers (community health workers) are being trained to deliver the drugs. Assessment of Anganwadi training was done by monitoring two randomly selected centers in each block. In each area, greater than 90% of all the centers were properly functioning. Drug use was 87% in the first campaign and 91% in the second (Kelly LM et al. 2001: s128 presented by Dr. Shally Awasthi).

*Guatemala and India: community management of neonatal infections*

In Guatemala, pregnant women were enrolled during the third trimester or at the time of delivery, and the newborns were followed up prospectively through regular home visits by health workers and the study physician for the first three months of life. The mortality rate among infants in the study was reduced by 85% compared to the historical controls. Families were oriented to recognize a simple set of signs and symptoms of illness, and once oriented, were capable of responding properly (Kelly LM et al. 2001: s128 presented by Dr.Gary Darmstadt).

Darmstadt also quoted the results of Abhay Bang and the coworkers' home-based trial in India. Caregivers with neonatal infants were educated in the recognition of pneumonia. Village health workers (VHWs) were trained in hygienic delivery practices, essential neonatal care, diagnosis of pneumonia, and empiric oral antibiotic treatment for pneumonia with cotrimoxazole in the home. The death rate among neonates in the intervention area, who were diagnosed to have pneumonia, was decreased by 40% compared to the death rate in the control area. More recently, the training for VHWs was expanded to encompass treatment of suspected septicemia, meningitis, and pneumonia by providing a package of home-based neonatal care. As a result, neonatal mortality declined significantly compared to the control area, at an estimated cost of US$5.30 per neonate (Kelly LM et al. 2001: s128-130 presented by Dr.Gary Darmstadt).

### 3-3-1-3 Compliance with recommended treatment and referrals

One of the sixteen key family practices recommended by WHO and UNICEF is to follow recommendations given by health workers in relation to treatment, follow up, and referral. The problem of caretakers' adherence to treatments and referrals given by health workers is also an important issue of care seeking behaviors as described in the section 3-3-3.

*Uganda: Impact of training on compliance with IMCI treatment guidelines*

The IMCI guidelines have been implemented in 42 of 45 Ugandan districts since 1995, starting

in three districts through public sector and NGO health facilities. The community component has also been started in seven districts.

A study was conducted to evaluate the impact of IMCI treatment counseling guidelines on completion of a full course of antimicrobial treatment in the home. Methods included observation of counseling by dispensers in the health facility and a follow-up interview with the caretaker in the home five days after the visit. As a result, the IMCI counseling guidelines were extremely effective in improving the quality of drug-counseling given by dispensers in examining the use of chloroquine and cotrimoxazole as measured by a 12-point index of counseling quality. Training of dispensers using IMCI counseling guidelines resulted in a statistically significant but modest improvement in the proportion of caretakers who administered a complete course of co-trimoxazole to the child in the home and a non-significant improvement for chloroquine (Kelly LM et al. 2001: s131 presented by Dr. George Pariyo).

*Ecuador: Adherence to referral*

From September 1999 to April 2000, a study was conducted to determine the levels of key referral indicators and to identify factors that could potentially be modified to increase hospital access for referred children in 51 of 53 primary facilities of the MOH and in all regional hospitals in Imbabura, Ecuador. All children (11,672) aged one week to five years were diagnosed with IMCI guidelines. Of those 170 (1.5%) children who were referred to a hospital were tracked to the hospital or their homes with an attempted follow-up period of 24 hours after the referral, and 160 of their caregivers were interviewed. Sixty-seven (42%) of 160 referred children did not access the hospital, and 12 (7.5%) died of their acute illnesses. Seventy two percent of referred children who accessed the hospital were admitted. The most severe barriers to realization of referral were found as the following five factors: the caregiver did not receive a referral slip, the health worker did not counsel the caregiver to go to hospital immediately after leaving the primary care facility, transportation to hospital was very expensive, the mother was not the primary decision-maker of the family regarding whether to go to hospital, and the caregiver had to spend the night away from home to take the child to hospital. The findings suggest that access to hospital could increase if health systems made referral slips available to their health workers and trained them to provide a referral slip and counsel the caregiver of each referred child that the severity of illness requires going to hospital immediately after leaving the first-level facility. Health workers should also be trained to assess additional risk factors for each referred child, such as the child's age or the caregiver having to spend the night away from home, to complete referral (Kelly LM et al. 2001: s132-133 presented by Dr. Henry Kalter).

### 3-3-1-4  Integration of interventions in the community

*Uganda: Impact of IMCI*

An IMCI impact study in western Uganda found that IMCI training significantly increased the performance of health workers such as checking caregivers' feeding practices and respiration rates of children.  However, under-use of the government and NGO health facilities remains an important problem, medical referrals of ill children to higher-level facilities were not immediately followed by caregivers, and immunization rates were poorly low.  In conclusion, work is urgently needed to introduce the IMCI guidelines into private practice, to implement prescribing and dispensing the guidelines for the use of pharmaceuticals, reform the referral, and increase the immunization rates (Kelly LM et al. 2001: s133-134 presented by Dr. Gilbert Burnham).

*Uganda: Problems of private practitioners*

Formal and informal private practitioners treat a large proportion of sick children and yet are ignored by most child survival programs.  For example, in Uganda, they treat 78% of all sick children.  They are in high demand by the community because they are generally closer than the government and NGO health facilities; they have longer working hours and less-waiting time; and they spend more time with their clients and seem more responsive to the needs of patients.  The problem is that the quality of their services is poor.  They rarely give advice on feeding a sick child, often give incorrect doses of drugs, and rarely counsel caregivers on warning signs of illness that may require urgent treatment or referral.  In conclusion, more research is needed to improve formal and informal private practitioners' practices and understand care seeking (Kelly LM et al. 2001: s134-136 presented by Dr. Youssef Tawfik).

*Pakistan: Improving private practitioner sick-child case management*

In Pakistan, private practitioners operate 79% of first line clinical healthcare, and in much of the country most care is provided by unlicensed and untrained private providers.  The BASICS project developed a multicomponent behavior change method termed IMFECTOM to facilitate the transfer of IMCI skills to private providers.  The method assesses provider behavior through interviewers with the methods of sick children, termed verbal case reviews (VCRs).  Through a series of community household surveys, mothers describe the treatment practices of care providers as observed during consultation for their sick child.  The subsequent behavior change intervention, INFECTOM, includes communication of information, i.e. the essentials of the IMCI algorithm to healthcare providers, feedback to health providers on the differences between the care they are providing as documented in the verbal case reviews and the IMCI standards; contracting with providers to commit to specific improved practices, and ongoing monitoring of providers' practices through repeated verbal case reviews and feedback of the results to providers and the community.

The BASICS VCR and INFECTOM approach were implemented in two low income communities in Karachi, Pakistan, and evaluated if it improved the consistency of clinical practices with IMCI recommendations, from November 1997 to December 1998. Interviewers asked mothers of children, who had visited healthcare providers in the preceding two weeks complaining of diarrhea, cough or rapid breathing, or fever, whether providers performed specific behaviors recommended by the IMCI algorithm. A team met with the providers, discussed the correct IMCI algorithm behavior, reviewed the percentage of time each of their practices was consist with IMCI recommendations, and negotiated a contract with a numerical target for improved practices. The cycle of surveys, discussion of results and contracting was repeated three times over 10 months. Provider were classified as qualified if they reported completing a Bachelor's Degree in Medicine, and unqualified if they did not.

The team used an intervention that spent 90% less time teaching how to follow the IMCI algorithm than the standard approach, yet resulted in private providers altering a broad range of their diagnostic and therapeutic behavior so that it was more consistent with the IMCI algorithm.

Overall, 16 of the 21-targeted behaviors (76%) occurred with significantly increased frequency during the course of the intervention. The mean overall performance score was 5.5 out of a possible 10. Combining all visits, the mean score of qualified providers (5.6) was similar to unqualified providers (5.4). Mean overall performance scores for all providers improved from 4.3 at the first evaluation to 6.2 at the fourth evaluation. Qualified providers improved more with the intervention than did unqualified providers.

However, even at the end of project some provider behaviors were not ideal. In the final evaluation only 37% asked if an ill child had convulsions, a third of the children with respiratory symptoms did not have their respiratory rate timed with a watch. More than half of the children received an injection, and less than half were told under what conditions to return for immediate re-evaluation.

An advantage of INFECTOM is that monitoring is ongoing, so health providers understand that every health care interaction could be assessed. Mothers, however, were not trained in IMCI, so the information they provide is more limited and dependent upon their recall. A major barrier to broader implementation of INFECTOM is that it requires substantial inputs. The authors concluded that with further development the INFECTOM approach could contribute to reaching the children who seek care among private providers (Luby S et al. 2002: 210-219).

### 3-3-1-5 Role of community health workers

*India: Use of IMCI guidelines by Anganwadi workers*

Anganwadi workers (community health workers) were trained with IMCI guidelines for diagnosis and treatment of children aged two months to five years, in Chennai, India. A study was

carried out to evaluate the ability of Anganwadi workers (AWs) compared to the gold-standard diagnosis by physicians in 2000. The sensitivity of the AWs' diagnosis of danger signs and low weight for age were moderately high (70-72%), but for the other critical diseases such as pneumonia, dehydration, and anemia, the sensitivity was low. The specificity of the AW's diagnosis was moderately high except for the diagnosis of protein-energy malnutrition (Kelly LM et al. 2001: s137-138 presented by Dr. Manjula Datta).

*Kenya: Community Initiative for Child Survival (CICSS) project*

The project targets 32,674 children under 5 years and 41,672 mothers at childbearing age in Nyanza Province, Kenya. Community health workers (CHWs), community health committees, and women's groups were trained in modified IMCI guidelines to promote infant and maternal health. Pharmacies at the community level were established to enhance access to drugs and prescribed treatment. The project has reduced child morality by 49%, increased vaccination rates by using the IMCI guidelines, and also increased the level of care seeking for malaria by using health promotion practices. Community support at all levels of the project was crucial to its success (Kelly LM et al. 2001: s138 presented by Dr. David Newberry).

*Nepal: Role of female community health volunteers*

The current MOH program trains female community health volunteers (FCHVs) to diagnose and treat pneumonia and refer more seriously ill children to the nearest health facility. They also have been trained in recognition of danger signs of dehydration and appropriate use of ORS, the importance of good nutrition/vitamin A supplementation, and promotion of routine immunization for children. In 1997, a study was conducted to monitor and evaluate FCHVs and found that over 80% of them had and maintained excellent knowledge about danger signs, respiration rates, and antibiotics dosage for several years after initial training. They treated large numbers of pneumonia cases with pediatric co-trimoxazole and followed up over 80% on the third day of treatment by increasing access to treatment for children. Since July 1999, the community-based child health program has been merged with the IMCI initiative. Recognition of the effectiveness of FCHVs is increasing both in community and national levels (Kelly LM et al. 2001: s138 presented by Dr. Penny Dawson).

*El Salvador and Nicaragua: Role of community health workers*

In El Salvador and Nicaragua, the community-based Child Survival Project trained 1,058 volunteer CHWs to promote child health and growth at the local level. Several years after implementation of the program, the rates such as breastfeeding, and complementary feeding practices and nutritional supplementation during illness increased in both countries. The rate of tetanus immunization also increased in El Salvador. The ability of CHWs to diagnose and treat

dehydration was improved in both countries. The key elements of success of this program were active involvement of the community, careful selection of CHWs, and dissemination of the project's achievements within the community to build greater acceptance and use (Kelly LM et al. 2001: s 138-139 presented by Dr. Alfonso Rosales).

*Brazil: Barriers to extending IMCI to the community through CHWs*

A study was carried out to determine the potential and problems of CHWs in Sergipe State, Brazil in 2000. In-depth and expert interviews with CHWs, nurses, doctors, heads of local departments of health, and coordinators of IMCI and CHW programs in 21 of 75 municipalities were conducted, and six focus-group interviews with mothers of children under 5 years were also done. Barriers to extending IMCI to the community through CHWs were: the CHWs received inadequate training, support, and supervision, low salaries without fringe benefits or job security, and isolation in the community. As a solution, improving the relationship between CHWs and mothers by selecting them from the communities in which they practice is needed (Kelly LM et al. 2001: s139 presented by Dr. Juraci Cesar).

### 3-3-2 Community health workers

Community health workers (CHWs), who are community members and not working in health facilities, are expected to complement services of health facilities and to help ensure that treatment at home is appropriate. In addition to the summary of presentations in the CORE group meeting as described above, results of evaluation for IMCI-trained community health worker performance were reported from Kenya.

*Community Initiatives for Child Survival (CICS) Project in Siaya District, Kenya*

Impacts of CICS project were briefly summarized in the CORE Group meeting as described above (Kelly LM et al. 2001: s138). In the same project implemented by CARE Kenya, community health worker (CHW) performance using simplified IMCI guidelines (CARE algorithm) were evaluated in 1998, 1999, and 2001 (Kelly JM et al. 2001: 1617-1624). CHWs received three weeks of initial training in 1997, received refresher training in 1998 and 2000, and have been supervised throughout the project. In each evaluation, 120 CHWs, who were selected by systematic sampling, were invited to the Siaya District Hospital, and asked to manage up to four ill children. "Gold standard" classifications and treatments were generated with a computer program based on the diagnoses by a study clinician who repeated examination of children using the CARE algorithm (Ibid. 1617-1619).

The proportions of children treated "adequately (antibiotic, antimalarial, or ORS, as indicated, was selected, plus referral for severe classifications)" were 58% (1998), 36% (1999), and 39%

(2001) for children with a severe illness classification, and respectively 28%, 77%, 74% for children with a moderate illness classification.  By the third evaluation, CHWs missed identifying many children with severe classifications (sensitivity: the lowest 0% for severe dehydration and the highest 57.3% for very severe disease) and moderate classifications (24% for some dehydration and 63.9% for malaria).  Similarly, few CHWs provided recommended treatments.  The proportion of children who were adequately treated was somewhat better, raging from 0% (severe dehydration) to 58.8% (severe pneumonia) for severe classification and from 50% (pneumonia) to 90.5% (malaria) for moderate classifications.  The study found deficiencies in the management of sick children by CHWs, although care was not consistently poor.  The deficiencies were a result of errors both in performing assessments and in using the assessments to choose classifications and treatments.  The reasons why the deficiencies occurred, while CHWs were being trained and supported with job aids, refresher training, and supervision for four years, were discussed.  The five reasons proposed were: 1) the complexity and inconsistencies (the contents were changed frequently) of the guidelines, 2) inadequate clinical supervision and low quality of supervisors, 3) an awareness of criticism for misclassification of a moderate condition as a severe case and unnecessary referrals, 4) lack of confidence in the guidelines (they had difficulty because mothers use oriere, the local word for "convulsions," when a child was only shivering or startled.  Thus, CHWs might have dismissed caregivers' history of convulsions.), and 5) insufficient practice using the guidelines (Ibid. 1620-1624).

### 3-3-3  Health care seeking

In the CORE Group meeting in January 2001, Ruth Frischer (USAID) cited USAID-funded studies from Uganda and Bolivia in which 40% or more children died without ever reaching any care provider.  She pointed out six important intervention areas to provide the greatest gains in child survival including timely care seeking and appropriate treatment that could result in 400,000 fewer child deaths (Kelly LM 2001: s115-116).

How to improve health care seeking for IMCI-diseases is being investigated by the WHO multi-center research project in Ghana, Mexico, and Sri Lanka.

Results of the study from Sri Lanka have just been published in 2001, but the study focused on the level and nature of health care seeking in the population for the targeted diseases of the IMCI program, not the effectiveness of the IMCI program on care seeking.  However, the study shows the potential relationship between the levels of care seeking and child mortality.  The study was carried out from June to September 1998, documenting care seeking practices of mothers in a population of 2,248 children in 60 villages.  A question reminds that in such a situation of poor economic performance, poor investment by government on the health care of the people, and high levels of malnutrition in children, how can we explain the low levels of childhood mortality in the country?

A result shows that despite the high prevalence of malnutrition in children in the villages, mothers did not perceive it as a condition of ill health. In 65% of illness episodes in children the mothers sought outside care and treatment. Mothers sought treatment from both private and public sectors with the majority seeking care in the private sector: of all of the ARI and diarrhea cases seeking outside care, 69% of ARI and 78% of diarrhea cases have been sorted to the private sector for care. The pattern of care seeking is highly responsive to perceived symptoms and the closely linked perception of severity, and care seeking is not related to socio-economic status or enduring characteristics of the mother or child. The study points out that high care seeking of mothers in Sri Lanka, particularly for illnesses with acute high-risk symptoms and signs, is a plausible explanation for the low level of childhood mortality despite the prevalence of a high rate of malnutrition (De Silva MWA et al. 2001: 1363-1372).

