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PREVENTIVE ACTION AND INTENSIFICATION OF THE STRUGGLE AGAINST DIARRHOEAL DISEASES, IN PARTICULAR CHOLERA

ECOSOC

PLAN OF ACTION FOR THE PERIOD 1995-1999

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SUBSTANTIVE SESSION 1995

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PREVENTIVE ACTION AND INTENSIFICATION OF THE STRUGGLE AGAINST DIARRHOEAL DISEASES, IN PARTICULAR CHOLERA

PLAN OF ACTION FOR THE PERIOD 1995-1999

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BACKGROUND

Diarrhoea can be caused by many different organisms. It is prevented by avoiding contaminated food, water, hands and eating utensils. Cholera is in no way different, although the diarrhoea it causes (particularly in the malnourished) is so severe that it can rapidly drain the body of fluid, resulting quickly in death if this fluid is not replaced. The bacterium *Shigella dysenteriae* is the common cause of bloody diarrhoea (dysentery).

Cholera and dysentery are examples of epidemic diarrhoea. These epidemics strike adults as well as children and often gain high visibility in the mass media. Yet it is endemic diarrhoea which kills the vast majority of victims, who are children less than five years of age. It is estimated that cholera and epidemic dysentery together accounted for at least 20 000 deaths during 1994. Endemic diarrhoea, however, was the principal cause of death of some 3 million children.

Prevention and control of diarrhoeal diseases depend on education, community participation and the activities of sectors other than health. Intersectoral coordination has a high priority since a number of specific behaviours promote the transmission of gastrointestinal pathogens and thus increase the risk of diarrhoea. These include failing to breastfeed exclusively for the first 4-6 months of life, using infant feeding bottles, storing cooked food at room temperature, using drinking-water contaminated with faecal bacteria, failing to wash hands and failing to dispose of faeces hygienically. While vaccines are a hope for the future, they are not yet ready for public health use. Effective treatment depends on early diagnosis in the home and rapid referral of severe cases to a health centre.

Treatment of diarrhoea requires the early replacement of fluids, usually by mouth using whatever fluids are available in the home, and continued feeding. If rehydration is delayed, or if the particular case is more severe, a special fluid containing a balanced mixture of salts is needed. This fluid can be prepared in the home by mixing water with a packet of oral rehydration salts (ORS). Thanks to local production and support from the international community (especially UNICEF, UNIDO and WHO), ORS packets are now widely available in developing countries, both in health centres and in the market place. In some 10% of cases of diarrhoea with dehydration, even these salts are insufficient and rehydration using an intravenous infusion is required. Antibiotics are an important adjunct to rehydration therapy for severe (life-threatening) cholera and dysentery.

This document is divided into four parts and an annex. Part I presents the accomplishments in 1990-1994 and describes the goals, strategies and workplan for the control of non-epidemic diarrhoea for the period 1995-1999. Part II presents the same information for epidemic diarrhoea (cholera and dysentery). The United Nations agencies' coordination mechanisms to carry out the workplan are presented in Part III, and the resource needs are contained in Part IV. The annex provides a summary of the components and activities of the workplan.

PART I. NON-EPIDEMIC DIARRHOEA

A. ACCOMPLISHMENTS

Despite adverse socioeconomic conditions, natural disasters such as prolonged drought, and civil unrest in many areas, there has been a marked reduction in the number of deaths of children under 5 years of age in developing countries. The mortality rate decreased by 17%, from 117 deaths per 1000 live births in 1985 to 97 per 1000 in 1993. In absolute figures, in 1993 there were 1.1 million fewer deaths in children than in 1985, despite population growth. Progress in the prevention and control of diarrhoeal diseases have certainly contributed to the global decline of childhood mortality. Examples from countries indicate the significant effect of diarrhoeal disease control programmes on diarrhoea mortality in children.

Technical guidelines based on scientific evidence and a consensus of recognized experts were issued by WHO and UNICEF. The guidelines on case management refer to action to be taken by families in the home, and action to be taken by health providers at health facilities and elsewhere. The guidelines on prevention include policies and guidance on breastfeeding, weaning foods, child feeding, food safety in the home and in food service and mass catering establishments, appropriate technology for improving drinking-water quality, and hygienic behaviours for reducing the transmission of diarrhoeal diseases (safer disposal of faeces, handwashing, keeping drinking-water free from faecal contamination, thorough cooking and safe storage of cooked food).

The technical guidelines were complemented with **managerial support materials** which provide guidance on planning, training and supervising health workers, communicating with families, organizing logistics, monitoring activities and evaluating progress towards achievement of targets in the areas of case management of diarrhoea, nutrition, food safety, and both rural and urban water supply and sanitation services. The guidelines and managerial materials were issued in English, French and Spanish, with some also available in Arabic, Portuguese and Russian. They were distributed free of charge to Member States, bilateral cooperation agencies and nongovernmental organizations (NGOs). Many have also been translated into other languages. A set of participatory tools for sanitation and hygiene improvement have been developed by WHO and the UNDP/World Bank Regional Water and Sanitation Group - East Africa.

Regular communication with health workers of all categories has been maintained through the newsletters **Environmental Health** and **Facts about Infant Feeding**, produced by WHO, and the quarterly **Dialogue on Diarrhoea**, produced with WHO and UNICEF support by the Appropriate Health Resources and Technologies Action Group (AHRTAG), London, United Kingdom. This newsletter is available in at least eight languages.

UNICEF and WHO have achieved close **interagency coordination** of their programmes for diarrhoeal disease control, nutrition and water supply and sanitation in order to promote the same technical policies and managerial principles in the planning and implementation of national control programmes. Representatives of the two agencies meet at least twice a year at global level to develop joint approaches and coordinate activities. An important outcome of these discussions was the development of core sets of key programme indicators and the definition of mid-decade and end-of-decade operational targets. The Water Supply and Sanitation Collaborative Council, during its meeting in Oslo in 1991, designated the WHO Working Group on Operations and Maintenance of Water Supply and Sanitation Facilities as one of its "sponsored" groups. Later the Council confirmed this group as one of its "mandated" groups in the meeting at Rabat in September 1993, and also established a Working Group on the Promotion of Sanitation, under WHO's coordination, to promote support to the implementation of sanitation strategies. UNIDO has been actively involved in the industrial aspects of a global assessment of fresh water resources, the protection of water resources from industrial activities, and projects on the production of equipment for treating wastewater and for supplying drinking-water.

Africa 2000 is a major initiative aimed at achieving universal coverage of sub-Saharan African populations with water supply and sanitation services. The initiative was launched in 1994 in Brazzaville, Republic of the Congo, at the 44th session of the WHO Regional Committee for Africa, which was composed of the Ministers of Health of the countries of this region. The regional committee called on United Nations agencies to cooperate with Member States in a "new partnership" of involvement in the initiative. WHO, UNICEF, UNDP and the World Bank are involved in its implementation. Initiatives such as these raise awareness regarding effective means of interagency cooperation and strengthen the framework for the provision of services.

At country level, planning and evaluation activities provide important opportunities to strengthen interagency collaboration in the support of national programmes. In addition to WHO/UNICEF collaboration in most countries, other agencies participated in joint review and planning activities in recent years, as for instance the World Bank in Bangladesh and UNEP in Brazil.

As of the end of 1994, more than 100 countries were implementing **plans of action** for the control of diarrhoeal diseases in children, on the basis of the policies promoted by WHO and UNICEF. Regional and intercountry programme managers' meetings are convened by WHO and UNICEF annually or every two years to exchange country experiences, review the achievement of targets and discuss programmatic approaches, including new managerial materials. In 1994, WHO provided technical assistance to developing countries in all regions in developing food safety programmes, updating food legislation, and strengthening water supply and sanitation services.

During the period 1990-1994, 2500 high-level officers attended **training** courses on diarrhoeal disease control programme management and some 13 000 middle-level officers were trained in supervisory skills. It was estimated that, by the end of 1994, 42% of health staff with supervisory responsibilities had been trained. According to WHO's estimates, by the end of 1994 around one-third of doctors and other health workers were trained in standard diarrhoea case management. More than 420 diarrhoea training units have been established in 85 countries.

A major focus of WHO training activities was the introduction of new materials completed in the 1992-1993 biennium for strengthening the teaching of diarrhoeal diseases in medical schools and in basic training programmes for nurses and other health workers. Twenty workshops were held for teachers of paediatrics and community medicine from 128 medical schools in 20 countries to assist them to plan ways of strengthening the teaching of diarrhoeal diseases to their students. In 1992-1994, joint workshops of WHO's Programme for Control of Diarrhoeal Diseases and the Expanded Programme on Immunization for directors of 55 paramedical schools reviewed modifications in curricula in 20 countries to strengthen the teaching of diarrhoeal diseases and immunization programmes.

A breastfeeding counselling training course was jointly produced by WHO and UNICEF to train a cadre of referral-level health workers in counselling and supporting breastfeeding mothers and infants, and helping them to overcome difficulties. The material focuses on practical skills and includes training of trainers. The course was conducted in 11 countries.

WHO produced a training manual for improving the diarrhoea treatment practices of pharmacists and licensed drug sellers which provides a step-by-step guide to setting up a local training programme. In addition, a distance learning package on managing cases of childhood diarrhoea was produced for health workers unable to attend a training course away from their place of work.

Methodologies have been field-tested for the identification of hazardous behaviour leading to food contamination and transmission of diarrhoeal diseases, including cholera. Materials were developed for training on Hazard Analysis Critical Control Point as a method of safety assurance and food inspection. WHO and the Industry Council for Development supported courses using these materials in nine countries. Strategies to prevent and control contamination of food and drinking-water throughout the production/distribution chain were incorporated into national plans of action on nutrition with technical assistance of FAO. UNIDO has developed training programmes to improve the hygienic standards of food products in Viet Nam and five African countries, and assisted the Cambodian Government in establishing a food safety and quality control programme.

