PREVENTION AND CONTROL OF CHOLERA
IN BELIZE
NATIONAL PLAN

PREPARED BY:
The National Committee for the Prevention and Control of Cholera
Ministry of Health
Technical Assistance provided by PAHO/WHO
Belize City, October 1991
I. INTRODUCTION

1. General Description of the country

In 1990 the country's estimated population was around 184,340; 76% resided in eight urban and rural areas and 24% lived in Belize city (1990 Quick Count). Over the past 10 years the population growth rate was 3% with crude birth rate of 37 per 1000 population in 1989 remaining fairly stable since 1970. The total fertility rate decreased from 5.8 per woman in 1980 to 5.2 in 1989. The Infant Mortality Rate was 19.4 per 1000 live births in 1989. Belize has one of the highest birth rate in Central America. The 1990 Census sets the median age at 16.5 years, with 46% of the population under 15 years of age. Between 1980 and 1989, the population 60 years and over decreased from 11% to 7% in 1990.

Eight ethnic groups live in Belize: Creoles 40%, Mestizos 33%, Garinagu 8%, Maya Mopan 7%, Maya Ketchi 3%, and a smaller percentage of Chinese, East Indians, and Whites. Belize has remained relatively free of racial and ethnic conflicts.

There is no accurate count of refugees residing in Belize, but could be estimated ranging from 15000 to 40000. There are no available data to confirm same. The number of displaced is an additional burden to the health problems of the country.

Belize's rapid population growth and immigration from neighboring republics are off set by the on going emigration of Belizeans to the U.S.A. Population Statistics suggest that as many as one of every eight residents have emigrated during the past 10 years.

Belize's mortality rate has experienced a decline, mainly in the last ten years. In 1969, with a population on 124 074, the General Mortality Rate was 6.3 per 1000 population. By 1978 this figure increases to 6.5 per 1000 population but in 1989 the rate has decreased to 4.2 per 1000 population.

Evaluation of death's causes depends on the quality of the certification by doctors. One of the methods to assess this quality is the proportion of ill-defined conditions. In 1988 these conditions were declared as basic causes of death in 4.8% of the certificates. This proportion is lower than the 22.4% found in 1978, which indicates an improvement in certification, but there are still some problems with specific conditions.

It can be seen that conditions affecting the Newborn constitutes the first cause of death. It is interesting that malnutrition as a basic cause occupies the fifth place. Intestinal Infectious Diseases are the tenth cause. Diseases of the circulatory system represent four of the most important causes of death.
Between 1984 and 1989 infant mortality rates per 1,000 live births dropped from 22.3 to 19.4, and mortality rates per 1000 population in children aged 1-4 years increased from 1.5 in 1984 to 2.0 in 1989. The three leading causes of infant and child mortality remain certain conditions originating in the perinatal period, diseases of the respiratory system, and infectious and parasitic diseases, and mostly deaths occurred in the first week of life. Among children aged 1-4 years, most deaths due to infectious and parasitic diseases eg. gastroenteritis and ARI.

Measles, whooping cough, and tetanus have almost been eliminated as causes of death in infants (two deaths in 1985, one in 1986, and none in 1987-1989) and in children aged 1-4 (few deaths in that periods). The low level of reported cases of diphtheria, tetanus, pertussis, poliomyelitis, tuberculosis, and measles may be a result of activities carried out since 1986 under the Expanded Program on Immunization (EPI). The extensive use of oral rehydration therapy probably has contributed to significantly reduce the mortality rate from gastroenteritis.

Communicable diseases constitute an important cause of morbidity in the country. The five most frequently reported communicable diseases in 1989 were: malaria, gastroenteritis, gonorrhea, chickenpox and syphilis. The incidence of tuberculosis is increasing. Rabies was reintroduced in the country in 1987; one human fatality occurred in 1988 and 2 in 1990.

Tropical diseases of concern in Belize are: Malaria, leptospirosis and leishmaniasis. Leprosy has not been reported as a health problem, but due to the influx of refugees from endemic zones in neighboring countries, it might become a factor.

Malaria is endemic. The extensive eradication program carried out in the 1950's and 1960's virtually eradicated malaria. However, fiscal constraints and new agricultural production patterns led to insufficient follow-up after the campaign, resulting in a dramatic increase in the incidence of cases from 876 in 1977 to 4595 in 1983. From 1984 to 1986, the number of cases decreased, but from this on they remain at around 3,000 cases per year.

