PART III

Chapter 5

CONTROL OF DIARRHEAL DISEASES

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I. Introduction

The Program on Control of Diarrheal Diseases (CDD) was initiated in 1978 in response to a call from the Members States of the Pan American Health Organization (PAHO) for concerted action to address one of the major causes of mortality, morbidity, and malnutrition among children in the developing countries. The CDD Program represents a regionwide effort to tackle the problem of diarrheal diseases in the Americas.

Acute diarrheal diseases (ADD) are one of the main problems affecting children in the Region, reducing their well-being and creating considerable demand for health services. Although general mortality from this cause has fallen, diarrhea remains a serious public health problem. In some countries, it is still the leading cause of death among children aged 1 to 4 years, together with acute respiratory infections (ARI).

In 1990, according to official reports from 26 countries of the Region, an estimated total of 52,623 under-5 children died as a result of diarrhea—approximately 15% of all deaths in this age group. This number of deaths does not fully reflect the seriousness of the situation, however, because information systems do not count cases occurring at the community level, and in many countries the real figures may be underestimated.

Despite these alarming figures, analysis of trends over time shows a drop in mortality from diarrhea in almost all the countries. There has been a general decline in the number of diarrhea deaths in all age groups, in the under-5 age group, and in the proportion of total deaths attributed to diarrheal diseases. The reduction in child mortality from these diseases has contributed substantially to the decline in mortality from all causes and, consequently, to the increase in life expectancy at birth.

In the last decade, control activities have focused on improving the treatment of acute cases of dehydrating diarrhea, mainly at the level of health services. A better understanding of the interaction between persistent diarrhea and malnutrition as causes of mortality has drawn increased attention to the need to expand the scope of intervention programs, whose therapeutic basis is oral rehydration therapy (ORT).

The ORT strategy is a very important aspect of the treatment of diarrheal disease, but it certainly does not prevent it. Indeed, diarrhea morbidity does not appear to have diminished at all in recent years, which shows that ORT has its limits. Although ORT has been, and continues to be, a key element in curbing diarrhea mortality—which it has helped to reduce dramatically—it cannot be the only technique brought to bear in the fight against diarrheal diseases and cholera (*1*).

This chapter provides a more detailed description of other techniques—some of which come from sectors outside the health sector—which have been developed and/or adopted by CDD for the prevention and treatment of diarrheal diseases.

In regard to cholera, after almost 90 years, this disease re-emerged in the Region in 1991. That year, a total of 391,734 cases and 4,002 deaths were reported to PAHO. In 1992, 352,300 cases and 2,396 deaths were reported; in 1993, 204,543 cases and 2,362 deaths; and in 1994, 112,611 cases and 1,229 deaths. In 1995, as of 15 July, reported cases totaled 38,694, with 503 deaths (*2*).

While these data certainly provide evidence of progress in controlling the disease, they also show that much remains to be done, especially with regard to prevention through health services systems.

Since the outbreak of 1991, PAHO has been actively promoting the development and implementation of national prevention and control plans. Cholera has shown its ability to increase attention to the efforts that the CDD Program is already carrying out in the health sector.

The epidemic has thus created a great opportunity for expanding and strengthening the countries' capabilities in the areas of: (1) training in case management, (2) prevention, (3) breastfeeding, (4) support for epidemiological surveillance, (5) social mobilization, (6) water and sanitation, (7) safe food-handling, (8) health education, (9) essential treatment supplies (10) commitment of the private sector, and (11) public information (*1*).

Recognizing that the goal of health for all by the year 2000—both those aspects that are related to the CDD component and those that are not—cannot be achieved by the health sector alone, the members countries of PAHO are taking action to strengthen care extensively at the local level, with special attention to efforts within communities.

Health workers are being retrained to apply approaches that go beyond traditional health education methods, focusing in particular on client-provider relationships and on working hand-in-hand with community structures. Increasing emphasis is being placed on the implementation of community-based programs aimed at achieving quantifiable goals and providing the necessary information and tools to enable the community itself to take action *(3).*

At the regional level, the programs for control of diarrheal diseases (CDD) and acute respiratory infections (ARI) have been integrated into a single technical unit. The decision to integrate the two programs was made taking into account the magnitude of the morbidity and mortality associated with these two causes, which are among the five leading causes of death in under-5 children in the Region.[1] It was also based on the preponderant role that ARIs and ADDs play as causes of pediatric medical consultations and hospitalizations.

National coordinators of ARI and CDD programs have committed themselves to support and strengthen the process of integration of ARI/ADD control activities at all levels of the health structure (Declaration of Santa Cruz, Bolivia, February 1996).

In addition, agencies such as PAHO and UNICEF have agreed on the need to include these two components as key elements in the strategy of *Integrated Management of Childhood Illness* (IMCI). The primary objective of this strategy is to shift the focus from treating disease to providing comprehensive attention to the health conditions of children, which will make it possible to identify the principal problems affecting them. Because the IMCI strategy is so important, it is the subject of a separate chapter in this publication.

The present chapter presents a brief overview of the operational aspects of diarrheal disease control. It is intended to serve mainly as guide that will enable health workers at the local level to undertake a more thorough study of the vast quantity of literature available on the subject. It does not seek to be exhaustive, since a great deal of material has already been published on diarrheal disease; rather, it is hoped that the data and guidelines presented here will serve as a complement to the rest of the publication.