In the area of **communication**, WHO developed a guide on the "ask-praise-advise-check" process for health workers to follow when advising families on home case management of diarrhoea. The guide is recommended for all clinical courses on diarrhoeal disease. A focused ethnographic study protocol on families' beliefs and practices regarding diarrhoeal diseases in children was field-tested in Bolivia. In collaboration with HEALTHCOM, a guide on the effective use of radio has been field-tested in Bangladesh. The use of radio will help disseminate messages about home case management and prevention of diarrhoeal diseases to all families. UNICEF promoted social mobilization and created six major networks of partnership at global level to support the achievement of the goals of diarrhoeal disease control. UNICEF and WHO have promoted a twin strategy of infrastructure strengthening for delivery of services for the control of diarrhoea combined with periodic intensive communication and social mobilization. With UNICEF and WHO collaboration, 24 countries organized oral rehydration therapy (ORT) weeks in 1994. Many countries have developed communication strategies involving mass media and other groups to accelerate the promotion of ORT.

The **logistics** of ORS have been a constant concern for WHO and UNICEF which have provided technical assistance for production and quality control of ORS in developing countries for 15 years. It is estimated that about 400 million ORS packets are produced annually and that two-thirds of them are produced in developing countries. About 85% of all available ORS corresponds to the WHO/UNICEF formula. Sixty developing countries now produce ORS and worldwide there are more than 450 manufacturers.

The WHO/UNICEF **evaluation** instruments for national programmes include: (i) a health facility survey to measure clinical practices on diarrhoeal diseases in health facilities; (ii) a household survey to measure morbidity and treatment practices on diarrhoeal diseases in children at home (combined with information on acute respiratory infections and breastfeeding practices); (iii) a rapid multiple-indicator household survey through which several indicators related to diarrhoeal disease control are measured (including ORT use, breastfeeding, vitamin A supplementation, measles immunization, water supply and sanitation); (iv) a guide for estimating costs of diarrhoeal disease control activities for cost-effectiveness analysis; (v) a country programme profile questionnaire to gather information from national programmes annually; and (vi) a manual for focused programme reviews, which describes a problem-solving approach and provides the data for replanning diarrhoeal disease control activities. During 1990-1994, 37 health facility surveys, 69 household surveys and 17 focused programme reviews were carried out.

The **research** activities in recent years have covered three priority areas: case management in health facilities (clinical and operational research), case management in the home (sociocultural research) and prevention (epidemiological and behavioural research). In case management research, the efficacy of several fluids for the treatment of dehydration was studied and it was concluded that the standard WHO/UNICEF-recommended glucose-based ORS solution is as efficacious as the rice-based ORS solution for acute non-cholera diarrhoea in young children. These studies emphasized the importance of early feeding once dehydration has been corrected.

In sociocultural research, a protocol was tested to assess mothers' and other caretakers' comprehension of the advice on home care of the sick child given by health workers in the clinic and to follow up the families to see what messages they really understood and what they put into practice. A project aimed at production of guidelines on how to institute interventions to improve household behaviours regarding the sick child was started. A theoretical framework was outlined for the project.

Prevention through cost-effective vaccines would be of great value for the control of diarrhoeal diseases in children. Basic research to develop new candidate vaccines for the most important causes of these diseases is supported by WHO's Global Programme for Vaccines and Immunization, UNIDO and UNDP. Evaluation of the most promising of these vaccines in field trials is supported by the WHO Programme for Control of Diarrhoeal Diseases and UNICEF.

One objective has been to develop a safe rotavirus vaccine that is effective in infants under 6 months of age. Rotavirus is the most important single cause of dehydrating diarrhoea in children worldwide. An estimated 600 000 child deaths are caused by rotavirus annually. The most promising candidate rotavirus vaccine is a rhesus/human tetravalent vaccine that is directed against the four important serotypes of human rotavirus. The vaccine is given by mouth in three doses at the same time as diphtheria/pertussis/tetanus and oral polio vaccines. Studies in Brazil and Peru have shown 20-50% protection in infants against all rotavirus diarrhoea episodes for one year and 50-75% for episodes which were clinically severe and potentially life-threatening. In an effort to improve the level and duration of protection a 10-fold higher dose of vaccine is being studied. In the United States, this higher dose of the vaccine has produced 80% protection against severe rotavirus diarrhoea. The same increased dose is being evaluated in Venezuela to define better its potential effect in developing countries. Several approaches to developing other candidate vaccines, focused on the biology of the virus replication, are being supported by UNIDO. Annual studies, with experimental vaccines have been promising as regards the induction of neutralizing antibodies.

Studies in adults in Sweden have shown that a killed oral enterotoxigenic *Escherichia coli* vaccine is safe and immunogenic: about 80% of volunteers developed intestinal antibody responses after two doses of vaccine. Studies of the efficacy of the vaccine are under way in American sailors travelling to developing countries. Preparations are also being made for evaluation of the vaccine among infants and young children in Egypt.

A multicentre study on the safety and efficacy of vitamin A supplementation in young infants as a means of preventing diarrhoea and pneumonia was started in three countries. Other research and development activities in the field of prevention addressed the following areas: evaluation of the breastfeeding counselling course; improvement of the management of the most frequent breastfeeding problems; preparation of review papers on issues relevant to the promotion of breastfeeding; guidelines on the adaptation of the feeding messages for the sick child treatment charts; and recommendations for the effective promotion of improved nutrient content and food safety in the preparation of weaning food.

B. GOALS

The World Summit for Children, held in New York on 30 September 1990 and attended by 71 heads of state or government and by ministers representing 81 other countries, adopted the World Declaration on the Survival, Protection and Development of Children and a related Plan of Action containing specific goals for the health of women and children. The attainment of the Summit goals constitutes a common cause for all United Nations agencies in pursuit of the overall goal of health for all and positive human development.

The World Summit for Children **goals related to diarrhoeal diseases** by the year 2000 (compared with 1990 levels) are as follows:

- Reduction by 50% in deaths due to diarrhoea in children under the age of 5 years.
- Reduction by 25% in episodes of diarrhoea in children under the age of 5 years.

The World Summit for Children set **goals on nutrition** which are critical for the attainment of the diarrhoeal disease goals. Nutrition goals which are important contributory factors to reduction of the severity of and mortality from diarrhoeal diseases are the following:

- Reduction by 50% in severe as well as moderate malnutrition in children under 5 years of age.
- Reduction of the rate of low birth weight (2.5 kg or less) to less than 10%.
- Virtual elimination of vitamin A deficiency as established both by an absence of signs of clinical deficiency and by adequate levels of biochemical indicators.

The most important World Summit for Children goal on nutrition which will contribute significantly to the reduction of episodes of diarrhoeal disease in infants is the breastfeeding goal:

- Empowerment of all women to breastfeed their children exclusively for four to six months and to continue breastfeeding, with complementary food, well into the second year.

The World Summit for Children **goals on water and sanitation** and on **measles immunization** have direct relevance to the prevention of diarrhoeal diseases in children. They are:

- Universal access to safe drinking water.

  Universal access to sanitary means of excreta disposal.

- Reduction by 95% of measles deaths and reduction by 90% of measles cases by 1995, as a major step towards the global eradication of measles in the longer run.

In 1993, UNICEF and WHO decided to adopt selected **intermediate mid-decade goals** to facilitate and encourage the achievement of the end of decade goals set by the World Summit for Children. The mid-decade goal calls for achieving at least 80% of **use of oral rehydration therapy (ORT - increased fluids) and continued feeding** for diarrhoea in children. In addition two priority programme targets need to be met - 80% of the population will have **access to oral rehydration salts** (ORS) and 80% of **mothers will know the three rules of home case management** of diarrhoea: increased fluid, continued feeding and when to seek care.

The most recent analysis of the progress made in the achievement of the WHO/UNICEF intermediate goals for diarrhoeal disease control indicates that by the end of 1994:

- Data available from 80 countries on the use of ORS and recommended home fluids show that ORT use has increased from 38% in 1991 to **51%** in 1993. Results from surveys carried out in seven countries thus far indicate that **39%** of episodes of diarrhoea in children were given ORT and continued feeding. Country reports suggest that these rates may be significantly higher in other areas and may have increased sharply in 1994.

- Only **11%** of mothers in the developing world know the three rules of home case management of diarrhoea in children. This indicator is low because the knowledge of one of the rules (when to seek care for a child with diarrhoea), as determined by household surveys, was as low as 11%.

- Maternal knowledge of two rules (the need for increased fluid and continued feeding for children with diarrhoea) is approximately **60%**.

- The best progress was made towards achieving the ORS access goal: the rate was estimated to be **75%** for developing countries, ranging from 63% in sub-Saharan Africa to 80% in the Eastern Mediterranean Region.

- The population access to water supply and sanitation was estimated in 1990 to be 85% for urban water supply, 74% for urban sanitation, 62% for rural water supply and 42% for rural sanitation.

In 1990 malnutrition affected 35.8% of children in developing countries. Over 50% of the world's underweight children were in south Asia. The mid-decade goal aims at **reducing severe and moderate malnutrition** among children under 5 years of age by 20%. According to an analysis of regional trends, by the end of 1994 the prevalence of underweight children remained stable in Africa (27%) and in Asia (40%), while there was a slight decrease from 9.6% to 8.8% in the Americas. No mid-decade goals on control of low birth weight were adopted by UNICEF and WHO. As regards **vitamin** A deficiency, the adopted mid-decade goals call for all countries to identify whether they have a problem of vitamin A deficiency and establish approaches to ensure the elimination of the problem by the year 2000. By the end of 1994, 60 countries had recognized, on the basis of survey data, that vitamin A deficiency was a problem of public health significance.

In compliance with the commitment to achieve the **breastfeeding** mid-decade goals, by the end of 1994 practically all developing countries had initiated procedures to prohibit the distribution of free and low-cost breastmilk substitutes in all maternity centres and hospitals. At the same time 947 health facilities have been certified as meeting the criteria for "baby-friendly hospital status" based on the implementation of the Ten Steps to Successful Breastfeeding recommended by UNICEF and WHO. The mid-decade target is 14 000 health facilities in developing countries.

The mid-decade **goal of reducing measles** deaths by 95% is likely to be met if current trends continue. The goal of reducing measles cases by 90% compared with pre-immunization levels will probably be achieved after 1995. The benefit of the present measles immunization level is estimated as the prevention of 90 million cases and 1.54 million deaths a year worldwide.