The health seeking behavior study in Ghana has completed the formative research phase (July 1998-February 1999), and a paper that uses data from the study to explore the relative importance of symptom recognition as a barrier to care seeking is being prepared for publication. The results show that caretakers' recognition was poor for several IMCI danger signs, and other non-recognition related barriers to care seeking were identified. Caretakers sought medical care in only 50% of the episodes they recognized as being severe/that could have killed. Reasons ascribed for this were: 33% said that this was because the illness was 'non-hospital', 30% because the illness can either be cured at home or by a healer and 33% because they lacked money for transport, bills or medication. The class of illnesses that informants labeled 'non-hospital' were not considered being treatable using modern medicines, instead traditional remedies. These illnesses had the potential to include severely ill children and were common, and thus have the potential to be major barrier to appropriate care seeking because the diagnosis as 'non-hospital' stopped caretakers from seeking medical care even though the child was considered severely ill and the family tried several different herbalists. For illnesses that were considered curable by modern medicine, traditional treatments (used in 77% of all episodes) were frequently considered effective, appropriate and were particularly attractive because they were accessible and affordable (Hill Z et al. 2002).

Although many studies of care seeking behaviors have been conducted, studies on the aspects of the effectiveness of IMCI on care seeking have not been published because the family and community component of IMCI has just started to be implemented, except a report from Kenya as described below.

*CARE Kenya's Community Initiatives for Child Survival (CICS) Project in Siaya*

A year after community health workers (CHWs) were trained with a modified IMCI algorithm, a study of care seeking behaviors during terminal illnesses was conducted to identify opportunities to further reduce childhood mortality by CARE Kenya's CICS project in 1998 (Garg R et al. 2001: 1611-1613). Ninety-seven caregivers, who lost children less than 5 years during four months, were

interviewed about the deceased children's symptoms and duration of terminal illness, types of health providers consulted, and number, chronology, and timeliness of visits. Seventy percent of the children were infants, and 56% were male.

Of them 90% died at home although most of the children received care outside the home during their terminal illness, only 10% of the 97 children were referred for higher level care, and only 6% received inpatient care. Caregivers usually consulted multiple health providers such as traditional healers (51%), a health worker (HW) at a health facility (46%), and a CHW (26%). A total of 58% of the 97 children were seen by a trained provider (either a CHW or a HW), and only 32% of them returned for follow-up care. On the other hand, 76% of children who were seen by traditional healers returned to them a second time. Traditional healers saw half of the children who died. The most frequently mentioned reasons for not consulting a CHW was not knowing about such individuals (26%), and for not consulting a HW was preference for traditional healers (16%). As a solution to enhance care seeking for caregivers to consult trained CHWs, traditional gatherings and village meetings can enhance dissemination of information in rural Kenyan communities to increase awareness of CHWs (Ibid. 1611-1613).

### 3-3-4  Cost-effectiveness of community interventions

Very few rigorous cost-effectiveness studies of community interventions have been done. Waters presented a summary of literature review for the studies in the CORE group meeting in January 2001 as described in the section 3-3-1 (Kelly LM et al. 2001: s139-141 presented by Hugh Waters). The summary reviewed by Waters follows. Interventions included community health workers (CHWs) and volunteer health workers (VHWs) have generally been found to be cost-effective if they are continuously supported with salaries, financial incentives, or some types of motivation. Services provided by traditional birth attendants (TBAs) are less cost-effective than facility-based services in reducing maternal mortality. A study that compared program investment options to reduce maternal mortality, including TBAs, prenatal care, family planning, and different levels of health facilities, found that investments in health centers and rural hospitals to be the most cost-effective option. Community activities can play a significant role in improving community health; for example, women's groups have great potential as community agents to influence healthcare behaviors. However, it is difficult to quantify in the context of cost-effectiveness studies. The feasibility of other community financing schemes is still largely unknown (Ibid. s140-141).

### 3-3-5  Morbidity and mortality of children under 5 years of age

Major evaluations of the impact of IMCI on mortality are underway in Uganda, Bangladesh, and Tanzania by the multi-country evaluation by WHO as described below (WHO c. 2001).

### 3-4　WHO Multi-Country Evaluation of IMCI Effectiveness, Cost, and Impact

The Multi-Country Evaluation of IMCI Effectiveness, Cost, and Impact (MCE) is a global impact evaluation being coordinated by the Department of Child and Adolescent Health and Development (CAH) of WHO.  The objectives of the MCE are to evaluate the impact of the IMCI strategy on child health, including child mortality, child nutritional status, and family behaviors, and to evaluate the cost-effectiveness of the IMCI strategy.  The MCE is also designed to help determine the best ways of delivering IMCI (WHO c. 2001: 3).  The first MCE report has been published on the WHO Internet websites as a progress report of the MCE (May 2000-April 2001) in 2001.  The report focuses on the evaluation methods and provides a summary of progress and plans in the four countries where the MCE is currently being implemented.  The four countries: Tanzania, Bangladesh, Peru, and Uganda have been selected based on feasibility assessments (Ibid. 16).

The characteristics of the MCE in each country are shown in Table 16.  The household surveys and health facility assessments as baseline surveys were conducted in 1999 and 2000.  The final surveys are planned for 2004.   The evaluation design varies in each country depending on the IMCI implementation process.  Except Bangladesh, where the evaluation started before the introduction of IMCI, most countries started implementing IMCI before collecting the baseline data of the MCE.   Therefore, a ''plausibility'' evaluation design is being used except in Bangladesh, where a ''probability'' evaluation based on a randomized design is being used as shown in Table 16 (Ibid. 17).

The noteworthy progress is that methods and tools for the evaluation of child health programs have been developed and field-tested by the MCE team.  The data collection tools being used in the MCE are for standard description of study sites (monitoring of IMCI implementation), existing demographic surveillance or survey (DSS), household survey, first-level health facility survey, and referral-level health facility review.  Furthermore, for evaluating cost-effectiveness, the MCE costing methodology and three cost-effectiveness ratios to analyze both costs and effects have been developed (Ibid. 13-14).  Some of them are shown in Table 17, and many of them will be available in the near future (Ibid. 24).

In the WHO report, only preliminary baseline data are summarized below.

*Tanzania*

The study design is a pretest and post-test with the comparison between two IMCI areas and two non-IMCI areas.  Since there has been continuous mortality surveillance for several years, a study of the impact of IMCI on child mortality will be conducted.  A baseline survey was carried out in 1999 in about 2,400 households, and a health facility survey in 2000 covering 70 facilities.  Information on costs and documentation of IMCI-related activities are being collected simultaneously (Ibid. 17).  The health facility survey showed that children seeking care at health

facilities in IMCI districts are more thoroughly assessed and received higher quality care than children seeking care in non-IMCI districts. In summary, preliminary results suggest that IMCI implementation has led to better health services, but some improvements are still required, and there is an urgent need to strengthen community IMCI in the intervention districts (Ibid. 20-23).

*Bangladesh*

Twenty health facilities in Matlab Thana were matched in pairs according to selected characteristics, and one facility in each pair was randomly selected to serve as a control in a randomized design. To date, a baseline demographic survey covering 80,000 households was carried out in the first half of 2000, an in-depth household survey was carried out in 2,400 households. A health facility survey was carried out in 19 facilities in the second half of 2000. Results of these surveys were used to match the health facilities for randomisation. Data on costs are being collected in all surveys. Preliminary findings of the baseline show that overall levels of care seeking for sick children are low, and that the levels of performance of health facilities are low. In summary, the preliminary analyses demonstrate that improvements in care seeking must occur for IMCI to result in significant improvements in child health, and that the quality of care in health facilities is inadequate and likely to be improved through the implementation of IMCI (Ibid. 18-33).

*Uganda*

The MCE is being carried out by Johns Hopkins and Makerere Universities with USAID funding. Randomly, six IMCI districts, which are about to start IMCI implementation, were chosen, and four comparison districts without specific plans for implementing IMCI were selected. In 2000, a baseline survey was carried out in 14,000 households to assess demographic and health indicators in all ten districts. Ongoing district surveys are monitoring IMCI implementation at the district, health facility, and community/household levels. A costing study is being carried out simultaneously (Ibid. 18).

*Peru*

The study is being carried out to compare 25 departments with different levels of IMCI implementation by using the existing large amount of child health data. The impact of IMCI on mortality will be difficult to be proven because of relatively low mortality levels. Phase I of the evaluation will involve a nationwide analysis of existing data on health and related variables, including a mixed (retrospective and prospective) analysis of the impact of IMCI. All 25 departments were planned to be visited in 2001 to collect detailed data on implementation. Phase II will include an in-depth comparison of departments where IMCI implementation was strong and weak based on the results of Phase I (Ibid. 19). No results of the baseline survey are yet available in the MCE report.

# 4.  A Case Study in Guatemala

## 4-1  Overview of health care system in Guatemala

### 4-1-1  General health condition

*General demographic and economic conditions*

The Republic of Guatemala is a democratic country, located in Central America, with a land area covering 108,889 km$^2$ (PAHO a. 2001).  It is divided into 22 departments, which include 330 *municipios* (municipalities).  In 2000 the population was estimated at 11.3 million, with 22% living in the capital city and 78% in rural areas.  Some 43% of the population is considered indigenous, and 21 different linguistic groups are recognized.  The illiteracy rate in 1998 was 31.7%.  According to data from 1995, the proportion of the population living in conditions of poverty was 76% for the country as a whole, 91.3% of the indigenous, and 55.6% of the non-indigenous population.  The gross domestic product (GDP) has grown by an average of 4.1% per year, and per capita GDP reached US$1,760 in 1998.  Total health expenditure of the Ministry of Health (MOH for 1998 was 1.1% of GDP (PAHO b. 1999: i-3).

*General maternity and child health*

The birth rate was 37.3 per 1,000 population in 1995, and total fertility was 5.1 children per woman (6.2 in rural areas and 3.8 in the urban population).   In 1995, life expectancy at birth was 67.1 (64.7 for male and 69.8 for female).   In 1995, the proportion of females was 49.5%, and that of women of reproductive age was 22% of the population (PAHO c. 1998: 294).

In 1994, the perinatal mortality rate was 14.2 per 1,000 live births, and a total of 17,907 deaths were reported in infants under 1 year of age (27.3% of all deaths).  Infant mortality was 48.3 per 1,000 live births, and the leading causes were conditions in the perinatal period (50.5%), pneumonia (17.0%), intestinal infections (8.8%), and malnutrition (2.3%).  The percentage of low-weight newborns (less than 2,500 g) was 7.8% in 1993.  In 1995, 50.5% of infants breast-fed exclusively until 4 months of age and 32 % did so until the age of 6 months.   Mortality in children 1 to 4 years of age was 2.3 per 1,000 in 1995.   The leading causes of mortality in this group in 1994 were pneumonia (26.0%), intestinal infections (24.3%), and nutritional deficiencies (10.0%). (Ibid. 295)  In 1999, according to a UNCEF report, the infant mortality was 45 (1,000 live births); the under-5 mortality was 60 (1,000 live births). (UNICEF c. 2001:  79)

The Expanded Program on Immunization was established in the country in 1982.  The coverage of fully immunized children under 1 year old had reached very high levels in 1999: tuberculosis (TB) 88%, DTP (diphtheria, pertussis, and tetanus) 89%, Polio 91%, and Measles 81% (UNICEF c.

2001: 87).

During 1990-1995 maternal mortality was estimated at 190 per 100,000 live births, based on data from the second National Maternal and Child Health Survey (1995), which used the sisterhood method of collecting information. The five leading causes of maternity mortality were complications of delivery (30%), retention of the placenta (14%), puerperal sepsis (11%), eclampsia (11%), and abortion (7%) in 1994. The percentage of pregnant women who received prenatal care given by trained personnel was 54% in 1995 (PAHO c. 1998: 296).

## 4-1-2  Health care system

Guatemala has a three-tiered structure to its health care system: public sector, public social security, and private sector. The administrative organization tree of the public sectors is shown in Figure 2.

*Public sector:*

The Ministry of Public Health and Social Welfare (MOH) is one of the principal providers of direct free basic health services to the uninsured population who are at high biological and social risk. The MOH is responsible for public health activities and formally for management of the public sector, which absorbs approximately 40% of national health expenditure (PAHO b. 1999: ii). It has its own services network as shown in Figure 2. Since 1997 it has been developing its ability to finance and regulate basic health services provided by NGOs to populations that formerly lacked access to health care. The subnational administrative units are the Health Area Authorities. There is at least one in every department, permitting some degree of coordination with other state agencies at a similar level of decentralization. In each department the Area Authority is responsible for the Health Services Network in its jurisdiction, made up of the hospital and several health districts, which are composed of health centers and posts (PAHO d. 2001: 6).

The Guatemalan Social Security Institute (IGSS) is a formally autonomous institution (although the President appoints its director) with its own regulatory statutes. It has subnational administrative units, but covers workers who are members, located mainly in the capital and along the country's southern coast. It is financed through payroll deductions and an employer contribution, with the relative weight of each being determined by the service plans to which the contributions are applied. The IGSS includes a complex network of institutions, programs, and services that fall into two main categories: health services and social security. The IGSS network as shown in Figure 2 includes 24 hospitals, 30 primary care facilities, 18 first aid stations, and 5 wards in National Hospitals (PAHO b. 1999: 3-4).

*Private Sector:*

The private sector is divided into nonprofit and for-profit subsectors.

The nonprofit subsector is nongovernmental organizations (NGOs).

Almost 200 of the 1,100 NGOs in Guatemala engage in health activities. The activities of the health NGOs are mainly preventive in nature (80%) and less frequently involve the delivery of clinical services (20%), and no more than 5% of these NGOs have national coverage. All departments where the NGOs are most active have a high concentration of indigenous and rural population; therefore, they are important partners in the effort to expand coverage of basic primary-care services, with public financing from the MOH (PAHO b. 1999: 4-5).

The for-profit subsector consists of physicians in private practice (in their own offices) as well as hospitals and clinics in the capital and the major cities, and covers only most of urban population with the ability to pay. Clinical laboratories and pharmacies complement the private network of health services. This network has approximately 221 hospitals, 1,981 medical clinics, 235 registered dental clinics, and 382 laboratories. The private sector is almost entirely financed through direct (out-of-pocket) payments by users (Ibid. 4-5).

*Population Coverage and health expenditure*

Population coverage by different institutional sectors in 1997 was MOH 32%, IGSS 25%, private services 10%, and military health 0.21% (PAHO b. 1999: 8-10). The percentage of the population with no coverage is estimated at 42%. Indigent residents of rural areas, whose coverage is the responsibility of the MOH, make up the bulk of this population without access. The population coverage and health expenditures in each sector are shown in Figure 3. The health expenditure of private services was relatively high (31% of national health expenditure) in spite of the low coverage of population (10%) in 1998 because the private sector has provided comparatively high cost and quality services for upper-middle class and rich people. On the other hand, the MOH has been using the budget to expand the population covered by a minimum set of services rather than to enrich the basic package of services to the population that already had care (Ibid. 8-10).

## 4-2    The Comprehensive Health Care System (SIAS)

### 4-2-1  The background of SIAS

*Health Sector Reform*

Many countries are introducing health sector reforms that can profoundly influence how health services are provided and who receives them. In 1997 the Pan American Health Organization (PAHO) and the USAID launched the Latin America and Caribbean Regional Health Sector Reform Initiative. In Guatemala, the Health Sectoral Reform as such began in 1996 with the Health

Services Modernization (Improvement) Program (HSMP), financed by the Inter-American Development Bank (IDB) and implemented by the MOH (PAHO b. 1999: 12). The sectoral reform agenda for the country follows the guidelines proposed in the terms of the loan agreement. Its objectives are to: a) extend health services coverage, targeting populations that lack access, and to increase the response capability of the services; b) increase the level of public expenditure and expand financing sources; c) redirect allocation of public resources based on criteria of equity and efficiency; d) generate an organized social response for the mobilization and control of public resources (Ibid. 12-13).

MOH technicians and staff participated in the original proposal design of the health sector reform. The proposal was then modified with the participation of technical staff from different levels of the MOH, laying the groundwork for the new health system, the Comprehensive Health Care System (SIAS). (Ibid. 13)

*The Health Code*

A new Health Code was issued in November 1997 to update several regulations and strengthen the steering role of the MOH. The most controversial articles referred to the possibility of recovering costs for public service delivery and allowing private entities to provide public services. The code defines equity as: a) the obligation of the MOH to provide services free of charge to those who lack the means to pay for all or part of their medical care, and b) the priority orientation of the MOH toward populations in need of access to services. To expand coverage, the specific program (SIAS) that intends to provide a basic health services plan to populations, which have never received public health care, is being introduced (Ibid. 13-14).

*The National health policies (1996-2000)*

The national health policies established for the period 1996-2000 include: a) reorganization, integration, and modernization of the sector; b) an increase in coverage and improvement in the quality of care, with emphasis on prevention and control of priority problems; c) improvement of hospital management; d) health promotion and promotion of a healthy environment; e) an increase in coverage and improvement in the quality of water, and expansion of basic sanitation coverage in rural areas; f) social participation and control in the public management of services; g) coordination of international technical cooperation; and h) development of human resources. The policies are consistent with organizational change process introduced by sectoral reform (Ibid. 1). The current national health policies (2000-2004) is based on the Social Policy Matrix 2000-2004, which profiles basic health guidelines and emphasizes on the most neglected sectors, and maintains a consistent orientation throughout the transition of the government as shown in Table 18 (PAHO d. 2001: 1).

