11 ABM-014

# CONTROL OF DIARRHEAL DISEASES IN THE CENTRAL AMERICAN REGION[1,2]

[1] Paper presented by Dr. Hernàn L. Delgado at the Eight Meeting of the Technical Advisory group of the Diarrheal Disease Control Programme, Washington, D.C. March 9-13, 1987.

[2] Division of Nutrition and Health. Institute of Nutrition of Central America and Panama (INCAP).

The Oral Rehydration Therapy, Growth Monitoring and Education project is an institutional effort being carried out by professionals working in different divisions and coordinations at INCAP. The multidisciplinary professional staff was integrated in 1986 by: (in alphabetical order)

| Advisory Committee | Professional Staff | Advisors working at the Central American Countries |
|---|---|---|
| Luis Octavio Angel | Rodrigo Alvarez | Julia Esther Elvir |
| Ernestina Ardòn | Rosa Amurrio | Leonel Gallardo |
| Julio Bejarano | Ernestina Ardòn | Graciela Garrera |
| Marteen Immink | Rebeca Arrivillaga | Francisco Pineda |
| Arnulfo Noguera | Josè Ramiro Cruz | Zillyham Rojas |
| | Carmen Dàrdano | Carlos Samayoa |
| | Hernàn L. Delgado | |
| Principal Investigator: | Berta Garcìa | |
| | Mario Garcìa | |
| | Teresita Gonzàlez | |
| Hernàn L. Delgado | Elena Hurtado | |
| | Mario Molina | |
| | Verònika de Palma | |
| | Patricia Palma | |
| | Mireya Palmieri | |
| | Alexandra Praun | |
| | Benjamìn Torùn | |
| | Liza Vielman | |

This project is being funded by
AID/ROCAP (Project number 596-0115),
PAHO/WHO and INCAP.

The purpose of this presentation is (a) to analyze data available on selected health and nutritional indicators in the Central American region, specially in terms of diarrheal diseases and protein energy malnutrition; (b) to describe the national programs aimed at reducing these health problems and discuss their constraints; and (c) to review results from a subregional project being carried out by INCAP, in close coordination with other international agencies, in support of national and subregional activities of child survival.

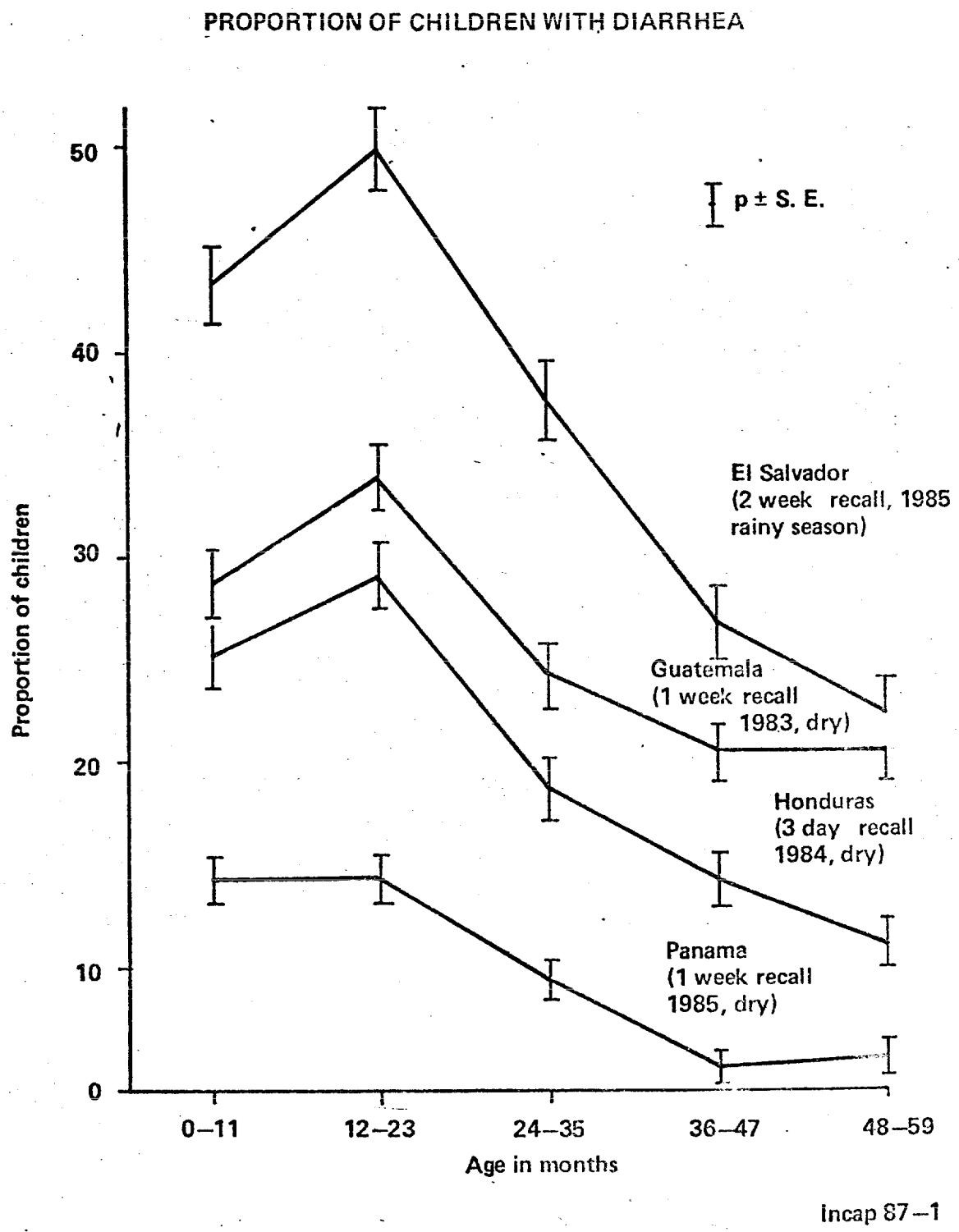
## I. HEALTH AND NUTRITIONAL CONDITIONS

Although there are disparities in health and nutrition conditions among the countries in the Central American and Panama region, similar health and nutrition problems still exist in all of them. The main specific health problems particularly in children living in rural areas, in most Central American countries are: 1) infectious diseases preventable by vaccination; 2) diarrheal diseases; 3) malnutrition; and 4) acute respiratory infection. The leading reported causes of death in children under 5 years of age are gastrointestinal and respiratory illness, except in Costa Rica and Panamá, where perinatal complications and accidents have become the most important causes of death.

Regarding diarrheal diseases, national surveys have been carried out in Panama, Honduras, El Salvador and Guatemala in the past 5 years. As shown in Figure 1, diarrhea is a major health problem of children younger than 18 months of age in all countries, independently of the prevalence of diarrhea at the national level.

A major reason that in these countries common infections so often

Figure 1


PROPORTION OF CHILDREN WITH DIARRHEA
p ± S. E.
El Salvador
(2 week recall, 1985
rainy season)
Guatemala
(1 week recall
1983, dry)
Honduras
(3 day recall
1984, dry)
Panama
(1 week recall
1985, dry)
Proportion of children
50
40
30
20
10
0
0–11
12–23
24–35
36–47
48–59
Age in months
Incap 87–1

occur in preschool children and lead to death, is their interaction with malnutrition. Information on growth retardation, ascertained by anthropometric indicators is available for children below 5 years of age from national surveys conducted in the past five years in Costa Rica, El Salvador, Guatemala, and Panama. As shown in Table 1, the percentage of children less than 5 years of age exhibiting marked weight and height retardation dropped in most countries with data from 1965-66 to the late 1970's. For the interpretation of this Table, a malnourished child is defined as one having a weight-for-age or height-for-age relationship below minus 2 standard deviations of children of the same age and sex from the WHO reference population.

