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AN EVALUATION OF THE  
NATIONAL CDD PROGRAM  
IN ZAMBIA

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## Chapter 1

### EXECUTIVE SUMMARY

From February 27 through March 11, 1989, a five-person PRITECH team was in Zambia to assess the PRITECH-I intervention within the context of the national CDD Program. Since its launch in 1986, the national CDD Program has made remarkable progress under the direction of the CDD Secretariat, which comprises Dr. H.B. Himonga, CDD Program Manager; Mr. Peter Mphande, Deputy Program Manager; and Mrs. Mary Kaoma, Mrs. Annie Muphinde, public health nurses.

Among the program's achievements are the extensive training in ORT of health workers throughout Zambia, the local production of ORS, the development and distribution of health education materials, and an ambitious and comprehensive baseline survey. The CDD Program appears this year for the first time in the National Development Plan, which lists program objectives and targets as well as budget line items for program components. The Ministry of Health succeeded in removing antidiarrheals from its formulary and is expected to have legislation passed to ban the importation of antidiarrheals into Zambia.

These achievements are all the more striking when viewed within the context of the many problems facing Zambia today. The CDD Program functions in spite of its limited resources -- in personnel, finances, and equipment, in particular, transport. In addition to these chronic resource deficiencies, the program has had to cope with the acute and worsening problems of the country's economic decline, the AIDS epidemic, and the lack of Zambian doctors, which has resulted in an influx of foreign, non-English speaking doctors who lack CDD training. To make the most of its limited resources, the Zambia CDD Program has accepted financial and technical assistance from a number of donors and organizations, in particular UNICEF, WHO, DANIDA, and the AID-funded PRITECH Project.

In February and March 1986, at the invitation of the Director of Medical Services, Dr. E.K. Njelesani, PRITECH sent a team to Zambia to assess its CDD activities and to develop an intervention strategy for PRITECH assistance to the program. The PRITECH technical assistance plan was approved by Dr. Njelesani in April 1986, and the PRITECH intervention got under way in August 1986, with the hiring of a full-time resident representative to work with the Ministry of Health's CDD team and to manage PRITECH's contributions to the program. In addition to supporting an office, transportation, and administrative assistance for the representative, the PRITECH plan provided some funding for ORS production and distribution; training, development, and reproduction of materials; baseline and follow-up surveys; and small operations-research studies. Up to ten weeks of short-term

technical assistance was also made available to the CDD Program in the PRITECH budget.

Under its contract with A.I.D., the PRITECH Project is required to assess its country interventions at the end of the first phase of the project, that is the end of PRITECH-I, while at the same time developing, with the MOH and other donors, the plan and budget for assistance under the PRITECH-2 contract. For this purpose, the PRITECH assessment team visited Zambia in February and March 1989 and, through site visits and interviews, reviewed the components of the national CDD Program, with particular attention to the PRITECH technical contributions. The program components examined by the team are as follows: case management of diarrhea; training; supervision; communications; ORS production, supply, and distribution; program management; health information systems; community participation; coordination with other groups, associations, and organizations; evaluation; and problem-solving studies.

As shown in Chapter 4 of this report, for each component, the team reports its findings and makes recommendations for consideration by the Ministry of Health (MOH). The three most important recommendations are the following:

- The urgent need for the MOH to formulate a policy statement and precise guidelines regarding the case management of diarrhea and issue this information to all persons delivering health care in Zambia
- The assurance of regular and sufficient supplies of ORS packets throughout Zambia
- The inclusion of "hands-on" training in ORT in all training courses and the provision of this training to non-Zambian physicians, if necessary in their mother tongue.

The remainder of this report is divided into three chapters and six appendices, as follows:

- Background: Provides a country profile of Zambia, including demographic data, the economic situation, and health-care structure and describes the components of the national CDD Program.
- Survey Findings: Focuses on the principal findings of three recent research studies concerning CDD activities in Zambia.

- Findings and Recommendations: Sets forth the recommended actions of the PRITECH team based on site observations at six hospitals and four health centers in Lusaka and in the Southern and Copperbelt provinces.
  
- Appendices: Includes a summary of the estimated and actual outputs of PRITECH I, the report of the ORS supply management expert, and a survey of facilities visited.

## Chapter 2

### BACKGROUND

Zambia is a relatively new nation state whose history can be divided into three distinct phases: a long precolonial period, followed by a period of British colonial rule from the end of the 19th century, to the eventual attainment of political Independence under the Commonwealth in 1964.