### 4-2-2  The concepts of SIAS

The SIAS is the most important initiative within the Health Services Modernization (Improvement) Program (HSMP) and has financial support through a loan from the IDB. Approximately 42% of the population lacks regular access to health services.  The SIAS is intended to provide a basic package of services to the population that currently lacks them.  It is based on a network of community health workers (CHWs) and subcontracts with NGOs for services delivery (PAHO b. 1999: ii).

*The strategies of the SIAS for the primary health level*
The MOH document published in 1997 defined the specific objective of the SIAS, which is to establish a system of basic health services for all people who are living in isolated or remote areas without basic health care services, by means of multisectoral and community participation reducing the mortality of mothers and children by 50% from 1995 until 2000 (MOH b. 1997: 2).  When the SIAS was introduced, a basic plan was established for the MOH primary and secondary levels, which included the basic and expanded services as shown in Table 19 (Ibid. 4-5 and PAHO d. 2001: 10).

The components of human resources called "a basic health team" are constituted of community and institutional human resources.  The community human resources are CHWs (*promotor de salud or vigilantes de salud*), vector control volunteer (*colaborador voluntario de malaria*), traditional birth attendant (*comadrona tradicional capacitada*), and community facilitator (*facilitador comunitario*).  The institutional human resources are institutional facilitator (*facilitador institucional*), assistant nurse (*auxiliary de enfermería*), rural health technician (*técnico en salud rural*), outpatient medical doctor (*médico ambulantorio*), municipal coordinator (*coordinador municipal*), and departmental coordinator (*coordinador departamental*). (MOH b. 1997: 6-7)

All workers in the basic health team are required to participate in training courses periodically to develop their maximum capacity to deliver services to the community.  The training course for CHW plans for 16 hours for general orientation at the beginning and 8 hours for each topic monthly (Shingo 2000).   The workers in the community are selected from the community, based on defined criteria.  For example, the CHW must be over 18 years of age and have permanent residence, write and read, speak the local language, and have leadership ability.   CHWs are required to have time for an hour per day or 7 hours per week to work.  Community facilitators are also required to have time for 4 hours per day (MOH b. 1997: 6-8).  They receive salary or incentives monthly.  The estimated costs per month in the Quetzal (Guatemalan currency, approximately $1=Q7 in 1998) were, for example, Q5,000 (salary) for an outpatient medical doctor, Q1,800 (salary) for an institutional facilitator, Q375 (salary) for a community facilitator, and Q50 (incentives) for a CHW and a traditional birth attendant in 1998 (MOH c. 1998).

The SIAS provides for home visits every two months by the trained CHW, who monitors the supply of oral rehydration solution, administers treatment for tuberculosis, and engages in health promotion and education (PAHO d. 2001: 15-16).  The detailed requirements for CHWs are shown in Table 20 (MOH b. 1997: 8-9).

The supervisory directions are shown in Figure 4.  The figure shows that an institutional facilitator (IF) supervises five community facilitators (CFs) and each CF supervises 20 CHWs (a total of 100 CHWs=5 × 20).  Each CHW covers about 20 families in the area in a jurisdiction with 10,000 habitants (MOH d).

Convergence centers have been established in the communities.  These are physical spaces where, spontaneously or through a referral from a health volunteer, patients from the locality are served during the periodic visits made by the community physician.  New clinical procedures have not been introduced.  The explicit definition of services to be offered at the primary and secondary levels of care will fine-tune the referral and back-referral system (PAHO d. 2001: 21).

### 4-2-3  Implementation of SIAS

The Accord (Acuerdo Gubernativo: the Number 115-99) of the SIAS was approved by the government on the 24th of February 1999.  The central office of the SIAS in the MOH was established in the beginning of 2000.  The functions of the office are divided into three units: community, health centers at the district level, and hospital (national, special, and regional level). (MOH a. 2001)

*Implementation*

Community SIAS programs are being implemented by the MOH and NGOs through two types of organizations, *Prestadora de Servicio de Salud* (PSS) and *Adoministradora de Servicios de Salud* (ASS).  PSS provides health services with its own financing.  On the other hand, ASS provides only administrative services to implement the program.  In the case of ASS, the MOH covers the costs of services (MOH c. 1998).

Within the framework of the SIAS, some responsibilities and resources are being decentralized through transfer to the Health Area Authorities.  Health Area Authorities are signing agreements with local NGOs for delivery.  From 1996 to early 2000, agreements were signed with NGOs to provide a basic package of services for 4.5 million inhabitants who did not previously have access to health services.  The agreements involved a series of sequential commitments, including personnel training, census taking, map preparation, and finally gradual delivery of the services in the basic package.  As of 1999, most contracted NGOs were still not delivering health services.  With the start of the new administration, many of the contracts signed were reviewed and some rescinded.  The first phase of the Health Services Modernization Program (HSMP) was to be completed in

early 2001. As of early 2001, some 80 contracts had been signed covering 3.2 million persons (PAHO d. 2001: 14-20).

According to the data provided by the Group of Processing and Analyzing Information in the Unit of Services Provision for Primary Level of the office of the SIAS in the MOH, the number of Departments (states) covered by the SIAS is 18 as of December 2000, as shown in Table 21 (MOH e. 2000). The number of jurisdictions involved is 286 being implemented by over 100 NGOs (161 PSS: 56% and 125 ASS: 44%). In the covered areas, there are 6,800 communities and 2,300 community centers. Approximately 300 medical doctors were trained (Guatemalan 212 and Cuban 90). Approximately 300 institutional facilitators, 1,450 community facilitators, 22,000 CHWs, and 7,200 traditional birth attendants were trained. Furthermore, in three Departments, Izabal, El Progreso, and Zacapa, the SIAS is being implemented by the MOH without NGOs, according to the information obtained through personal communication (MOH f).

In mid-2001 steps were taken to launch the second phase of the HSMP, which involves strengthening the second and third levels of care and the participation of the Guatemala Social Security Institute (IGSS) in a coordinated delivery of health services by public providers (PAHO d. 2001: 14-20).


*The challenges of SIAS*

It is a fact that coverage has been expanded very rapidly as shown in Figure 4. However, the impact of the expansion in coverage has not been evaluated. The strategy to expand coverage is in a very fragile stage. In addition to several political and technical reasons, the government lacks financial liquidity. In the MOH this resulted in the failure to pay the contracted NGOs in the first half of 2001 (Ibid. 24).

''Baseline for the Evaluation of the Expansion of Basic Health Services Coverage at the Primary Care Level'' found the performance of several of the NGOs hired to be unsatisfactory. The reasons identified included: a) actual population is smaller than the number declared, meaning that some NGOs were operating with undeclared surpluses; b) lack of incentives to go from the census-taking and mapping phase to the delivery of benefits stage, since the resources allocated for the two are the same, while costs for the service delivery phase are higher; and c) the absence of formal accreditation of the contracted NGOs, with many lacking basic competencies for service delivery (Ibid. 23).


In addition to the progress of SIAS implementation, the availability of essential drugs has improved at the various levels of care in the context of the health sector reform. This has resulted from negotiation of large-scale purchases, cash payments to suppliers, the elimination of some corruption, and the establishment of a network of community drug sales and rural dispensaries in the communities benefiting from the expansion of coverage (Ibid. 23).

**4-3 IMCI in Guatemala**

**4-3-1 Introduction of IMCI to Guatemala**

IMCI is known in Spanish as AIEPI (*Atención Integrada a las Enfermedades Prevalentes de la Infancia*). In 1997, through a partnership between USAID, PAHO, and BASICS I, the Latin America and the Caribbean (LAC) Regional IMCI Initiative, funded by USAID's LAC Bureau, began operations in eight child survival emphasis countries: Bolivia, Ecuador, Peru, El Salvador, Guatemala, Honduras, Nicaragua, and Haiti (BASICS II a. 2000).

The MOHs in seven of the eight countries adopted IMCI as their child health care strategy and significant achievements were attained by the end of September l998 (BASICS II b). In December 1999, PAHO chose to support implementation of IMCI in the LAC Region by launching a strategy called "Health Children: Goal 2002", with the objective of preventing the death of 100,000 children under 5 years of age in the Americas by the year 2002 (PAHO e. 1999).

The eighth, the Guatemalan MOH, had not embraced IMCI for the first three years after the LAC Initiative started, but some NGOs in Guatemala, with BASICS assistance, had adopted IMCI in their service delivery (BASICS II b). The reason why the MOH initially rejected IMCI was that the MOH feared that IMCI would compete with the previous administrations' efforts to introduce the Comprehensive Health Care System (SIAS), according to personal communication with a representative of BASICS (BASICS II c). In November 2000, the MOH finally adopted IMCI, with a new government and leadership (Project HOPE a. 2000: 22).

Before the Guatemalan MOH adopted IMCI, BASICS and Project HOPE had implemented IMCI with some NGOs in Guatemala as described below.

**4-3-2 BASICS**

Basic Support for Institutional Child Survival (BASICS II) is the US government's largest child survival project, working in collaboration with other international agencies, NGOs, health systems, academic institutions, and especially public health officials in developing countries (BASICS II d).

From 1993 to 1996, formerly called BASICS I provided technical assistance to the MOH in the treatment and standard case management (SCM) of ARI, household behavior change, and community drug availability. BASICS began intense collaboration with the MOH in 1997 to expand technical assistance and training of area and district health staff in SCM of prevalent childhood diseases in the five Mayan highland departments, with USAID/Guatemala funding. Companion work included an expansion of health communications and behavior change, district management training, and community organization (BASICS II e).

The algorithm used for the SCM training course nearly matched the standard IMCI course.

Then, September 1997, the MOH halted all training in the Mayan highland projects, just as SCM and district management training were gaining momentum and producing positive results. At a policy level, negotiations stalled between the USAID Mission and the MOH on U.S. bilateral assistance in the health sector (BASICS II e). Since USAID was a strong supporter of IMCI and somewhat skeptical about the future of SIAS, they encouraged incorporation of an IMCI-like approach in private volunteer organizations (PVOs) and collaborating agencies that received Child Survival funds from USAID (BASICS II c).

In this context, the USAID/Guatemala Mission asked BASICS to focus its technical assistance on introducing IMCI to three USAID-funded NGOs: *Agrosalud, Guatesalud*, and *Clinica Maxena* in December 1997. The geographic focus of BASICS work thus shifted from the Mayan highlands to the Boca Costa region. In February 1998, BASICS began intensive efforts to introduce IMCI to the three NGOs. A working team was formed under the direction of BASICS's Guatemala office. BASICS adapted existing IMCI training materials, trained facilitators and health staff, and designed and introduced community and household behavior interventions as well as improvements to health information and cost systems. The beneficiaries of BASICS's work with *Guatesalud* and *Agrosalud* were the young children of workers on commercial plantations. *Clinica Maxena* assists local, mostly indigenous communities in the highland department of Sololá. Each NGO employs medical doctors, health promoters, and/or community health workers. BASICS provided technical assistance through the Guatemala office and staff such as two pediatric clinicians who served as the country program manager and the technical officer and a community behavior change specialist (BASICS II e).

The BASICS Guatemala office was closed in December 1998. At the time, BASICS was completing its work in introducing IMCI to front-line NGOs. In addition to the *Agrosalud, Guatesalud*, and *Clinica Maxena*, another group of NGOs was interested in collaborating on community IMCI, including Project HOPE and the Population Council (BASICS II e).

### 4-3-3 Project HOPE

### 4-3-3-1 Overview of Project HOPE's project in Guatemala

Project HOPE is a private volunteer organization (PVO) and a member of the CORE Group based in the United States. HOPE has been implementing the Child Survival project entitled *Improving the Health of Guatemala's Most Vulnerable Population : Migrant Women and Their Children in the Boca Costa of Guatemala*, which has been funded by USAID, for four years, since 1997, in the Boca Costa region of southwestern Guatemala. The project has just been extended four more years, until September 29, 2005, from the end of the first period (September 30, 1997 to September 29, 2001). (Project HOPE a. 2000)

The project is located in the Boca Costa region in five departments (San Marcos, Quetzaltenango, Suchitepéquez, Retalhuleu, and Sololá) and twenty municipalities where the economy of this area is dominated by about 600 coffee estates. It is known as an area of the highest risk for morbidity and mortality in Guatemala. The area contains approximately 500,000 permanent residents and 90,000 seasonal coffee workers who speak mainly Mam, Quiche, and Spanish, and can be categorized into residents, plantation residents, and migrants (Project HOPE b. 2000: 4).

The program goal of the first period was to reduce infant and child mortality, improve maternal health, and increase the knowledge and skills of mothers and other caretakers through health education and promotion in the target area. The detailed objectives are shown in Table 22 (Project HOPE c. 1998: 7-11). The project has aimed to improve health services to and the health status of families working on coffee estates, and focused on diarrhea, pneumonia, maternal care, immunizations, and nutrition. In order to improve disease prevention and care seeking behaviors in the target population and improve health service delivery, HOPE has formed an alliance with the MOH, IGSS, Guatemalan Coffee Growers Association (*Anacafé*), several NGOs, and many coffee estates (clinics are privately owned and operated). Rather than delivering health services directly, Project HOPE is facilitating, training, and providing technical assistance to its partners in the alliance so that they can deliver more effective and sustainable services (Project HOPE b. 2000: 4). The primary interventions and the primary approaches and strategies are shown in Table 23 (Project HOPE d. 2001: 1-2).

Finally, the project has provided benefits for more than 200,000 migrant and resident children and women of reproductive age on about 150 coffee plantations in the five departments. In the extended period, by September 2005, the project has proposed to expand the program adding 100 plantations in the area and providing targeted assistance to some of the municipalities of origin of the migrants, as well as increase the program's reproductive health focus and strengthening overall sustainability (Project HOPE a. 2000).

### 4-3-3-2   Integration of IMCI to the project

*The first project period (September 30, 1997 to September 29, 2001)*

During the development of the detailed implementation plan (DIP), IMCI was not mentioned. A report of the DIP, mentioning SIAS, briefly noted that local NGOs would bid on providing coverage to areas not covered by MOH services (Project HOPE c. 1998: 14).

In the report of mid-term evaluation in 1999, IMCI was referred to as Case Management of Childhood Illness (CMCI). The report showed that the MOH had adapted a modified version of IMCI and the project referred to it as CMCI. The project had used CMCI in training course for staff facilitators, volunteer facilitators, institutional health staff, and community health volunteers

(CHV, as the same as CHW) in 1998 and 1999. Training sessions on CMCI covered access, immunization, nutrition, diarrhea, and pneumonia (Project HOPE b. 2000: 5-24). The detailed information about the CMCI was not shown, but it seems that only a modified IMCI algorithm was adopted.

The annual report for October 1999 to December 2000 (the third project year) showed that HOPE had participated in the national IMCI taskforce with IGSS, the Quality Assurance Project (QAP), and the other PVOs (URC and Population Council) since the MOH had formally adopted IMCI in November 2000 (Project HOPE d. 2001: 2). The taskforce is called as ETANA (Equipo Técnico Asesor Nacional: National IMCI Technical Team). The report described monthly meetings for the country adaptation process (planning, definition of methodologies and training, monitoring and supervision, and community education), and the MOH decided to develop a group of master trainers responsible for national training, starting initially with a pilot site. HOPE was assisting its health areas with this process, and the health areas have added additional staff to join the group of master trainers developed by HOPE earlier. In this term, many project counterparts were given training on IMCI, such as immunization, breastfeeding counseling, and child nutrition counseling. As a result, for example, CHVs counseled caregivers of malnourished children and referred the identified children based on the IMCI guidelines (Ibid.)

*The extended project period (September 30, 2001 to September 29, 2005)*

HOPE expresses that there is an excellent opportunity and conducive policy environment for improving the health of the groups targeted by the proposal, following the Peace Accords of 1996 and with a new MOH National Health Plan 2000-2004. Improving maternal and child health, particularly in indigenous and migrant groups is the number one objective of the MOH. There is also an increased focus on preventive services, quality and effectiveness of care at all levels, and emphasis on decentralization, community involvement, and increased participation of the private sector under the SIAS. The central MOH considers HOPE a lead agency in working with these vulnerable groups and has sought its Country Director's input to the development of policies and guidelines for implementation (ETANA: National IMCI Technical Team). With support from BASICS, HOPE had already trained all IGSS and NGO staff in the target area in IMCI in the first period. The MOH has HOPE taking the lead in IMCI implementation in the target area. MOH, IGSS and NGO staff in the area have expressed a keen interest in receiving additional technical assistance, particularly with the implementation of IMCI and reproductive health interventions, as well as to sustain better achievements to date (Project HOPE a. 2000: 6-23).

In the extension, the project will continue to emphasize the use of effective supervision systems for the staff trained in IMCI, periodic health facility assessments, verbal case reviews, and other methods to monitor quality of care. The training of health staff in the use of SIAS manuals and quality improvement will also assist in addressing administrative issues related to IMCI (drug

supply, transport, patient flow, etc.) and adherence to technical standards.  Health unit (HU) CHW training curricula use IMCI case management protocols, and all health messages for the households and community level are consistent with IMCI materials.  Care seeking by residents and migrants at health units has increased over the past years.  Attention to quality of IMCI services provided by HU CHWs and health providers through multiple quality improvement methods combined with community education will increase appropriate use of these services and client satisfaction (Ibid. 22-23).