1 The other three causes, after ARI and ADD, are malnutrition, malaria, and vaccine-preventable diseases, such as measles

II. Objectives

1. **General objectives:** The regional objectives for CDD established by the Interagency Coordinating Committee (ICC) for the attainment of the goals of the 1990 World Summit for Children are as follows *(4):*

   1.1 Reduction of mortality from diarrheal diseases, including cholera; and
   1.2 Reduction of morbidity from diarrheal diseases, particularly in infants and young children.

2. **Specific objectives:** The support/sectoral objectives for CDD to be acheived by the year 2000, taking as a reference point the figures for 1990, are as follows:

   2.1 Reduction of 50% in the number of deaths due to diarrhea in children under the age of 5 years;
   2.2 Reduction of 25% in the number of cases of diarrhea in children under the age of 5 years in the Region *(4);* and
   2.3 Reduction of 90% or more in the incidence of cholera at the Regional level *(1).*

The foregoing objectives may be adapted to the local level according to existing needs and the degree of development already achieved.

3. Other specific objectives for CDD include:

   3.1 Reduction of the number of deaths from diarrhea occurring at home in children under 5 years of age. According to recent data reported by local authorities in "prototype" countries such as Mexico, this cause accounts for up to 70% of deaths in the home.
   3.2 Identification and modification of the determinants and risk factors for the diarrheal processes that generate morbidity and mortality in under-5 children, through strengthening of information and epidemiological surveillance systems.
   3.3 Promotion of the dissemination of knowledge and the generation of educational processes to sensitize the population and involve relevant social actors in the identification and analysis of problems caused by diarrheal disease, as well as in the joint search for solutions to those problems.

III. Strategies

1. General strategies:

Like the plans developed at the regional and national levels, plans of action at the local level should target mainly children under the age of 5 and especially those under the age of 2. In order to achieve a reduction in rates of mortality and morbidity from diarrheal diseases, including

cholera, it is suggested that, as a general strategy, CDD programs seek to promote self-sufficiency at the following levels:

1.1 at the family and community level, in the correct management of cases of diarrheal disease in children and cholera in other age groups;
1.2 in the planning, organization, and execution of CDD activities in the context of primary health care, with the participation of all sectors, both public and private;
1.3 at the local level, in the production and supply of oral rehydration salts (ORS), including the establishment of effective quality control procedures.

These strategies are based on the premise that it is feasible to achieve a significant decrease in mortality and morbidity associated with diarrheal diseases in all age groups. This can be accomplished through the identification and proper use of liquids and foods for the preventive treatment of dehydration in the home, timely and correct use of ORS, and feeding during diarrhea episodes. In addition, parents should be educated about when to seek help outside the home (*1*). Some of these measures can be facilitated, when direct access to homes is not possible, through community oral rehydration units (CORUs).

2. Specific strategies:

2.1 Effective management of diarrhea and cholera

In the home and in CORUs, the effective management of diarrhea includes the following components:

- Appropriate use of ORT, including the identification and proper use of liquids available in the home, followed by ORS, if needed. Treatment should begin with an appropriate homemade liquid and, if necessary, continue with ORS;
- Continued feeding during diarrhea, especially breastfeeding;
- Information and knowledge on when and where to seek qualified help outside the home *(1)*.

At the level of health services, effective management of diarrhea in children should include:

- Accurate assessment of the child's degree of dehydration and nutritional status, blood in the stools (dysentery), persistent diarrhea, and other problems;
- Use of oral rehydration therapy (ORT) and selective use of intravenous rehydration therapy for serious cases of dehydration;
- Feeding during diarrhea, including breastfeeding of infants;
- Appropriate use of antibiotics for cases of dysentery and severe cholera;
- Appropriate and effective counseling of parents and/or caregivers about the need to give plenty of liquids and continue feeding and when to seek help;
- Caution in the use of so-called antidiarrheal drugs such as diphenoxylate, loperamide, streptomycin, neomycin, hydroxyquinolines, non-absorbable sulfonamides, kaolin and pectin, acti-

vated charcoal, and attapulgite, among others. These should not be used for the treatment of acute diarrhea in children under the age of 5 years;
- Participation of health and community personnel in analysis of the problem of acute diarrheal diseases and their determinants.

2.2 Prevention of diarrheal diseases, including cholera

Early treatment of diarrhea in the home is crucial to prevent death from dehydration. However, the implementation of effective and feasible prevention measures should also be vigorously promoted in order to reduce morbidity and mortality at the local level. These measures include:

- Exclusive breastfeeding during the first 6 months of life and continued breastfeeding up to the age of 2 years;
- Improved weaning practices;
- Use of safe water;
- Hand-washing;
- Use of latrines;
- Proper disposal of the excreta of young children;
- Immunization against measles.

Preventive efforts to control cholera and other diarrheal diseases should focus on communities at high risk. Preventive intervention measures should be identified and implemented based on the findings of a rapid assessment of the resources available and the priorities at the local level.

Community leaders, religious groups, NGOs, and local businesses, together with government institutions, should participate actively in the surveillance and early detection of problems, as well as in the prevention of risks. Educational processes, dissemination of information, communication, and health education for the population should also be planned.[2]

Outlined below (Table 1) are the prevention measures that should be promoted and supported by CDD programs at the local level as *strategic areas.* These are:

a) Breastfeeding;
b) Environmental sanitation;
c) Epidemiological surveillance; and
d) Immunization against measles.