The country is landlocked with an area of 758,000 km<sup>2</sup>. The landscape consists chiefly of an undulating plateau, which ranges between 900 and 1,500 meters. The varying combinations of climate, topography, and soil types give rise to four major ecological zones:

- o Northern - high plateau, high rainfall and low soil fertility
- o Western - lowest, driest, and low agricultural potential
- o Central - good soil, adequate rainfall, major agricultural zone
- o Zambezi - Luangwa Rift, low altitude, low rainfall, generally unsuited for agriculture.

Zambia is divided into nine provinces, each headed by a member of the Central Committee and assisted by a Permanent Secretary. The provinces are further subdivided into 57 districts, which are in turn divided into wards. Each district is headed by a governor, appointed by the head of state and assisted by civil servants. Zambia's one-party state requires that the political party -- National Independence Party (UNIP) -- be represented from the village level to the national level (central committees). Moreover, as a result of various political and administrative reforms, the distinction between the political and civil-service structures of government has become increasingly blurred.

#### 2.1 Demography

Zambia has one of the highest population growth rates in the world (3.6 percent annually). The population has doubled from 3.5 million in 1963 to more than 7.0 million in 1987. This high rate of natural increase is a result of constant fertility and declining mortality. The crude birth rate was estimated at between 49 to 53 per 1,000 in 1980, while the crude death rate declined from 19.7 per 1,000 in 1969 to 16.6 per 1,000 in 1980.

Fertility studies indicate that there have been no sharp declines in fertility since the 1969 Census. The total fertility rate, based on the 1980 Census, as well as on regional fertility studies, is an average of 7.2. If fertility remains high and mortality continues to decline, the Zambian population will increase to 8.1 million by 1990 and to 11.8 million by the year 2,000.

The overall sex ratio is slightly imbalanced, with 95.8 males per 100 females. Moreover, the high degree of male, rural-urban migration has led to an imbalance in sex distribution among the provinces. The Copperbelt and two "line-of-rail" provinces have a male surplus, while predominantly rural provinces have sex ratios of between 90 to 85 males per 100 females. Female-headed households are prevalent in rural areas (30 percent overall), with some districts as high as 42 percent. The absence of male labor has led to an overburdening of the workload on rural women and has, therefore, affected their ability to feed their families adequately.

Another demographic characteristic that has important consequences in terms of development and strain on available social resources is the high dependency ratio. The child population (below 15 years) was estimated at 49 percent of the total population in 1980. Out of the 2.77 million children in 1980, 36.8 percent, or 1.02 million, were under the age of five. Assuming current fertility levels, the total number of children and under-fives will reach 3.98 million and 1.60 million, respectively, by 1990. The dependency ratio, including the 2.8 million persons (aged 65 years and above), was 110 dependents per 100 productive (working-age adults 15 to 64).

Another negative development factor is the rapid and extensive urbanization rate. By 1980, the urban population was 43 percent; this rate is expected to reach 50 percent by 1990. Despite a short history of urbanism since Independence in 1964, the urban growth has been extremely rapid. The average annual urban growth between 1969 and 1980 was 6 percent, while the rural population increased by only 1.6 percent during the same period, thereby making Zambia's urban growth among the highest in sub-Saharan Africa. The growth of periurban squatter areas associated with large towns and cities has been particularly rapid. The population of Lusaka, the capital and largest city in Zambia, grew from 262,000 to 550,000 between 1969 and 1980 and was estimated at 850,000 in 1987.

Although the urban population has grown rapidly, employment opportunities have decreased. Because wage-earning employment is the main source of income for the urban population, general urban living conditions have deteriorated. Rising prices, crowding, declining formal-sector employment, shortages of basic commodities, and overstrained government services have had a detrimental effect on the urban population. This situation is compounded by the large numbers of young school leavers seeking employment. Some have been absorbed into the informal sector, but their incomes are generally insufficient in meeting an average household's basic needs. Inflationary pressures, both internal and external, have led to rapid price increases for basic commodities during the past decade. This process has been particularly dramatic during the recent period of foreign exchange auctioning, which has eroded the

kwacha's value. Because wages have risen slowly, rapid inflation has sharply reduced purchasing power, particularly for the urban poor.

The all-items' index, or general level, rose by 160 percent during 1975 to 1982 for the low-income group, by another 65 percent during 1983 to 1985, and 68 percent more from 1986 to 1987. Some of these increases have resulted from the withdrawal of subsidies and decontrol of prices, while other factors such as foreign-exchange auctioning exacerbated inflationary tendencies. The current annual inflation rate for low-income groups is 60 percent.