## 4-3-3-3  Effectiveness and problems in the HOPE project

*The mid-term evaluation*

The mid-term evaluation was carried out for two weeks, November 8-19, 1999.  The report summarized the results that the project had met or exceeded most of its scheduled implementation targets to date.  It has trained 197 staff (83% of the target) from the partner organizations, 473 CHVs (124%), and 667 traditional birth attendants (102%) in CMCI and/or Information/Education/ Communication (IEC).  It had convinced 130 coffee estates to commit resources and join the program.  It had created a series of audiotapes on various common illnesses in several languages spoken in the area, and they had been broadcasted.  It had gained the full support of the top management of the departmental MOH and IGSS.  It had been begun to see significant improvements in health services, as evidenced by increases in vaccination coverage and prenatal visits.  Supply of medication was a major problem facing the project.  Many problems remained to be solved in order to insure an adequate and sustainable flow of medicines (Project HOPE b. 2000: 1-2).

*The final evaluation*

Shortly before the project was ending in September 29, 2001, the final evaluation was carried out by using the Knowledge-Practice-Coverage (KPC) survey tool, in Quatzaltenango, San Marcos, and Suchitepequez, from August 30 to September 12, 2001.  Three hundred households with children under 2 years were selected by the cluster sampling method from residents of the area (migrants are not included in this survey), and the collected data were compared with the baseline data (Project HOPE e. 2002: 4-5).

The report summarized main indicators showed significant progress in the comparison study: 1) coverage of BCG, OPV3, and DPT3, 2) proportion of children with a health (vaccination) card (53% at baseline and 72% at final), 3) early initiation of breastfeeding in the first hour of birth, 4) complementary feeding for 5-8 months of age (34% and 58%), 5) vitamin A supplementation coverage, 6) ORT use rate (8% and 39%), 7) home fluids use rate during diarrhea, 8) maternal knowledge of pneumonia danger signs (23% and 42%), 9) knowledge and use of child spacing

methods, 10) proportion of mothers with maternal cards, and 11) institutional birth (Ibid. 8-15).

After the KPC survey, the qualitative evaluation survey was carried out from October 1 to 9, 2001. A total of 66 interviews were conducted with Health Area officials, Health Council members, trainers, health service providers, and CHVs. The report summarized overall assessment that almost all of the respondents saw significant improvements. Most important improvements are greater access to health services and improved health status among migrants and residents, and lower costs and improved worker productivity for the plantations. The most significant and important problem is the lack and/or shortage of medicines. There are some problems with CHVs, especially turnover, unavailability when needed, and inability to communicate with migrants. Inconvenient operation hours, lack of coordination, inadequate supervision, and poor continuity of care for migrants are also problems (Project HOPE f. 2001: 1-11).

Evaluating the accomplishment of project for four years, HOPE summarized the impact of the project as shown in Table 24. Noteworthy results of the project were: establishment of 150 health units (HUs) on plantations in the target area, training of 150 HU promoters in standard case management (diarrheas, pneumonia, and nutrition education), training of 650 existing rural CHWs (100% of project benchmark achieved) in adult and participatory education methodologies and 697 traditional birth attendants (100%). As a result, shown in Table 24, 80% of trained IGSS staff now possesses adequate knowledge about pneumonia, 74% about nutrition, and 66% about diarrheas based on PAHO knowledge and performance measures for IMCI. All training of counterpart staff took into account IMCI norms. Now that IMCI has been adopted by the MOH, health workers in the target area are ahead of other areas. Of 50 resident mothers interviewed, 62% had heard basic health messages on the radio, and of 400 migrant mothers participating in focus group discussions, 215 had heard radio messages (Project HOPE a. 2000: 1-2).

### 4-3-4  Current national situation of IMCI in Guatemala

The Guatemalan MOH adopted IMCI only in November 2000. Many aspects of IMCI were already included in the MOH's Integrated Health Care for Children and Women promoted under the previous government. In addition, as part of its SIAS, the MOH has promoted an increased role of the community and local facilities and agents in the area, and improved collaboration with NGOs/ PVOs. In the project extension proposal, HOPE expresses that one priority of working with partner agencies will be the implementation of IMCI with the MOH and URC (PVO), building on the ongoing activities of the project (Ibid. 12-22).

Information in this part was mainly obtained by personal communication through electronic mail because there is no available published document. Dr. Francisco Chew (a pediatrician), who is a member of the ETANA (National IMCI Technical Team) and working in the executive unit for agreements with USAID in the MOH, has a responsibility to support the implementation of IMCI in

the eight Health Areas of Guatemalan highland areas: Chimaltenango, Sololá, Quiché, Ixil, Totonicapán, Quetzaltenango, San Marcos, and Huehuetenango.  In addition, PAHO/Guatemala and the American Red Cross are implementing IMCI in Zacapa and Alta Verapaz.

According to Dr. Chew's information, the MOH declared officially to implement IMCI strategy in December 2000, prepared the national and Health Area implementation plans, and adapted materials of capacitating during five months (January to May, 2001).  As the first phase of IMCI implementation, training of trainers in each area was carried out in May and June 2001, and they have trained health workers (staff in health facilities) in five selected districts of each Health Area.  Now they have started training health workers in the rest of the districts as the expanded phase.  By June 2002, all staff in the ten Health Areas will have been trained in IMCI guidelines.  Continuously, institutional facilitators, community facilitators, and CHWs will start to be trained for the community-capacitating phase.  Simultaneously, performance of trained health workers is being monitored.  Collaborating NGOs/PVOs in IMCI implementation are HOPE and URC/ Calidad en Salud with USAID funding.  The American Red Cross, PAHO/Guatemala, and UNICEF are also collaborating organizations (Chew F 2002).

University Research Corp. (URC), which is a PVO based in the United States, and Calidad en Salud (NGO) based in Guatemala are supporting the training of health workers (mostly nurses and physicians) in clinical parts of IMCI (Clinical IMCI) in the eight areas as shown in Table 25.  The information about URC/Calidad en Salud was obtained through personal communication with Ms. Peggy Koniz-Booher, a representative of URC.  URC is a member of ETANA.  In terms of Community IMCI, they are currently assisting the MOH in launching an expanded community level IMCI within the Extension of Coverage program.  They will be supporting the training of members of the Basic Health Team (BHT) in the Integrated Case Management within community health centers.  The BHTs have been formed under the SIAS, such as outpatient medical doctors, Cuban medical doctors, and institutional and community facilitators as described the above section of SIAS and as shown in Table 25.  They are also proposing their own version of Community IMCI, which they are calling *Atención Integrada de la Niñez y la Mujer en la Comunidad* (AINM-C: Integrated Attention of Children and Women in the Community), with a focus on promotion and prevention.  In AINM-C, they will be training other members of the BHT such as community health workers (CHWs) and traditional birth attendants.  Many other NGOs are interested in supporting the community IMCI work.  They are specifically working with CARE, Save the Children, SHARE and Catholic Relief Services, all of which receive Title II food aid money (USAID) and have child survival projects (Koniz-Booher P 2002).

In the metropolitan area, some of the health staff in the MOH and IGSS facilities are also training in IMCI guidelines, according to the information of Dr. Mirta Iraheta who is a pediatrician in IGSS.  She noted that the national general coordinator of IMCI is Dr. Enrique Molina who is working in the Division of Maternal and Child Health of the MOH (Iraheta M 2002).

Information about the political or strategic coordination of IMCI implementation in the areas where SIAS has been implemented was obtained. According to the information of Dr. Chew, IMCI, which integrates various MOH programs such as ARI, diarrhea, vector control, nutrition, and immunization, is used as a strategy for SIAS. In community health centers and MOH health facilities (health center and health post) that SIAS has covered, the health workers use IMCI guidelines to diagnosis, treat, and refer children.

Furthermore, a field survey will be conducted to augment previously obtained information and to evaluate the effectiveness of IMCI in Guatemala.

# 5.  Discussion and conclusion

*Implementation and the cost-effectiveness of IMCI*

WHO suggests that the success of IMCI implementation in a country depends on acceptance and commitment from the Ministry of Health (MOH) and other relevant bodies.  It is essential that the process of early implementation be officially endorsed by the MOH and accompanied by practical steps to facilitate the introduction of IMCI and related activities.  It is also important that during the initial phases, time is taken to build consensus and to create a broad base of support, including establishing or strengthening partnerships between existing programs.  To ensure the sustainability of IMCI beyond the early implementation phase, it is essential that linkages between IMCI and health sector reforms be discussed early in the planning process (WHO h. 1999: 5).  Countries that first used IMCI experienced problems mainly in the process of adaptation of the IMCI guidelines and training materials.  It is important for that adaptation to include the most important illnesses of children in a specific country, to be consistent with national treatment guidelines and other policies, and to be feasible to implement the guidelines through the health system (WHO r. 1999: 1).

Aspects of the cost-effectiveness of IMCI are very important in developing countries.  Planning and implementing IMCI will be strengthened and supported by evidence of its effectiveness and clear information about costs.  Therefore, WHO has identified that a study of the costs of IMCI is a key research priority as well as the impact of IMCI on child morbidity and mortality (WHO s. 1999: 1-2).

Early studies on drug costs from Uganda (Kolstad et al. 1998) and Kenya (Boulanger et al. 1999) suggest that those associated with IMCI are less than the costs of current practice (Tulloch, 1999: SII 19).  Furthermore, evaluation studies on the impact of IMCI on total costs of health services are needed.  The WHO Multi-Country Evaluation of IMCI Effectiveness, Cost, and Impact (MCE) team has developed the MCE cost measurement tools and methods to document the economic aspects of IMCI implementation and to measure its cost-effectiveness.  The tools and methods have been field-tested (WHO c. 2001: 14-15).

*The first component: Improving case management skills of health workers*

Based on the field tests of the IMCI guidelines in the six countries that first used IMCI (Gambia, Kenya, Ethiopia, Bangladesh, Uganda, and Tanzania), WHO concluded that the IMCI guidelines can lead to appropriate management of sick children by health workers in first-level facilities: health workers trained in IMCI performed well compared to pediatricians who sometimes had access to radiology and laboratory results, most children received the specific treatments they needed, and the guidelines enabled health workers to manage a very high proportion of the clinical

problems that presented (86% in Kenya, 87% in Ethiopia, and 93.5% in Uganda). (WHO p. 1997: 119)  Areas that needed improvement are: case management of ARI, diarrhea, dysentery, meningitis, malaria, and malnutrition as well as management of the neonate (WHO s. 1999: 2-3).

The IMCI training courses improved health worker skills very well, according to the studies from Ethiopia (Simoes et al. 1997) and Kenya (Odhacha et al. 1998).  On the other hand, the CORE Group (a group of NGOs/PVOs based in the US that has been carrying out many child survival projects funded by USAID) pointed out that attempting to involve all health workers in all health facilities has proven difficult in many countries for the following reasons: 1) the course is too long, and health workers cannot afford to take 11 days away from their work for training, 2) some health workers with limited formal training who practice in peripheral facilities find parts of the guidelines too complex to understand and use, and 3) application of the guidelines requires more time than health workers would normally spend giving care.  Under such conditions, shorter training courses are applied, especially in many Latin America countries, and modified IMCI guidelines are developed (Winch P et al. 2001: 12-13).

Health workers are expected to refer children with severe conditions to upper level facilities. WHO compared the results of the effectiveness of referral by health workers from the field tests of the IMCI guidelines in the five countries that first used IMCI (WHO p. 1997: 121-124).  Overall, the proportion of children referred by health workers tended to be lower than that of children referred by the "gold standard" pediatrician.  Some under-referral occurred, in part because health workers missed key clinical signs or because they did not refer serious conditions requiring hospitalization that were not specifically addressed in the IMCI guidelines.  WHO emphasizes the efforts of careful training following the modules in the full IMCI training course, which explain that health workers should also refer sick children who have problems that they are not able to manage, regardless of the child's IMCI classification.  For health workers who work in peripheral facilities where referral is difficult or impossible, it may be necessary to implement course adaptations and additional training and supplies to expand the level of care available for the severely ill child (Ibid. 123).

*The second component: Improving the health system*

The success of IMCI depends on the reorganization and improvement of essential elements of the health system.  A WHO report noted that early experience with IMCI implementation led to greater awareness of the need to improve drug availability, to support effective planning and management at district levels, and to address issues related to the organization of work at health facilities, as shown in Table 5.  In all countries with significant experience to date, IMCI has served as a catalyst for the identifying substantial weaknesses in the public health system (Lambrechts T et al. 1999: 587-590).

Drug availability is essential for improving case management in health facilities.  Although

countries implementing IMCI have succeeded in modifying the Essential Drug List to ensure drug availability, the complex and interrelated issues of drug procurement and drug distribution have proven to be serious challenge in all countries (Ibid. 587).

The introduction of IMCI in every country should be coordinated with health sector reform efforts promoted by the government and donor agencies. At the end of 1998, 29 countries had included IMCI in health reform projects supported by the World Bank. Health sector reforms in many countries included the decentralization of management and services, introduction of policies recommending the delivery of a minimum package of services in first level facilities, introduction of cost recovery mechanisms, and redistribution of activities between the public and private sectors (Ibid. 590). WHO emphasizes that the IMCI strategy can play an important role in most aspects of health sector reform, by: 1) improving cost-effectiveness of essential child health care services, 2) strengthening capacity for decentralized management at district level, 3) improving quality of health care for children, 4) supporting the new role of the MOH, 5) cost savings, and 6) strengthening drug supply and management (WHO l. 1999: 2-4). The case study of the HOPE project in Guatemala demonstrates that IMCI implementation is strengthening the capacity for decentralized management at the district level, improving quality of heath care for children, and supporting the new role of the MOH. Furthermore, the impact evaluation for the IMCI strategy on health sector reform should be a research priority in all countries.

*The third component: Improving family and community practices*

Without improving family and community health practices, no strategy for improving child health and development will be effective. Implementation of family (household) and community (HH/C) IMCI has been led by NGOs/PVOs in many countries. The presentations in the CORE Group meeting, which was held in January 2001 and were described in the previous section (3-3-1), show clearly the effectiveness of HH/C IMCI for improving child survival situations in the world.

In Kenya's Community Initiative for Child Survival project, some issues arose that needed to be addressed including: poor performance of community health workers (CHWs) and inappropriate care seeking (caregivers' low utilization of trained CHWs). (Kelly LM et al. 2001: s138, and Garg et al. 2001) Deficiencies in CHW performance were attributed to the following: the complexity and inconsistencies of modified IMCI guidelines, inadequate supervision, CHWs' awareness of being criticized for referring less-to-moderately serious cases, and insufficient practice using the guidelines (Kelly JM et al. 2001: 1620-1624).

Common reasons for not seeking care for sick children include late recognition of severe symptoms requiring care outside of the home, and barriers to use of health care services. WHO identified research priorities to improve family response to illnesses, these were: identifying signs and symptoms of illness that can be recognized by caretakers, investigating methods to improve caregivers' recognition of signs of serious illness and to promote timely and appropriate family

action, and assessing caregivers' adherence to treatment advice and follow-up and referral recommendations provided by trained first level health workers and CHWs (WHO s. 1999: 4-5).

As the range of activities in HH/C IMCI is very wide, an integrated framework of HH/C IMCI is needed. The CORE Group meeting in January 2001 produced very rich outcomes and consensus of HH/C IMCI. The framework of HH/C IMCI that has been created based on discussions in the meeting is shown in the document of the CORE group (Winch et al. 2001). An essential product of the meeting is that three elements of HH/C IMCI were defined. The HH/C IMCI is the optimization of a multi-sectoral platform for child health and nutrition that includes three linked requisite elements: the first: partnerships between health facilities or services and the communities they serve, the second: appropriate and accessible care and information from community-based providers, and the third: integrated promotion of key family practices critical for child health and nutrition (Ibid.).

Existing community-based child and nutrition programs should be utilized and integrated in the implementation of IMCI in the community (Lambrechts et al. 1999: 591). While programs to control ARI and diarrhea in young children generally become fully integrated into national IMCI programs, other programs and initiatives continue to exit, and new programs and initiatives are being developed outside of IMCI (Winch P et al. 2001: 63-65). Where linkages have been formed between these other programs and IMCI, the links have most often been with the first component of IMCI, improving the skills of health workers. Relatively little effort has been invested in linkages between HH/C IMCI and other programs (Ibid. 63). The CORE Group emphasizes that a number of child health problems stand out as needing research to define and test effective community interventions, including neonatal mortality, HIV/AIDS, injury prevention, care of AIDS orphans, and promotion of mental development (Kelly LM: 2001: s146-147).