The goals set by the World Summit for Children on **universal access to safe water and sanitary means of excreta disposal** are far from being achieved, especially in the African Region. Major efforts are being exerted by United Nations agencies to promote the water and sanitation activities as a major component of primary health care. Despite recognition of the importance of the problem, financial resources are a major constraint. The goals of the World Summit for Children cannot be attained in the original timeframe without infrastructural investments by communities, governments and cooperation agencies. The **mid-decade goal for water supply** was defined as reducing by one-fourth the gap between the 1990 level of access to water supply and the universal access which has to be reached in the year 2000. For **sanitation** the goal adopted calls for reducing this gap by one-tenth. The aim is "full latrine-coverage for groups at higher risk of excreta-related diseases, and hygiene promotion for all". Countries established water supply and sanitation programmes during the 1980s within the context of the International Drinking Water Supply and Sanitation Decade. Monitoring the achievement of goals has faced some difficulties due to the dispersal of responsibilities and the lack of national institutions with the necessary mandate to undertake sector-wide data collection and interpretation.

C. STRATEGIES

The strategy for reducing mortality from diarrhoeal diseases has been evolved by WHO and UNICEF during some 15 years of work supporting national programmes. It was endorsed by the World Health Assembly resolutions WHA31.44 (1978), WHA35.22 (1982) and WHA40.34 (1987). The UNICEF Executive Board, at its annual session of 2-6 May 1994, approved the policies and Medium Term Plan for UNICEF's action to control diarrhoeal diseases.

Correct **case management** is the appropriate control strategy for achieving the goal of reducing mortality from diarrhoea. The case management strategy comprises: (i) the prevention of dehydration through the proper treatment of diarrhoea in the home using available, home-prepared solutions; (ii) the treatment of dehydration due to diarrhoea using ORS; (iii) appropriate feeding during and after diarrhoea; (iv) selective use of intravenous fluids for severely dehydrated cases; (v) use of antibiotics for suspected cases of cholera and dysentery. The management of persistent diarrhoea includes restoring fluids and electrolyte losses with ORS, continuing feeding with full calorie intake and treating any associated infection.

Case management at home includes the use of available fluids (particularly food-based, and especially cereal-based, fluids but also any available and safe fluid) to prevent dehydration in children with diarrhoea, and the recognition of dehydration in order to seek treatment outside the home.

Oral rehydration salts can safely correct electrolyte and fluid deficits of moderately dehydrated cases of diarrhoea of any etiology in all age groups. ORS are as effective as intravenous rehydration and are safer, less expensive and more convenient. They are also safe and effective for use in neonates and malnourished children.

Continued feeding during and after diarrhoea is an essential component of correct case management. Children fed actively during and after diarrhoea have a better outcome; they grow normally in spite of frequent diarrhoeal episodes. During diarrhoea, breastfeeding should be encouraged in infants and full-strength milk and weaning foods given to older children.

The case management strategy discourages the use of **antidiarrhoeals** and other pharmaceutical products because they are ineffective and toxic; they also are expensive and divert attention from appropriate diarrhoea treatment. The use of antibiotics for treatment of acute watery diarrhoea is also strongly discouraged because they are ineffective and their widespread use contributes to the spread of bacterial resistance; antibiotics are justified only for treatment of severe cholera, dysentery and associated infections in persistent diarrhoea.

The **strategies to prevent morbidity** from diarrhoea require multisectoral action to promote nutrition (particularly breastfeeding), food safety, education on hygienic behaviours (handwashing, proper disposal of faeces, maintaining drinking-water free from faecal contamination) and environmental health in relation to water supply and sanitation.

Infants should be breastfed exclusively for the first 4-6 months, and **breastfeeding** should continue for at least one year and preferably for two years. Breastfeeding promotion involves educating health personnel, restricting infant formula advertising and marketing, and strengthening mothers' support groups. At the age of 4-6 months weaning foods should be introduced. The choice of weaning food depends on the local diet and pattern of agriculture, as well as on existing beliefs and practices. It is important that the food is cooked or boiled.

Food safety activities relating to microbiological contaminants contribute to the prevention of foodborne diseases, particularly non-epidemic and epidemic diarrhoeal diseases.

The key **hygiene behaviours** for the reduction of diarrhoeal diseases are: (i) handwashing after defecation or handling infants' faeces, and before preparing food, feeding a child or eating; (ii) safer disposal of faeces, particularly faeces of young children and of people with diarrhoea; (iii) maintaining drinking-water free from faecal contamination in the home and at the source; (iv) thorough cooking of food, including water; and (v) avoiding storage of cooked food at temperatures permitting growth of bacteria or production of toxins. These hygienic behaviours reduce the opportunities to transmit faecal pathogens of diarrhoea to children. These behaviours require well designed actions combining mass media, community, family and individual approaches.

Increased **water supply allows** improved hygiene by contributing to the reduction of faecal contamination. Proper cleaning of utensils, food and home environments is also likely to reduce transmission of faecal matter. The transmission of all the main diarrhoea-causing agents is influenced to some degree by increased water availability.

Sanitation means safe excreta disposal facilities. All the major infectious agents of diarrhoea are shed with the faeces of infected persons, and therefore hygienic disposal of human excreta plays a role in controlling them. Use of latrines should reduce faecal contamination in homes and in the neighbourhood. In addition, proper treatment and disposal of human excreta would prevent faecal contamination of fields, crops and water reservoirs. The promotion of community-based sanitation projects, especially in rural and periurban areas, and the introduction of low-cost sanitation facilities are of high priority in Africa and South-East Asia. In Africa less than half of the population is served with safe drinking-water; in both Africa and South-East Asia only about one-third of the people have access to adequate means of excreta disposal.

Measles immunization is an integral part of the Expanded Programme of Immunization. Diarrhoea is a frequent complication of measles in young children in developing countries and is accompanied by a high case fatality rate. In addition, children remain susceptible to diarrhoea for a long period after the measles itself has subsided. Therefore prevention of measles also means prevention of the diarrhoeal complications.

D. WORKPLANS

All the strategies for the control of non-epidemic acute diarrhoeal diseases will be implemented as an integral part of primary health care. National programmes have to intensify efforts and invest resources to reduce the gap between the present mortality rates in children and the expected mortality rates of the end-of-decade goals. The global trend towards reform and decentralization of health structures calls for technical and managerial integration of disease-specific control programmes. The goals of reducing childhood mortality can be achieved more rapidly and at a lower cost if all major causes of childhood illness and death are approached in an integrated way. It is estimated, for example, that in developing countries nearly three-quarters of deaths in children under 5 years are attributable to diarrhoea, acute respiratory infections, measles, malaria and malnutrition. WHO and UNICEF have defined the technical policies on the integrated case management of the sick child, and will assist countries in planning the transition from disease-specific programmes to integrated sick child programmes and strengthening of existing health systems management in order to provide a solid basis for the implementation of the **integrated management of the sick child.**

The existing **national plans of operation** on diarrhoeal disease control will be revised to set the targets for accelerated programme implementation, particularly in areas that are critical for rapid reduction of mortality, and to plan the transition to the establishment of the programme on integrated management of the sick child. Quantified targets of activities will be planned and monitored. Realistic budgetary estimates will form an integral part of these plans. In part the resources must come from more efficient focusing of the resources that are already available; in part they must come from additional funding. Better coordination of action within the United Nations system and better coordination with countries and other agencies are essential elements in making the national plans effective.

National **food safety policies** will be developed with emphasis on strengthening food control systems, integrating food safety in primary health care systems and setting up foodborne disease surveillance. Intersectoral collaboration is essential for implementing food safety activities and enforcing legislation at central, provincial and municipal levels.

National plans for **water supply and sanitation** will address both the long-term development and sustainability of the sector, and the preparedness and response to emergency situations caused by outbreaks of cholera and dysentery. Activities relating to long-term development will focus on expansion of water supplies and sanitation and on operational sustainability.

There are four categories of **managerial activities** to implement the case management and prevention strategies in order to achieve the goals of reducing mortality and morbidity from diarrhoeal disease:

- **Training, supervision and logistics**
  These activities are aimed at increasing the access of the population to:

  - health providers able to offer correct case management of diarrhoea;
  - health services which contribute to the prevention of diarrhoea, such as measles immunization and breastfeeding counselling;
  - safe food;
  - safe water supply and sanitation.

- **Communication and education**
  These activities are designed to increase correct case management of diarrhoea in the home, promote the appropriate use of health facilities and preventive services, and increase use of safe food and water and sanitation facilities. This can be accomplished though nationwide activities comprising: (i) communication, using both interpersonal and mass media; (ii) social mobilization and networking at global, national and local levels; (iii) organization of regular "ORT weeks/fortnights" that take place two or three times a year during the diarrhoea season; and (iv) community education and preparation for actions required to control diarrhoeal diseases.

- **Monitoring and evaluation**
  These activities are designed to assess whether the planned activities to increase access and use are proceeding according to plan, and whether the targets and goals are being achieved.

- **Research and development**
  These activities are designed to improve the knowledge needed to solve problems in implementing case management and preventive strategies, and to develop new or improved control tools and approaches for national programmes.

Current managerial materials for planning and implementation, which are specific to diarrhoeal disease control, will gradually be replaced by planning guides, training courses, communication materials and manuals for supervision, monitoring and evaluation relating to integrated management of the sick child. Research and development activities will address the problem of diarrhoeal diseases within the context of the main childhood illnesses.

Training and supervision

There is an important need to assist countries in training and retraining health workers to strengthen their clinical skills in treating diarrhoea and their communication skills in advising families on management of children with diarrhoea at home and on hygienic behaviours related to the prevention of diarrhoea. There is also a need to strengthen the managerial skills of health officers responsible for the implementation and supervision of the case management and preventive activities of the programme.

Training on case management activities will be addressed to four categories of health worker: (i) programme managers and supervisors; (ii) health workers who take care of children at different levels of the health service structure; (iii) pharmacists and drug sellers; and (iv) students at medical and paramedical schools.