Five unconfirmed cases of dengue fever were reported in 1985. The first AIDS case was reported in Belize in 1986. Since then more cases were detected in the country. So far 38 cases of AIDS have been confirmed in the country. As of January, 1988, all blood has been screen for HIV using the ELISA test.

There is not much available information on the prevalence of nutritional deficiencies.
2. Health Services Infrastructure

The Government recognizes health as a basic human right and a fundamental aspect of the development process, and is committed to provide health services to every Belizean using community participation and intersectoral coordination as key elements. The national health policy is guided by the principles of democracy, comprehensiveness, education, participation, and accessibility.

The health plan identifies mothers and children from birth to 5 years old, low income groups, the disabled, the elderly, and those living in undeserved areas as priority groups. In addition, the prevention and treatment of high-prevalence diseases and conditions also is considered a priority. The plan emphasizes manpower training with appropriate technical and managerial skills geared to local needs and resources, with an integrated approach to preventive and curative health care, and with the capability to function as part of a health team. The need to decentralize program execution and management to the peripheral level through a local health systems approach also is considered.

In 1990, government health care expenditures represented 2.9% of GDP (at constant 1984 prices) and 9.8% of the national budget, equivalent to around $US32 per capita per annum. The percentage distribution of the budget according to program areas in 1991-1992 was: central administration, 4.4%; primary health care, 11.6%; district hospitals, 17.4%; national hospital, 29.8%; supplies, 15%; and the Belize School of Nursing, 2.9%.

Government health services are practically free, including the provision of pharmaceuticals, and are funded by central government revenue. The Social Security Scheme begun in 1981 and covers only health expenses due to occupational illness or accident.

A national network of 34 health clinics and 6 primary level hospitals form the infrastructure for primary health care. Belize City Hospital is the only acute medical care public facility at the secondary level in the country. As a referral center it receives patients from all the other district hospitals. In 1989, 70% of all institutional deaths occurred there. There are 422 hospital beds in the country (one bed per 427 inhabitants) and one health center per 5819 inhabitants. The distribution of beds and centers per population varies among the districts. There are two health care clinics operated by private denominational groups and three private clinics run for profit.

Approximately 88.6% of the population is covered by services provided by health centers; 56.1% have close direct access and 32.5% are served through periodic visits by mobile clinics on a prearranged schedule. Of those with direct access, 92.1% are urban dwellers living in the district capitals or major towns.
According to the Ministry's figures, 8.9% of the rural dwellers have direct access to the health centers, 3% have intermittent access, and 24% have no access.

The availability and distribution of health professionals according to selected occupations in 1990 was as follows: physicians 121; dentists 13; pharmacist 1; nurses 229; practical nurses 78; auxiliary nurses 37; practical midwives 19; chemist/drugist 14; public health inspectors 16; health technicians 15 and vector control personnel 101.

II PROBLEM DESCRIPTION:

Cholera is the most acute of the diarrhoeal diseases characterized by profuse painless watery stool of sudden onset, vomiting, rapid dehydration and circulatory collapse.

The bacteria responsible for cholera is the Vibrio Cholerae. The majority of cholera outbreaks worldwide have been associated with contaminated food products, such as raw molluscan shellfish harvested in waters contaminated with raw or poorly treated human sewage.

During the century there has not been any epidemic of cholera in the Americas. However, there has been isolated cases in North and South America, which have proven to be imported cases. In the later part of the last century (1892), there was an outbreak of cholera in Belize. Many people died due to poor management, and lack of proper sanitary facilities. This outbreak resulted in the strengthening of the poorly equipped and understaffed health system.

In early January 1991, an outbreak of cholera was reported on the Pacific Coast of Peru. Within three months, the epidemic spread out to Ecuador, Colombia, Chile and Brazil, neighbouring countries of Peru. During the past eight months, over 310,000 cases of cholera and 3,200 deaths occurred in 11 countries of the Region of the Americas, showing the spreading of the epidemic a North-bound trend

Risk associated with the Epidemic:

Since the beginning of the Cholera Epidemic in Perú in early January, 1991 until the present date, at least 6 Countries in South America have been affected and 5 in Central and North America; 2 of these are bordering Countries with Belize.