Furthermore, as presented in Figure 2, the peak of major weight deficit in Central American countries in 1965-66, occured between 6 and 18 months of life, coinciding with their peak age of diarrhea. These data give support to the hypothesis that most malnutrition cases in Central America are related to diarrheal disease, especially during infancy. INCAP has been working during the past years based on this hypothesis.

Although knowledge of oral rehydration therapy (ORT), growth monitoring and related health-nutrition education activities exists in Central America, in most countries one or more of these technologies have not been implemented in a systematic and permanent fashion. In addition, there is still scarce information on the acceptance and use of these technologies, the implementation follow-up activities and the appropriate content and form of accompanying educational packages. Also, there are major constraints in the systems which are supposed to deliver these technologies and educational support to communities and households in each country.

Table 1

**GROWTH DEFICIT IN CHILDREN LESS THAN 5 YEARS OF AGE IN CENTRAL AMERICA AND PANAMA**

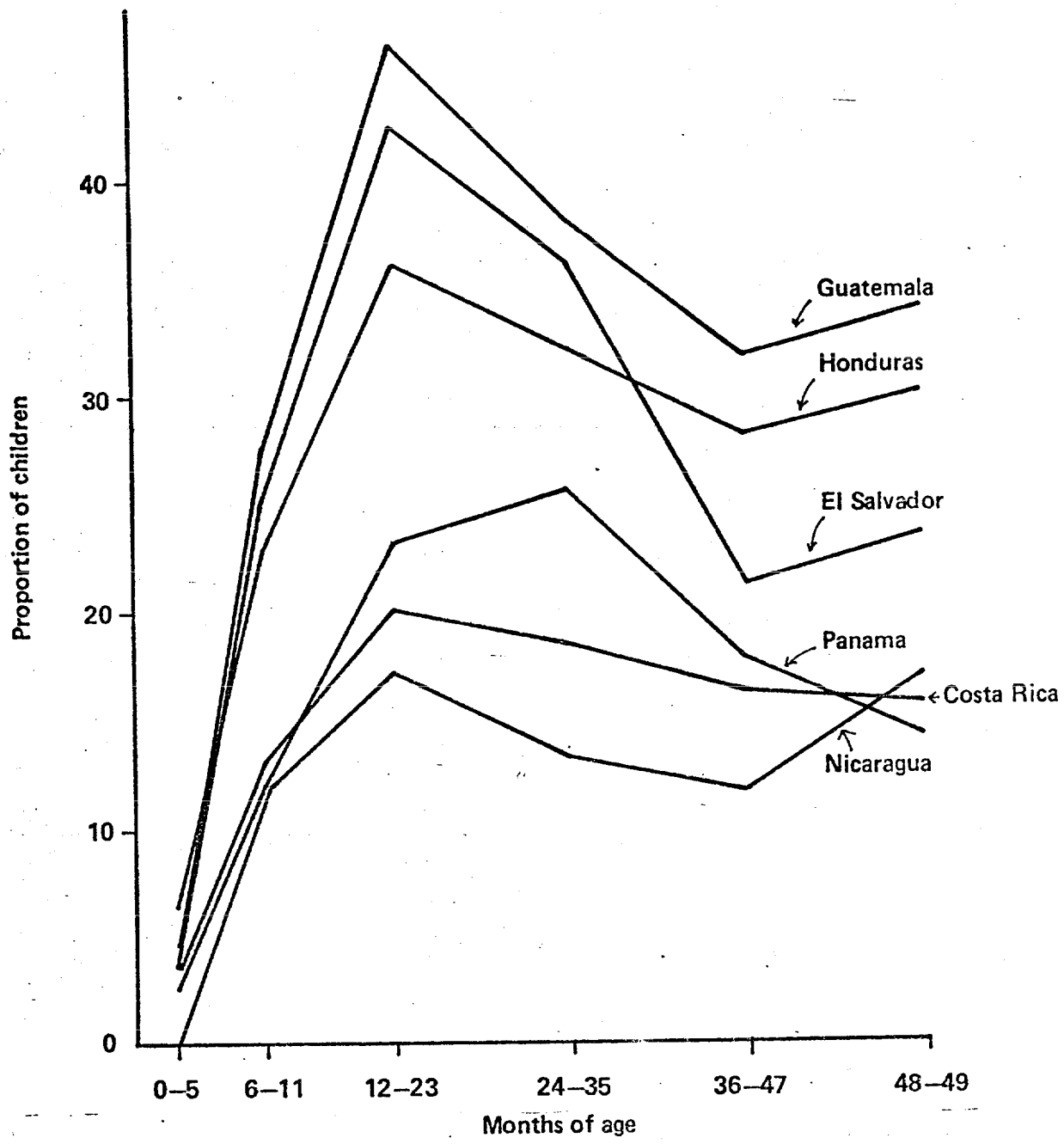
| Country | % Children less than -2 S.D./WHO | | | |
|---|---|---|---|---|
| | Weight-for-age | | Height-for-age | |
| | 1965–67 | 1978–82 | 1965–67 | 1978–82 |
| Costa Rica | 16.3 | 6.1 | 24.1 | 6.4 |
| El Salvador* | 30.1 | 17.9 | 53.0 | 44.1 |
| Guatemala* | 36.5 | 43.6 | 60.0 | 59.7 |
| Honduras | 28.5 | – | 46.7 | – |
| Nicaragua | 17.1 | 27.1 | 36.2 | 35.0 |
| Panamá | 13.5 | 15.8 | 23.5 | 25.1 |

* Rural area.

Incap 87–7

Figure 2

PREVALENCE OF WEIGHT DEFICIT. PROPORTION OF CHILDREN
< -2 S.D. WEIGHT/AGE




Incap 87–2

## II. PROGRAMS AND ACTIVITIES RELATED TO CONTROL OF DIARRHEAL DISEASES

On account of the health situation that has been described in the preceding section, the Central American governments, and those of Panama and Belize, have been developing various programs, projects and activities related to the control of diarrheal diseases. A summarized description of those programs is presented in Table 2. The data used were derived from different process evaluations implemented during the period 1984-85. These studies were aimed at determining the operational strengths and constraints of action programs or activities in maternal and child health, in general, or in control of diarrheal diseases (CDD), in particular.

All countries have formulated health policies and plans that provide an institutional framework for CDD action programs and activities. Nevertheless, political support, which may be expressed as the form in which resources are distributed and allocated to different activities, is not evident in most countries. In this respect, there should be complete agreement between components prioritized in national health plans and the orientation of financial, material and human resources as they are distributed according to geographic, and programatic criteria.