2 Detailed strategic approaches are presented in the document **Programa ampliado de control de la enfermedad diarreica: un plan coordinado a mediano plazo para eliminar los brotes de cólera y reducir la morbilidad por diarrea en las Américas,** published by the program on control of Diarrheal Diseases of the Pan American Health Organization

Table 1
Activities by strategic area and lines of action of the Expanded Program on CDD

Strategic areas / Lines of action	Effective case management	Breastfeeding	Environmental sanitation	Epidemiological surveillance	Immunization against measles
Ongoing education	Training at the level of: • the home; • the community (CORUs); • health services and schools that train human resources; • drug suppliers	Training for: • community leaders; • women's organizations; • grassroots organizations; • pre-professional and professional personnel in the areas of physiology, clinical practice, legislation and. management	Training for community leaders and risk groups in: • quality control of water; • solid waste management; • excreta disposal; • food-handling;	• Training of local and national personnel in epidemiological surveillance; • promotion of epidemiology programs in the field.	SUPPORT FOR THE ELIMINATION OF MEASLES IN HIGH-RISK COMMUNITIES
Logisitcs and supplies	• ORS; • drugs; • educational materials; • laboratory equipment.	• Educational and promotional materials; • support for the "baby-friendly hospital" inititiative (BFHI).	• Laboratory; • chlorinators; • chlorine comparators; • latrines; • decontaminant material.	• Computer equipment for surveillance and management.	
Supervision, monitoring and evaluation	• Supervision of CORUs; • supervision of case management by services, with special attention to: - rational use of drugs - use and access of ORS; - doctor-patient communication.	• Advisory technical team; • ICC on the goals of the Summit; • field advisory team; • existing programs in countries	• Surveillance of reservoirs and storage tanks for water inside and outside housholds; • maintenance of latrines; • regulation of street food vendors (food handlers)	• Program indicators; • monitoring of sudden changes (outbreaks); • weekly updates on cases of diarrhea/cholera.	

Table 1
Activities by strategic area and lines of action of the Expanded Program on CDD (Cont'd.)

Communication and information	• Production of audiovisual materials • guides for health service and field promoters; • social marketing.	• Regional educational and bibliographic resource center; • promoter communication network.	Production of informational materials on: • hygiene; • water quality; • excreta and solid waste management; • food-handling.	Periodic information bulletins at various levels (national, regional, local)	
Research	• ORS management; • rational use of drugs; • doctor-patient transfer of messages; • outbreaks.	Promotion of research: • clinical/health service; • women and work; • knowledge, attitudes and practices; • code of breastmilk substitutes; • legislation.	Use of simplified technologies.	• Investigation of outbreaks; • studies of the etiologic agents of diarrheal diseases	

Source: **Pan American Health Organization, Division of Disease Prevention and Control, Program on Communication Diseases, Program on Control of Diarrheal Diseases (CCD). Washington, DC;** 1993.

Together with effective case management, these four strategic areas are summarized in Table 1, as are the main lines of action defined for diarrheal disease control under each area.

a) Breastfeeding

It has been amply demonstrated that exclusive breastfeeding until the age of 6 months and continued breastfeeding with complementary foods up to the age of 2 years is beneficial to children. It reduces the incidence of diarrhea, allergies, and infections, improving nutritional status and prolonging the interval between births. Among the interventions for prevention of diarrhea, one of the most important continues to be promotion, protection, and support of breastfeeding.

Current recommendations are to breastfeed exclusively for 4 to 6 months. Subsequently, continue to breastfeed partially, as a means of substantially reducing the high risk of death caused by diarrhea. The problems begin with the introduction of complementary foods (generally at about 4-6 months of age).

It is during this period, from 6 months to 2 years of age, that malnutrition often becomes very apparent and cases of acute and persistent diarrhea increase. These conditions are closely linked to the socioeconomic circumstances of the population *(5).*

The areas in which the greatest attention is needed in relation to the support, protection, and promotion of breastfeeding are training, policy formulation, needs of working mothers, ratification and implementation of the International Code of Marketing of Breastmilk Substitutes, reestablishment of patterns of natural complementary feeding, and development of community support systems.

The role of multisectoral commissions, both at the national and local levels, is to coordinate activities relating to breastfeeding, as well as to inform and educate the population.[3]

b) Environmental sanitation

One of the goals of the World Summit for Children to which the Members Governments committed themselves is the continuation of intensive capital investment aimed at ensuring universal access to safe drinking water and sanitation services by the year 2000 *(4).*

The cholera epidemic has served to highlight the persistence of health infrastructure problems in many countries. As of the period 1988-1990, an average of 80% of housing units in the Region had access to safe drinking water and 68% had adequate systems of excreta disposal *(6).*

However, these relatively high levels mask sizable local differences in the quality and quantity of drinking water within countries. In many countries, housing units have access to drinking water only for a few minutes or hours a day. People are therefore obliged to store water in containers such as plastic pails and storage tanks, a practice which carries a high risk of contamination.

The selection of appropriate technologies for excreta disposal, safe water sources, food protection, and promotion of hand-washing, at least in high-risk communities, could significantly reduce the regional and local incidence of cholera and other diarrheal diseases.