Presently, the magnitude and experiences of this Epidemic in Mexico and Guatemala is not clear, since both Countries have been reporting only laboratory confirmed cases.
The poor sanitary conditions, the over-crowding of persons and the absence of basic personal hygienic practices favours the rapid dissemination of the Disease.

It is recognized that a small percentage of the population has access to potable water. It is also a fact that there are specially in the rural areas, a lack of proper sanitary facilities for the disposal of human faeces. The open sewer system in Belize City further increases the risk of transmission of cholera. Moreover, this enhances the negative cultural attitudes and practices of the public at large.

A great part of food products is imported from neighbouring countries and most of the food vendors do no practice proper personal hygienic measures. Lack of public awareness and negative attitudes and practices prevail in the Belizean Society. Immediate identification of cholera cases to prevent further transmission of the disease poses a major problem.

The present threat of Cholera possess a great risk for endangering the tourism and fisheries industries two of the greatest economic areas of Belize, the socio-economic and the financial situation of both the people and the Government of Belize. It is estimated that, if the epidemic occurs, about 3% of the population will be infected, mainly adults (productive population). Out of the infected population about 25% will probably require hospitalization.

III PROJECT DESCRIPTION:

This project is designed to strengthen the national programs of health in supporting the Diarrhoeal Disease Control Programme to improve epidemiological surveillance of diarrhoeal diseases and monitoring of waters, food and the environment towards early detection of the Vibrio cholera; to improve public information and health education to obtain participation of the population in prevention and control of cholera; to strengthen technical capacity for effective laboratory diagnosis, management and treatment of cholera cases, if they occur.

IV OBJECTIVES:

General:

To organize national and multisectorial efforts that are necessary to prevent and control Cholera Country-wide, emphasizing those geographic areas and population groups that are at a higher risk, with the purpose of preventing deaths and to avoid the expansion of the epidemic.
Specific:

1. To establish an effective mechanism for epidemiological surveillance of diarrhoeal diseases with emphasis on Cholera by improving the identification, notification and analysis of data in order to show trends that will assist in timely and appropriate actions for the control of Cholera.

2. To provide the necessary resources for the proper management of patients with Cholera, and to ensure sanitary facilities in hospitals and health centres to avoid dissemination of the Disease.

3. To establish a national network for "sampling" of suspected Cholera cases, the surveillance of water sources and the strengthening of the Central Medical Laboratory that functions as a National Referral Centre.

4. To intensify the improvement of basic sanitary conditions emphasizing on community participation, strengthening the analysis and quality of water and food, use of latrines, and solid waste management.

5. To strengthen the Health Education and promotion programme for the prevention and control of Cholera directed to all the population emphasizing those at higher risk.

Strategies:

1. Strengthening the National Diarrhoeal Disease Control Programme emphasizing interprogramatic and interinstitutional coordination.

2. Development and application of norms and procedures at the national level that will provide a standard criteria for all activities and procedures as well as the evaluation and necessary re-adjustments.

3. Management of training of health personnel with an integrated approach on epidemiological surveillance, diagnosis and treatment of cases, environmental sanitation, food safety and community education and participation.

4. Establishment of one line of communication/information at the national level for the different medias of mass communication. This line will have a principal source of information on the Epidemiological Surveillance System.
V COMPONENTS OF THE PLAN

The plan has the following components:

1. Epidemiological Surveillance
2. Laboratory Diagnosis
3. Water and Sanitation
4. Food Safety
5. Public Information and health education
6. Medical Services and Case Management
Expected Results

Early detection of cases of *Vibrio Cholerae* in order to prevent the spread of the disease to other areas of the country.

Enhance district laboratory capabilities for detecting cases of diarrhoeal diseases.

Provide laboratory equipment and reagents to isolate, identify and monitor cases of diarrhoeal diseases.

Project Administration

This project will be administered by the Ministry of Health, Government of Belize. The collaboration of the other Sectors related to health and non-governmental organizations is foreseen.

Duration: 3 years

**Budget for Laboratory Diagnosis**

**In U.S. Currency**

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**National Budget for Laboratory Diagnosis of Cholera**

**In U.S. Currency**

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3. WATER AND SANITATION

Description of the problem:

The status of water supply and sanitation service and the problem related to on-going programmes aimed at increasing access and improving understanding are characterized as follows:

Coverage for Belize is 72% for potable water supply and only 43% for adequate sanitation facilities. There is a distinct rural-urban disparity in that most of the urban and semi-urban residents have access to potable water compared to only 53% of rural inhabitants.