Action programs and activities in the field of CDD vary from country to country in terms of their particular insertion in the organizational structure of health institutions. Some are organized as vertical projects with external funding, others as support for permanent ongoing programs in Maternal and Child Health. CDD programs and activities are developed through the Maternal and Child Health (MCH) and/or Epidemiology Departments in the Ministries of Health. In some countries, Social Security Institutes are implementing CDD

TABLE 2

STATUS AND CONSTRAINTS OF ORT PROGRAMS AND ACTIVITIES IN CENTRAL AMERICA, PANAMA AND BELIZE

| ASPECT | BELIZE | COSTA RICA | EL SALVADOR | GUATEMALA | HONDURAS | NICARAGUA | PANAMA |
|---|---|---|---|---|---|---|---|
| - **Types of Programs/ Activities** | | | | | | | |
| . Public Sector | National (Integrated) | National (Joint MOH and SS and integrated to MCH) | National (Vertical) | Various by regions (Vertical) | National (Vertical) | National (Integrated) | National (Integrated to MCH, jointly MOH and SS) |
| . PVO's | Toledo District and rural areas | Religious Groups | Located by Regions | Located by regions | Yes | Information not available | Information not available |
| - Coverage | 74% (Health Centers) | MOH: 50% SS: 78% | 47.7% (Institutional 41.7 com. hw.) | Information not available | Same as services (MOH and SS) | Information not available | Information not available |
| - **Norms** | | | | | | | |
| . Exist | Yes | Yes (1978) | Yes | Partially | Yes (1982) | Yes | Yes |
| . Reviewed | ---- | Yes (1984) | Yes | No | ---- | Yes | Yes |
| . Available in Health Services | 74% | Partially (70%) | Partially | Partially | ---- | ---- | Partially |
| . Known to Personnel | ---- | Partially (68%) | Partially | ---- | Partially (55%) | ---- | Partially |
| - **Financing** | | | | | | | |
| . Specific | No | No | No | Yes | Yes | Information not available | No |
| . Through MOH Departments | Yes | Yes | Yes | Yes | No | Yes | Yes |

Table 2 (Cont'd)

| ASPECT | BELIZE | COSTA RICA | EL SALVADOR | GUATEMALA | HONDURAS | NICARAGUA | PANAMA |
|---|---|---|---|---|---|---|---|
| - Treatment | | | | | | | |
| . Personnel Using ORS | Adequate (except doctors) | 80% | Adequate (except doctors) | Information not available | Adequate (depending on degree of rehydration) | ----- | Adequate |
| . Services where Mothers Participate in treatment | ----- | 90% | Mostly at Health Center Level | Few | ----- | | ------- |
| . Personnel Indicaing that breastfeeding be stopped | 50% | 7% | Minority (15%) | Information not available | Information not available | Information not available | Minority |
| . Exclusive Use of ORS by Mothers | 55% | 47% | 26.1% | 7.4% | 5.9% | Information not available | 4.3% |
| - Logistics | | | | | | | |
| . Needs estimated through Consumption Data | No | Yes (SS, MOH) | No | No (MOH) Yes (SS) | No | Information not available | Information not available |
| . Needs estimated through Population Data | No | Yes (MOH) | No | Yes | Yes | Yes | Information not available |
| . Specific Logistic System for ORS | No | No | No | No (SS) Yes (MOH) | No | No | No |
| . Availability of ORS at Service Level | 100% | 73% (1984) | Inadequate at Local Level | Inadequate at Area and Local Level (MOH) Adequate at Local Level (SS) | 79% (1984) | Information not available | ------- |

Table 2 (Cont'd)

| ASPECT | BELIZE | COSTA RICA | EL SALVADOR | GUATEMALA | HONDURAS | NICARAGUA | PANAMA |
|---|---|---|---|---|---|---|---|
| . Storage Conditions Regional Level | Adequate | 50% Inadequate | 50% Adequate | Inadequate (MOH) Adequate (SS) | -------- | Information not available | Adequate |
| . Distribution at all Levels | Adequate | Adequate | 50% Adequate | Inadequate (MOH) Adequate (SS) | Inadequate at Local Level | Information not available | Adequate |
| . ORS included in essential drug list | Yes | Yes | Yes | Yes | Yes | Information not available | No |
| - Information System | | | | | | | |
| . Specific System for CCD | No | No | Yes | No | Information not available | Information not available | No |
| . Existence of Morbidity Studies | Yes | Yes (1983) | Limited | No | No (exc. Procomsi) | Information not available | Yes |
| . Utilization of Information at Regional Levels | No | Inadequate | No | No | ------ | Information not available | Yes |
| . Quality of Reporting | Poor | Good | Fair | Poor | Fair | Information not available | Fair |
| - Training | | | | | | | |
| . Trained personnel | 100% (community hw.) | 84% (1979-82) | 17% doctors (1984) 27% nurses (1984) 3% aux. nurses (1984) | Information not available (MOH) Adequate (SS) | 75% (1984) | Information not available | More adequate at health center and post levels |

Table 2 (Cont'd)

| ASPECT | BELIZE | COSTA RICA | EL SALVADOR | GUATEMALA | HONDURAS | NICARAGUA | PANAMA |
|---|---|---|---|---|---|---|---|
| . Availability of Training Material for Continuing Education | Adequate at all levels | Not adequate at regional and local Level | Partial (25% of services, MOH) | Partial (Central Level, MOH) | | Information not available | Partial |
| - Supervision | | | | | | | |
| . Frequency | Rare (except for com. hw. | Adequate | Rare (from Central to Regional Level) | Rare at all levels | | Information not available | Adequate |
| . Integrated into Global Supervision System | No | Yes | Yes | No | No | Information not available | Yes |
| - **Evaluation/Research** | | | | | | | |
| . Quantitative | No | Yes | Yes | Yes | Yes | Information not available | Yes |
| . Qualitative | Yes | No | Yes | Yes (in progress) | Yes | Information not available | Yes |
| - Health Education and Promotion | | | | | | | |
| . Mass Communication Activities | Concentrated in Belize City | No | Yes | No | Yes | Yes | Yes |
| . Personal Communications | Inadequate | Adequate | Adequate | Inadequate | Inadequate | Adequate | Inadequate |

Table 2 (Cont'd)

| ASPECT | BELIZE | COSTA RICA | EL SALVADOR | GUATEMALA | HONDURAS | NICARAGUA | PANAMA |
|---|---|---|---|---|---|---|---|
| . Availability of Printed Material at Service Level | Inadequate | Insufficient | Insufficient (some regions) | Inadequate and insufficient | Adequate | Adequate | Insufficient |
| . Health personnel distributing printed material to mothers | 21% | 53% | Majority | Minority | Information not available | Majority | Information not available |

activities through the MCH or Preventive Medicine Departments.

Presently, it is a fact that availability of financial resources is not a constraint. Nevertheless, particular restrictions persist in the areas of budget performance and control. Officials in national, international and bilateral institutions have indicated that permanent institution-building measures should be adopted to prevent a possible collapse of national programs when external funding comes to an end.

On the whole, the process of health planning, specifically in the area of program and project formulation is inadequate, basically in terms of the lack of clear, measurable and feasible goals. There is a wide array of methodologies for the programming of activities at different levels; in Guatemala, El Salvador and Honduras, programming procedures at the local level have proved to be ineffective and confusing.

Training activities in CDD have been aimed both at institutional and voluntary personnel in all countries. In terms of the number of courses, workshops, seminars, tutorials and of people trained, there seems to be an adequate coverage. In spite of this, several studies have shown that the quality of service provided to mothers and children is low on account of the lack of adequate knowledge and appropriate skills to perform different tasks. On the other hand, simple technologies, such as ORT, are not effectively included in higher education curricula of doctors and nurses at different stages of their training. Furthermore, and in spite of the fact that clinical and epidemiological topics are covered, management and educational subjects are hardly touched upon.