All training courses will be conducted according to the methodologies and training materials developed by WHO with the collaboration of UNICEF. All the courses issued by WHO's Programme for Control of Diarrhoeal Diseases are based on the following principles: teaching the skills trainees have to perform, active and individualized participation in learning, and immediate performance of the learned skills. A large proportion of the clinical courses is devoted to practical work in outpatient departments, oral rehydration units and hospital wards.

The current courses that are specific to diarrhoeal disease will be replaced by integrated courses dealing with the diseases that most frequently cause morbidity and mortality in children. The first integrated course on case management of the sick child for health workers at first-level health facilities will be issued in 1995.

WHO and UNICEF will support governments in undertaking training activities, depending on programme priorities and resources, in the following areas:

- Programme policies, planning, organization of managerial activities and evaluation, for health officers responsible for the programmes at national and provincial (region, province or state) levels and for managers of NGOs working in developing countries.

- Planning, supervision and monitoring of programme activities, for health management officers and supervisors of health workers at peripheral level (districts or counties).

- Organization of training, for heads of in-service clinical training units (training of clinical trainers).

- Case management, for doctors, medical assistants, nurses and other paramedical staff who care for children at first-level health facilities and who communicate with families on home care and preventive measures.

- Case management, for community health workers with responsibilities in the care of sick children.

- Self-instructional clinical skills materials, for health workers who cannot attend formal training courses.

- Teaching about diarrhoeal diseases, for teachers of medical schools and of basic training programmes for nurses and other health workers.

- Improvement of the diarrhoea treatment practices of pharmacists and licensed drug sellers.

- Breastfeeding counselling, to enable health workers to support optimal breastfeeding practices and help mothers overcome difficulties in breastfeeding their children.

WHO will also support the following courses:

- Formulation of national food safety policy, plan of action and review of food legislation, for government officials and representatives of consumers, industry and trade.

- Application of the Hazard Analysis Critical Control Point system as a method of safety assurance and food inspection, for government officials and food industry quality assurance staff.

- Hygienic handling of food, particularly weaning food in the home, for health workers and nutritionists.

- Microbiological analysis of food, for technicians of food control laboratories.

WHO will promote and support regional workshops on operation and maintenance of water supply and sanitation systems, and national workshops for community workers on operation, maintenance, monitoring and evaluation of village water supplies and on the planning of village programmes in sanitation and hygiene education. WHO and UNEP will support courses on environmental health, including drinking-water quality and sanitation, for urban managers.

Water conservation and the safe use of wastewater in water-scarce areas will be jointly promoted by WHO, FAO, UNCHS and UNEP through regional workshops. National workshops will be supported in countries experiencing water shortage for the purpose of development of their own health-based standards for reuse of wastewater. Demonstration projects will be implemented in all regions with the participation of WHO, FAO, UNCHS, UNDP, UNEP, UNICEF and the World Bank. Given the potential water pollution problems, including microbiological contaminants, of industry, UNIDO will support countries in controlling the adverse impact of industry on water quality and in expanding the use of the existing water resource base, including treatment of wastewater.

The success of the programme will depend to a large extent on whether the health workers practise the case management skills they learn in training courses. To ensure that they are managing children with diarrhoea correctly it is important to supervise their performance in a systematic way. National plans will include operational targets for supervisory visits. However, no special supervisory activities will be planned for the diarrhoeal disease control programme. The supervision of diarrhoeal disease control will be included in the regular plan of supervision of health staff within the primary health care system. The national programmes will prepare supervisory checklists of the tasks on diarrhoeal diseases and other childhood illnesses that supervisors should check during their periodic visits to health facilities.

Logistics

National programmes will not establish their own systems for procurement, storage and distribution of ORS and other drugs (antibiotics, intravenous fluids), but will continue to use existing facilities and logistic support of the essential drugs programmes, including those based on the Bamako Initiative. Coordination meetings will be promoted with officers of the essential drugs programmes to ensure that the regular logistics system meets the requirements of the sick child initiative, including diarrhoeal disease control. The aim is that all first-level health facilities and first referral hospitals participating in the programme have a regular supply of ORS and the essential antibiotics that are recommended in national policies. At community level, village-based resources for ORT/ORS - depots, village healers, community pharmacies - will be promoted.

WHO and UNICEF will assist countries to ensure there is an adequate supply of ORS through several mechanisms: support to local production in a government-run unit, expanded production and distribution by commercial manufacturers for use in both private and public sectors, importation and, in some cases, donations. The annual worldwide survey on production and distribution of ORS will be continued as it is an efficient system for identifying countries that face problems with the availability of ORS.

The logistics activities will also include the supply of furniture and equipment to ORT units/corners, diarrhoeal disease cells and diarrhoea training units, as well as support to national institutions for the installation and evaluation of equipment for the production of chlorine.

Communication and education

WHO and UNICEF will continue assisting countries to implement effectively sound communication strategies aimed at changing behaviours on home care of children (use of home fluids to prevent dehydration in children with diarrhoea, continuous feeding of children with diarrhoea to prevent malnutrition, awareness of danger signs of dehydration which require prompt careseeking) and aimed at encouraging preventive measures (breastfeeding, collection and storage of clean water, hand-washing, safe preparation of food, adequate disposal of faeces and other hygienic behaviours). Both interpersonal communication and mass media will be used.

- Countries will be encouraged to collect sociocultural information using the WHO manual for focused ethnographic studies where necessary. Such information will be useful to adapt the communication messages on home care using local language and concepts. The adapted messages will be incorporated into health worker training and communication aids.

- All courses on case management for health workers will include training on interpersonal communication skills using the WHO training guide *Advising mothers on management of diarrhoea in the home*. Home care advice cards will be used as visual aids to help health workers to remember the points that should be stressed in their communication with families.

- Health messages on food safety, particularly for the preparation of weaning food, will be developed and disseminated though the mass media.

- The WHO/UNICEF/HEALTHCOM guide for the effective use of radio will be promoted.

- Social mobilization and networking will be supported at national and local levels. ORT weeks/fortnights, two or three times a year at the start of diarrhoea seasons, will be organized as regular activities. The events will include orientation and action meetings in towns and villages to explain to community leaders and organized groups how diarrhoea affects children, how it can be prevented and how the community can be involved in the control of the problem. Special orientation activities will be addressed to pharmacists and drug sellers, private health workers and staff of NGOs.

- Activities will be undertaken to involve and mobilize professional associations (physicians, nurses, pharmacists) and will include seminars, advocacy brochures and the publication of articles in local medical journals. The professional associations will be invited to participate in social mobilization for the control of diarrhoeal diseases.

- Participatory approaches offer possibilities for communities to bring about real change in finding ways to solve water supply and sanitation problems. Community control over the planning, implementation and operation of water supply will be promoted. A manual will be issued to present the tools for working with communities on sanitation problems based on the UNDP/World Bank SARAR methodology (**S**elf-esteem, **A**ssociative strength, **R**esourcefulness, **A**ction planning, **R**esponsibility). These tools focus on a sanitation upgrading approach which validates any improvement in facilities or behaviours that can lead to health benefits. UNICEF manuals on sanitation and hygiene behaviour will continue to be promoted.

- The lack of safe drinking-water and adequate sanitation facilities in many rural and periurban primary schools, for instance in Africa, contributes to high levels of diarrhoeal and other waterborne diseases and to high rates of absence from school. UNESCO, UNICEF and WHO give special importance to the role of the educational system in promoting health behaviours. To do this, however, there must be not only appropriate water and sanitation facilities at schools, but also the communication of hygiene messages to school children through active programmes of health education. Support will be given to the implementation of the **School Health Initiative** which envisages community and teachers' participation in hygiene education and improvement of basic sanitation, particularly in primary schools of poor rural areas. This will be carried out in coordination with broader efforts by UNESCO to address in an integrated way the health and nutrition problems of school children and the conditions in which learning is taking place. Guidelines and fact sheets on environmental sanitation for diarrhoeal disease control will be made available to Ministries of Education. This will help to create a greater awareness at national and international levels of the need to attend to the health and nutrition concerns of school-age children.

Monitoring and evaluation

Programme monitoring and evaluation will be based on data from routine recording and reporting, supervisory performance observations, and periodic surveys. The registry and reporting at health facilities will be limited to essential data that are needed to monitor implementation of the case management strategy. No specific reporting system on diarrhoeal disease control will be promoted. The programme will use the integrated primary health care information system that is in operation and will be modified if necessary to make it suitable to the monitoring needs of diarrhoeal disease control.

The indicators to measure the achievement of the operational targets mentioned in Part B will continue to be measured through surveys. UNICEF and WHO will support countries in conducting surveys which provide information on the selected diarrhoeal disease control programme indicators:

- the health facility survey, which assesses case management practices at health facilities, measures the effectiveness of training, logistics and supervision;

- the household survey, which determines the extent of diarrhoea in children, collects data about families' current practices in relation to diarrhoea in children, and also collects information on breastfeeding, is in addition an instrument for evaluating the effectiveness of communication activities;

- the rapid multiple indicator household survey measures the mid-decade and year 2000 goals.

WHO and UNICEF will also support focused programme reviews which are a standard means of assessing the status of programme activities and progress towards achievement of targets, and of identifying and proposing solutions to constraints to programme implementation.

WHO and UNICEF have established a Joint Monitoring Programme for Water Supply and Sanitation which will continue to help countries strengthen their capacity to plan and manage services through routine monitoring of data. Both agencies will provide countries with computer equipment and training using the Water Supply and Sanitation Monitoring System technology. WHO will continue to report on the global situation of water supply and sanitation.

The newly-revised WHO Guidelines for Drinking-Water Quality will be used to establish or revise national drinking-water standards. Surveillance of drinking-water will be supported with training, provision of analytical equipment and quality assurance for analytical laboratory work. Priority will be given to surveillance of drinking-water in periurban areas of large towns.

The impact on mortality will be measured through retrospective household surveys using new techniques that have been validated to produce estimates of overall mortality which are plausible, consistent and compatible with estimates made from other sources. The impact on morbidity will be measured through the above-mentioned household survey.

Research and development

Research and development activities will continue to address topics related to improvement of guidelines on case management in health facilities and the home, and to prevention. The research and development activities on case management will be progressively oriented towards the integrated management of childhood illness.