*The goal of IMCI*

The goal of IMCI is to reduce child morbidity and ultimately, mortality. The studies in Guatemala, India, and Ethiopia showed the great impact of community interventions on neonates and under-five child mortality as described in the above section (3-1-1-2). The intervention strategies in these countries were as follows: regular home visits by health workers and the study physician in Guatemala (Bartlett et al. 1991), management of cases of neonatal pneumonia with co-trimoxazole by trained community health workers and traditional birth attendants in India (Bang et al. 1993), and health education for mothers to recognize possible malaria and promptly give chloroquine by trained mother-coordinators in Ethiopia (Kidane G et al. 2000). It is noteworthy that these studies show a possibly high impact of households and community (HH/C) IMCI on child mortality. The improvement of neonatal mortality is especially important to reach the goal of IMCI because neonatal mortality comprises approximately 66% of all deaths in infants aged less than one year, and 40% of all deaths in children aged less than five years (Kelly LM et al. 2001: s 128

presented by Dr. Gary Garmstadt).   However, the all studies were conducted or started before IMCI was launched by WHO/UNICEF.   The CORE Group identified principles underlying the HH/C implementation framework, and one of them is that HH/C can be implemented with or without the first two IMCI components (health worker skills and health system supports).   This is helpful if the first two components of IMCI are impossible in some settings or may take many years to accomplish in other settings (Winch P et al. 2001: 68).     However, all three IMCI components contribute to an effective life-saving strategy, and are synergistic (Ibid. 68).   Therefore, the impact of IMCI with the three components combined is expected to be more effective than that of separate interventions on child mortality.   Major evaluations of the impact of comprehensive IMCI on mortality are underway in Uganda, Bangladesh, and Tanzania by the WHO/MCE team (WHO c. 2001).

*Guatemala*

IMCI in Guatemala at the national level has been implementing since May 2001.   In 1997, Guatemala was selected as one of eight Latin American and the Caribbean countries by the Regional IMCI Initiative.   However, the government of Guatemala did not accept IMCI officially until November 2000.   Current national IMCI implementation is proceeding in the ten departments under the Comprehensive Health Care System (SIAS), which was launched by the MOH in 1997.   NGOs/ PVOs are supporting the MOH to implement both SIAS and IMCI.   The MOH is now focusing on the first component of IMCI, which is improving the skills of health workers.   The second (improving health systems) and third components (improving household and community practices) are ready to be implemented and are compatible with the national health policies (1996-2000 and 2000-2004) and with the Health Code issued in 1997 promoting health sector reform.   Furthermore, since 1997 the SIAS has been creating human resources such as community facilitators and community health workers with salaries or incentives in communities where previously un-served by the public sector health system.

While BASICS had been implementing community IMCI in the Mayan highlands and the Boca Costa area of Guatemala, the government refused to accept IMCI.   When the BASICS office closed, Project HOPE continued its efforts.   The HOPE project demonstrates the effectiveness of maternal and child health project combining IMCI strategies, and is leading IMCI implementation in the health facility and community levels in Guatemala.   HOPE and URC, which are PVOs based in the US, are supporting the MOH to implement the first component of IMCI as a member of the National IMCI Technical Team (ETANA).   It seems hopeful that with the help of these NGOs/ PVOs, the MOH of Guatemala will be able to implement IMCI at the community level in the near future.

In conclusion, the effectiveness of IMCI on child health and development is clearly shown

especially with regard to improving the skills of health workers at the health facility level. The members of the CORE Group have demonstrated the effectiveness of HH/C IMCI, however, more evaluation research is needed. The impact of IMCI on child mortality is not known yet, but expectations for IMCI are increasing in developing countries. The case study in Guatemala demonstrates how the combined efforts of NGOs/PVOs at the community level and the MOH at the health facility level will serve to bring about the comprehensive implementation of IMCI throughout the country and at all levels. Finally, more evaluation research and sound impact evaluation studies are essential for determining the effectiveness of IMCI in reducing child morbidity and mortality.

**Table 1. Interventions Currently Included in the IMCI Strategy and the Guidelines for First-level Health Workers**

| Levels | Promotion of growth<br>Prevention of disease<br>(Preventive intervention) | Response to sickness<br>(Curative care)<br>Conditions covered by case management |
|---|---|---|
| Home | 1. Community/home-based interventions to improve nutrition<br>2. Insecticide-impregnated bed-nets | 1. Early case management<br>2. Appropriate care-seeking<br>3. Compliance with treatment |
| Health services (Generic version) | 1. Vaccinations<br>2. Complementary feeding and breastfeeding counseling<br>3. Micronutrient supplementation | 1. Case management of:<br>　*Acute respiratory infections (ARI)<br>　*Diarrhea: dehydration, persistent diarrhea, dysentery<br>　*Malaria<br>　*Measles<br>　*Malnutrition<br>　*Anemia<br>　*Meningitis, sepsis<br>　*Ear infection<br>2. Complementary feeding and breastfeeding and counseling<br>3. Iron treatment<br>4. Antihelminthic treatment |
| Health services (IMCI adaptation guide) | Periodic deworming | Case management of:<br>　*HIV/AIDS<br>　*Dengue haemorrhagic fever<br>　*Wheeze<br>　*Sore throat |

Reference: WHO. IMCI Information, Management of Childhood Illness in Developing Countries: Rationale for an Integrated Strategy. WHO/CHS/CAH98.1A 1999: 1-6.

**Table 2. The Range of Possible IMCI Planning and Management Activities**

Improving health workers skills:

- Develop/adapt case management guidelines and standards

- Train public health providers

- Define roles for non-governmental/private providers

- Improve and maintain health workers performance

- Use training to orient health workers to problem-solving in the community


Improving the health system to deliver IMCI

- Improve availability of drugs and supplies

- Improve service quality and organization at health facilities

- Improve referral pathways and services

- Identify/develop methods for sustainable finance and ensure equity of access

- Link IMCI and Health Information Systems


Improving family and community practices

- Support/strengthen community organization and participation

- Promote appropriate family response to childhood illness

- Contribute to prevention and promote child health and nutrition actions

- Create an enabling, safe and supportive environment

Reference: WHO. IMCI Information, Planning National Implementation of IMCI. WHO/CHS/CAH/98.1C. 1999: p.2.

### Table 3. The IMCI Case Management Process

1) The health worker first <u>assesses</u> the child by identifying any danger signs, asking about the four main symptoms in all children (cough or difficulty breathing, diarrhea, fever, and ear problems). Carrying our further assessment if a main symptom is reported, and reviewing the nutritional and immunization status in all children.

2) The health worker then <u>classifies</u> the child's illnesses. The classification of illness is based on a color-coded triage system with which many health workers are already familiar through use of the WHO case management guidelines for diarrhea and acute respiratory infections. Each illness is classified according to whether it requires: urgent referral, specific medical treatment and advice, or simple advice on home management. Action-oriented classifications, rather than exact diagnoses, are used.

3) After classification, <u>specific treatments</u> are identified. If the child has to be referred urgently to a hospital, the health worker gives only essential treatment before departure. Since most children have more than one illness classification, an integrated treatment plan is developed.

4) Practical <u>treatment instructions</u> are carried out, including how to teach the mother to administer oral drugs, to increase fluid intake during diarrhea, and to treat local infections at home. The mother is advised on the signs that indicate that the child should immediately be brought back to the clinic and when to return for routine follow-up.

5) Feeding is assessed and <u>counseling</u> of mothers on feeding problems is provided.

6) <u>Follow-up</u> instructions for various conditions are given when the child returns to the clinic.

Reference: Gove S. et al. Integrated Management of Childhood Illness by Outpatient Health Workers: Technical Basis and Overview. For the WHO Working Group on Guidelines for Integrated Management of the Sick Child, *Bulletin of the World Health Organization*, 1997; 75 Suppl 1: 8-9.

## Table 3.  (conti.)

| | | |
|---|---|---|
| **Persistent diarrhea** | | |
| - Dehydration present | Severe persistent diarrhea | - Treat dehydration before referral unless the child has another severe classification.<br>- Refer to hospital. |
| - No dehydration | Persistent diarrhea | - Advise the mother on feeding a child who has PERSISTENT DIARRHEA.<br>- Follow-up in 5 days. |
| **Dysentery** | | |
| - Blood in the stool | Dysentery | - Treat for 5 days with an oral antibiotic recommended for *Shigella* in your area.<br>- Follow-up in 2 days. |
| **Fever: for high malaria risk** | | |
| - Any general danger sign<br>- Stiff neck | Very severe febrile disease | - Give quinine for severe malaria (first dose).<br>- Give first dose of an appropriate antibiotic.<br>- Treat the child to prevent low blood sugar.<br>- Give one dose of paracetamol in clinic for high fever (38.5°C or above).<br>- Refer URGENTLY to hospital. |
| - Fever (by history or feels hot or temperature 37.5°C or above) | Malaria | - If NO cough with fast breathing, treat with oral antimalarial. Or If cough with fast breathing, treat with cotrimoxazole for 5 days.<br>- Give one dose of paracentamol in clinic for high fever (38.5°C or above).<br>- Advise mother when to return immediately.<br>- Follow-up in 2 days if fever persists.<br>- If fever is present every day for more than 7 days, REFER for assessment. |
| **Fever: for low malaria risk and no travel to a high risk area** | | |
| - Any general danger sign<br>- Stiff neck | Very severe febrile disease | - Give quinine for severe malaria (first dose).<br>- Give first dose of an appropriate antibiotic.<br>- Treat the child to prevent low blood sugar.<br>- Give one dose of paracetamol in clinic for high fever (38.5°C or above).<br>- Refer URGENTLY to hospital. |
| - NO runny nose and NO measles and NO other cause of fever | Malaria | - If NO cough with fast breathing, treat with oral antimalarial. Or If cough with fast breathing, treat with cotrimoxazole for 5 days.<br>- Give one dose of paracentamol in clinic for high fever (38.5°C or above).<br>- Advise mother when to return immediately.<br>- Follow-up in 2 days if fever persists.<br>- If fever is present every day for more than 7 days, REFER for assessment. |
| - Runny nose PRESENT Or<br>- Measles PRESENT Or<br>- Other cause of fever PRESENT | Fever-Malaria Unlikely | - Give one dose of paracetamol in clinic for high fever (38.5°C or above).<br>- Advise mother when to return immediately.<br>- Follow-up in 2 days if fever persists.<br>- If fever is present every day for more than 7 days, REFER for assessment. |

| Fever: for no malaria risk and no travel to a high risk area | | |
|---|---|---|
| - Any general danger sign<br>- Stiff neck | Very severe febrile disease | - Give first dose of an appropriate antibiotic.<br>- Treat the child to prevent low blood sugar.<br>- Give one dose of paracetamol in clinic for high fever (38.5°C or above).<br>- Refer URGENTLY to hospital. |
| - NO general danger sign AND<br>- NO stiff neck | Fever-Malaria Unlikely | - Give one dose of paracetamol in clinic for high fever (38.5°C or above).<br>- Advise mother when to return immediately.<br>- Follow-up in 2 days if fever persists.<br>- If fever is present every day for more than 7 days, REFER for assessment. |
| **Measles (if measles now or within the last 3 months)** | | |
| - Any general danger sign or<br>- Clouding of cornea or<br>- Deep or extensive mouth ulcers | Severe complicated measles | - Give vitamin A.<br>- Give first dose of an appropriate antibiotic.<br>- If clouding of the cornea or pus draining from the eye, apply tetracycline eye ointment.<br>- Refer URGENTLY to hospital. |
| - Pus draining from the eye or<br>- Mouth ulcers | Measles with eye or mouth complications | - Give vitamin A.<br>- If pus draining from the eye, treat eye infection with tetracycline eye ointment.<br>- If mouth ulcers, treat with gentian violet.<br>- Follow-up in 2 days. |
| - Measles now or within the last 3 months | Measles | - Give vitamin A. |
| **Ear problem** | | |
| - Tender swelling behind the ear | Mastoiditis | - Give first dose of an appropriate antibiotic.<br>- Give first dose of paracetamol for pain.<br>- Refer URGENTLY to hospital. |
| - Pus is seen draining from the ear and discharge is reported for less then 14 days, or<br>- Ear pain | Acute ear infection | - Give an oral antibiotic for 5 days.<br>- Give paracetamol for pain.<br>- Dry the ear by wicking.<br>- Follow-up in 5 days. |
| - No ear pain and No pus seen draining from the ear | No ear infection | - No additional treatment. |
| **Malnutrition** | | |
| - Visible severe wasting or<br>- Severe palmar pallor or<br>- Oedema of both feet | Severe malnutrition or Severe anemia | - Give Vitamin A.<br>- Refer URGENTLY to hospital. |
| - Some palmar pallor or<br>- Very low weight for age | Anemia or very low weight | - Assess the child's feeding and counsel the mother on feeding according to the FOOD box on the COUNSEL THE MOTHER chart. If feeding problem, follow-up in 5 days.<br>- If pallor:<br>  - Give iron.<br>  - Give oral antimalarial if high malaria risk.<br>  - Give mebendazole if child is 2 years or older and has not had a dose in the previous 6 months.<br>- Advise mother when to return immediately.<br>- If pallor, follow-up in 14 days. If very low weight for age, follow-up in 30 days. |
| - Not very low weight for age and no other signs or malnutrition | No anemia and not very low weight | - If child is less than 2 years old, assess the child's feeding and counsel the mother on feeding according to the FOOD box on the COUNSEL THE MOTHER chart.<br>- Advise mother when to return immediately. |

Reference: WHO t. *Handbook IMCI Integrated Management of Childhood Illness*. WHO/FCH/CAH/00.12. April 2000: 13-52.

**Table 4.  IMCI Illness Classification and Treatment for Age 2 Months up to 5 Years**

| Signs | Classify as | Identify treatment |
|---|---|---|
| **Cough or difficulty breathing** | | |
| - Any general danger signs or<br>- Chest indrawing or<br>- Stridor in calm child | Severe pneumonia or Very severe disease | - Give first dose of an appropriate antibiotic.<br>- Refer URGENTLY to hospital. |
| - Fast breathing | Pneumonia | - Give an appropriate oral antibiotic for 5 days.<br>- Soothe the throat and relieve the cough with a sage remedy.<br>- Advice mother when to return immediately.<br>- Follow-up in 2 days. |
| - No signs of pneumonia or very severe disease | No pneumonia: couch or cold | - If coughing more than 30 days, refer for assessment.<br>- Soothe the throat and relieve the cough with a sage remedy.<br>- Advise mother when to return immediately.<br>- Follow-up in 5 days if not improving. |
| **Dehydration** | | |
| Two the following signs:<br>- Lethargic or unconscious<br>- Sunken eyes<br>- Not able to drink or drinking poorly<br>- Skin pinch goes back very slowly | Severe dehydration | - If child has no other severe classification: Give fluid for severe dehydration. Or<br>- If child also has another severe classification: Refer URGENTLY to hospital with mother giving frequent sips of ORS on the way.  Advise the mother to continue breastfeeding.<br>- If child is 2 years or older and there is cholera in your area, give antibiotic for cholera. |
| Two of the following signs:<br>- Restless, irritable<br>- Sunken eyes<br>- Drinks eagerly, thirsty<br>- Skin pinch goes back slowly | Some dehydration | - Give fluid and food for some dehydration.<br>- If the child also has a severe classification: Refer URGENTLY to hospital with mother giving frequent sips of ORS on the way.  Advise the mother to continue breastfeeding.<br>- Advise mother when to return immediately.<br>- Follow-up in 5 days if not improving. |
| - Not enough signs to classify as some or severe dehydration. | No dehydration | - Give fluid and food to treat diarrhea at home.<br>- Advise mother when to return immediately.<br>- Follow-up in 5 days if no improving. |

**Table 5. WHO and UNICEF Current Recommendations for Improving the Health System to Support IMCI**

Drug availability
- Involve national drug authorities early in IMCI planning.
- Work to have IMCI drugs included in the national Essential Drugs List and approved for use at the appropriate level of the health system by IMCI trained staff.
- Identify temporary solutions in districts starting IMCI while working for system change to improve drug availability.

IMCI planning and management
- Organize national planning for IMCI in collaboration with all ministry of health divisions and interested partners to ensure correct understanding of major steps.
- Involve districts early in the planning process. Define the roles of central and district levels in district activities.
- Help districts integrate IMCI into their development plans, building upon and strengthening existing management structures and ongoing programs.
- Learn about supervisory systems at national and district levels and strengthen existing supervisory activities by providing training in IMCI for existing district supervisors. Seek to involve staff with good clinical skills in supervision.
- Plan and budget for strengthening or developing monitoring at district level, including how to use the information collected to solve problems and improve planning.

Organization of work at health facility level
- Assess clinic organization and job descriptions during IMCI planning to ensure that all IMCI tasks will be performed adequately (including immunization of ill children and counseling on feeding). Identify possible problems and plan for solutions.
- Consider training all health workers in a facility within as short a time period as possible.

Health information systems
- In the early stages of IMCI planning, start collaboration with the ministry of health division responsible for HIS. Based on national IMCI and HIS classifications, consider developing a table to help workers to convert the IMCI classifications into HIS classifications.
- Develop recommendations and procedures to help health workers meet the HIS reporting requirements adequately after training in IMCI.