The area of supervision is deficient in most countries. Due to the fact that supervision has constituted a problem area in the past,

various projects have designed specific supervision systems which have, on the contrary, created more confusion and depleted resources available for that purpose. There is a complete lack of adequate supervising methodologies and instruments that may contribute to the solution of problems encountered at different levels, in relation to integrated health-care activities aimed at mothers and children.

Health information systems give adequate support to the programming, monitoring and evaluation of programs and activities in Costa Rica and Panama. Health and management information systems in the rest of the isthmus countries have proved to be, at large, inefficient in relation to the production of valid, reliable and timely data of adequate coverage.

The procedures that guarantee the supply of oral rehydration salts at different levels are not working properly in most countries. Constraints are present at different stages of the process, specifically during the selection, procurement, distribution and utilization cycles, but on the whole, the distribution stage poses most of the difficulties. Table 3 contains information regarding available rehydration salts and solutions in Central America and Panama.

Health education and promotion activities in the field of CDD vary significantly from country to country. To a large extent, there is a combination of strategies that rely on mass-communication and interpersonal technologies, which have not been necessarily based on community studies aimed at determining knowledge and practices related to diarrheal diseases and their treatment. Furthermore, there is a lack of appropriate methodologies for evaluation purposes in the area

Table 3

Availability of Oral Rehydration Salts and/or Solutions in Central America

| Country | Provider or Name | Presentation | Formula | Price local currency | $ |
|---|---|---|---|---|---|
| Nicaragua | UNICEF | Envelope for 1 liter | Glucose 20 grms.<br>Sodium Chloride 3.5<br>Sodium Bicarbonate 2.5<br>Potassium Chloride 1.5 | ₡ 30.00 | $ 0.03 |
| Costa Rica | COFALA | Envelope (52 gr) for 1 liter | Glucose 49.85<br>Sodium Chloride 1.75<br>Potassium Chloride 0.15<br>Calciun Chloride 0.15<br>Saccarin 0.10 | ₡ 25.00 | $ 0.43 |
| | | Bottle (400 ml) | | ₡ 85.40 | $ 1.46 |
| | RAVEN | Envelope (6 grm) for 8 oz. Bottle | NaCl 0.84<br>KCl 0.54<br>Na HCO 0.6<br>Dextrose 4.8 | ₡ 6.00 | $ 0.10 |
| | OMNI | Envelope (6.7) for 8 oz. Bottle | NaCl 0.84<br>KCl 0.36<br>Citric Acid 256<br>Sodium Citrate 344<br>Dextrose 4.8<br>Excipients CPS | ₡ 6.60 | $ 0.11 |

Table 3 (Cont'd)

| Country | Provider or Name | Presentation | Formula | Price local currency | $ |
|---|---|---|---|---|---|
| | FIDE | Envelope for 1 liter | Sodium Bicarbonate 1.7 | ₡ 19.00 | $ 0.32 |
| | | | Sodium Chloride 0.5 | | |
| | | | Potassium Chloride 1.5 | | |
| | | | Dextrose 50.0 | | |
| | | Bottle (1000 ml) | | ₡117.00 | $ 2.00 |
| | ABBOT | Bottle (400 ml) | NaCl 12.0 | ₡123.00 | $ 2.10 |
| | | | Potassium Chloride 149 | | |
| | | | Calciun Chloride 29 | | |
| | | | Magnesium Chloride 41 | | |
| | | | Sodium Lactate 314 | | |
| | | | Water | | |
| | RIFS.A | Bottle (1 liter) | NaCl 1 gr. | | |
| | | | Potassium Chloride 2 gr. | | |
| | | | Sodium Bicarbonate 3 gr. | | |
| | | | Glucose 50 gr. | | |
| | | | Water | | |

Table 3 (Cont'd)

| Country | Provider or Name | Presentation | Formula | Price local currency | Price $ |
|---|---|---|---|---|---|
| El Salvador | Oraldex | Bottle (410 ml) | | ₡ 9.25 | $ 1.85 |
| | Oralite | Bottle (450 ml) | | ₡ 9.25 | $ 1.85 |
| | Pedialite | Bottle (400 ml) | | ₡ 11.95 | $ 2.39 |
| | Dextrolito 1 | Envelope (50 g) | | ₡ 4.15 | $ 0.83 |
| | Dextrolito 2 | Envelope (50 g) | | ₡ 4.65 | $ 0.93 |
| | Suerolito / UNICEF | Envelope (27.9 g) | | | |
| Honduras | Litodex | Bottle (1,000 cc) | | L 6.87 | $ 3.43 |
| | Oralectril | Bottle | | L 4.50 | $ 2.25 |
| | Pedialyte | Bottle (400 ml) | | L 4.60 | $ 2.30 |
| | Suero Mixto | Bottle | | | |
| | Servidrat | | | L 11.05 | $ 5.53 |
| | Suerolito | Envelope (50 g) | | | |
| | Dextrovita | Envelope (25 g) | | | |
| | SRO | Envelope (27.5 g) | | L 1.86 | $ 0.93 |
| | Litrosol | Envelope (27.5 g) | | | |
| | UNICEF SRO | Envelope (27.5 g) | | L 0.12 | $ 0.06 |

and, consequently, no basis to determine which is the most cost-effective educational intervention.

## III. STRATEGIES

The governments of Central America and Panama have accepted the challenge to improve the health and nutritional conditions in each country, and thus, save and protect the lives of their children and mothers. According to national priorities and to the specific health and nutrition problems, technical groups within the Ministries of Health in each country have drawn up five-year plans for child survival as part of the Peace Bridge initiative of the Contadora Group and the PAHO/WHO-UNICEF plan of Priority Health Needs in Central America and Panama.

The combined efforts of PAHO/WHO, UNICEF, INCAP and other international and bilateral agencies working in the Region will provide the countries with financial and technical resources aimed at reducing infant and child mortality, morbidity and protein-energy malnutrition. This is a most appropriate setting in which to apply technical innovations that will contribute to the short-term solution of the most pressing health and nutrition problems in the region.

To this effect, the governments of Central America and Panama and international and bilateral agencies working in the region have agreed upon the following basic strategies during the next five years:

1. To concentrate on a Primary Health Care approach with emphasis on Maternal and Child Health.
2. To identify high-risk areas or regions in each country, based on data already available and to identify available resources. This involves the selection of appropriate

indicators, the identification of target groups, individuals and geographical areas of highest risk and the re-allocation of scarce resources.

3. To emphasize the implementation of low-cost and high-impact measures for the achievement of basic objectives and targets.

4. To maximize the utilization of existing knowledge and technical resources in the region. (This strategy has been utilized by international and bilateral agencies and has proven to be successful in maximizing the participation at the national and regional levels and dissemination of technical information).

5. To promote and strengthen self-sustaining health delivery systems through the introduction, in each country, of institution-building measures which will guarantee the efficient operation of permanent health and nutrition interventions.

6. To provide training to health personnel in regional and national institutions in appropriate technologies to be utilized in primary health care.

7. To secure influential support at the level of political decision-making and the private sector. Efforts will have to be directed towards the mobilization of support of important leaders of the public sector, of industry and commerce, the universities, the church, the media and the arts.

8. To coordinate efforts from international and bilateral agencies in support of the countries' needs. This includes the collaboration of technical and funding agencies and Private Voluntary Organizations.

9. To promote the involvement of different disciplines and sectors, as well as different levels within each sector in the countries.