## 2.2 Economic Development

Zambia's economic development is characterized by extreme dualism between an urban-oriented sector dominated by the copper industry and a rural subsistence sector. This dualism has led to an imbalance in providing social services, most of which are concentrated along the "line of rail" -- an imbalance that goes back to the colonial period when the British South Africa Company operated the copper-mining industry. The mines drew labor from the rural areas, thereby reducing agricultural productivity of the traditional sector but creating an urban population dependent on an outside source for food. The colonial trading pattern which resulted involved the importation of food, clothing, and other commodities exchanged for the exported copper. As the price of copper fell on the international market and production costs rose, the urban sector was forced to rely more and more on the rural sector for food and other essential commodities.

Another significant sector that emerged as a result of the rural-urban migration was the periurban, low-income group which neither participates in the productive activities of the rural subsistence sector nor is fully integrated into the urban industrial sector. Income in this periurban sector comes from formal and informal employment activities.

During the past 50 years, Zambian copper output averaged approximately 10 percent of the world total, reaching nearly 14 percent of the world market at the time of Independence in 1964. The importance of copper to the Zambian economy is indicated by the fact that copper mining has consistently contributed more than 30 percent of Zambia's Gross Domestic Product (GDP) and more than 95 percent of foreign-exchange earnings.

The copper boom, however, has become a "copper curse" and has resulted in a deepening economic crisis. The major precipitating factors for this economic situation were the world economic recession following in the wake of the "oil crisis" in late 1973 and falling copper prices. During the years 1975 to 1983, copper prices fell to their lowest levels since 1945. As a result, Zambia's economy entered a long period of stagnation followed by

rapid decline. Between 1965 and 1974, the real GDP grew at an annual rate of 2.3 percent; since 1974, however, because of high population growth, the GDP per capita has in fact declined steadily and by 1983 fell to 42 percent of its 1965 level.

While the economic problems faced by Zambia following the world recession affected many nonoil-producing countries, Zambia suffered more by comparison. Between 1974 and 1982, nonoil-producing countries experienced a 15 percent decline in their terms of trade; Zambia had a dramatic 72 percent fall during the same period. While the oil Zambia needed cost more, the copper used to pay for oil cost less.

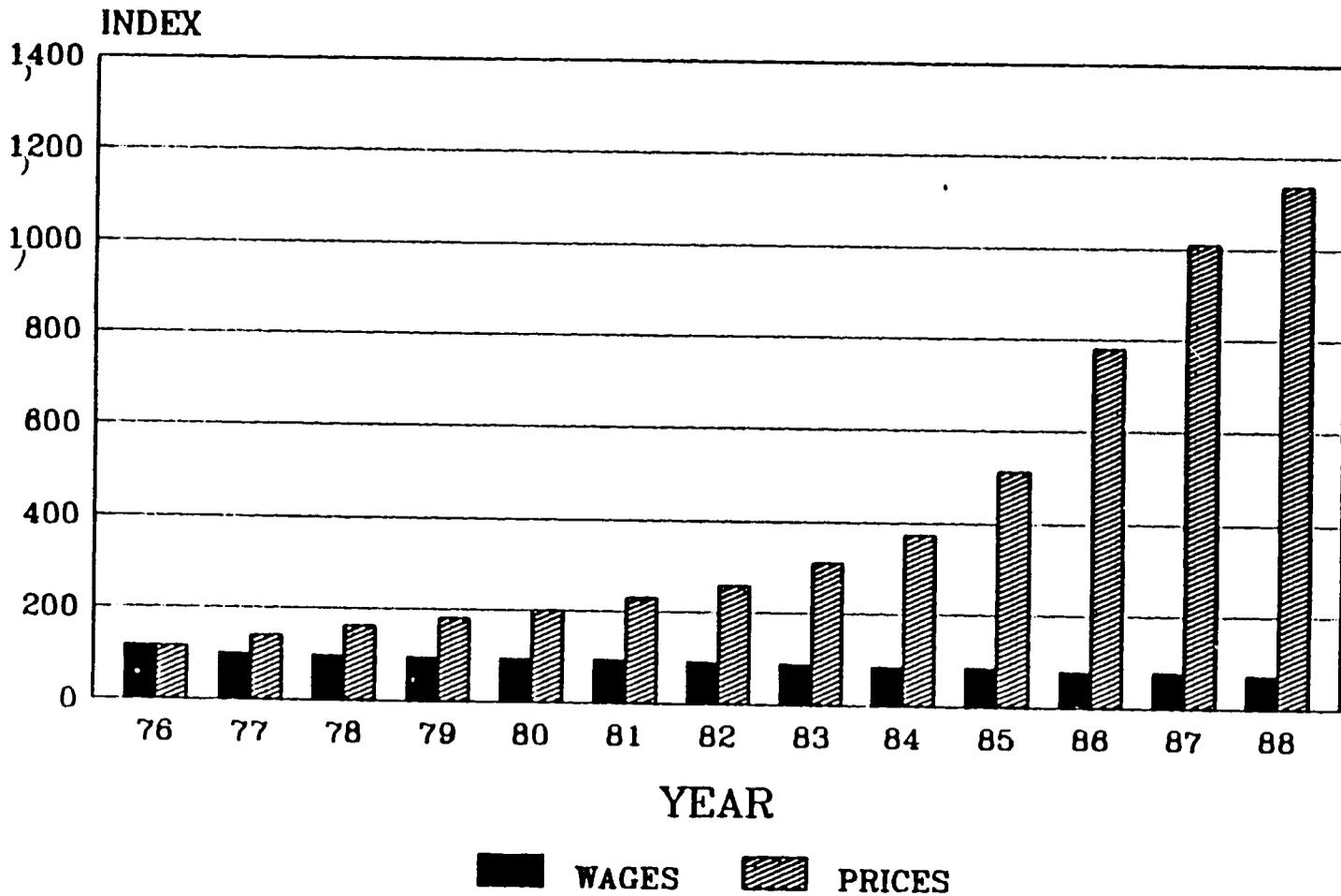
As a result of rapidly shrinking foreign-exchange rates and poor terms of trade, Zambia increased her external borrowing in order to finance current account deficits. The resulting debt-service obligations mounted rapidly, from 1974 when they were less than 8 percent of export earnings to 1983 when they consumed 52 percent of export earnings. In addition, there are more than one billion U.S. dollars in accumulated external overdue payments.