Health sector reform
- Identify health sector reforms under way or planned in the country.
- Educate the national authorities responsible for reforms and their involved partners about IMCI, and advocate the inclusion of IMCI as part of health sector reform efforts.
- Coordinate the implementation of health sector reforms with IMCI implementation.

Reference: Lambrechts T. Bryce J. Orinda V. Integrated Management of Childhood Illness: A summary of First Experiences. *Bulletin of the World Health Organization*. 1999; 77(7): 588 Box 3.

**Table 6.** **UNICEF Goal and Objectives for Improving Home and Community Health Care for Children**

**Goal**

To improve home and community health care practices to enhance child survival, growth and development.

**Objectives**

Prevention
  To provide adequate knowledge, skills and support to families and communities to accelerate the prevention of common child killers, with focus on perinatal causes, diarrhea, malaria, measles, ARI, HIV/AIDS and malnutrition.

Home care and care-seeking
  - To improve home-care for sick and injured children, and promote timely and appropriate care-seeking behavior.
  - To increase compliance with advice and treatment from trained providers.
Improved caring practices by providers.
  - To improve the quality of care (when care is sought outside the home) from community providers and in health facilities.

Enabling environment
  - To build capacity at the household, community and district levels to facilitate active household and community participation in improving health care practices for women and children.
  - To ensure adequate monitoring and evaluation, and use of data for planning and to stimulate community action.

Reference: UNICEF. Home and Community Health Care to Enhance Child Survival, Growth and Development (Draft). Program Division UNICEF New York. 1999: 1-17.

## Table 7. The 16 Key Family Practices to Improve Care of Children at the Household and Community Levels

**For physical growth and mental development**

1. Breastfeed infants exclusively for at least 4 and if possible up to 6 months (taking into account WHO/UNICEF/UNAIDS policy and recommendations on HIV and infant feeding).

2. Starting at about six months of age, feed children freshly prepared energy and nutrient rich complementary foods, while continuing to breastfeed up to 2 years or longer.

3. Provide children with adequate amounts of micronutrients (vitamin A and iron, in particular), either in their diet or through supplementation.

4. Promote child's mental and social development by being responsive to the child's needs for care, and stimulating the child through talking, playing, and other appropriate physical and affective interactions.

**For disease prevention**

5. Take children for a full course of immunizations (BCG, DPT, OPV, and measles) before their first birthday.

6. In malaria-endemic areas, ensure children sleep under recommended insecticide treated mosquito nets.

7. Dispose faeces (including children's faeces) safely, and wash hands with soap after defecation, and before preparing meals and feeding children.

8. Adopt and sustain appropriate behaviors regarding HIV/AIDS prevention and care for the sick and orphans.

**For appropriate home care**

9. Continue to feed and offer more fluids to children when they are sick.

10. Give sick children appropriate home treatment for infections.

11. Take action to prevent child abuse, recognize it has occurred and take appropriate action.

12. Ensure that men actively participate in provision of childcare, and are involved in reproductive health initiatives.

13. Prevent and provide appropriate treatment for child injuries.

**For seeking care**

14. Recognize when sick children need treatment outside the home and take them for health care to the appropriate providers.

15. Follow recommendations given by health workers in relation to treatment, follow up and referral.

16. Ensure that every pregnant woman receives the recommended four antenatal visits recommended doses of tetanus toxoid vaccination, and is supported by family and community in seeking appropriate care, especially at the time of delivery and during the postpartum/lactation period.

Reference: UNICEF. Home and Community Health Care to Enhance Child Survival, Growth and Development (Draft). Program Division UNICEF New York. 1999: 11.

**Table 8.  The List of 63 Countries in Different Implementation Phases, as of June 1999**

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**The introduction phase** - 20 countries in the process of introducing IMCI:

Belarus, Benin, Bhutan China, Colombia, Georgia, Ghana, India, Iran, Kenya, Kyrgyzstan, Laos, Myanmar, Namibia, Syria, Tajikistan, Turkey, Turkmenistan, Uzbekistan,  and Yemen.

**The early implementation phase** - 31 countries had successfully introduced IMCI and had moved on to preparation for and implementation of initial activities in selected districts:

Argentina, Armenia, Azerbaijan, Bangladesh, Botswana, Cambodia, Cóte d'Ivoire, El Salvador, Egypt, Eritrea, Ethiopia, Haiti, Honduras, Kazakhstan, Paraguay, Madagascar, Malawi, Mali, Moldova, Morocco, Mozambique, Nicaragua, Niger, Nigeria, Pakistan, Senegal, South Africa, Sudan, Togo, Venezuela, and Zimbabwe.

**The expansion phase** - 12 countries had moved from early implementation to expansion of activities and geographic coverage countries:

Bolivia, Brazil, Dominican Republic, Ecuador, Indonesia, Nepal, Peru, Philippines, United Republic of Tanzania, Uganda, Viet Nam, and Zambia.

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Reference: WHO. Integrated Management of Childhood Illness: Global Status of Implementation June 1999. *IMCI Information.* WHO/CHS/CAH/98.1B. 1999: 1.

## Table 9.  WHO IMCI Guidelines, Tools, and Documents

**Planning**

IMCI Planning Guide: Gaining experience with the IMCI strategy in a country        (WHO/CHS/CAH/99.1)

Improving Family and Community Practices: A component of the IMCI strategy.        (WHO/CHD/98.18)

IMCI Adaptation Guide, Version 5        (WHO/CHD/98)


**Guidelines and Training**

Consultative meeting on HIV adaptation in IMCI        (AFRO, August 2000)

Report on the Workshop on Adaptation of IMCI Guidelines to include HIV/AIDS        (AFRO, June 2001)

IMCI Care for Development. For the healthy growth and development of children

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)

IMCI Chartbooklet


**IMCI Pre-Service Training**

Report of a capacity building workshop for IMCI pre-service training

(Geneva, Chateau de Penthes 27-30 March 2001)

IMCI Guidelines for Student Assessement        (WHO/FCH/CAH/01.11)

IMCI Technical Seminars        (WHO/FCH/CAH/01.10)

IMCI Reference Library of Selected Materials        (WHO/FCH/CAH/01.08)

IMCI Model Chapter for Textbooks        (WHO/FCH/CAH/00.40)

IMCI Model Handbook        (WHO/FCH/CAH/00.12)

IMCI: Planning, Implementing and Evaluating Pre-Service Training

Pre-service Training for the Integrated Management of Childhood Illness (IMCI):

Report of an informal consultation        (Geneva, 28-30 January 1998)

Report of an intercountry workshop on IMCI pre-service training        (Geneva, 2-5 November 1999)


**IMCI In-service training**

Introduction, Assess and Classify the Sick Child Age 2 Months up to 5 years,

Identify Treatment, Treat the Child, Counsel the Mother,

Management of the Sick Young Infant Age 1 Week up to 2 Months, Follow-up,

Facilitator Guide for Outpatient Clinical Practice, Facilitator Guide for Modules, and

Guide for Clinical Practice in the Inpatient Ward.        (WHO and UNICEF, 1997)

Course Director's Guide        (WHO/CHD/97.3.K.  Rev.1)


**Guidelines for Follow-up After Training in the WHO/UNICEF course on IMCI for first-level health workers**

Facilitator's Guide        (WHO/FCH/CAH/99.1A)

Supervisor's Guide        (WHO/FCH/CAH/99.1B)

Reference: WHO. WHO/Child and Adolescent Health and Development/IMCI/Selected Publications and Documents.
       (www.who.int/child-adolescent-health/publications/pubIMCI.htm)

**Table 10. Tasks in Planning and Implementing Activities to Improve Family and Community Practices Suggested by WHO**

Collect and review, with community participation, existing information regarding key family practices.

Carry out local studies (using protocols provided in the IMCI Adaptation Guide) in the districts where IMCI will be implemented first:
- Develop feeding recommendations.
- Identify the local terms for signs of illness to use in communicating with families.
- Adapt the mothers counseling card using local terms and appropriate feeding recommendations.
- Design and pre-test the adapted mothers counseling card.

Use this information to adapt IMCI training materials for first-level health workers.

Produce the mothers counseling cards.

Identify one or two IMCI districts within which to begin community-based activities.
- Facilitate joint planning with the community.
- Gather more information on family practices affecting child health and the factors influencing these practices.
- Further adapt the mother's counseling card, if necessary, for use with population living in their communities, and reproduce the card.
- Identify available community resources for supporting families and the care of children, and assess their strengths and weaknesses.
- Select potential resourced within the community, and identify what can be done to support and strengthen them.
- Review health messages delivered at the community and ensure that they are consistent with IMCI messages.
- Facilitate the training of persons working with the community, for example, the primary school teacher, the community level health worker and others conducting community-based activities.

Identify indicators to monitor progress and evaluate changes in family and community practices (technical support to be provided by WHO and UNICEF).

Develop mechanisms to provide feedback to the community to encourage community ownership of activities.

Reference: WHO. The Role of IMCI in Improving Family and Community Practices to Support Child Health and Development. *IMCI Information*. WHO/CHS/CAH/98.1G. 1999: 4.

## Table 11.  IMCI Evaluation Indicators Proposed by the WHO Evaluation Team

1. Provision of IMCI
    1.1 Availability of IMCI
        1.1.1 Number and proportion of health facility (HF) with at least 80% of HF who manage children trained in IMCI
        1.1.2 IMCI supported by health system (chart booklets available, regular supervision, equipment, essential IMCI drugs)
    1.2 Accessibility of IMCI
        1.2.1 Estimate of the proportion of the population living within x minutes travel time from a HF with at least 80% of HW who manage children trained in IMCI
    1.3 Quality of care provided
        1.3.1 Integrated approach used
        1.3.2 Correct treatment
        1.3.3 Missed opportunities for immunization avoided
        1.3.4 Effective counseling provided
        1.3.5 Caretaker satisfaction

2. Utilization of IMCI
    2.1 Annual number of attendances of under-fives in UMCI HF
    2.2 Proportion of attendances by main diagnostic category (diarrhea, ARI, measles, malaria, malnutrition, and anemia)
    2.3 Comparison of actual attendances with expected number of episodes in target population of under-fives
    2.4 Number of children immunized, by type and dose of vaccine
    2.5 Number of drugs distributed for use in children, by type
    2.6 Number of micronutrient supplements distributed for use in children, by type
    2.7 Number of impregnated bednets distributed

3. Coverage of IMCI
    3.1 Proportion of children in the target population who, having presented a given sign or symptom (diarrhea, cough, fast breathing, fever, rash, etc) in the last x days, received health care by an IMCI health worker (HW) (coverage of curative services).
    3.2 Proportion of caretakers who, having brought their children to an IMCI HF, complied with the advice provided (additional ethnographic research may be needed).
    3.3 Proportion of children in the target population who are fully vaccinated according to their age.
    3.4 Proportion of children with diarrhea in the last x days who received ORT.
    3.5 Proportion of children who sleep regularly under impregnated bednets.
    3.6 Proportion of children aged under two years who received nutrition counseling within the last x months.
    3.7 Proportion of children aged under two years whose mother has a mother's card (nutrition counseling).
    3.8 Proportion of children who received micronutrient supplements within the last x months/weeks/days.
    3.9 Proportion of children who were weighted in a HF in the last x months, and whose weight was recorded in a growth chart.
    3.10 Proportion of children aged 2-5 years with a weight under -2 standard deviation who have received nutrition counseling in the last x months.

**Table 11.  (conti.)**

4. Impact of IMCI

    4.1 Impact on mothers' knowledge and behavior

        4.1.1 Note: indicators on mother's knowledge of danger signs, feeding recommendations, vaccinations, bednets, ORT, etc.  These will have to be adapted to the locally developed educational messages.

        4.1.2 Proportion of infants less than 4 months of age who are exclusively breastfed.

        4.1.3 Proportion of infants 6-9 months of age receiving breast milk and complementary foods.

        4.1.4 Proportion of children 20-23 months who are breastfeeding.

        4.1.5 Proportion of children in the target population who, having presented a given sign or symptom (diarrhea, cough, fast breathing, fever, rash, etc) in the last x days, were taken to an IMCI HW (care seeking behavior).

    4-2 Impact on health and nutrition

        4.2.1 Prevention of wasting, stunting and underweight.

        4.2.2 Prevalence of micronutrient deficiencies (iron, vitamin A – actual indicators to be decided).

        4.2.3 Rates of hospital admissions due to diarrhea, ALRI, malaria, measles, malnutrition and anemia.

        4.2.4 Distribution of hospitalized children according to severity of illness at admission.

        4.2.5 Infant and under-five mortality rates.

        4.2.6 Proportionate infant and under-five mortality rates.

        4.2.7 Under-five mortality rates due to selected causes (pneumonia, diarrhea, malaria, etc).

        4.2.8 Proportion of all under-five deaths due to selected causes (pneumonia, diarrhea, malaria, etc).

Reference: Victora CG, Bryce J, Martines JC, et al. Evaluation of the impact of Integrated Management of Childhood Illness, Design Issues. WHO. June 1998: 26-30.

    (www.who.int/imci-mce/Publications/PDF/Overview/IMCI_Design.pdf)

**Table 12. Sensitivities and Specificities of the IMCI Guidelines for Pneumonia, Diarrhea, Malnutrition, and the Need for Referral Classified by Health Workers**

| Site | Diseases | Sensitivity % (n/N) | Specificity % (n/N) |
|---|---|---|---|
| Kenya | Pneumonia | 97 | 49 |
| | Dehydration from diarrhea | 51 | 98 |
| | Malnutrition | 96 | 66 |
| | Need for Referral | 42 | 94 |
| Gambia | Pneumonia | 81 | 89 |
| | Dehydration from diarrhea | 67 | 96 |
| | Malnutrition | 89 | 90 |
| | Measles | 100 | 99 |
| | Need for Referral | 45 | 93 |
| Uganda | Pneumonia | 76 | 60 |
| | Diarrhea | 91 | 88 |
| | Malnutrition | 19 | 97 |
| | Need for Referral | 41　(111/268) | 91　(870/958) |
| Ethiopia* | Pneumonia | 88 | 87 |
| | Diarrhea | 76 | 98 |
| | Malnutrition/Anemia | 85 | 96 |
| | Need for Referral** | 84 | 97 |
| Tanzania* | Pneumonia (Severe) | 60 | |
| | Diarrhea | 84 | |
| | Malnutrition/Anemia | 91 | |
| Bangladesh** | Need for Referral<br>　Young Infants<br>　　(All)<br>　　(With Pneumonia)<br>　Children<br>　　(All)<br>　　(With Pneumonia) | <br><br>84<br>100<br><br>86<br>97 | <br><br>54<br>5<br><br>64<br>25 |

\* In addition to the table of Sypnosis, the Ethiopia and Tanzania cases were added by K. Yamaguchi according to the Reports of these Countries (Simoes et al.1997 and WHO q.1997).

\*\* IMCI and reference standard data were collected by physicians. At other research sites, IMCI data were collected by other health workers and compared with ''gold standard.''

Reference: The Child Health Project. Sypnosis: Validation of Outpatient IMCI Guidelines. No.2: Jan. 1998. (www.ih.jhsph.edu/fhacs/imci-research.htm).

**Table 13. WHO Review for the Sensitivity and Specificity of Referral of Sick Children, Aged 2 Months to 5 Years, by Health Workers Using IMCI Guidelines Compared with Gold Standard Based on Research in 5 Countries**

| Country | Health worker using IMCI guidelines | | | Pediatrician or computer applying IMCI guidelines | | | Gold standard* by pediatrician % admitted |
|---|---|---|---|---|---|---|---|
| | % referred | Sensitivity | Specificity | % referred | Sensitivity | Specificity | |
| Gambia | 14 | 46% | 93% | NA** | | | 18 |
| Kenya | 14 | 42% | 95% | NA | | | 22 |
| Ethiopia | 7 | 74% | 99% | 9 | 84% | 97% | 7 |
| Bangladesh | NA | | | 36 | 86% | 64% | 34 |
| Uganda | 16 | | | NA | | | 22 |

\*   Gold standard: As a standard of referral based on pediatrician's diagnosis, sometimes with radiology and laboratory results.

\*\*  NA: Data not available in this study.

Reference: WHO. (WHO Division of Child Health and Development). Integrated Management of Childhood Illness: Conclusions. *Bulletin of the World Health Organization.* 1997; 75 Suppl 1: 122.