3 The document **Lactancia materna: lineamientos estratégicos para la promoción de acciones básicas en las Américas y el Caribe** describes how to promote, protect, and support breastfeeding through interagency efforts.

c) Epidemiological surveillance

In recent years, active epidemiological surveillance systems have achieved high levels of reliability throughout the Region as an added benefit of the notable efforts of the Expanded Program on Immunization (EPI) to eradicate poliomyelitis. Not only are the countries of the Region systematically reporting cases of vaccine-preventable diseases, but cases of cholera, as well.

This enhanced surveillance capacity enables ministries of health, for example, to promptly detect outbreaks of cholera. In order to control and eventually eradicate cholera, it will be necessary to develop national surveillance systems that include:

- Coordination of activities, starting at the local level, in response to outbreaks;
- Improved laboratory capacity, including development of standardized protocols for diagnosis and surveillance of antimicrobial resistance;
- Training and support for rapid outbreak investigation teams, development of the capacity for diagnosis and follow-up of confirmed cases, as well as promotion of the development of field epidemiology training programs;
- Environmental monitoring of *Vibrio cholerae* and of water chlorination levels *(1).*

d) Immunization against measles

Among the six diseases covered by the EPI, measles is the leading cause of death, and these deaths are generally associated with conditions of poverty and malnutrition. It is presumed that immunization against measles will increase child survival since, although the deaths that are prevented in this way may be replaced by mortality from other causes, it will probably be of lesser magnitude.

Because children with measles are more susceptible to various diseases, including diarrheal disease, and to deterioration of their nutritional status, the EPI recommends that immunization of malnourished children be given priority. Eradication of this disease by the year 2000 is one of the current goals of the EPI *(7).*

IV. Implementation of the Strategies

1. Stages for implementation:

Improvements in the management of diarrhea cases are generally achieved progressively. Table 2 presents a possible sequence of activities for improving case management *(8).* The emphasis in each phase or stage builds logically on the accomplishments of the previous phases. For each stage, components of the other strategic areas described should be included (breastfeeding, environmental sanitation, epidemiological surveillance, immunization against measles).

Table 2
Stages for the implementation of the CDD program strategies

STAGE	EMPHASIS	PROGRAM ACTIVITIES AIMED AT:
1	Case management in public and private health establishments.	Replacing inappropriate treatment of diarrhea with effective case management, including education on treatment in the home, as described in the WHO Case Management Charts *(*module for *Management of the Patient with Diarrhoea: Course on Supervisory Skills)*
2	Effective case management in all public and private health establishments	Increasing access to effective case management, primarily through training of personnel in more centers, as well as increasing the distribution of ORS.
3	Promotion of services	Promoting greater use of health establishments, offering effective case management, for example, by promoting existing services.
4	Increasing access	Increasing access to ORS by adding new providers, for example, community healthworkers, pharmacists, or clerks in stores.
5	Treatment at home	Promoting treatment at home extensively through various channels such as mass and interpersonal communication.

Source: Organización Mundial de la Salud, Programa para el Control de las Enfermedades Diarreicas. **Comunicación: una guía para los responsables de los programas nacionales de control de las enfermedades diarreicas**. Ginebra: OMS; 1987.

2. Activities

2.1 Training

Training of health workers at all levels of the health care system in effective management of diarrhea and cholera cases and prevention measures should continue to be a priority in the coming years, especially in countries in which not all health workers have been trained. It is therefore suggested that CDD programs at the local level, in close coordination with PAHO and other agencies, provide strong support for training on diarrheal diseases and that they also establish training units in selected establishments.

Decentralized training is recommended, using the short course on case management for small hospitals and health centers. Current management guidelines call for combining CDD with control of acute respiratory infections (ARI), where necessary, as well as the development of original materials or the adaptation of existing national or regional materials.

The following training activities are recommended:

a) Develop training materials and programs for the community and community organizations;
b) Collaborate in the training of personnel from the private and public sectors, including social security institutions, private physicians, NGOs, pharmacists, and other providers;
c) Participate in the training of teaching personnel from the institutions that train human resources, and contribute support material for this purpose;
d) Provide training for health-related personnel who are outside the medical profession, per se— for example, people whom parents or caregivers consult when children have diarrhea. These include pharmacists, drug retailers, traditional birth attendants, and traditional healers (*1*).

2.2 Provision of supplies

The plans of action should strongly support self-sufficiency in the production of ORS in the countries where this is feasible and cost-effective. The countries that need to establish and/or enlarge local production facilities, both in the public sector and in the private, will thus receive support and technical assistance.

ORS production by the private sector is considered a potentially cost-effective measure. It is a way of increasing their availability and promotion and of ensuring that they are used by other health institutions, by private physicians, and by NGOs.

It is also necessary to use alternative means in order to improve public and private systems for ORS distribution and sales. This implies distributing them not only through the health system, but also through other appropriate local channels—for example, CORUs, day care centers, and other establishments that care for children. Another means is social marketing through local pharmacies, religious groups, local health volunteers, stores, and other retail sales establishments.