Research on case management in health facilities will look to determine: the efficacy of alternative formulations of ORS; the impact of zinc supplementation on the clinical course of persistent diarrhoea and on the subsequent incidence of diarrhoea; optimal management of diarrhoea in severely malnourished children; and determinants to appropriate advice-giving on feeding by health workers to families during consultations for diarrhoea.

The priorities for research on case management in the home will include: guidelines on the use of ethnographic data to improve health workers' communication with families, and on the applicability of ethnographic data to regions outside the study area; methods of evaluating families' comprehension of home care advice which is delivered through face-to-face communication in a clinical setting; and development of guidelines for selecting and developing interventions to improve families' behaviours in relation to childhood illness.

With regard to nutritional preventive measures, research will address: assessment of the impact of the breastfeeding counselling training course on the prevalence and duration of breastfeeding; the efficacy of community-based approaches to promote breastfeeding; effects of promoting improved energy and nutrient intakes for young children during diarrhoea and during convalescence; and the safety and impact on the incidence and severity of diarrhoeal diseases of vitamin A supplementation in infants less than six months of age.

In the area of food safety, priority will be given to studies to determine the extent and type of food contamination in households and its relationship with diarrhoea, and the degree and type of contamination of street-vended food.

Improvements to the school environment together with hygiene education can affect the sanitation behaviours not just of children but of the wider community. Operational research will be conducted to observe how a school-based sanitation intervention can affect the behaviour and sanitation facilities of the community. The development of simple methodologies to study latrine use and hygiene behaviours will be promoted.

In the area of vaccines, programme support will focus on field trials to evaluate vaccine safety, immunogenicity and efficacy, and on epidemiological studies required to prepare for such trials. Field trials on rotavirus vaccines (RRV-tetravalent vaccine) and enterotoxigenic *Escherichia coli* (ETEC) vaccines will be completed.

Development activities will focus on the preparation of managerial instruments for the implementation of the integrated management of the sick child, namely: a planning guide, a programme management course, methods for training in drug supply management at health centres, methods to monitor case management at first-level health facilities, and programme evaluation manuals. Training packages on operation and maintenance of water supply and sanitation systems will be developed.

PART II. EPIDEMIC DIARRHOEA: CHOLERA AND DYSENTERY

A. ACCOMPLISHMENTS

A Global Task Force on Cholera Control, formed by 10 WHO Programmes, was established in April 1991 in response to the spread of the seventh pandemic of cholera to the Americas. The Task Force coordinates support to countries aimed at improving their capacity to prepare for and respond to epidemics of cholera and other epidemic diarrhoeal diseases, especially bacillary dysentery. The control strategies comprise case management, surveillance, outbreak investigation and control, food safety, community education and long-term prevention through improved water supply and sanitation.

Cholera is subject to the International Health Regulations and should be reported within 24 hours of detection of the first indigenous case within the territory of a WHO Member State. As a result of WHO and UNICEF activities to promote improved **surveillance** of cholera, the level of reporting by Member States has increased considerably. Reported cases and deaths are published weekly by WHO. Laos, Viet Nam and most countries in Africa and Latin America have established national cholera control commissions which have issued plans for preparedness and response for cholera outbreaks. A wealth of new knowledge was produced as a result of the technical cooperation provided on surveillance and field investigation. In Afghanastan, a Cholera Task Force involving UNDP, UNICEF, UNOCHA, WHO and NGOs assisted in containing the cholera outbreak. Support was given to a laboratory surveillance system for monitoring *Vibrio cholerae* and *Shigella dysenteriae* drug resistance in Burundi, Rwanda and southern African countries. Courses for laboratory staff to improve their ability to confirm cholera and dysentery epidemics and to monitor bacterial antibiotic sensitivity were carried out in Malawi, Swaziland and Zambia.

In late 1992, a new bacterium called *Vibrio cholerae* O139 (Bengal) emerged and spread very rapidly through countries of south Asia, causing high mortality even in adults. The WHO Task Force has provided information to Member States on the epidemiological features of the new epidemic, and on treatment recommendations and control measures. WHO has facilitated the production and distribution of specific antiserum necessary for the confirmation of *Vibrio cholerae* O139 infection.

A number of **technical guides** were issued by WHO to provide guidance on the following topics: management of the patient with cholera; formulation of national policy on the control of cholera; cholera control; control of epidemics due to *Shigella dysenteriae* type 1; basic facts on cholera for travellers; safe food for travellers; inspection for safety of imported foods; rapid tests for food safety; and Fact Sheets on environmental sanitation for cholera control. The guidelines for cholera control are available in Chinese, English, French, Spanish and some other languages.

In view of the **economic losses** caused by restriction in food importation from areas affected by cholera, WHO requested Member States through a circular letter in 1992 not to use embargo on importation as a measure to avert the theoretical risk of cholera transmission through the food trade.

A WHO team consisting of a team leader, an epidemiologist, a water and sanitation engineer and an administrative officer was placed in Zimbabwe to provide **technical support** on surveillance of cholera and epidemic dysentery due to *Shigella dysenteriae* type 1 in southern African countries. A multidisciplinary team was deployed to Somalia during a large outbreak of cholera and another along the Rwanda-Zaïre border during the cholera and dysentery epidemic among Rwandan refugees and displaced persons in July 1994. The teams provided technical guidance on all aspects of epidemic diarrhoea control. WHO technical assistance was extended to European countries such as Albania and Moldova. National cholera control workshops and training courses were conducted in Cambodia, Laos and Viet Nam.

In late 1993, a preliminary assessment of the **food safety** situation in Zambia was undertaken by WHO with a view to assisting national authorities to implement an integrated food safety programme. UNIDO has developed a training programme on food safety and quality management for the food production and processing sectors of less developed countries of Africa and Asia. In many countries, street food is considered a potential vehicle for transmission of cholera. WHO issued recommendations on practical approaches for improving the safety of street-vended food. Orientation meetings on the subject were organized for governments in the Western Pacific Region in 1993 and in the Eastern Mediterranean Region in 1994. Studies in the microbiological quality of street food have started in some major Latin American cities, and in Bangladesh and Nepal.

A rapid assessment of the situation with regard to **water supply and sanitation** was carried out in Malawi, Mozambique, Swaziland, the United Republic of Tanzania, Zambia and Zimbabwe and the lines of action to be followed were identified. A strategy for emergency and longer-term interventions in water supply and sanitation in Latin America was developed, resulting in the preparation of a project for the improvement of water quality surveillance in small villages and towns threatened by cholera.

To assist Member States in adequate activities on **public information**, WHO and UNICEF have produced and disseminated press releases and organized press conferences. Sample health education messages have been developed to inform the public about ways to prevent cholera, prepare and handle food products and make water safer for drinking, and about action to be taken when cholera is suspected. Photographs and video films have been produced, and a radio programme on cholera was distributed to more than 200 radio stations. Journalists have used WHO weekly updates of cholera data and the analysis of the situation as a basis for their reports, ensuring that information on the extent of the epidemic and on recommendations by WHO and other United Nations agencies appear widely in print and electronic media.

WHO has reached a special agreement with the Swiss Disaster Relief Corps to provide technical assistance in epidemic diarrhoea control. The Organization has established special collaboration with the International Federation of Red Cross and Red Crescent Societies for the control of diarrhoeal diseases, including cholera, in the newly independent states of Eastern Europe and Central Asia.

The main **research** efforts addressed the development and field-testing of vaccines against cholera and dysentery since vaccines currently available are not recommended as a public health measure to control these epidemic diseases. Two approaches are being taken: (i) a vaccine composed of killed *Vibrio cholerae* and purified recombinant B subunit of cholera toxin; and (ii) a vaccine composed of live *Vibrio cholerae* that have been made avirulent by deletion of genes that encode the production of the A subunit of cholera toxin. Field trials of the killed vaccine in Bangladesh and Peru, given in two or three doses, have shown it to be safe and to provide 85% protection for 4-6 months. The Bangladesh study showed, however, that protection declined after six months, averaging 50% in all age groups for three years. Studies to determine the long-term efficacy of the vaccine and to evaluate the benefit of a booster dose given after one year are underway in Peru. Studies of the live oral vaccine in volunteers have shown it to be safe and highly protective as early as eight days after a single dose. A field trial of the vaccine, given in a single dose, is under way in Indonesia. UNIDO participated in the development of a rapid and reliable polymerase chain reaction method for the characterization of *Vibrio cholerae* toxigenic strains.

Several candidate shigella vaccines, including live oral vaccines and parenteral vaccines, have been under development. Parenteral vaccines are the most promising so far. A small efficacy trial conducted among adults in Israel suggested that a parenteral *Shigella sonnei* polysaccharide-protein conjugate vaccine is protective, at least for several months. This has been supported by a subsequent trial in Israel of a parenteral vaccine based on *Plesiomonas shigelloides*, an organism with capsular polysaccharide antigen identical to that of *Shigella sonnei*. Although *Shigella sonnei* is not the most important *Shigella* serotype in developing countries, success with this approach suggests that it could be used to develop vaccines for the more important serotypes of *Shigella*, especially *Shigella dysenteriae* type 1 and *Shigella flexneri*.

B. GOALS

The goals of cholera and epidemic dysentery control are to limit the spread of these infections, reduce morbidity and prevent mortality. The achievement of these epidemiological goals will contribute to reducing the social and economic consequences of the diseases. The epidemiological goals cannot realistically be quantified because of the unpredictability of cholera and dysentery epidemics. The operational objective is that by the year 2000 all countries at particular risk of outbreaks of epidemic diarrhoea will have in place plans and mechanisms to respond rapidly so that, when outbreaks occur, they will be able to minimize mortality and socioeconomic consequences.

C. STRATEGIES

The strategies for control of epidemic diarrhoea do not differ substantially from strategies for the control of non-epidemic acute diarrhoea, although epidemic diarrhoea primarily affects adults. The strategies for the control of both diseases comprise case management (including the use of antibiotics), improved food safety, health education leading to better personal, domestic and environmental hygiene, provision and use of safe water, and access to sanitation facilities.