**Table 14. Nutritional Interventions Presented in a Meeting, 22-24 January 2001**

| Country (Area) Organizations | Target Population | Interventions |
|---|---|---|
| **Bangladesh** (Dhala) | 30,000 households of middle and lower SES* | **Peer counseling to promote breastfeeding in the community;** Peer counselors were trained with a simplified WHO/UNICEF breastfeeding counseling training course. |
| **Peru** Instituto de Investigacion Nutricional in Lima | Health centers and mothers in the community | **Improving nutrition and feeding practices in the community through health centers;** - All health workers were trained to deliver the same message to mothers, - Quality of counseling was improved and participatory demonstrations were introduced, - Community outreach activities (group sessions) were encouraged. |
| **India** (Harayana) | Four intervention and four control rural communities (5,000 each), <br><br> Children aged less than 2 years | **Improving breastfeeding and complementary feeding practice through counseling;** - Locally-relevant feeding messages and channels for delivery were identified, - The counseling took place in immunization sessions, weighing sessions, delivering, and home visiting for new births, by health workers and TBA**s, - Women's core-group meetings with health workers, neighbourhood meetings included feeding demonstrations for promoting portion size, - Activities to reach children included rallies, debates in schools, roadside plays, and nutrition fairs. |
| **Honduras** The National Health Secretariat, <br><br> BASICS | Children less than 2 years, National community health program established in 2000 has reached 20 of 27 health areas and will cover 25 of them by the end of 2001. | **Atención Integral a la Niñes (AIN: Integrated Care for Children)**: a community-based, preventive health and nutrition program for children aged less than 2 years; - Every child (< 2years) is seen monthly by a community volunteer, - Counseling tailored to meet family needs is provided monthly to families, - The advice focuses on care-seeking and household practices, - Adequate monthly weight gain is used as a dynamic measure of success, - AIN extends the IMCI package to sick children, aged 0-5 years, using a modified IMCI protocol that includes the use of antibiotics by community volunteers. |

* SES: socioeconomic status, ** TBA: traditional birth attendant

Reference: Kelly LM, Black RE. Research to Support Household and Community IMCI, Report of a Meeting, 22-24 January 2001, Baltimore, Maryland, USA. *The Journal of Health, Population and Nutrition.* 2001; 19(2): suppl. 119-122.

**Table 15.  Illness Management and Care Seeking in the Home and Community Presented in a Meeting, 22-24 January 2001**

| Country (Area) Organizations | Target Population | Interventions |
|---|---|---|
| **Ethiopia** (A northern area) | A randomized study with a total population of over 70,000, Mothers with children under 5 years | **Training mothers to treat their own children with presumed malaria using appropriate anti-malarial drugs at home;**<br>- Training mother-coordinators (MCs) to teach their neighboring mothers to recognize possible malaria and to promptly give chloroquine,<br>- Ensuring that all MCs had supplies of chloroquine to distribute to all families with young children,<br>- Training MCs to record all births and deaths of young children. |
| **India** (Uttar Pradesh), The Integrated Child Development Services (ICDS) | Approximately, one million children under 6 years | **DEVTA Project: routine deworming of preschool children, coupled with periodic large-dose administration of vitamin A and 400 mg of albendazole;**<br>- Meeting at the state, district, and block level,<br>- Training of Anganwadi workers to deliver the drugs |
| **Guatemala** | Pregnant women after the third trimester and the newborns (n=380) | **Newborns were followed up through regular home visits by health workers and the study physician for the first three months of life;**<br>- Pregnant women were enrolled during the third trimester or at the time of delivery,<br>- Newborns with severe illnesses were treated in the community with referral to an area hospital. |
| **India** | Caregivers with infants | **Home-based trial for neonatal deaths;**<br>- Caregivers with neonatal infants were educated in the recognition of pneumonia,<br>- Village health workers (VHWs) were trained in hygienic delivery practices, essential neonatal care, diagnosis of pneumonia, and empiric oral antibiotic treatment for pneumonia in the home with cotrimoxazole,<br>- More recently, the training for VHWs was expanded to encompass treatment of suspected septicemia, meningitis, and pneumonia by providing a package of home-based neonatal care. |

Reference: Kelly LM, Black RE. Research to support household and community IMCI, report of a meeting, 22-24 January 2001, Baltimore, Maryland, USA. *The Journal of Health, Population and Nutrition.* 2001; 19(2): suppl. 125-130.

**Table 16.  Characteristics of Existing WHO/MCE Study Sites, as of 2001**

| | Tanzania | Uganda | Bangladesh | Peru |
|---|---|---|---|---|
| **Design** | Pre-post comparison of 2 IMCI and 2 non-IMCI districts | Comparison of 10 districts with different levels of IMCI implementation | Randomized trial of 10 first-level health facilities with IMCI and 10 without IMCI | Comparison of 25 departments with different levels of IMCI implementation |
| **Baseline Under-5 Mortality** | 160-180 | 141 | 89* | 58 |
| **Mortality assessment** | DSS | Surveys | Survey + DSS | Vital Statistics |
| **Household coverage surveys** | 1999 (baseline) 2004 (planned) | 2000 (baseline) 2004 (planned) | 2000 (baseline) 2004 (planned) | Not planned for Phase I |
| **Health facility assessments** | 2000 (mid-way) | 2000 (baseline) & continuous monitoring | 2000 (baseline) | 1999 (pilot study in selected departments) |
| **Cost assessments** | Included in survey tools | Included in survey tools | Included in survey tools 2004 (planned) | Not included in Phase I |
| **Randomization** | None | None | Yes (2001) | None |
| **Type of inference** | Plausibility | Plausibility | Probability | Plausibility |
| **Malaria** | Yes | Yes | No | Variable |
| **IMCI course** | 11 day | 11 day | 11 day | 7 day |
| **Partnerships** | Ifakara Centre TEHIP MOH | Johns Hopkins Makerere Univ MOH USAID | ICDDR, B MOH USAID | Instituto del Niño MOH |

\* Based on 1999 DSS (demographic surveillance system) data from part of study area.  2000 data are not yet available. Crude under-5 mortality from baseline surveys is 71/1000, but this needs to be weighted according to the procedures used by DHS (demographic health survey).

Copied from: WHO. The Multi-country Evaluation of IMCI Effectiveness, Cost and Impact (MCE) Progress Report May 2000 - April 2001. Gate Report 2000. 2001: 17, Table 1. (http: //www.who.int/child-adolescent-health/New Publications/ IMCI/MCE).

### Table 17. WHO/MCE Methods and Tools for the Evaluation of Child Health Programs, as of 2001

1. **Design Issues in Evaluating IMCI** (A technical document): the basic assumptions and methodology of the MCE.

2. **An IMCI impact model**: the basis for the evaluation, specifying expected processes, outcomes and impact variables and defining key indicators. A computer-based version of the model was used to carry out simulations of expected levels of outcomes and impact.

3. **The MCE Household Survey materials**: a detailed list of IMCI indicators at household level, a set of household survey modules that have been adapted and used in three countries, guidelines for training of surveyors, and plans for analysis of both key and supplemental indicators.

4. **The MCE Health Facility Survey materials**: instruments and guidelines for conducting a health facility survey, a set of computer files for data entry and calculation of the priority and supplemental indicators, and a plan of analysis for all indicators as well as the MCE summary indices of quality of care. These materials have now been used both as a baseline survey where IMCI has not yet been implemented and in comparative designs of districts with and without IMCI.

5. **The MCE Costing Methodology**: data collection modules at household, health facility, district and national levels. These data are then used to complete a standardized costing template for IMCI. The approach and assumptions are fully explained in a paper on ''The economic methodology for the MCE''.

6. **Guidelines for impact evaluations**: they have been drafted. These guidelines summarize basic evaluation concepts and how they can be applied to the evaluation of IMCI impact. The objective of the guidelines is to assist Ministries of Health and their partners in making a decision about whether an impact evaluation is needed and feasible in their setting.

7. **The MCE resource notebook**: it brings together in one place (using both CDs and diskettes) all key documents and tools related to the MCE.

8. **Tools in development**: methods for assessing the quality of referral care, practical tools for documenting IMCI implementation and monitoring progress, and guidelines for measuring impact through demographic surveillance.

Reference: WHO. The Multi-country Evaluation of IMCI Effectiveness, Cost, and Impact (MCE) Progress Report May 2000 - April 2001. Gate Report 2000. 2001: 24. (http: //www.who.int/child-adolescent-health/New Publications/ IMCI/MCE).

**Table 18. The Contents of National Health Policies for the Period 2000-2004 in Guatemala**

1) Comprehensive family health;

2) The health of the Mayan, Garífuna, and Xinca peoples, with emphasis on women;

3) The health of the migrant population;

4) Developing and improving the comprehensive health of other groups;

5) Expanding coverage of sustainable good quality basic health services;

6) Developing basic and environmental sanitation;

7) Access to essential drugs and traditional medicine;

8) Strategic development of human resources;

9) Institutional development, deconcentration, and decentralization;

10) Intra- and intersectoral coordination;

11) Improving and maximizing international cooperation;

12) Development of health sector financing; and

13) Reproductive health, nutrition, and food security.

Reference: PAHO. Guatemala Profile of the Health Services System (revised, December 12, 2001). 2001: 1.
(www.americas.health-sector-reform.org/english/clhmgutpr.htm)

**Table 19.  The Basic Services and the Expanded Services in SIAS in Guatemala**

**Basic Services**

1) Maternity care: prenatal check-ups, tetanus prevention, micronutrients supplementation, proper care to ensure clean births, and care in the puerperium and between pregnancies.

2) Infants and preschool care: vaccination, control of ARI, diarrhea/cholera control, nutritional assessment and care for children under 2.

3) Emergencies care and morbidity: diarrhea/cholera, ARI, dengue/malaria, tuberculosis, rabies, and STD/AIDS.

4) Environmental control: vector control, control of zoonoses, sanitary excreta and refuse disposal, and water quality control.

**Expanded Services**

1) Care for women of reproductive age: early detection of cancer and family planning.

2) Care for infants and preschoolers: including nutritional assessment and care for children under 5.

3) Emergency care and treatment of morbidity: in keeping with local demand.

References: PAHO. Guatemala Profile of the Health Services System (revised, December 5, 2001). 1999: 10.
(www.americas.health-sector-reform.org), and the MOH . Sistema Integral de Atención en Salud -SIAS-
Lineamientos para el nevel primario de atención. January 22 1997: 4-5.

**Table 20. Requirements of Community Health Workers by SIAS Program in Guatemala**

Community health workers cover about 20 households.

1. Make a sketch of the area (about 20 households)

2. Conduct a census in the area

3. Analyze the health situation and risk factors of families in the area

4. Program activities and requirements for basic supplies with a community facilitator

5. Support institutional facilitators to conduct vaccination and detect cases of malnutrition and take care of them,

6. Take care of sick children with diarrhea, cholera, and severe respiratory infections

7. Continue the surveillance of communicable diseases in families

8. Every two months, visit households to control inventories (ORT, and drugs of tuberculosis) and to promote health education

9. Take preventive methods for malaria and dengue, take blood samples to diagnose malaria, and take care of existing cases

10. Assist in cases of accidents and emergencies

11. Refer patients to emergency services (doctors or health services)

12. Follow up referred cases

13. Identify sources of water supply

14. Conduct vaccination for dogs

15. Participate in conferences for training

Reference: MOH. Sistema Integral de Atención en Salud -SIAS- Lineamientos para el nevel primario de atención. January 22 1997: 8-9.

**Table 21. The Coverage of Departments by SIAS Program in Guatemala, as of December 2000**

| Department | Jurisdiction | Jurisdiction (PSS) | Jurisdiction (ASS) | NGOs | Medical Doctor (Guatemala) | Medical Doctor (Cuba) | Facilitator (Institutional) | Facilitator (Community) | Community Health Worker | Traditional Birth Attendant | Communities | Community Health Center |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Alta Verapaz | 32 | 19 | 13 | 9 (2) | 19 (2) | 29 (5) | 43 (5) | 235 (28) | 3,571 (518) | 1,363 (203) | 1,184 | 335 |
| Escuintla | 18 | 0 | 18 | 1 | 11 | 6 | 30 | 77 | 2,114 | 348 | 781 | 129 |
| Guatemala | 13 | 13 | 0 | 4 | 15 | 0 | 15 | 90 | 1,479 | 112 | 163 | 113 |
| Sacatepéquez | 12 | 0 | 12 | 2 | 13 | 0 | 13 | 77 | 935 | 217 | 1,579 | 108 |
| Chimaltenango | 10 | 3 | 7 | 5 | 10 | 0 | 11 | 49 | 852 | 319 | 203 | 123 |
| Retalhuleu | 5 | 0 | 5 | 1 | 5 | 0 | 5 | 39 | 412 | 134 | 63 | 63 |
| Baja Verapaz | 5 | 3 | 2 | 4 | 4 | 3 | 6 | 24 | 407 | 261 | 95 | 58 |
| Huehuetenango | 39 | 31 | 8 | 17 | 34 (2) | 4 | 45 | 248 (11) | 3,068 (56) | 1,333 (37) | 713 | 299 |
| El Quiché | 42 | 22 | 20 | 17 | 20 (4) | 34 | 45 (1) | 214 (7) | 3,056 (101) | 1,446 (81) | 753 | 345 |
| Petén | 10 | 10 | 0 | 3 | 11 (7) | 0 | 9 (5) | 37 (12) | 614 (261) | 207 (60) | 90 | 23 |
| Jutiapa | 6 | 0 | 6 | 2 | 6 | 0 | 6 | 42 | 657 | 118 | 181 | 67 |
| Jalapa | 5 | 5 | 0 | 3 | 5 | 0 | 5 | 35 | 596 | 335 | 79 | 35 |
| Santa Rosa | 11 | 5 | 6 | 7 | 10 | 0 | 12 | 68 | 827 | 204 | 250 | 79 |
| Chiquimula | 25 | 4 | 21 | 4 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| Sololá | 12 | 7 | 5 | 5 | 11 (1) | 3 | 11 (1) | 70 (4) | 1,061 (92) | 417 (43) | 220 (34) | 135 (13) |
| Quetzaltenango | 12 | 11 | 1 | 9 | 12 (1) | 0 | 13 (1) | 67 (10) | 1,058 (75) | 175 (16) | 144 (10) | 128 (10) |
| Totonicapán | 12 | 12 | 0 | 6 | 12 | 1 | 12 | 54 | 1,015 | 272 | 75 | 66 |
| San Marcos | 17 | 16 | 1 | 6 | 16 | 0 | 17 | 80 | 1,373 | 363 | 250 | 212 |
| | | | | | | | | | | | | |
| Total* | 286 | 161 | 125 | 105 | 229 | 95 | 313 | 1,521 | 23,110 | 7,639 | 6,838 | 2,333 |
| (Uncertain numbers) | | | | 2*** | 17 | 5 | 13 | 72 | 1,103 | 440 | 44 | 23 |
| Total** | 286 | 161 | 125 | 103 | 212 | 90 | 300 | 1,449 | 22,007 | 7,199 | 6,794 | 2,310 |

\* Total number includes uncertain numbers that are shown in the parentheses.  \*\* Total number does not include uncertain numbers.

\*\*\* Two municipalities are included in the number of NGOs.

Drawn from the data provided by La Unidad de Provisión de Services de Primer Nivel de Atentión por el Grupo de Procesamiento y Análisis de Información (The Group of Processing and Analyzing Information in the Unit of Services Provision for Primary Level, the office of the SIAS, the MOH, Guatemala) through corresponding with Licenciada Beatriz Hernández (a coordinator of the Group).

**Table 22.  The Objectives of the Project in the Boca Costa of Guatemala, in 1998**

1.    Increase by 10% the utilization of maternal and child health care services by migrants,

2.    Increase to 80% the number of children between 13 and 23 months who have a complete immunization scheme,

3.    Increase to 50% the number of mothers who know that their child needs to be vaccinated against measles at nine months of age,

4.    Increase to 60% the number of families with Family Health Cards,

5.    Increase to 70% the percentage of women with two or more TTV,

6.    Increase to 60% the percentage of mothers exclusively breastfeeding for the first four months,

7.    Increase by 20% the number of infants between 6 and 9 months of age receiving complementary foods,

8.    Reduce the percentage of children 6-59 months, who have eaten two or fewer meals the day preceding the survey to 10%,

9.    Increase to 60% the number of resident families seeking professional care for children with diarrhea and dehydration,

10.   Increase to 30% the number of families using ORS and other acceptable home available liquids (tea, rice water, purified water) to prevent dehydration from diarrhea in children not being exclusively breastfed,

11.   Increase to 60% the number of mothers who continue to breastfeed, provide liquids and/or feed a child the same or more during episodes of diarrhea,

12.   Increase to 90% the number of cases of pneumonia and diarrhea treated according to current WHO norms for case management,

13.   Increase to 40% the percentage of mothers who recognize one or more symptoms of pneumonia,

14.   Increase to 60% the number of mothers seeking professional care or care from trained CHVs for children with cough or difficult breathing,

15.   Increase to 70% the number of mothers seeking prenatal care from a trained provider,

16.   Increase to 40% the number of births attended by trained personnel and,

17.   Strengthen institutional capacity by promoting and collectively developing systems for monitoring and supervision, and date collection, analysis, and utilization.

Reference: Project HOPE. Improving the Health of Guatemala's Most Vulnerable Population: Migrant Women and Their Children in the Boca Costa of Guatemala. Detailed Implementation Plan. April 1998.

**Table 23. The Primary Interventions and the Primary Approaches and Strategies of the Project in the Boca Costa of Guatemala**

**Primary interventions**

1) Training in diarreheal disease control, immunization, pneumonia control, nutrition and maternal care,

2) Implementation of minimal health units on the coffee plantations,

3) Development of master trainers in the main partner agencies of the project,

4) The development and implementation of and organized IEC approach,

5) Improvement of supervision systems and logistics, and

6) Coordination with radio stations to disseminate health messages in the local Mayan languages.