The process of creating CORUs, staffed by voluntary health promoters, has advanced at different rates, the greatest progress being noted where health services have been able to provide them with continuous support and supervision (Annex 1).[4]

2.3 Supervision

The aim of continuous monitoring, supervision, and evaluation of strategies and activities is to improve the planning and management of CDD programs in health establishments at both the local and national levels. At the same time, these activities seek to assess progress toward the attainment of the goals and objectives of the program by means of:

4 The guidelines for the supply and quality control of ORS should be based on the WHO/UNICEF document entitled **Sales de rehidratación oral: planificación, establecimiento y operación de las instalaciones de producción.**

a) Home visits;
b) Individual in-depth interviews conducted with health personnel and community leaders;
c) Discussions in focus groups of providers and users;
d) Direct observation of practices by a person from outside the community (for example, a supervisor);

It is important that supervision and monitoring activities be practical and that they be approached as an aid to decision-making. All supervision activities should be stimulating for the personnel and should:

a) Be presented as a means of improving the program and not as a mechanism for criticizing personnel performance;
b) Produce succinct, practical, and appropriate results;
c) Ask why certain things are not happening and then identify what should be done to make them happen;
d) Involve users in the identification of solutions, problems, or obstacles revealed during supervision, as a more feasible means of finding practical solutions *(8)*.

The course on supervisory skills includes exercises, case studies, and an extensive series of clinical management charts as well as treatment plans for specific cases. An example of the material available in these modules is included in Annex 2.

2.4 Communication, information, and education

It is necessary have an effective and permanent component of communication and education if CDD programs are to be successful. Communication and information strategies must be carefully designed for this purpose. They should be based on research in the social sciences, focused ethnographic studies, and testing and monitoring of communication strategies, such as distribution of printed materials, interpersonal communications, and mass dissemination of information to the general public.

Recently, traditional media, such as popular theater and puppet shows, have been increasingly promoted. It is recommended that communication components and messages be incorporated into other activities such as training, rather than being developed and implemented separately. An effort should also be made to integrate the messages with those of other programs, such as ARI and EPI.

Social mobilization efforts should be aimed at promoting the active participation of all sectors of society, including political leaders, educators, religious and business leaders, unions, NGOs, advertising companies, and the mass media.

In the cholera epidemic in the Region, for example, mass communication has played, and continues to play, a fundamental role in the control of the disease. Mass communication campaigns and training of journalists and those responsible for the mass media are among the strategies used to raise awareness of the problem and contribute to its solution.

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V. Steps for Implementation

Several of the points included in this section are common to both CDD programs and ARI control programs. In fact, in several of the countries of the Region, consultants and other health workers are already managing these two components in an integrated fashion. As was mentioned in the introduction, there is a commitment to fully integrate maternal and child health activities, not only activities under these two components, but also activities relating to nutrition, immunization, and malaria, to name only the most important and prevalent.

1. Definition of the area of application

In order to define the geographic areas in which a CDD program is to be applied, it is necessary to first determine the target populations and the mechanisms for delivery of the services that are to be offered. For this purpose, the main element to be taken into account is the situation prevailing in the area, as determined by the indicators mentioned below, which are described in greater detail in the section on monitoring and evaluation.

The information on these indicators may be available at both the central and local levels. It is understood that the programs should have the capacity for execution at the local level, or in other words, they should have been decentralized to some extent *(1)*.

2. Description of the situation

CDD programs should focus on high-risk communities. In collaboration with programs for surveillance, water and sanitation, nutrition, and health promotion, among others, the organizers of CDD programs at the local level should identify these communities and assess their needs, mainly in terms of:

a) Morbidity and mortality from diarrhea and cholera in the susceptible population;
b) Existence of basic sanitation services; and
c) Acceptance by the populations targeted by the program and their priorities.

Ministerial objectives (including retraining of health workers, rapid situation assessment, supplies and equipment) should be estimated simultaneously for the population and the infrastructure of a high-risk community. The information should be compiled and used to design the plan of action at the local level *(1)*.

3. Description of the available health structure

Rapid assessments within the community should include inspections of sewerage systems, household surveys to determine which of the services are used, and reviews of data on the current

situation from health centers and nearby regional hospitals, among other sources. This information should help to facilitate the process of local planning.

Part of the available health structure is its human resources, including administrative and clinical personnel, community workers, and volunteer health promoters. It is expected that some technical support and certain materials will be contributed by grassroots organizations, local companies, information media, and other agencies, both governmental and nongovernmental. However, extreme dependence on external assistance should be avoided, and any initiative should be begun with whatever resources are available.

4. Development of an operational plan

An agreement on joint programming should be reached among public and private sector participants. It goes without saying that social participation should be the central element guiding the entire effort. Implicit in this participation must be an understanding of the need to go beyond simple support of specific activities to involvement in the programming, execution, and evaluation of work at the local level.

4.1 Goals

In order to achieve the expected objectives, key indicators and goals have been established for 1995, as well as for the year 2000. The regional goals for the year 2000—which could also be applicable at the local level—include ensuring that:

- 80% of diarrhea cases receive sufficient fluids and continued feeding;
- 100% of mothers can apply the three rules of diarrhea management in the home (fluids, feeding, and seeking assistance outside the home);
- 100% of the population has access to a health worker with a regular supply of ORS;
- 90% of cases seen in health establishments and CORUs are correctly managed.

In addition, the Region seeks to ensure that:

- 100% of CDD programs are reviewed with a view to improving technical competence and expanding activities to include cholera control;
- At least 80% of mothers breastfeed their children exclusively up to 6 months of age and continue to breastfeed, with the addition of complementary foods, until 2 years of age;
- At least 90% of children continue to be fully immunized before their first birthday;
- The proportion of housing units in high-risk communities with drinking water and appropriate excreta disposal services increases by at least 80% *(1)*.