## IV. INCAP PROJECT ON ORT, GROWTH MONITORING AND EDUCATION

In January, 1985 the Institute of Nutrition of Central America and Panama (INCAP), began a five-year project aimed at collaborating with the Ministries of Health in Central America and Panama in the reduction of infant and child mortality and severe malnutrition. The objective of the project was to increase the effective use of ORT, growth monitoring (GM), and appropriate feeding practices (AFP). The purpose to be accomplished relies on technologies that are already developed and have been successfully implemented in other regions of the world and, to a limited extent, in Central America and Panama.

The overall strategy of this project is to increase the use of ORT, GM, and AFP in the region through promotion and planning activities, research and technology development, technical assistance, and training. The technological knowledge and skills must be transferred to the majority of professionals, health providers and households in the region.

The activities to be carried out by the project were organized in five components. The objectives of these components and achievements to date are summarized in the following section. Most activities

accomplished by the project in 1985-86 were carried out in close coordination with international agencies, UNICEF, PAHO/WHO, USAID, and other also working in the region. Nonetheless, the outputs related to different components to be presented hither to are those in which the project was the main source of funding and technical support.

Component 1

Promotion of Effective National Strategies and Plans

The objectives of this component are:

a) To collaborate in the development and implementation of effective national strategies dealing with ORT, GM and AFP;

b) to increase private sector involvement;

c) to improve donors coordination, and

d) to increase involvement of key health sector opinion leaders.

Table 4 summarizes the outputs to date.

During 1985 promotional and technical visits were made to all the Central American countries, Panama and Belize to inform Ministries of Health and PAHO representatives about the project. In addition, coordination meetings were held with PAHO, UNICEF and USAID on the role of the project within the regional Child Survival plans. Interagency agreements to coordinate efforts to support National Child Survival plans were signed in Honduras, Guatemala and El Salvador.

INCAP collaborated with the Ministries of Health in the development of national plans analysing available data in each country, and providing new information on health and nutrition conditions from different studies. Ethnographic studies in selected communities were carried out in Guatemala, Panama, Nicaragua, El Salvador and Belize and provided information on current knowledge, attitudes and practices of target populations, on relevant topics, including present sources of health care and illness prevention and health-seeking behavior. Those studies relied heavily on modified

anthropological techniques or RAP (rapid appraisal procedures). Specific studies on program management and health service delivery systems were also carried out. The substantive areas covered in the special studies were policy-making, planning and service delivery, financing, program management, logistics; monitoring, evaluation and information systems and health communications. Furthermore, the methodology for studies of the Conditions for the Efficiency (CE) of Maternal and Child Health programs ("Condiciones de Eficiencia de los Programas de Salud Materno Infantil"), being promoted by PAHO was revised and implemented in Panama and Guatemala in collaboration with PAHO and UNICEF. In addition, using PAHO/WHO CDD methodology, an evaluation was carried out in El Salvador. Finally, INCAP staff and professional groups in each country developed and carried out studies among selected system studies. CE and CDD studies were carried out independently in Honduras and in Nicaragua and Costa Rica respectively, with PAHO and INCAP support.

In July, 1985, at a joint PAHO, UNICEF and INCAP meeting, guidelines were produced for the detailed programming of national five-year Child Survival plans and country documents, including a plan of action for the first year (1986-87). The national plans were presented at a seminar on Child Survival and Nutrition in Primary Health Care, held in Antigua Guatemala in January 28-31, 1986. Members of each National Child Survival commision and representatives from donor agencies (USAID, PAHO/WHO, UNICEF, EEC, UNFPA and Italian Government) reviewed and approved all 1986-87 national Child Survival plans. Funds provided by Italy through UNICEF were made available to all countries; in addition, the other agencies contributed with funds and technical assistance to different substantive areas of the plans.

Interagency coordination meetings and with coordinators of the national commission of Child Survival are periodically held. An Interagency Technical Focus group ("Grupo Tècnico Focal Interagencial") integrated by representatives from PAHO/WHO, UNICEF and INCAP, has visited all Central American countries to monitor progress in the implementation of the Child Survival plans. Furthermore, the Technical Ad-hoc Committee ("Comitè Tècnico Ad-hoc"), formed by all national coordinators, review all subregional projects and activities that are to be carried out in support of national maternal and child health care programs.

Finally, on March 23-26, 1986, the Health Ministers of all Central American countries, Panama and Belize signed a Declaration in support of the Child Survival strategy. This declaration provides full political support and consensus on the implementation of activities dealing with Child Survival in the Region.

Table 4

## OUTPUTS

COMPONENT: Promotion of effective national strategies and plans.

- 7 Assessment Guidelines on:
  - Policy-making
  - Planning
  - Finance
  - Program Management
  - Logistics
  - Health Information System
  - Health Communications
- 4 Baseline Community Studies in:
  - Guatemala
  - El Salvador
  - Belice
  - Panama
- 1 Baseline Provider Study in:
  - Guatemala
- 1 Guide for Child Survival Plan Formulation
- 1 National plan prepared or improved per year = 12
- 1 Regional Planning Seminar (80 participants)

Incap 86–51

Component 2

Strengthening Health Service Delivery and Information System

The purpose of this component is to strengthen health service delivery system for ORT, GM and AFP. The main activities included in this component are the development of implementation guidelines, technical assistance to the public and private sector delivery systems, and operations research. Information systems will also be improved to assist in monitoring and evaluating progress.

As mentioned above, using PAHO CDD and CE methodology, studies were carried out in all Central American countries, Panama and Belize. These assessments provide valuable information regarding constraints in the health service delivery and information systems. In addition to limited resources, constraints were identified in operation management, especially supervision and norms, training of personnel and management and routine health information system (Table 5).

INCAP staff has been providing technical assistance to public and private organizations, in the development and testing of methodologies through operations research, and in the improvement of program management systems aimed at monitoring and evaluating the child mortality, diarrheal disease and malnutrition situation and the progress of the programs to increase use of ORT, GM and AFP. Regarding information systems, in close collaboration with the Ministry of Health of Guatemala, the project has developed a sentinel surveillance system, including coverage surveys, sentinel posts and communities and specific in-depth studies in rural and urban areas. One-hundred nineteen communities of approximately 1000 inhabitants (1000 $\pm$ 250), were randomly selected in rural areas in Guatemala as

Table 5

## OUTPUTS

COMPONENT: Strengthening Health Services Delivery and Information Systems

- 4 process evaluations of national programs in:
  - Honduras
  - Panama
  - Guatemala
  - Belice
- 1 CDD Program Evaluation in El Salvador