**Primary approaches and strategies**

1) Inter-institutional coordination and strengthening of the technical capabilities of the project's partner agencies,

2) Involvement and community participation through community leaders, promoters, and traditional birth attendants,

3) Development of a sustainable approach to health training and education in the MOH, IGSS, local NGOs, and Anacafe,

4) Development and implementation of the activities in accordance with SIAS, and

5) Involvement of plantation owners and administrators for long-term sustainability.

Reference: Project HOPE. Improving the Health of Guatemala's Most Vulnerable Population: Migrant Women and Their Children in the Boca Costa of Guatemala. Annual Report -October 1999 to December 2000. February 2001.

## Table 24.  The Impact of the HOPE Project in the First Period in Guatemala

1.  Based on PAHO knowledge and performance measures for IMCI, 80% of trained IGSS staff now possesses adequate knowledge about pneumonia, 74% about nutrition, and 66% about diarrheas.

2.  Based on observations and interviews with 100 MOH health workers in San Marcos and Suchitepéquez, 80% correctly applied standard case management norms.  Performance evaluations were discontinued, because the MOH was deciding to implement IMCI.

3.  The master trainers recently trained in obstetric risk and newborn care have started to train MOH and IGSS staff in the target area.

4.  Supervision visits by HOPE staff and MOH district directors confirm that most MOH and NGO staff use the training materials and participatory education methodologies taught by the project.

5.  Based on bi-monthly supervision visits by MOH and IGSS staff, about 70% of the promoters (CHWs) trained in health education methodologies are forming and teaching mothers' groups, using basic health messages and adult learning methodologies.  MOH staff use monthly facility-based meetings with promoters to strengthen their knowledge and practices.

6.  The MOH has conducted at least one health campaign on 120 of the 150 plantations this year providing vaccines, supplements, and prenatal care.

7.  All 150 health unit promoters use standard case management protocols and conduct health education sessions. They are supervised bi-monthly by the MOH, IGGS and other partners, and provide monthly activity reports to the MOH in exchange for a new stock of essential drugs.

8.  About 90% of trained Traditional birth attendants (TBAs) are supervised and updated monthly at the closest health facility.  Even though the impact of training will not be assessed until project end, district health directors believe that there has been a drop in maternal mortality.

9.  In the target area, all trained promoters and TBAs have the necessary education materials and basic messages to conduct their activities.

10. All trainings of counterpart staff took into account IMCI norms.  Now that IMCI has been adopted by the MOH, health workers in the target area are ahead of other areas.

11. Based on its experience, HOPE has been invited by the MOH to participate in the national Taskforce on IMCI.

12. From October to December 1999, the Health Units promoters managed 2,807 cases of children under five years, 70% for ARI, 28% for diarrhea, and 2% for malnutrition.  This increased to 3,127 cases in only October - November 2000, based on preliminary reports from 117 promoters.

13. Migrant children with incomplete coverage rates have received appropriate doses of vaccines through MOH health campaigns on the plantations they would not have received before.

14. Of 50 resident mothers interviewed, 62% had heard basic health messages on the radio covering diarrheal diseases, AIDS, immunization, cholera, pneumonia, and prenatal care.  Of 400 migrant mothers participating in focus group discussions, 215 had heard radio messages about colds, pneumonia, vaccines, dengue, diarrhea, and maternal health.

Reference: Project HOPE. Improving the Health of Guatemala's Most Vulnerable Population: Migrant Women and Children in the Boca Costa Region of Southwestern Guatemala. An Extending Proposal to USAID. December 20, 2000: 1.

**Table 25. The Coverage of Departments by IMCI in Guatemala**

| Departments | District | Municipality | NGO | MD | MD (Cuba) | IF | CF | CHW | TBA | Community | CHC |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Chimaltenano | 4 | 5 | 5 | 10 | 0 | 11 | 49 | 852 | 319 | 203 | 123 |
| 2. Huehuetenango | 15 | 14 | 12 | 26 | 4 | 39 | 204 | 2,596 | 1,133 | 604 | 262 |
| 3. Quiché | 13 | 13 | 10 | 18 | 14 | 30 | 142 | 2,081 | 1,017 | 559 | 255 |
| 4. Sololá | 6 | 10 | 5 | 11 | 3 | 11 | 68 | 1,059 | 384 | 186 | 122 |
| 5. Quetzaltenango | 9 | 7 | 9 | 12 | 2 | 13 | 50 | 1,047 | 159 | 110 | 81 |
| 6. Totonicapán | 6 | 7 | 5 | 12 | 1 | 12 | 54 | 1,015 | 272 | 75 | 66 |
| 7. San Marcos | 5 | 8 | 6 | 16 | 0 | 17 | 80 | 1,373 | 363 | 250 | 212 |
| 8. Ixil | 3 | 3 | 1 | 10 | 14 | 12 | 61 | 735 | 333 | 168 | 66 |
| 9. Alta Verapaz | | | | | | | | | | | |
| 10. Zacapa | | | | | | | | | | | |
| Total | 61 | 67 | 53 | 115 | 38 | 145 | 708 | 10,755 | 3,980 | 2,155 | 1,187 |

MD: Medical doctor (Guatemalan), MD (Cuba): Medical doctor (Cuban),

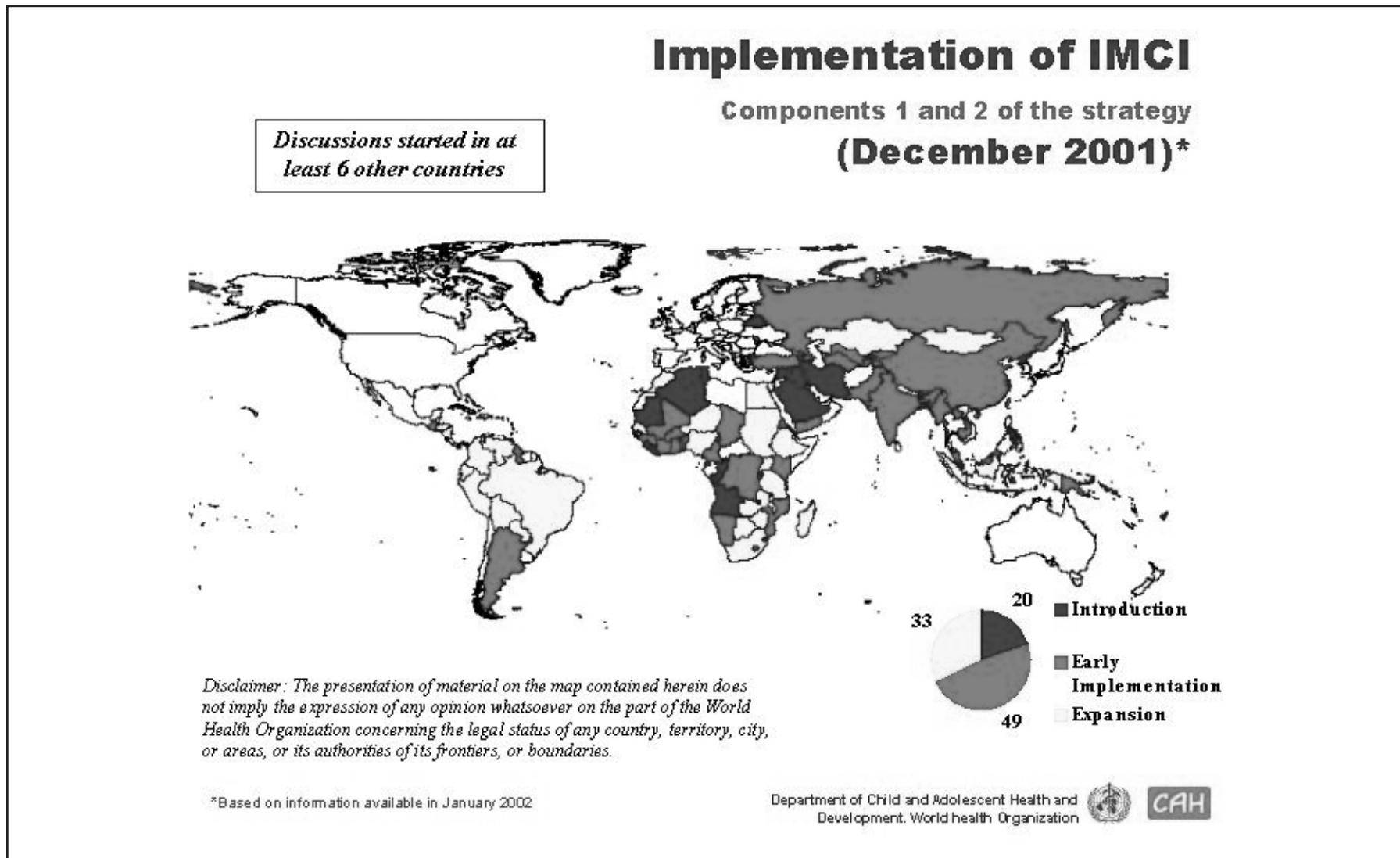IF: Institutional facilitator, CF: Community facilitator,

CHW: Community health worker, TBA: traditional birth attendant, and

CHC: Community health center.

Reference: This table was provided by Ms. Peggy Koniz-Booher (URC) and made by Calidad en Salud/URC based on the data from the SIAS office (UPS1)/the MOH/Guatemala.
*This table was provided by URC, March 2002, and the date that the data was colleted is unknown.

**Figure 1. The Status of IMCI Implementation, as of June 2001**



## Implementation of IMCI

### Components 1 and 2 of the strategy
# (December 2001)*

Discussions started in at
least 6 other countries

33    20  ■ Introduction

49    ■ Early
       Implementation
       Expansion

Disclaimer: The presentation of material on the map contained herein does
not imply the expression of any opinion whatsoever on the part of the World
Health Organization concerning the legal status of any country, territory, city,
or areas, or its authorities of its frontiers, or boundaries.

*Based on information available in January 2002

Department of Child and Adolescent Health and
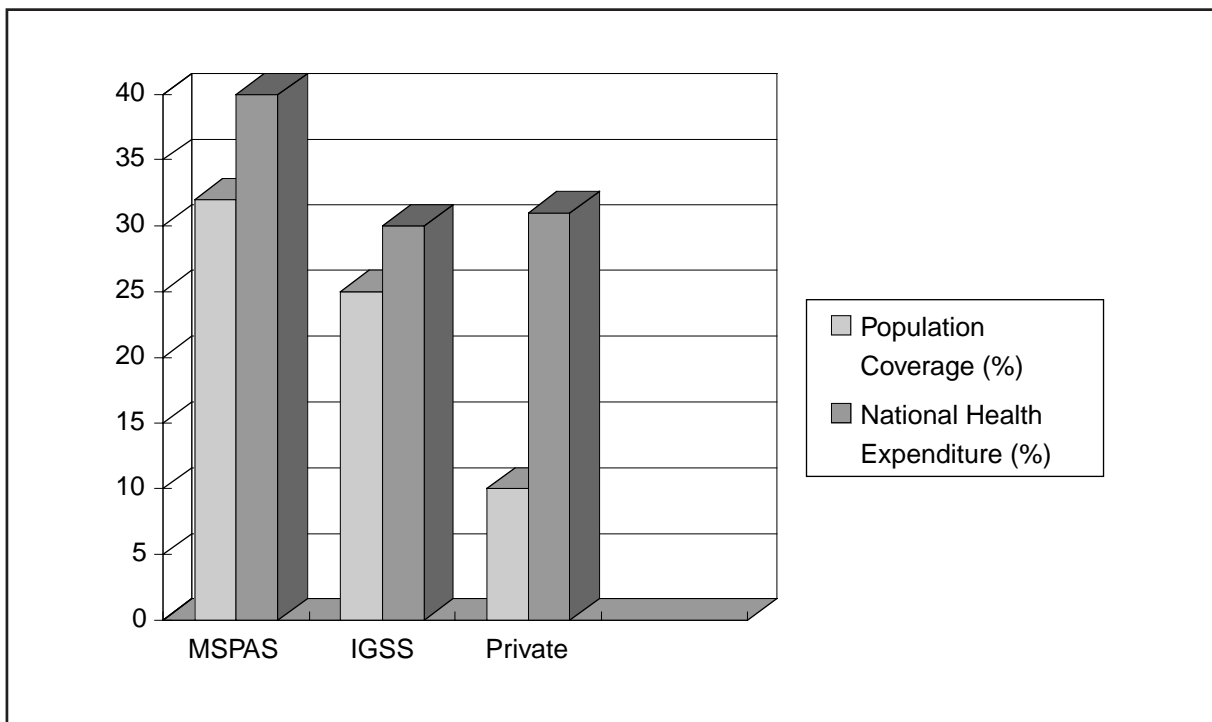Development. World health Organization    CAH

(Copied from: WHO/Child and Adolescent Health and Development/IMCI home, www.who.int/child-adolescent-health/integr.htm)

**Figure 2.  Public Health Services System in Guatemala**
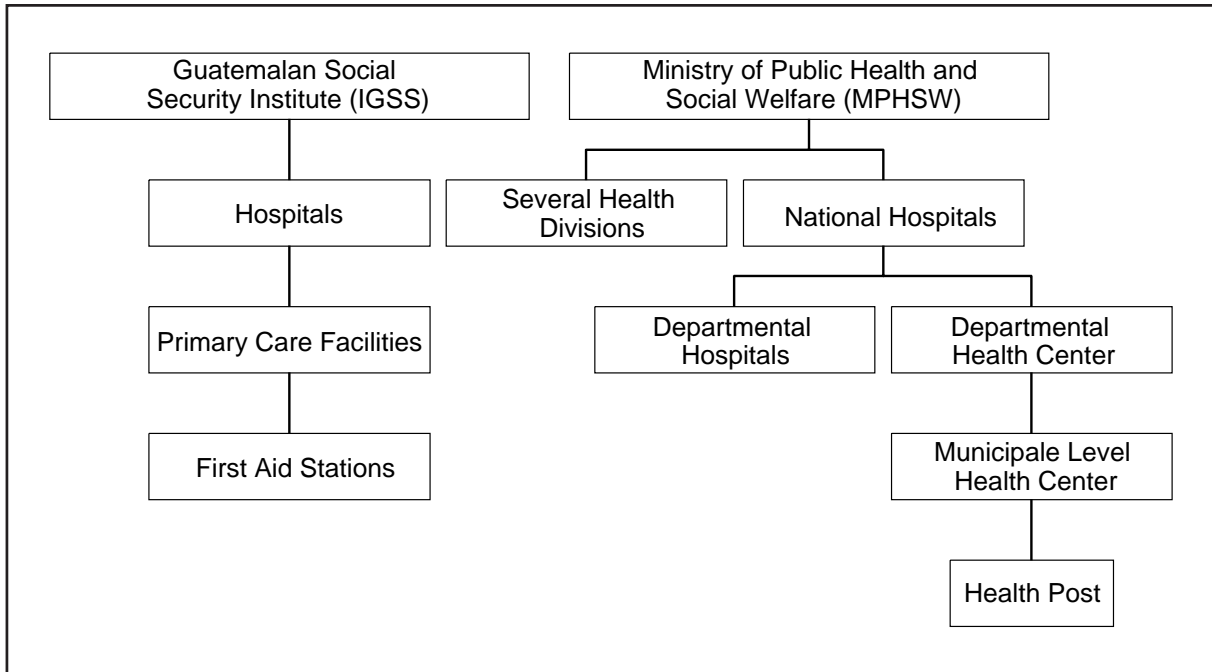
**Figure 3. Population Coverage of Health Services and National Health Expenditure 1997 in Guatemala**

**Figure 4.   The Organization and Supervisory Directions of Community SIAS in Guatemala**



**EXTENSION DE COBERTURA CON SERVICIOS BÁSICOS DE SALUD  EN EL  PRIMER NIVEL DE ATENCIÓN"**
**ESTE ES EL EQUIPO BÁSICO Y  EL CONJUNTO DE SERVICIOS BÁSICOS DE  SALUD  (CSBS)**
**DE UNA JURISDICCION DE 10,000 HABITANTES EN PROMEDIO**
**a través de ONGs (PSS/ASS) a quienes el MSPAS transfiere fondos  a través de convenios**

**1 Facilitador Institucional (FI)**

**1 Médico Ambulatorio (MA) o Enfermera Ambulatoria (EA)**

**5 Facilitadores Comunitarios (FC)**

**Centro Comunitario (CC) + Botiquín Medicamentos BÁsicos (BMB)**

**COMUNIDAD**

**Comadronas Tradicionales (CT)**

**100 Vigilantes de Salud (VS)**

**Colaboradores para el control de Vectores (CCV)**

**S E C T O R**
**20 Familias por Vigilante de Salud**

Provided by La Unidad de Provisión de Services de Primer Nivel de Atención por el Grupo de Procesamiento y An á lisis de Información (The Group of Processing and Analyzing Information in the Unit of Services Provision for Primary Level, the office of the SIAS, the MOH, Guatemala) through corresponding with Licenciada Beatriz Hernández.

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