Zambia has been unable to meet these debt-service obligations and has had to agree to austerity programs in order to obtain International Monetary Fund (IMF) rescheduling. These austerity measures included kwacha devaluation, price decontrol, wage freezes, and removal of government subsidies on essential commodities. One of the results has been the domestic inflation rate of more than 60 percent. The effect on real wages of the low-income group is shown in Exhibit 1-1 on the following page.

Since 1983, the Zambian government has instituted a series of new economic policies to restructure the economy by diversifying away from copper. Progress and improvement in the agricultural sector, however have been slow; it has been predicted that in 1990 Zambia will still be 90 percent dependent on copper and cobalt exports. Because copper is virtually the only source of foreign exchange and because copper prices are expected to increase by only 2 percent annually, Zambia will have to continue to resort to debt rescheduling, loans, and grants just to maintain mine operations. Even in the event that the mines are able to generate a 2 percent growth rate in the GDP, the population growth of 3.6 percent will mean that per capita incomes will decline further. Although the consequences of this situation will fall on everyone, the burden will be heaviest on the low-income urban dwellers.

After an experiment with a foreign-exchange auction system (October 1986 to May 1987), Zambia broke with the IMF program and struck out on its own economic recovery plan based on the utilization of local resources. While the full social impact of these measures is yet to be evaluated, it is clear that the effects of a declining economy cuts across all sectors. For the health-care sector, these

# REAL WAGES AND CONSUMER PRICE INDEX LOW-INCOME GROUP (1975=100)



SOURCE: CSO STATISTICAL BULLETINS

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Exhibit 1-1

effects are reflected in increased malnutrition, morbidity, mortality, and declining service levels.

### 2.3 Health-Care Structure

Zambia has a four-tier health-care structure, consisting of government, missions, mines, and the private sector. Before Independence, government hospitals and clinics were concentrated in the "line of rail" and catered to mine workers and their families, while mission health services were located in rural areas. Since Independence, the government has expanded health services into the rural areas and until recently contributed 60 percent of the operating costs of mission hospitals and clinics. The mines provide health services to mine employees and their families. While the mines serve only 6 percent of the population, they provide 20 percent of the Ministry of Health's operating funds. There are approximately 100 private clinics and 175 physicians in private practice, located largely in urban centers. Private service fees are regulated by government tariff, and all practitioners are registered by the Medical Council of Zambia.

Three administrative components exist within the health structure of Zambia: central, provincial, and district health management teams. The central administration is headed by a Permanent Secretary/Director of Medical Services and consists of three divisions: medical, preventive, and administrative. The responsibilities of central administration include formulating health policy, developing comprehensive health programs, planning policy-implementation guidelines, and allocating funds.

The health-facility system consists of 3 central hospitals (located in urban, densely populated areas), 9 general hospitals (located in provincial capitals), 3 specialist hospitals (pediatric, psychiatric, and leprosy), 68 district hospitals, and 845 rural and urban health centers. In addition, there are subhealth centers, clinics run by private organizations, city councils, and municipal councils. Approximately 100 private surgeries located in large urban centers operate under the Health Legislation Act.