4.2 Activities

Similar to the steps that must be taken to develop and organize diarrheal disease control activities at the national level, the formulation of an operational plan at the local level requires the following activities:

- Hold preliminary planning meetings with local health authorities and representatives of other community entities, in addition to funding agencies;
- Prepare a sequence that includes policies derived from those already established at the national level, as well as objectives and goals, general and specific strategies, activities, timetable, and budget;
- Include periodic supervision and evaluations visits;
- Obtain support from the national CDD program;
- Inform national and internal levels on the progress, achievements, and limitations of the plans *(1)*.

5. Monitoring and follow-up of the operational plan

As was noted previously, sustained collective action will require frequent feedback to the community from the health sector. The information that is received, even when it is negative, should be accurate.

In relation to the activities of health workers, monitoring, supervision, and evaluation of strategies and activities, basically three objectives are sought:

5.1 Collection of information to enhance local and national planning as part of the programming of CDD activities;
5.2 Determination of the impact of program interventions, based on the objectives and goals established for national CDD programs;
5.3 Early detection of problems in the course of the program in order to correct them promptly.

In order to obtain and use the information, the following steps are recommended:

a) Include all local and national programs in the information contained in the National ARI/CDD Program Profile developed by PAHO/WHO and the ministry of health in each country, and disseminate the information contained in the profiles as widely as possible;
b) Gather information periodically, using, for example, the indicators included in Annex 3;
c) Identify studies carried out in each country, including surveys, ethnographic studies, and other studies related to diarrheal diseases, with a view to documenting the magnitude of the problem of diarrhea morbidity and mortality, and planning new surveys and studies to measure changes (Annexes 4a and 4b);
d) Adapt, in all local and national CDD programs, the protocols developed by the PAHO and WHO Programs on ARI/CDD for the execution of surveys on the quality of treatment of diarrhea in health services and in the home, as well as the surveys designed to determine mortality and morbidity from diarrhea in under-5 children;
e) Ensure that all local and national programs include questions on the incidence and treatment of diarrhea in the household surveys they carry out in the country and in each community (*1*).

6. Evaluation of control activities and indicators

In order to evaluate CDD programs and determine the impact of interventions, the following activities are recommended:

a) Develop specific guidelines to plan the programs, evaluate the progress achieved, and determine the impact of CDD activities, using the information available in the country;
b) Establish mechanisms for regularly and efficiently evaluating the progress achieved by CDD programs and for improving local and national programs;
c) Establish effective supervision at the local level using the techniques described in the PAHO/WHO course on supervisory skills for CDD and ensure that the personnel responsible for supervision receive appropriate training and support *(1).*

7. Research activities

National plans of action should provide for operations research on CDD, as well as on strategic areas such as breastfeeding, environmental sanitation, and epidemiological surveillance. These studies should contribute directly and significantly to local CDD programs. It is recommended that research in the following areas be supported:

7.1 Education: (a) design, execute, and evaluate educational methodologies for modifying behavioral habits with a view to improving the treatment of diarrheal diseases in the home and reducing their incidence; (b) give priority to the development of educational methodologies for illiterate groups and indigenous populations, as well as to ethnographic studies and methodologies for involving community groups and organizations;
7.2 Evaluation: evaluate the effectiveness, efficiency, and impact that services provided by the formal and informal health systems have on children with diarrhea, as well as the effective use of ORT in the home;
7.3 Problem-solving: Determine the causes of problems that hinder the progress of CDD programs in order to propose the necessary interventions and assess their impact;
7.4 Communication: Conduct comparative studies of the public and private distribution systems in terms of the effectiveness of the messages received *(9).*

VI. References

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VII. Annexes

Annex 1
How to Establish an ORC Area in a Health Care Establishment

A special area should exist within each health center or post for the administration of oral rehydration therapy (ORT). This space is necessary because patients and their families may have to remain at the health center for several hours. An "ORT area" or "ORU" (oral rehydration unit), properly established and equipped, can help personnel to more easily manage cases of diarrhea with dehydration.

1. Select the location of the ORT area, ensuring that the following requirements are met:

- health personnel frequently pass through the area and can monitor the treatment, check the patient's progress, and encourage the mother; the area might be set up close to the reception area or a patient examination room, but it should not be located in a corridor;
- the area should be close to a source of water;
- the area should be close to toilet and handwashing facilities;
- the area should be well-ventilated and should be as comfortable as possible.

2. Acquire the following furniture:

- a table for preparing the oral rehydration solution and holding the recipients that contain the solution;
- enough shelves to hold the supplies
- a bench with a back to allow the mother to sit comfortably while holding the patient;
- a small table where the mother can place the cup and spoon with the solution;
- a couple of baby cribs for patients who fall asleep, so that the mothers can rest while their children are sleeping;

3. Organize the supplies in the ORT area. Listed below is a minimun set of supplies, with adequate quantities for a health center that receives 25-30 cases of diarrhea a week:

- at least 200 packets of oral rehydration salts (ORS) per month;
- bottles containing the correct amount of water to mix with the ORS packets;
- 6 cups;
- 6 spoons;
- 2 droppers (which may be more useful than spoons for some patients, especially very young children or children with persistent vomiting)
- 3 pediatric naso-gastric tubes;
- instruction cards or other educational materials that provide guidelines for mothers on caring for children with diarrhea after they are taken home;
- soap for hand-washing;
- trash receptacle;
- record sheets for registering information on the diarrhea patients treated in the unit.

4. On the walls of the unit, hang posters with information about diarrhea and cholera, as well as other health messages, such as information about acute respiratory infections, immunization, and breastfeeding, among others.