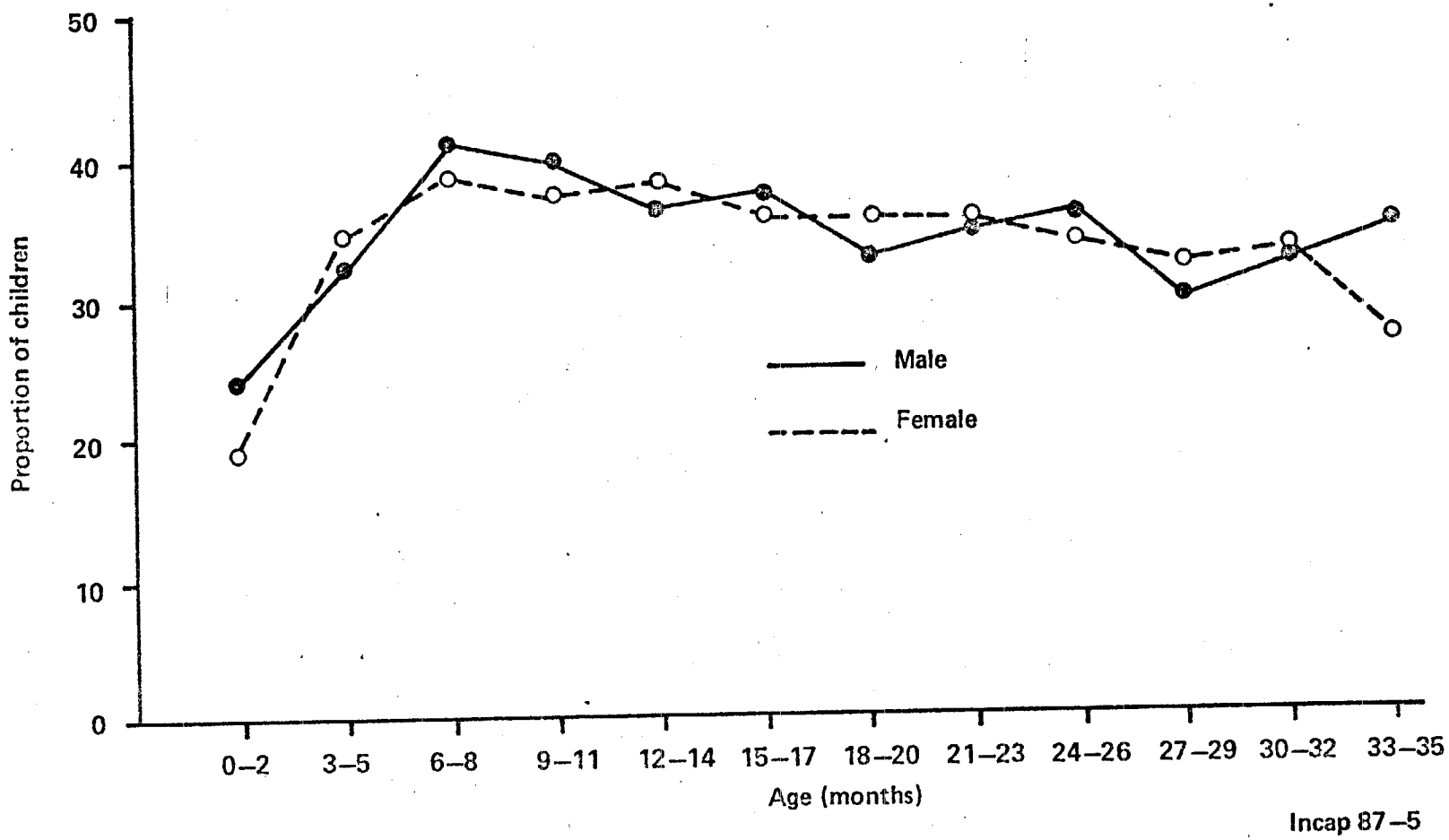
Incap 87-52

sentinel communities. Demographic, health and nutritional information was collected in 1985 in all sentinel communities, and additional data are being periodically gathered from all families living in the communities. The collection of information at the household level is utilized by the Ministry of Health in the monitoring and evaluating the child survival activities in high risk communities.

Data on the prevalence of acute respiratory infection, diarrheal disease and weight deficit in the sentinel communities are shown in Figures 3 to 6. As presented in these figures, most of the growth faltering and respiratory infections and diarrheal diseases occur during the first 18 to 24 months of life. In addition, a close correlation was found between the age of major weight deficit, from 12 to 14 months of age, and the age of peak prevalence of diarrhea and ARI prevalence. These data have been used for the identification of geographical regions with the highest morbidity, malnutrition and mortality rates. Furthermore, based on data from the sentinel communities, INCAP staff has developed a methodology for programming health activities at that level. The methodology is presently being tested in a health area in Guatemala.

El Salvador, with technical cooperation from INCAP, is presently implementing a similar surveillance system, while Nicaragua and Honduras are monitoring child survival activities with UNICEF support. INCAP staff is also providing technical assistance for improving health and nutrition information systems, at the request of the Ministries of Public Health of Costa Rica and Honduras.

PROPORTION OF CHILDREN WITH ACUTE RESPIRATORY INFECTION IN RURAL GUATEMALA
(2 WEEK RECALL, 1985–86)