One crucial policy and planning issue for health facilities in Zambia is how to cope with rapid population growth in a time of declining funds. It is already evident that the proportion of the population being served by health facilities is decreasing.

Zambia's development plans and other policy statements recognize the need to focus special attention on the most vulnerable groups: namely, women and children. Women and children are the major users of health-care facilities and, given the rapid population growth, it is obvious that maternal and child-health (MCH) services need to be improved and expanded. It is maternal and child health services, however, that have been the most severely affected by

declining funds, personnel shortages, and a lack of drugs and vaccines.

### 2.3.1 Churches Medical Association of Zambia

The Churches Medical Association of Zambia (CMAZ) is an ecumenical Christian association comprising 32 hospitals and 53 rural health centers, which are administered by 14 different churches. Church hospitals and rural health centers undertake approximately 50 percent of the health care of Zambia and are an integral part of the government health system.

CMAZ serves as a coordinating agency where planning and common policies are worked out. It is also an important channel of communication with the Ministry of Health headquarters at different levels. The Churches' health sector forms part of the free health service of Zambia; therefore, no fees may be charged. The church units, like their government counterparts, are deeply involved with primary health care at the district and subdistrict levels. They also administer training programs for nurses, midwives, laboratory assistants, community health workers, and traditional birth attendants.

At present, 40 percent to 70 percent of the funds for operating costs at church hospitals and rural health centers come either from the churches or from other sources. As such, the church sector has the advantage of local autonomy within the guidelines laid down by the Ministry of Health.

Although CMAZ institutions are administered by the churches, they are also under the jurisdiction of the Ministry of Health through the provincial medical officers. Many of the CMAZ hospitals have been designated district hospitals by the MOH. The policies and programs of the MOH are supported and followed by CMAZ members. A close working relationship is maintained through a Ministry of Health/CMAZ working committee, which is chaired by the Permanent Secretary of the Ministry of Health.

## 2.4 Health Services

The severe and worsening economic crisis in Zambia has set into motion various adjustment measures (subsidy withdrawal or reduction, adjustment of exchange rates, import controls, a foreign-exchange auction system, and retrenchment of government expenditure), which are making it increasingly difficult for the government to maintain the network of health and social services developed during the 25 years since Independence.

The effects on the health-care system are reflected in a falling patient/physician ratio; declines in recurrent and capital expenditures; deterioration in health-care coverage in rural areas, in particular, the chronic scarcity of drugs and equipment; and

severe implementation constraints on health programs (for example, UCI, CDD, MCH, malaria control, and PHC). The severity of the crisis in the health sector has been compounded by rapid population growth and urbanization.

Historical factors accounting for the dual economy and concentration of development along the "line of rail" are also reflected in the distribution of health services and resources. Lusaka and the Copperbelt, with 40 percent of the population, consume 60 percent of the national expenditure on health, leaving 40 percent for the remaining 60 percent of the population in the seven predominantly rural provinces.

Distribution of medical personnel is also similarly skewed in urban centers along the "line of rail." The general disease pattern in Zambia is similar to that in many other developing countries. The leading causes of child mortality in hospitals in Zambia are malnutrition, disorders of newborn and perinatal period due to low birth weight from malnourished mothers, diarrheal diseases, acute respiratory infections (ARI), measles, malaria, and anemias.

In general, for every 100 births approximately 12 die before the age of 1, approximately 15 die between the ages of 1 and 4 and 10 to 12 die between the ages of 5 and 14. Thus, 40 percent of all of the children born in Zambia die before the age of 15, from largely preventable conditions.