Rapid **response to cholera outbreaks** is imperative for minimizing loss of life and controlling the spread of infection. There may be a high percentage of asymptomatic carriers for each clinical case of cholera which enable the continued undetected circulation of cholera bacteria in a community. Introduction of cholera into a country cannot be prevented, but the spread within the community can be contained. Extensive municipal water purification, sewage treatment efforts and education on hygienic practices are effective. Travel and trade restrictions between countries, or between different areas within a country, do not prevent the spread of cholera. Although there is a theoretical risk of cholera transmission associated with some food commodities moving in international trade, this has rarely proved significant. Embargo on importation is not an effective strategy; it disrupts the economy of a country or area and encourages the hiding of information on cholera outbreaks .

The occurrence of **dysentery** can be limited by careful attention to personal hygiene, especially handwashing, and safe disposal of faeces. Mortality can be controlled by careseeking and appropriate treatment, including use of effective antibiotics. However, because of the growing proportion of *Shigella* strains (and also of cholera strains) resistant to standard, low-cost antibiotics, such treatment is becoming increasingly difficult. Recent progress in vaccine development suggests that control through immunization may be possible within several years.

The traditional injectable cholera **vaccine** is not recommended for public health use. It provides only limited and brief protection, and does not reduce the incidence of asymptomatic infections or prevent the spread of infection. Two recently developed oral cholera vaccines are more promising. Both provide high-level protection for several months, and at least one continues to be protective at a lower level for three years. Their possible role in the public health strategy to control cholera will be considered by WHO during the coming months. At present no countries require travellers to have a certificate of vaccination against cholera, reflecting the 1973 resolution of the World Health Assembly to abolish the requirement for such certification.

D. WORKPLANS

All activities included in the workplan for control of non-epidemic diarrhoea contribute to the prevention and control of epidemic diarrhoea. The functioning of an effective non-epidemic diarrhoeal disease programme is of crucial importance for success in the control of cholera and dysentery. The workplan for the control of epidemic diarrhoea focuses on activities addressed to improve governments' preparedness and response to outbreaks of cholera and dysentery through the following activities: surveillance; training to enable front-line health staff to respond rapidly to epidemics; logistics before and during epidemics; communication for emergency preparedness; water quality control; minimizing economic impact; and research and development.

Surveillance

Cholera is subject to the International Health Regulations, which are intended to strengthen the use of epidemiological principles as applied internationally. Epidemiological surveillance systems play a crucial role in early detection of epidemics. WHO and UNICEF will support the collection and reporting of data at health facilities on cholera and dysentery, along with polio, measles, meningitis and malaria. Standard case definitions have been established to ensure accuracy and comparability of reported cases. Health facilities and district health offices will be assisted to establish the routine charting of weekly data on cases to enable them to detect abnormal increases which would indicate the start of an outbreak. The death of an adult from diarrhoea suggests the possibility of an epidemic. The suspicion of an epidemic should be communicated immediately to the upper levels of the health system.

The role of the laboratory in the control of epidemic diarrhoea is essential. Support will be given to the establishment of national reference laboratories with the following purposes: (i) confirmation by culture of the earliest cases of an epidemic to identify the etiologic agent, and (ii) monitoring of bacterial drug sensitivity in a sample of patients during the course of the epidemic to guide the appropriate antimicrobial therapy. WHO reference laboratories will receive samples of strains isolated by national laboratories to confirm the findings and provide quality control services.

Support will be given to countries to build up their capacity to gather appropriate information regarding food contamination, prevalence of foodborne diseases and hazardous practices.

Training

Training activities will aim at enabling health personnel at district health offices and large first-level health facilities to respond quickly and efficiently to epidemic diarrhoea outbreaks. With rapid and effective response, case fatality from cholera can be kept at less than 1% and from dysentery at less than 5%. A well managed programme on case management and prevention of non-epidemic diarrhoeal diseases facilitates to a great extent the prevention and optimal management of epidemic diarrhoea cases. In addition to oral or intravenous rehydration therapy, antibiotics are required for the treatment of, at least, the severe cases of cholera (tetracycline, doxycycline or furazolidone) and dysentery (cotrimoxazole, ampicillin, nalidixic acid or quinolones).

The number of patients requiring treatment during an epidemic often exceeds the capacity of existing facilities. Countries will be assisted to prepare contingency plans for the erection or designation of temporary treatment centres, such as military hospital tents, or the adaptation of local schools, community halls or other buildings. Planning for emergency treatment facilities as well as the surveillance methods will be included in the curriculum of the training courses.

Logistics

Lack of adequate and appropriate supplies frustrates health workers when they detect the emergence of an outbreak. Support will be given to countries to organize stocks of supplies (ORS, intravenous fluids, antibiotics, laboratory materials) at peripheral storage facilities for easy access by local health officers immediately upon the onset of an epidemic. More substantial stocks should be kept at central locations for distribution as required.

The emergency plans should include a cash reserve that can be immediately available for the purchase of food for patients, transport of water to the site of the epidemic, fuel and other local necessities. Plans need to be made for the relocation of vehicles from other government programmes to affected areas and for re-assignment or temporary recruitment of health staff.

Communication and education

High case fatality rates from epidemic diarrhoea may be partially attributable to the community being unaware of the seriousness of the disease. WHO and UNICEF will assist countries to develop appropriate communication messages for use in preparation for and during the early stages of an epidemic and for involving concerned communities in the required actions. Communities must know when to suspect the onset of an epidemic, who should be informed and what protective measures should be taken.

Water quality control

Since contaminated water is a common source of cholera infection, all efforts must be made to ensure safe water for drinking, food preparation and personal hygiene. Good sanitation can markedly reduce the risk of transmission of cholera and other intestinal pathogens. Countries will be assisted in organizing water quality control, assessing water and sanitation requirements in affected areas and taking measures to ensure provision of safe water and safe sanitary disposal facilities.

Minimizing economic impact

One of the most damaging effects of epidemic diarrhoea is its impact on local and national economies. WHO will be active in promoting sound rational policies in the areas of food importation, transport and sale. Ministries of Health must play a leading role in reinforcing the policies, informing political and economic decision-makers and acting promptly at the early stages of an outbreak to keep the markets stable and allay unreasonable fears, both within and outside the country.

The importance of an effective food control system for preventing or alleviating economic losses as a result of restrictive measures has been demonstrated during cholera epidemics in South America and Asia in recent years. To support governments in food control activities, FAO and WHO will continue to serve as the Secretariat for the Codex Alimentarius Commission. The Codex is specifically mentioned in the Agreement on Application of Sanitary and Phytosanitary Measures of the General Agreement on Tariffs and Trade (GATT), signed in Morocco on 15 April 1994.

Research and development

The research activities will focus on antibiotics efficacy studies and evaluation of candidate vaccines. Antibiotics studies have high priority as a result of the rapid emergence of bacterial resistance against first-line antibiotics for the treatment of cholera and dysentery. New floroquinolones have been shown to be active *in vitro* against *Shigella* and effective for the treatment of dysentery in adults. WHO will explore the feasibility of studies to determine the efficacy and safety of fluoroquinolones in children, will support studies on the efficacy of azithromycin, a new oral macrolide antibiotic, against *Shigella* in adults, and will identify and support research institutions in developing countries which can undertake trials on antibiotic efficacy on a continuing basis.

In the field of vaccines, WHO will continue to support the field-testing of the killed whole-cell/recombinant B-subunit vaccine and the live oral CVD-103-HgR vaccine, and will promote research to develop combined vaccines against *Vibrio cholerae* O1 and O139 strains. WHO will monitor progress in the development of several candidate *Shigella* vaccines and will support field trials of a parenteral *Shigella sonnei* polysaccharide-protein conjugate vaccine.

PART III. COORDINATION

Better coordination remains central to improving efficiency. The workplan for preventive action and intensification of the struggle against diarrhoeal diseases, particularly cholera, will be implemented by WHO and UNICEF in close coordination with all agencies of the United Nations system and with the collaboration of bilateral cooperation agencies and NGOs. Given the complexity of the problem and the wide scope of the control measures, a multisectoral and integrated approach is essential to make progress in achieving the targets and goals as planned.

The most important focus for coordination is **at country level.** The workplan provides details of the cooperation of different agencies in specific activities at this level. The UNDP Resident Representative, as Representative of the Secretary-General, coordinates the development activities of the United Nations system at country level and is committed to facilitate the coordination and advocacy support of the different agencies in relation to the implementation of the workplan. Support will be given to countries to strengthen their capacity and existing mechanisms to coordinate activities at national and subnational levels. In many countries, ministries concerned with the social sector need support to ensure that the development process does not promote the transmission of diarrhoeal disease through changes in the physical environment or through displacement of populations which bring them into contact with epidemic diarrhoea.

At regional level the coordination committees so far established will be maintained. In the Region of the Americas, the Inter-Agency Coordination Committee (PAHO/WHO, UNICEF, USAID) provides coordination and monitors the progress of national programmes related to child survival, diarrhoeal disease being a priority topic of their agenda of work. The Africa 2000 Initiative will provide the framework for cooperation of United Nations agencies with Member States for achieving universal coverage of the sub-Saharan African populations with water supply and sanitation services. In southern Africa, UNDP, UNICEF, UNHCR, WHO and the Red Cross (ICRC, IFRC) have a joint plan of action for future emergencies, including their responses to cholera and dysentery epidemics. The United Nations Economic and Social Committee for Asia and the Pacific (ESCAP) will coordinate the efforts of the agencies for the control of preventable diseases, including diarrhoeal diseases, and particularly cholera, in the countries that belong to this regional group.

Within the United Nations system, existing mechanisms of **interagency global coordination** will be used to strengthen the collaboration of the different agencies in the implementation and evaluation of the workplan. The United Nations Economic and Social Council is the natural forum for the overall coordination of the workplan to take place in the context of more comprehensive programmes promoting primary health care, nutrition and environmental health .

The goals of diarrhoeal disease control are part of the goals for the year 2000 established in 1990 by the World Summit for Children. UNICEF and WHO have agreed on a list of indicators for monitoring the achievement of the goals. The status of the indicators will be reviewed in the regular meetings of the UNICEF-WHO Joint Committee on Health Policy, and in the UNICEF-WHO Intersecretariat meetings, which take place every year.