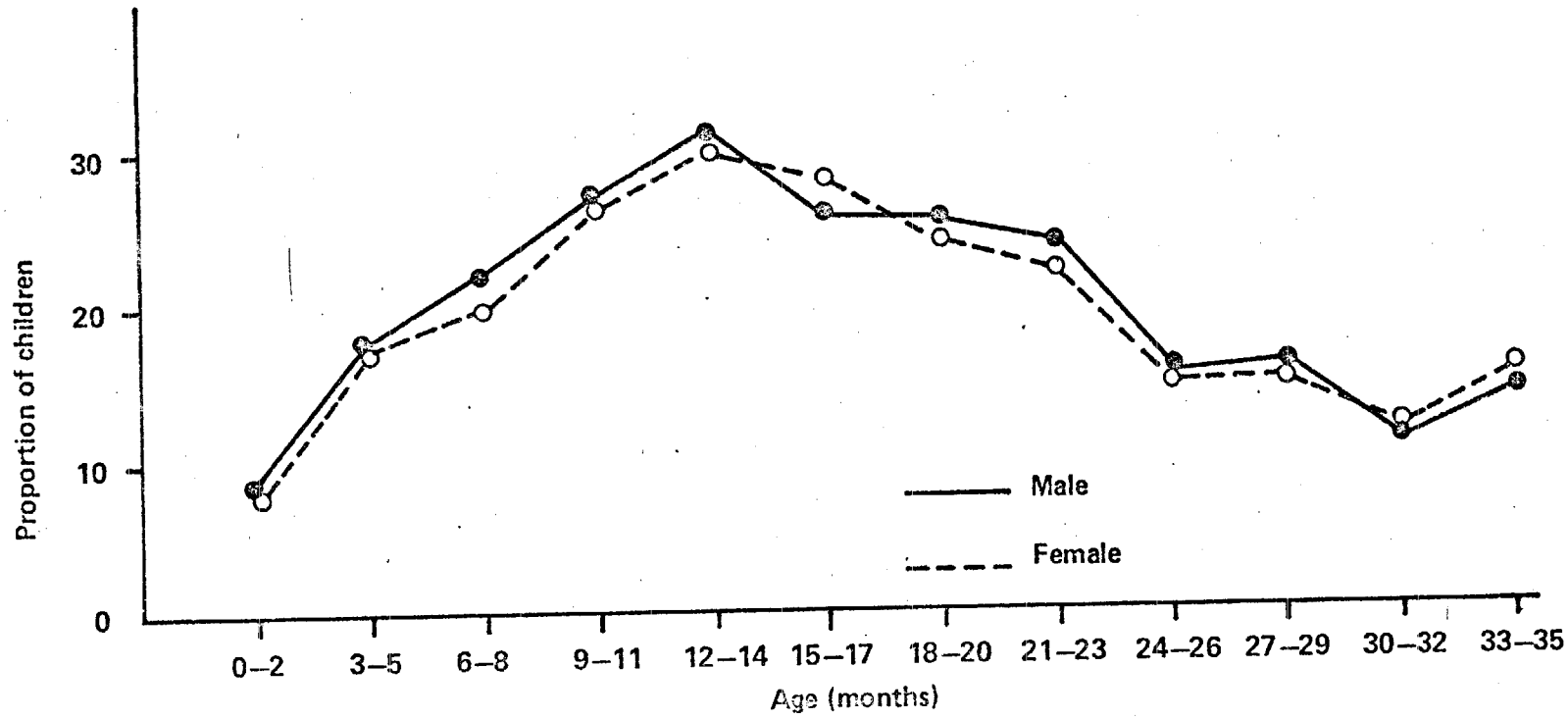



Incap 87–5

Figure 3

Figure 4

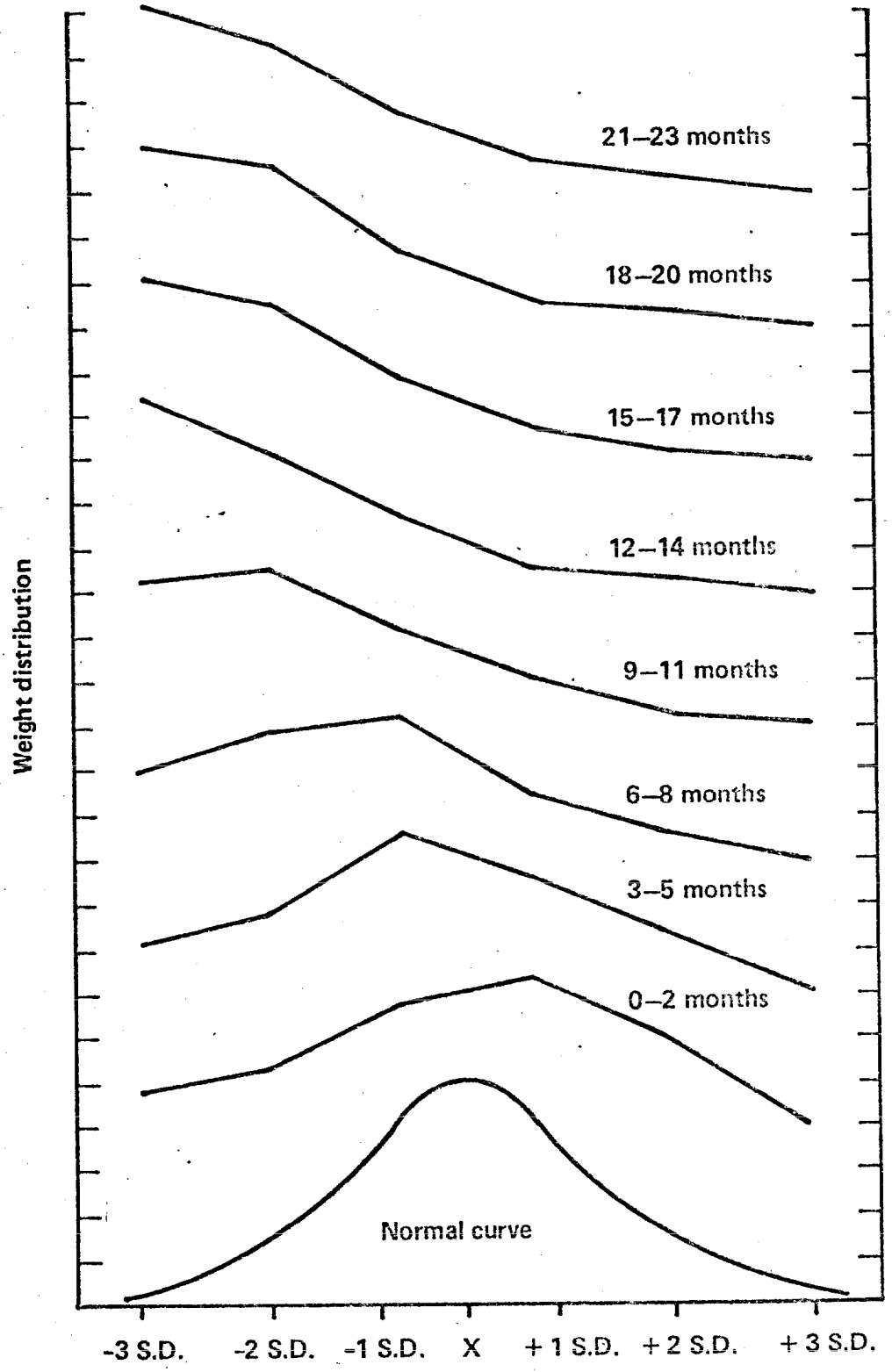
PROPORTION OF CHILDREN WITH DIARRHEA IN RURAL GUATEMALA
(2 WEEK RECALL, 1985–86)




Inca- 87–6

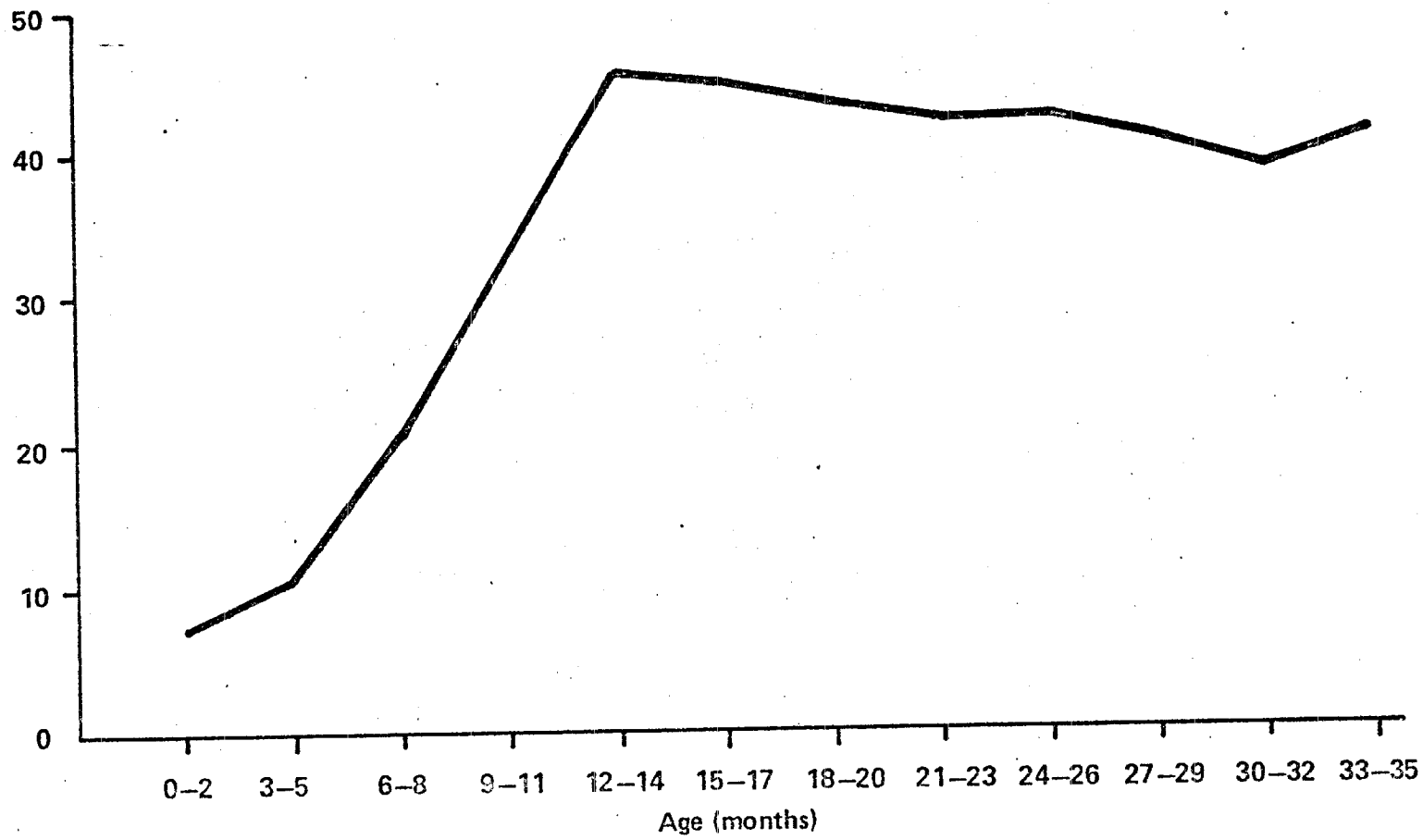
Figure 5

WEIGHT DISTRIBUTION OF RURAL GUATEMALAN CHILDREN LESS THAN TWO YEARS OF AGE, BY TRIMESTER OF AGE, AS COMPARED TO WHO (NCHS) REFERENCE POPULATION