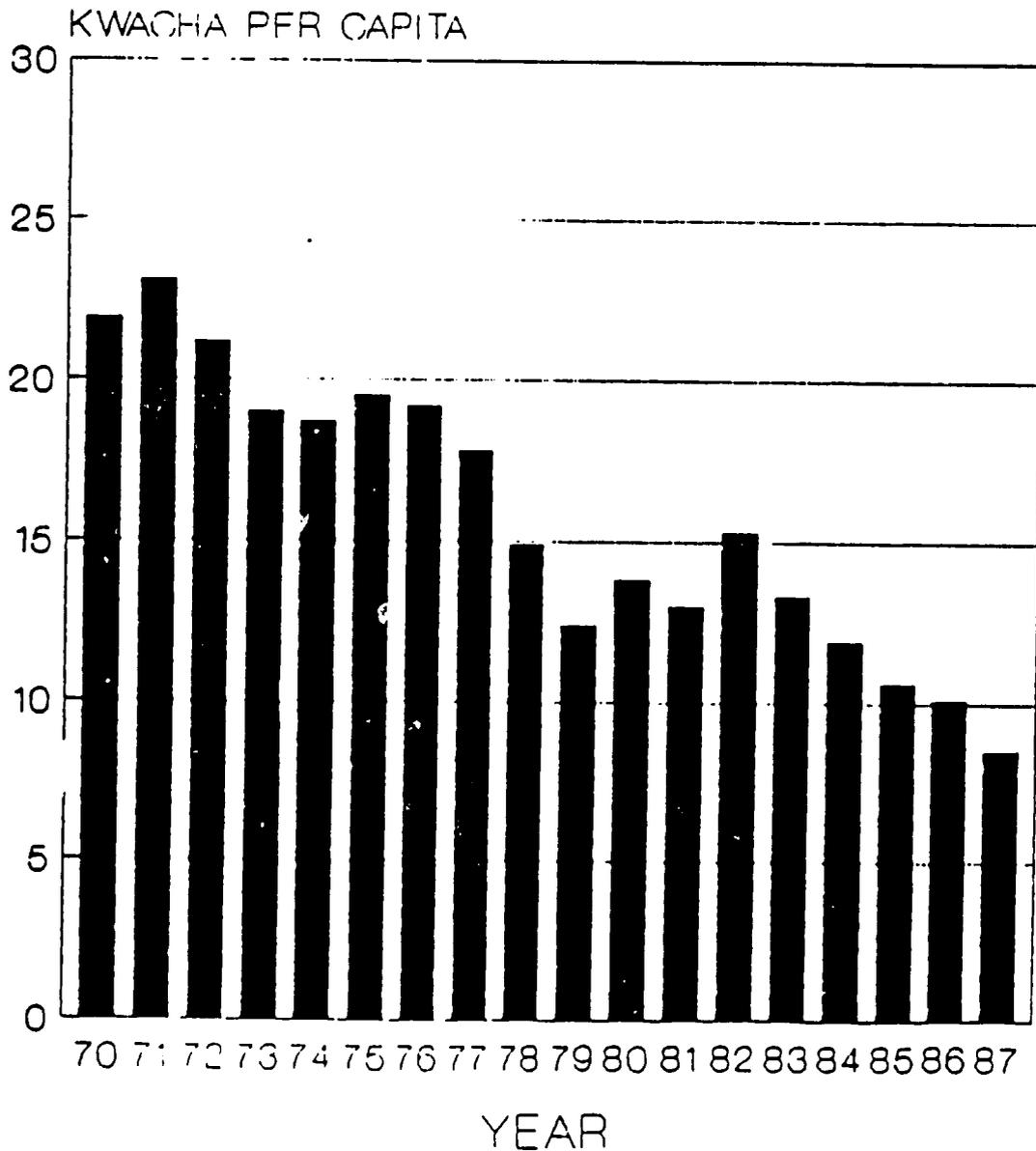
Unfortunately, there has been little improvement in this pattern since 1979, and in some cases (involving malnutrition and malaria) there has been marked deterioration. While there are a number of factors that have constrained health service, the most serious factor has been the continuing and deepening economic crisis. The effect on per capita health expenditure of this economic decline is illustrated in Exhibit 1-2, which follows.

## 2.5 Health Personnel

Zambia is currently facing a physician-manpower crisis brought about by devaluation of the kwacha and deteriorating economic conditions. Between 1981 and 1985, nearly 400 physicians resigned from government service, thereby reducing available staff by 27 percent. Resignations of this magnitude create a crisis in training as well because many physicians who left were teachers in the School of Medicine. With a current output of 25 to 30 doctors annually, it will be impossible to satisfy the projected need for 2,000 physicians within the next decade. Increasing medical-school output will require expanding laboratory and classroom facilities, which calls for a large capital input at a time when few economic resources are available.

The effects of the present doctor shortage are evident in the fact that many specialty clinics either are being closed or are

# TRENDS IN REAL PER CAPITA HEALTH EXPENDITURE-1970-1987



SOURCE: GRZ ANNUAL FINANCIAL REPORTS

operating at reduced capacity. There are also serious implications for quality of care when a physician's workload is increased to compensate for staff shortages. Several hospitals are operating with only 25 percent of their normal physician component.

The situation is even more alarming when the distribution of the physicians is considered. Eighty percent of all doctors are working in provinces along the "line of rail" (Central, Copperbelt, Lusaka, and Southern Province). In 1980, the disparity in the physician/population ratio ranged from 1:5,999 in the Copperbelt Province to 1:20,000 in Luapula. The overall "line of rail" physician/population ratio was 1:5,000 and 1:19,000 for the rest of Zambia. The ratio has continued to decline because of increased resignations since 1980.