The United Nations Secretary General will continue to present to the General Assembly an annual comprehensive report on Follow-Up to the World Summit for Children, in which the reports from national, subnational and local levels are consolidated. In September 1996, a special mid-decade review of progress together with a consolidated analysis of plans of actions in support of the World Summit goals, including the diarrhoeal diseases goals, will be presented to the General Assembly. All the United Nations agencies will support national efforts to monitor and report on progress for the mid-decade review.

The managerial structure of the WHO Programme for Control of Diarrhoeal Diseases includes an annual Meeting of Interested Parties with the participation of United Nations agencies, bilateral development agencies, NGOs and representatives from national programmes. The meeting is intended to provide an annual global update on the problem and on the control activities, review policies and strategies, assess progress and promote coordination among all the participating parties. The annual review of the management of the WHO Programme for Control of Diarrhoeal Diseases is entrusted to a Management Review Committee composed of representatives of four United Nations agencies: UNDP, UNICEF, World Bank and WHO. The research and development activities will continue to be coordinated through the Diarrhoea and Respiratory Disease Research Coordination Group which meets at least once a year. The main agencies and institutions participating in this group are the International Centre for Diarrhoeal Diseases Research in Bangladesh, the United States Agency for International Development and its Applied Diarrhoeal Disease Research Project, and the WHO Programme for Control of Diarrhoeal Diseases.

Some elements of the workplan will continue to be included in the agenda of existing permanent interagency coordination committees. An Inter-Agency Steering Committee for Water Supply and Sanitation has been incorporated within the Administrative Committee on Coordination Subcommittee for Water Resources as the official working group for drinking-water supply and sanitation. In addition, the Water Supply and Sanitation Collaborative Council, which was established in 1991, acts as a forum for water and sanitation practitioners from developing countries, United Nations organizations, bilateral development agencies, NGOs and the private sector. The collaboration of agencies in the elaboration of codes of hygienic practice and food standards will continue through the Codex Alimentarius Commission. FAO and WHO will continue to pursue jointly the follow-up of the implementation of the Declaration and Plan of Action on Nutrition adopted by the 1992 International Conference on Nutrition. The UNICEF/WHO joint Committee on Health Policy will continue to review annually the progress in the global indicators on diarrhoeal disease control.

PART IV. RESOURCE NEEDS

Case management of diarrhoeal diseases

Global resource needs for diarrhoeal disease control can be estimated on the basis of the 1995-1999 workplan for diarrhoeal diseases. Resources will be needed to support work in the following areas: strengthening of case management for non-epidemic diarrhoea within the context of the integrated management of the sick child; prevention activities, including improvements in food safety, water supplies and sanitation; improved preparedness for and control of epidemic cholera and dysentery; and a minimum package of essential research. Estimates based on the 1995-1999 workplan indicate that US$ 59 million per year will be required in new external support. Brief explanations of these figures are provided below.

Due to the difficulties and expense of preventing diarrhoeal diseases, most countries have focused on improving the quality of diarrhoea case management in health facilities and in the community. This can be accomplished most efficiently through an approach that combines management of diarrhoeal disease, acute respiratory infections, measles, malaria and severe malnutrition in an integrated process. The annual costs of providing integrated clinical care have been estimated at US$ 8 per case, or US$ 1.1 per capita, for low- and middle-income countries. In addition to the recurrent costs of diarrhoeal disease control programme activities, reorientation and strengthening of national capacity will be needed to support the move to integrated management. A basic package of diarrhoeal disease control programme activities designed to support and improve case management (including planning, training and supervision, logistics, communications, and monitoring and evaluation) requires approximately US$ 360,000 per country per year, with an additional US$40,000 required to support the reorientation of these activities to integrated management. These costs represent US$ 16 million for low-income economies and US$ 17.2 million for lower-middle-income economies. The costs of developing and disseminating the technical content of integrated management relevant to diarrhoeal disease will require an additional US$ 1 million per year. These costs do not include short-term technical assistance or specialized external training for national staff.

Essential prevention activities include the development and adoption by countries and communities of food safety policies and legislation, improved water supply and sanitation systems, effective breastfeeding promotion programmes, and community education programmes targeting hygienic food and water practices. National courses on breastfeeding, food, and water will cost an average of US$ 120,000 per country per year, and regional workshops on water-related issues will add an additional US$ 50,000. Estimated costs of these activities in low- and lower-middle-income countries, including development and dissemination of technical and training guidelines, are US$ 10 million per year.

Preparedness and response for epidemic diarrhoea (cholera and dysentery) must be improved through training of central and district-level staff in at-risk countries, through improved communication to the public in preparation for and during the early stages of an epidemic, through the refinement of rapid alert systems for epidemics, and through swift and effective response by national and international staff. Estimated costs for continued improvement of district, national and international response capability are US$ 10 million per year.

Estimation of resource needs must also include support for essential research to reduce diarrhoea-related morbidity and mortality. These questions include the efficacy and effectiveness of alternative treatment regimens (including ORS formulations, zinc supplementation for persistent diarrhoea, vaccines for rotavirus, cholera and *Shigella*, and the efficacy of specific antibiotic regimens for cholera and dysentery), the efficacy of behavioural interventions designed to improve family responses to diarrhoeal disease, and the effectiveness of interventions to prevent the contamination of food. A minimum annual estimate of support needed for research is US$ 5.5 million.

The cost of water supply and sanitation services varies according to technology, population density and many other factors; it can range from US$ 15 per person per year for simple rural systems to US$ 200 for urban systems. UNICEF estimates indicate that a total capital investment of US$ 5.4 billion annually is required to achieve universal access in the rural and periurban areas of Africa, Asia and Latin America alone. Current investment in these most needy areas is only US$ 1.7 billion per year. Water supply and sanitation services should be paid for by the households in most instances; these are services people are ready to pay for because of the many benefits, and not only health benefits, that the services bring about. In this way substantial improvements can be made at low cost for governments. To ensure long-term sustainability, water supply systems should be managed and operated in accordance with the principles of good business practice. The form of management will depend on the local situation. The responsible agency should be autonomous from government, accountable to consumers and subject to technical and regulatory control.

Governments should concentrate the use of public funds on setting and enforcing standards appropriate to the national situation, establishing regulatory measures for the provision of services in urban areas, and subsidizing services for poor people in rural and periurban areas who cannot afford the full cost. The use of public funds to finance some urban sanitation services may be justified in some circumstances.

DIARRHOEAL DISEASES: SUMMARY OF WORKPLAN 1995-1999

Global goals for the year 2000:

Reduction by 50% in deaths due to diarrhoea in children under the age of 5 years

Reduction by 25% of episodes of diarrhoea in children under the age of 5 years

Universal access to safe drinking water

Universal access to sanitary means of excreta disposal

RESPONSIBLE UNITED NATIONS AGENCIES:

Case management strategy:	**UNICEF, WHO, WORLD BANK**
Preventive strategies:	**FAO, UNDP, UNEP, UNESCO, UNICEF, UNHCR, UNIDO, WFP, WHO, WORLD BANK**
Monitoring of progress towards goals	**Management Review Committee of the Diarrhoeal Disease Control Programme, composed of representatives of UNICEF, UNDP, WHO and WORLD BANK**
Coordination at country level:	**UNITED NATIONS Resident Coordinator**
Coordination at global level:	**ECOSOC**

PROGRAMME ELEMENTS	PROJECTS, ACTIVITIES AND TARGETS				
	1995	1996	1997	1998	1999
1. Strategies technical content: a. Non-epidemic diarrhoea case management	Treatment charts on the integrated case management of the sick child, including diarrhoea, in outpatient services	Revised ORS formulations Guidelines on treatment of persistent diarrhoea	Manual on integrated inpatient care of the sick child, including severe dehydration	Revised guidelines on treatment of diarrhoea in severely malnourished children	All developing countries will have adopted policies on integrated management of the sick child, including revised guidelines on treatment of diarrhoea
	Intercountry and national seminars to promote new guidelines on integrated management of the sick child, including revised guidelines on treatment of diarrhoea				
b. Epidemic diarrhoea: cholera and dysentery	Fact sheets on cholera control Guidelines for the control of epidemic dysentery Recommendations on use of cholera vaccines in emergency situations	Promotion of policies and guidelines on preparedness and response to cholera and dysentery epidemics			All risk countries will have adopted policies on preparedness and response to cholera and dysentery epidemics
c. Prevention	Manual on surveillance of foodborne disease Guide on control of salmonellosis	Development on food safety standards, codes of hygienic practice and guidelines through Codex Alimentarius Commission Strengthening of national food control systems, integration of food safety in primary health care, and setting up foodborne disease surveillance			All developing countries will have adopted food safety policies and legislation
	Guidelines on steps to successful breastfeeding and on re-establishing optimal breastfeeding practices	Guidelines for storage of breastmilk	Review of household technologies for improving food safety	Guidelines on health education in food safety	

PROGRAMME ELEMENTS	PROJECTS, ACTIVITIES AND TARGETS				
	1995	1996	1997	1998	1999
Strategies. Prevention cont/...	Guide to participatory methods and tools for hygiene behaviour change in water supply and sanitation Guidelines on sanitation and hygiene education	Intercountry and national seminars on policies on operation and maintenance of water supply and sanitation systems, and on social participation and hygiene education to support water and sanitation programmes			All countries will have adopted new or revised policies on water supply and sanitation
2. Planning	Guide on the transition from disease-specific programmes to integrated sick child programmes Planning guide on the integrated management of the sick child, including diarrhoea Managers' guide on the use of participatory methods for hygiene behaviour change in water supply and sanitation	National CDD plans of operation will be revised to set targets for accelerated programme implementation, particularly in those areas critical for attaining rapid reduction of mortality, and to plan the transition to the establishment of the programmes on integrated management of the sick child Workplans for the control of epidemic diarrhoea will focus on governments' preparedness and response to outbreaks of cholera and dysentery The water supply and sanitation national plans will address both the long-term development and sustainability of the sector, and the preparedness and response to emergency situations generated by outbreaks of cholera and dysentery National plans of action on nutrition will be implemented as recommended by the 1992 International Conference on Nutrition			
3. Training and supervision a. Non-epidemic diarrhoea case management	Field test of the training course on integrated management of the sick child Field test of methods for training in drug supply management at health centres	Development of training course on integrated inpatient care of the sick child	Field test of course on integrated inpatient care of the sick child Development of training materials on integrated management of the sick child for medical and paramedical schools	Field-testing of training materials on integrated management of the sick child for medical and paramedical schools	