Solid waste disposal poses a problem of contamination to drinking water by improper handling and disposal. Inadequately developed health education programmes coupled with the lack of sanitation and water supply facilities perpetuate this problem. The rural and urban areas remain the target of most immediate concern.

People living in remote areas are those without access to potable water and proper sanitary facilities. Because of the lack of infrastructure such as roads, health centers, water supply, adequate sanitary facilities, these people are at high risk to faeco-oral diseases. In view of the fact that they live in close proximity of bordering neighbors who already have outbreak of Cholera, it is essential that these basic facilities be provided.

Justification:

Access to potable water supply, the proper disposal of household refuse, proper disposal of human body waste is essential to reduce the risk of diseases such as cholera associated with faeco-oral method of transmission.

Objectives:

1. To increase coverage of water supply and sanitation for those people living in high risk areas.
2. To improve water quality control measures throughout the country.
3. To educate the public on solid waste management, liquid waste management and water purification.
4. To strengthen surveillance activities with respect to cholera and water sources on a national level.
Expected Results:

It is expected that objectives will be achieved incrementally over a three year period.

Activities:

1. Strengthen the monitoring activity of the Water Quality Programme.
2. Procurement of required supplies for the Water Quality Programme.
3. Disinfection of water supplies that are of substandard (10+ colonies/100 ml of water.)
4. Increase the frequency of water sampling and analysis of water supply systems.
5. Training of lab personnel in the identification of organisms of water-borne nature especially *Vibrio Cholerae* among the Moore technique.
6. Construction of sanitary facilities in those areas that are in need.
7. Continue the monitoring of the collection and disposal of solid wastes.
8. Dissemination of relevant information through mass health education and public information campaigns.

Project Administration:

This project will be administered by the Ministry of Health, Government of Belize. The collaboration of other Sectors related to health and non-governmental organizations is foreseen.

Duration: 3 years
## BUDGET FOR WATER AND SANITATION
### IN US CURRENCY

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## NATIONAL BUDGET FOR WATER AND SANITATION
### IN US CURRENCY

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<td>198,100</td>
<td>207,600</td>
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VI Monitoring and Evaluation

Each component of the plan will be evaluated according to the indicated expected results. The National Committee for the Prevention and Control of Colera will be responsible for monitoring and evaluating the development of activities at national and district levels. At the District level, the District Committee will have the responsibility for monitoring the local activities.

VII Organization and structure

The Ministry of Health formed a National Prevention and Control Committee for Epidemics in which all the health programmes concerned with the prevention and control of cholera are represented. The committee was given the responsibility to study, analyze and develop an action plan to prevent a possible outbreak of Cholera in Belize. So far, the committee has taken various steps in the training of health personnel, epidemiological Surveillance and health education. The Committee is also responsible for epidemiological investigation which is necessary to guide the Ministry of Health in planning preventive and control strategies.

The Committee in addition to the actions already taken, has proposed the present National Plan for Prevention and Control of Cholera, with technical Support from PAHO/WHO.

Each project component corresponds to a health program which is being implemented by the corresponding structure within the Ministry of Health. Thus, project activities will reinforce the implementation of the corresponding program without creating new structures.

The National Committee for the Prevention and Control of Epidemics will coordinate the implementation of activities of each component.

At District level, a District Committee, with similar composition as that of the National Committee will be responsible for coordinating activities at this level.

VIII PARTICIPATING & COORDINATING INSTITUTIONS:

- Ministry of Health
- Ministry of Agriculture and Fisheries
- Ministry of Natural Resources
- Ministry of Social Services & Community Development
- Ministry of Tourism and The Environment
- Ministry of Economic Development
- Ministry of Education
- Ministry of Finance
- PAHO/WHO Programs and Centers
- UNDP/PRODERE, UNICEF, USAID, CARE, Red Cross Belize
### IX.

**NATIONAL AND EXTERNAL COUNTERPART FUNDS REQUIRED FOR THE PREVENTION AND CONTROL OF CHOLERA IN BELIZE**

**IN U.S. CURRENCY**

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**NAT = NATIONAL**  
**EXT = EXTERNAL**