The staffing position regarding nurses is due primarily to the fact that sufficient training schools are available and currently all posts in the government are filled. Maldistribution, however, is also a problem with nurses, because the majority prefer to live in large urban areas rather than in rural areas away from schools, social amenities, and opportunities for career advancement.

The availability of clinical officers who are in charge of the health centers and who thus form the mainstay of rural medical care is also problematic. Currently there are more than 500 vacant posts as it becomes more difficult to recruit and retain clinical officers to work in isolated rural areas, with no means of transport, few drugs, little equipment, and increasing workloads. Other categories of technical personnel, such as pharmacists, laboratory technicians, radiographers, physiotherapists, and optometrists, are all in critically short supply.

The major policy issues surrounding Zambia's health-manpower crisis concern posting of policies for physicians and nurses, the shortage of training facilities, and the need to revise the present conditions of service for physicians in order to stem the tide of those leaving for private practice.

## 2.6 Nutrition Status

In 1986, 8 percent of the total admissions of children throughout the country were due to malnutrition which accounted for 24 percent of the total deaths in children in 1986, compared to 12 percent in 1973. Case fatality rates for pediatric admissions have increased markedly from 165 per 1,000 in 1973 to 218 per 1,000 in 1986, while the number of admissions as a percentage of the under-five population has remained fairly stable. Further indications of the increasing severity of malnutrition comes from recent surveys at the University Teaching Hospital (UTH) in Lusaka, where an average of 30 percent of the malnourished cases died within 12 hours of hospitalization.

The overall extent of malnutrition was revealed in a Primary Health Care Review in 1984. A nutrition survey conducted during the review using the weight-for-age indicator in 30 randomly selected national clusters found that 28 percent of the 392 children aged 0 to 59 months were below the lower line of the Road-to-Health growth chart (80 percent weight for age). This result is similar to other data sources including community-based surveys and confirms the fact that roughly one third of the under-five children are malnourished.

An examination of data available from the MOH, community research, and the University Teaching Hospital indicates that the trend is continuing, with particularly large increases in urban areas. The malnutrition situation is due to interrelated factors, including a continuing decline in economic conditions, rapid inflation, population increases, urbanization, weaning practices, women's workload, infant and early childhood care, and AIDS.

All of the foregoing factors have contributed in varying degrees to the rising incidence of malnutrition. The marked rise in malnutrition mortality in recent years, as well as the fact that malnutrition is the major underlying cause of death in pneumonia, acute respiratory infections, diarrhea, gastro-enteritis, anaemia, and many other diseases and infections, make it the most important health problem affecting Zambia.

## 2.7 The National CDD Program

The basic planning document for the national CDD Program is still the Plan of Operation for the Control of Diarrheal Disease Program, which was developed in 1985. This plan set as the main objective of the program "to reduce the morbidity and mortality from diarrheal diseases, with emphasis on children 0 to 5 years." The specific objectives were to:

- o Improve the environmental sanitation of all communities and provide a safe water supply.
- o Make ORS available.
- o Increase community participation through the training of community health workers and traditional birth attendants (TBAs).

The actual working document for the program was the implementation plan developed in 1986, which was agreed upon by the National CDD Committee (comprising representatives of the MOH, WHO, PRITECH, and UNICEF.) This year, for the first time, CDD appears in the Fourth National Development Plan (FNDP), 1989 to 1993, with an itemized budget for the program (see Exhibit 1-3). The following is an excerpt from the FNDP:

## "Control of Diarrhoea Diseases Programme

The Fourth National Development Plan objectives and targets of this programme are to:

Reduce morbidity and mortality ratios among children 0-5 years of age by 80 percent in urban areas and 70 percent in rural areas by 1993.

Promote good personal hygiene and food preparation habits to 80 percent of the mothers.

Promote breast feeding to 90 percent of the mothers to reduce risks involved bottle feeding.

Promote to 80 percent public awareness of the use of salt-sugar solution as a basic component of home treatment of diarrhoea.

Provide adequate treatment for all children with diarrhoea in all health institutions.

To achieve the foregoing objectives and targets the following activities will be undertaken:

Undertaking massive health education campaigns on public awareness of diarrhoea prevention and treatment.

Ensuring continued production of Oral Rehydration Salts (ORS) by General Pharmaceutical Limited in Kabwe through PRITECH and UNICEF arrangements to purchase raw materials (Other alternative sources will have to be sought to sustain the production).

Establishing a comprehensive system of ORS distribution to all Rural Health Centres.

Establishing a sustainable system of programme monitoring and supervision.

Training of 70 percent of all health workers and 60 percent of Traditional Birth Attendants and community health workers in proper case management of diarrhoea.