While mothers are in the ORT area with patients, take the opportunity to educate them about ORT and other important interventions such as breastfeeding, weaning foods, use of clean water, hand-washing, and use of latrines.

SOURCE: OPS/OMS/CED. **Manejo del paciente con diarrea.** Curso sobre Habilidades de Supervisión. 3ra. Edición. Diciembre de 1991.

Annex 2
How to Assess the Hydration Status of Patients

FIRST: ASSESS THE PATIENT'S DEGREE OF DEHYDRATION

		A	B	C
1. LOOK:	GENERAL CONDITION EYES TEARS TONGUE/MOUTH THIRST	Alert Normal Present Moist Drinks normally, not thirsty	***Restless, irritable*** Sunken Absent Dry ***Drinks eagerly, thirsty***	***Lethargic or unconscious, limp*** Very sunken and dry Absent Very dry ***Drinks poorly or unable to drink***
2. FEEL:	SKIN PINCH SIGN	Returns to normal rapidly	***Returns to normal slowly***	***Returns to normal very slowly***
3. CLASIFY		The patient DOES NOT HAVE SIGNS OF DEHYDRATION	If the patient shows two or more of these signs, including at least one ***sign,*** the patient has SOME DEHYDRATION	If the patient has two or more of these signs, including at least one ***sign,*** the patient has SEVERE DEHYDRATION
4. TREAT		Use Plan A	Weigh the patient, if possible, and use Plan B.	Weigh the patient and use Plan C urgently

SOURCE TO CONSULT FOR MORE INFORMATION: **Management of the Patient with Diarrhoea.** Geneva: WHO; 1992, and other materials available from the Divisions of Child Health and Development (CHD) of the World Health Organization, CH-1211 Geneva 27, Switzerland.

Annex 3
CDD Indicators: Definitions and Sources of Information

INDICATOR	DEFINITION	SOURCE OF INFORMATION
Rate of training coverage	a) Personnel from health establishments trained in effective management of diarrhea cases b) Supervisory personnel trained in supervisory skills c) Other health workers trained (to be defined in each country or locality)	a) Surveys of health establishments; review of records b) Surveys of health establishments; review of records c) Review of records (supplied by professional associations)
Health establishments with trained personnel	Proportion of health establishments with at least two workers trained in case management (establishments with only one staff member will qualify if this individual is trained)	Surveys of health establishments; review of records
Rate of access to oral rehydration salts (ORS)	Proportion of the under-5 population with a regular supply of ORS available in the community	Research in the community in conjunction with household surveys (review of records, routine reports, supervisory visits)
Rate of ORS use	Perecentage of diarrhea cases in under-5 children treated with ORS (increase fluids)	Household surveys
Rate of continued feeding	Percentage of under-5 children with diarrhea who are given a normal or larger-than-normal amount of food during diarrhea episodes	Household surveys
Rate of increase in fluid intake + continued feeding	Percentage of under-5 children with diarrhea who receive a greater volume of fluids + normal or greater-than-normal amounts of food	Household surveys
Maternal knowledge	Proportion of mothers (or caregivers) who know the three rules of case management (increase fluids, continue feeding, seek assistance)	Household surveys

Annex 3 (cont'd.)

INDICATOR	DEFINITION	SOURCE OF INFORMATION
Cases assessed correctly	Percentage of diarrhea cases in under-5 children treated in health establishments that were assessed correctly	Survey of health establishments
Cases rehydrated correctly	Percentage of diarrhea cases in under-5 children treated in health establishments that were correctly hydrated (orally or intravenously)	Survey of health establishments
Cases in which the mother was correctly advised on home care	Percentage of diarrhea cases in under-5 children treated in health establishments in which the mother received appropriate instructions regarding treatment in the home, including the three rules of case management	Survey of health establishments
Cases of dysentery in which appropriate antibiotics were given	Percentage of dysentery cases in under-5 children treated in health establishments in which appropriate antibiotics were given	Survey of health establishments
Cases managed correctly in health establishments	Percentage of all cases of diarrhea in under-5 children treated in health establishments that were assessed correctly and given appropriate treatment (oral or I.V.)	Survey of health establishments
Children under the age of 6 months who are exclusively breastfed	Proportion of children under the age of 6 months who are exclusively breastfed	Household surveys

SOURCE: PAHO/WHO. **Directional Plan for the Control of Diarrheal Diseases in the Region of the Americas.** Interagency Coordinating Committee (ICC). Revised September 1994.

Annex 4a
Instruments for Studies of Knowledge, Attitudes, and Practices

DIARRHEA AND ORS
Knowledge, Attitudes, and Practices of Users

Knowledge

1. Do mothers know where to obtain treatment for diarrhea?
2. Do they have some special word or expression for describing dehydration?
3. Do mothers recognize that diarrhea and dehydration are problems? For example: Do they know that their children can die from dehydration due to diarrhea?
4. What are common beliefs about diarrhea?
5. What are the perceptions about and the names given to the various types of diarrhea?
6. Do mothers know the signs that indicate that a child needs to be taken to a health professional?
7. Do mothers know what homemade rehydration fluids are and how to prepare and use them?