PROGRAMME ELEMENTS	PROJECTS, ACTIVITIES AND TARGETS				
	1995	1996	1997	1998	1999
Training. Non-epidemic diarrhoea cont/...	Intercountry workshops and courses on programme management National courses on supervisory skills				60% of health staff with supervisory responsibilities will have been trained in supervising DD case management
	Intercountry and national courses for trainers on case management of the sick child Courses on case management for health workers responsible for child care				60% of health workers responsible for child care will have been trained in standard case management either at specific DD or sick child courses
	National workshops for teachers of medical schools on strengthening the teaching of medical students about diarrhoeal diseases National workshops on teaching of CDD for basic training instructors of nurses and other paramedical workers				100% of medical schools and 80% of paramedical schools in developing countries will have adopted methods to teach effectively DD case management
b. Epidemic diarrhoea: cholera and dysentery	Development and field test of training course for district level staff on preparedness and response to cholera and dysentery epidemics	District level courses on preparedness and response to cholera and dysentery epidemics in risk countries			All risk countries will have carried out district training on preparedness and response to epidemics
c. Prevention	Planning guide on training on breastfeeding counselling	National courses on breastfeeding counselling to enable health workers to support optimal breastfeeding practices			

PROGRAMME ELEMENTS	PROJECTS, ACTIVITIES AND TARGETS				
	1995	1996	1997	1998	1999
Training. Prevention cont/...	National courses on: a. Formulation of national food policy, plan of action and review of food legislation for government officials, and representatives of consumers, industry and trade b. Methods of safety assurance and food inspection for government officials and food industry quality assurance staff, including Hazard Analysis Critical Control Point methodology c. Hygienic handling of food, particularly weaning food in the home, for health workers and nutritionists d. Microbiological analysis of food for technicians of food control laboratories				All countries will have implemented plans of training on food safety
	Regional workshops on: a. Operation and maintenance of water supply and sanitation systems b. Water conservation and safe use of wastewater in water-scarce areas National workshops for community workers on: a. Operation, maintenance and monitoring of village water supplies b. Planning of village programmes in sanitation and hygiene education National workshops for urban managers on environmental health, including water quality and sanitation				All countries will have implemented plans of training on water supply and sanitation
4. Logistics	Procurement, storage and distribution of ORS will be ensured through the Essential Drugs Programmes, including the Bamako Initiative-based programmes At the community level, promotion of village-based resources for ORT/ORS - depots, community pharmacies - will be promoted. Mobilization of the pharmaceutical industry in developing countries for the promotion of ORS/ORT Annual worldwide survey on production and distribution of ORS Organization of stocks of supplies at peripheral storage facilities for easy local access at the onset of epidemic diarrhoea				100% of the population will have access to ORS

PROGRAMME ELEMENTS	PROJECTS, ACTIVITIES AND TARGETS				
	1995	1996	1997	1998	1999
5. Communication and education a. Non-epidemic diarrhoea case management	Field experience of use of the WHO manual on focused ethnographic studies on diarrhoeal diseases for adapting messages on home care	Guidelines on the use of ethnographic data for improving health workers' communication with families	Development of a guide on working with communities and on community education	All countries will have sound communication strategies on home case management, including intensive social mobilization fortnights	100% of mothers will report correct knowledge of the need to provide increased fluids and to continue feeding a child with diarrhoea 80% of mothers will know the three rules of home care of a child with diarrhoea: increased fluids, continued feeding and when to seek care
	Training on intercommunication skills will be included in all training courses on case management Promotion of guide for the effective use of radio Promotion of social mobilization and networking to create partnership at global, national and local levels in pursuit of the diarrhoeal disease control targets Organization of national ORT weeks/fortnights two or three times a year Advocacy seminars and brochures for members of professional associations Orientation activities addressed to pharmacists and drug sellers Implementation of School Health Initiative				
b. Epidemic diarrhoea: cholera and dysentery	Development and evaluation of appropriate communication messages in preparation for and during early stages of an epidemic	Dissemination of messages in risk countries on when to suspect the onset of an epidemic, who should be informed and what protective measures should be taken Involvement of concerned communities in the required actions			
c. Prevention	Development of health messages on food safety for mass media	Development of appropriate tools to work with communities on food safety Dissemination of food safety messages through mass media			
	Development of tools for working with communities on water supply and sanitation problems	Promotion of key hygiene behaviours Promotion of the School Health Initiative: community and teachers' participation in hygiene education and improvement of water supply and basic sanitation, in particular in primary schools of poor rural areas Promotion of participatory techniques for working with communities on improving existing systems of water supply and sanitation			100% access of the population to adequate information on safe water and safe sanitation systems

PROGRAMME ELEMENTS	PROJECTS, ACTIVITIES AND TARGETS				
	1995	1996	1997	1998	1999
6. Monitoring/evaluation a. Non-epidemic diarrhoea case management	Development and testing of rapid multiple indicator survey methodology Evaluation of early use of the CDD Focused Programme Review Guide Development of methods to monitor integrated case management of the sick child at first-level health facilities Guidelines on impact evaluation of the national CDD programme		Development of survey methods on case management of the sick child at first-level health facilities Development of survey methods for household surveys on morbidity and treatment practices in relation to the sick child		90% of diarrhoea cases will have been correctly rehydrated at health facilitites 90% of diarrhoea cases will have received increased fluids and continued feeding 200 CDD focused programme reviews will have been accomplished
	Evaluation of case management of diarrhoeal disease in children at first-level health facilities through CDD health facility surveys Evaluation of diarrhoea morbidity and treatment practices in the community through CDD household surveys and multiple indicator surveys Evaluation of CDD programme situation through focused programme reviews Evaluation of diarrhoeal disease mortality				
b. Epidemic diarrhoea: cholera and dysentery	Weekly reporting of data at health facilities on cases of cholera and dysentery Routine charting of weekly data on cases to detect abnormal increases which would indicate the start of an epidemic Establishment of national reference laboratories to identify etiologic agents and monitor bacterial drug resistance Development of indicators to monitor impact of food safety interventions on the control of epidemic diarrhoea				All countries at particular risk of outbreaks of cholera and dysentery will have in place mechanisms to respond rapidly
c. Prevention	Surveillance of food contamination, foodborne diseases and hazardous practices in relation to food handling UNICEF/WHO Joint Monitoring Programme for Water Supply and Sanitation will help countries to strengthen their capacity to manage services through routine monitoring of data and through monitoring the technology of water supply and sanitation systems Laboratory surveillance of drinking-water				100% of the population will have access to safe drinking-water 100% of the population will have access to sanitary means of excreta disposal

PROGRAMME ELEMENTS	PROJECTS, ACTIVITIES AND TARGETS				
	1995	1996	1997	1998	1999
7. Research a. Non-epidemic diarrhoea case management	Efficacy of alternative ORS formulations for treatment of dehydration Zinc supplementation impact on course of persistent diarrhoea	Appropriate advice-giving on feeding by health workers to families Methods of evaluating families' comprehension of home care advice	Optimal management of diarrhoea in severely malnourished children Development of interventions to improve families' behaviours in relation to childhood illness		
b. Epidemic diarrhoea: cholera and dysentery		Efficacy and safety of fluoroquinolones for treatment of dysentery in children Efficacy of azithromycin for treatment of dysentery in adults		Efficacy and safety of new antibiotics against cholera and dysentery	
c. Prevention	Field trials of benefits and safety of vitamin A supplementation in young infants Efficacy of nutrition counselling provided as an integral part of the integrated management of the sick child Evaluation of the effectiveness of training on lactation counselling				
	Completion of field trials of rotavirus vaccine safety and efficacy (RRV-tetravalent vaccine)	Completion of field trials of cholera vaccine safety and efficacy (killed whole-cell/ recombinant B-subunit, and live oral CVD-103-HgR vaccines)	Field trials of safety and efficacy of candidate Shigella vaccines (dysentery) Field trials of safety and efficacy of possible recombinant rotavirus vaccines		
	Continuation of laboratory and animal experimental work on possible recombinant rotavirus vaccines				

PROGRAMME ELEMENTS	PROJECTS, ACTIVITIES AND TARGETS				
	1995	1996	1997	1998	1999
8. Coordination	WHO/UNICEF Joint Policy Health Committee, Geneva, January 1995 World Summit for Social Development, Copenhagen, March 1995 ECOSOC meeting, July 1995	UN Secretary-General's Report to General Assembly on Follow-Up to the World Summit for Children and mid-decade review of progress achieved	UNICEF/WHO Joint Committee on Health Policy, January 1997 Review of the coordination of UN agencies in the implementation of the workplan by ECOSOC, July 1997		UNICEF/WHO Joint Committee on Health Policy, January 1999 Review of the coordination of UN agencies in the implementation of the workplan by ECOSOC, July 1999
	Country-level coordination:	Using existing mechanisms to strengthen country capacities to coordinate activities at national and subnational levels, including support for the United Nations Resident Coordinator system			
	Regional coordination committees:	American Region Inter-Agency Coordination Committee on Child Survival Programmes Africa 2000 Initiative Southern Africa Plan of Action for Future Emergency United Nations Economic and Social Committee for Asia and the Pacific (ESCAP)			
	Global coordination committees:	UNICEF/WHO Intersecretariat Meetings WHO CDD Meeting of Interested Parties WHO CDD Management Review Committee Inter-Agency Steering Committee for Water Supply and Sanitation Water Supply and Sanitation Collaborative Council Codex Alimentarius Commission FAO/WHO Follow-Up of Declaration and Plan of Action of International Conference on Nutrition			

ABBREVIATIONS:

CDD: Control of diarrhoeal diseases
DD: Diarrhoeal diseases
ORS: Oral rehydration salts
ORT: Oral rehydration therapy