Incap 87–4

PREVALENCE OF WEIGHT DEFICIT. PROPORTION OF CHILDREN < -2 S.D. WEIGHT/AGE
RURAL AREA, GUATEMALA 1985–86




Incap 87–3

Figure 6

Component 3

Improving professional, paraprofessional, and community worker skills and public education

The objective of this component is to improve the knowledge, attitudes and skills of the subregion's physicians, nurses, nutritionists, pharmacists, paraprofessionals, and community health and nutrition workers; as well as to strengthen community public education on maternal and child care.

One of the first activities accomplished in this component was to develop the methodology to conduct studies on health providers in all countries. The providers studies methodology allow the collection of information on the current knowledge, attitudes and skills of health and nutrition professionals, paraprofessionals and village workers, in both public and private sector, about maternal and child health and nutrition. This methodology was tested and implemented in Guatemala and El Salvador in 1986. Based on the information derived from these studies and the training materials already available, integrated educational packages or modules for training personnel are being developed in all Central American countries, with the technical collaboration of INCAP. The modules are designed to offer continued education to health personnel and community workers, based on updated technical information on child survival. As shown in Tables 6 and 7, national and regional courses, and task force meetings on different aspects of maternal and child health have been supported technically in the region.

INCAP is also working with training institutions to improve basic education of professionals and paraprofessionals in the region. This

will involve improvement of curricula, training time, methods, and evaluation of methodologies in training institutions including Schools of Medicine, Nutrition, and Nursing in all countries.

Table 6

OUTPUTS

COMPONENT: Improving professional, paraprofessional and community worker skills and public education

— 4 Regional Courses on:

- Growth Monitoring (50 participants).
- Food and Nutrition Surveillance (130 participants).
- Health Communications (40 participants).
- Anthropology (18 participants).

Incap 87-56

Table 7

— 7 Task Force Meetings on:

- Integrated Training Modules (Guatemala).
- Health Communications (Guatemala).
- Health Education (Guatemala).
- MCH University Education (Costa Rica)
- Monitoring and Evaluation (Guatemala).
- Child Survival Baseline Information (Guatemala).
- Operations Research in CDD (Guatemala).

Incap 87-57

Component 4

Increasing the availability of scientific and technical information

The purpose of this component is to satisfy the information needs of technical specialists, program managers and scientists whose understanding is required to improve the effective use of ORT, GM and AFP in the region. This will be achieved by expanding the INCAP Regional Clearinghouse and carrying out applied and basic research on those topics (Table 8).

Research activities carried out under this component, Table 9, will seek ways to effectively extend the use of known ORT, GM and AFP technologies, and to develop additional practical technologies on case management and on the health and nutrition education required to effectively deal with diarrheal disease and its nutritional consequences.

Research activities will also contribute to provide a scientific basis for the development of other interventions needed to reduce the deaths from diarrhea and severe malnutrition.

Operations research

The first objective, to extend use of known ORT, GM and AFP technologies, requires operational research on a wide array of behavioral, managerial and logistical constraints particular to each country. In addition, operational research will be used to transfer the findings of technical research into program activities.

Operations research will be conducted jointly by INCAP and national counterparts throughout the life of the project. INCAP will promote the interchange of operational research findings, particularly of results with applicability in more than one country and use the

Table 8

## OUTPUTS

COMPONENT: Increasing the Availability of Scientific and Technical Information

- 1 media library and technical information center established at INCAP.
- Regional Human Resources Data Bank (in progress).
- 1 set of Guidelines on Technical Content for educational and diarrhea case management (in progress).
- Technical quarterly newsletters.
  - 8 quarterly newsletters.
  - 5 sets of technical documents.
  - 1 audiovisual.
  - 1 bibliographic listing.
  - 6 technical documents.

Incap 87-58

Table 9

- Research Protocols on:
  - Anthropological Studies.
  - Dietary Treatment during Diarrhea.
  - Monitoring and Evaluation.
  - High Risk.
  - Community KAP Studies.
- Implementation of Research Activities on:
  - Anthropological Studies.
  - Dietary Treatment during Diarrhea.
  - Monitoring and Evaluation.
- Baseline Impact Evaluation in Guatemala.
- 2 Multicenter Studies in progress:
  - Anthropological Studies.
  - Monitoring and Evaluation.

Incap 87-59

Regional Clearinghouse to disseminate information. The project will provide limited funding to about twenty operation research activities in Central America, Panama, and Belize.

Basic Research

Three basic research activities are presently being carried out by the project. One is designed to define optimal foods, preparation and feeding frequency and duration needed to assure nutritional recovery from acute diarrhea. Once defined, these will be applied to community level studies in collaboration with the anthropological team to develop culturally acceptable and implementable guidelines for each community.

Another research area is designed to deal with the epidemiology of chronic diarrheal diseases and its nutritional interaction. The study will define the natural cause of infection, the nutritional consequences and specific etiologies of diarrhea during the first two years of life.

Finally, research will be carried out on the risk factors of intrauterine and posnatal growth retardation, morbidity and mortality in children less than two years of age.

## V. FINAL REMARKS

Malnutrition and diarrheal disease continue to be important health problems in the Central American region. For several years, the countries, with the collaboration of international agencies such as PAHO/WHO, UNICEF, INCAP and bilateral agencies, have carried out activities aimed at reducing diarrheal diseases and malnutrition. These efforts are reflected in some countries in important reductions in infant mortality and morbidity rates, as well as in the prevalence

of malnutrition. However, in spite of that, in most countries in the region, individuals, ranging from health professionals to affected mothers, have not been adequately exposed to these technologies. In addition, some knowledge gaps exist on the use of these technologies and in the development of appropriate education packages needed to achieve their widespread dissemination. Some specific problems identified by the countries are lack of educational and mass communication activities, material resources, including oral solution, logistics and financial constraints, and training of professional and paraprofessional personnel.

The reduction of infant and child mortality, the control of diarrheal disease and the reduction of severe malnutrition are stated priorities for all Central American countries and for the international agencies in the region. The Peace Bridge (Puente para la Paz) initiative, which PAHO promoted to help the Central American countries includes, among others, activities dealing with child survival. It is expected that the health assistance from European and other donors as well as from UNICEF, PAHO and INCAP will contribute to meet most of the health needs identified by the countries.

The evaluation of the impact of these activities will provide considerable information on what is reasonable to expect from the combination of technical expertise, resources and political decisions to solve the problems in the region.