Attitudes:

8. What do the users like about the products they are using now? What do they expect from a diarrhea treatment?
9. What attitudes do users have towards the use of fluids to treat diarrhea, including solutions prepared with salt and sugar?
10. How much do users expect to pay for an effective diarrhea remedy? What are their attitudes toward free drugs and public health centers?
11. Specifically, what do users believe are the benefits of ORT and ORS? What benefits do they attribute to other diarrhea treatment practices and remedies? What do they perceive as the disadvantages of ORS, other remedies, and other treatment practices?

Practices:

12. Who are the usual providers of treatment for diarrhea?
13. What are the most common home remedies for diarrhea?
14. How are children fed (including breastfeeding) during diarrhea episodes? Which children are not being fed and why? How do feeding practices vary depending on the mother's opinion about what type of diarrhea her child has?
15. Who make decisions in the home about medical treatment and treatment of diarrhea (e.g., decisions about seeking medical attention or purchasing drugs)?

SOURCE: Organización Mundial de la Salud, Programa para el control de la enfermedades diarreicas. **Comunicación: una guía para los responsables de los programas nacionales de control de las enfermedades diarreicas.** Geneva: WHO; 1987.

Annex 4b
Instruments for Studies of Knowledge, Attitudes, and Practices

DIARRHEA AND ORS
Knowledge, Attitudes, and Practices of Providers

Knowledge:

1. Do providers know:
   - the signs of dehydration?
   - the degrees of dehydration?
   - the appropriate treatment for dehydration?
   - what to advise mothers about caring for the child in the home?
   - appropriate use of antibiotics for diarrhea?

Attitudes

2. In the opinion of physicians, what priority should be assigned to diarrhea as a health problem?
3. What do health workers perceive as the principal health problem in the country?
4. What is the dominant attitude in the medical community (pediatricians, general practitioners, nurses, community health workers) regarding treatment of diarrhea?
5. What specific attitude do health personnel have in regard to ORT? In regard to treatment in the home?
6. What is the attitude of health personnel with respect to the role of mothers in the treatment of diarrhea (both in hospital and at home)?

Practices:

7. How are providers currently treating diarrhea?
8. What is their experience with the CDD program (use of clinical guides and manuals, etc.)?
9. How are providers instructing mothers with regard to treatment of diarrhea?
10. Do providers frequently prescribe antidiarrheal medications or antibiotics?

SOURCE: Organización Mundial de la Salud, Programa para el control de la enfermedades diarreicas. **Comunicación: una guía para los responsables de los programas nacionales de control de las enfermedades diarreicas.** Geneva: WHO; 1987.

Annex 5
Recent Reference Documents

Listed below are the most recent documents and research papers arising out of the work of the ARI/CDD Division of WHO in Geneva, Switzerland, during 1994:[5]

MANUALS AND GUIDELINES

1. **A Manual for instructors of nurses and other health workers.** CDD/94.2.
2. **Health facility survey manual: Diarrhoea and acute respiratory infections.** CDD/SER/90.1 (Rev. 1, 1994).
3. **Household survey manual: Diarrhoea and acute respiratory infections.** WHO/CDR/94.8.
4. **Radio guide: A guide to using radio spots in national CDD programmes.** WHO/CDD/94.48.
5. **Tha management of bloody diarrhoea in young children.** WHO/CDD/94.49.

ARTICLES:

6. Barreto, M.L., Santos, L.M.P., Assis, A.M.O., Araújo, M.N.P., Farenzena, G.G., Santos, P.A.B., Fiaccone, R.L. **Effect of vitamin A supplementation on diarrhoea and acute lower respiratory tract infections in young children in Brazil**. *Lancet*, 1994, 344:228-231.
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10. Cohen, R.J., Brown, K.H., Canahuati, J., Rivera, Landa L., Dewey, K.G. **Effects of age of introduction of complementary foods on infant breast milk intake, total energy intake, and growth: a randomised intervention study in Honduras.** *Lancet*, 1994, 344:288-293.

5 Spanish translations of these documents are available, although most were produced originally in English. Those interested in obtaining the originals or translations of documents available in Spanish should contact the ARI/CDD Program, Program on Communicable Disease Prevention and Control, Pan American Health Organization, 525 Twenty-third Street, N.W., Washington, D.C. 20037, U.S.A.

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14. Martines, J.C., Habicht, J.P., Ashworth, A., Kirkwood, B.R. **Weaning in Southern Brazil: Is there a "weaning dilemma"?** *Journal of Nutrition,* 1994, 124(8):1189-1198.
15. Maulen-Radovan, I., Fernández-Varela, H., Acosta-Bastidas, M., Frenck, S. **Safety and efficacy of a rice-based oral rehydration solution in the treatment of diarrhoea in infants less than 6 months of age**. *Journal of Pediatric Gastroenterology and Nutrition,* 1994, 19:78-82.
16. Pérez-Escamilla, R., Cohen, R.J., Brown, K.H., Rivera, Landa L., Canahuati, J., Dewey, K.G. **Maternal anthropometric status and lactation performance in a low-income Honduran population: evidence for the role of infants**. *American Journal of Clinical Nutrition,* 1995, 61:528-534.
17. Pierce, N.T., Fontaine, O. **Does Smectite have antidiarrhoeal activity?**. *Journal of Pediatric Gastroenterology and Nutrition,* 1994, 18:505-506.
18. Piwoz, E.G., de Creed, Kanashiro H., de López, Romana, G., Black. R.E., Brown, K.H. **Within—and between—individual variation in energy intakes by low-income Peruvian infants**. *European Journal of Clinical Nutrition* 1994, 48:333-340.
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