Encouraging the mothers to continue feeding children who have diarrhoea.

Establishing ORT corners in all health institutions for proper monitoring of oral rehydration therapy."

5.2 Control of Diarrhoea Diseases

Annex IV(1)

Programme Components	1989	1990	1991	1992	1993
ORS Sachets	1,500,000	1,500,000	1,500,000	1,500,000	3,000,000
Operational Research related to ORS Distribution	100,000	120,000	120,000	80,000	40,000
Baseline and follow up surveys	120,000	120,000	80,000	80,000	40,000
Operations Research	80,000	80,000	80,000	40,000	40,000
Popular Theatre	35,000	240,000	200,000	180,000	180,000
Provincial/District Staff courses training	28,000	16,000	20,000	20,000	16,000
Training of Health Centre staff in provinces	120,000	40,000	40,000	40,000	40,000
Equipment for UTH ORT Training Unit	12,000	12,000	12,000	10,000	10,000
Supervision	80,000	80,000	10,000	80,000	80,000
ORT Clinical Management (Local courses)	500,000	500,000	500,000	500,000	500,000
2x4 Wheel Drive vehicles	400,000	400,000	180,000	240,000	240,000
Maintenance of ORT Corners	800,000	640,000	40,000	200,000	200,000
<b>TOTAL</b>	<b>3,825,000</b>	<b>3,748,000</b>	<b>3,122,000</b>	<b>295,000</b>	<b>4,388,000</b>

This budget is a combination of input of all funding organisations. It should be noted that 2.5 million of ORS sachets is a yearly requirement at a price of 50n per sachet. Hence K1.25 million will be required annually from Ministry of Health to purchase the above.

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The Zambia National CDD Program targets, objectives, and activities were first outlined in the Plan of Operation of 1985. While this plan listed in some detail each activity and its desired outcome, as well as a desired activity schedule for each program component, it was broad and ambitious in scope, lacking the day-to-day detail of who would take responsibility for which activity, the steps needed to achieve these outputs, which organization would fund what activity, and so forth. At that time, the DMS decided that the Director of MCH programs would take responsibility for the CDD Program, even though this would place a heavy burden on the Director/MCH. The 1986 PRITECH team recommended that a full-time CDD Program Manager be appointed and that PRITECH hire a full-time PRITECH representative as the CDD Manager's counterpart. In addition, PRITECH urged that the very able WHO Associate Expert, Dr. Steffan Salmonsson, continue his current assignment assisting both the CDD and Expanded Program of Immunization (EPI) efforts.

In June 1986, the Director of Medical Services, Dr. E.K. Njelesani, announced that Dr. H.B. Himonga, MOH epidemiologist, would become the CDD Program Manager. In June 1986, the Ministry of Health appointed Dr. H.B. Himonga to be the full-time CDD Program Manager, although his title remained National Epidemiologist. In addition, two full-time public health nurses, Mary Kaoma and Annie Muphinde, were appointed to the program, and the following year Mr. Peter Mphande joined the CDD staff.

Unfortunately, as a result of staff shortages at the MOH, Dr. Himonga has at various times had to assume other responsibilities in addition to CDD program management. In 1987, Dr. Himonga had responsibility for both the EPI and CDD programs. He now is responsible for malaria and traditional medicine and occasionally serves as acting Assistant Director Medical Services.

The CDD program was ably assisted for two years by the WHO Associate Expert, Dr. Steffan Salmonsson, in the areas of CDD and EPI. Dr. Salmonsson's contract expired in August 1987, and WHO has yet to appoint his successor. During the PRITECH team's visit in May 1987, members expressed their concern that the departure of the WHO associate expert would inevitably deplete the program significantly. Members of the team continue to emphasize the important need for a WHO medical officer to assist the program, particularly in the areas of CDD case management and training courses at the University Teaching Hospital's ORT unit. Also in 1986, Dr. Njelesani formally approved the appointment of a PRITECH Resident Expert, who would provide both technical and administrative assistance to the CDD program.

The 1986 PRITECH team had also recommended that a first priority should be the development of a detailed implementation plan, to be prepared by the CDD Program Manager and the PRITECH Representative. The Ministry of Health circulated to UNICEF, WHO, and PRITECH an

outline of projected CDD activities, an implementation plan, and budget, which were agreed to by all parties and became the basis for the 1986 - 1987 program. This implementation plan, which covered the period from August 1, 1986 to August 1, 1987, was rather simple in scope initially, to a large extent listing actions to launch the program. Such actions included the formation of the national CDD Coordinating Committee in August 1986, arrangements for a baseline survey, a second meeting of the NCCD Committee, CDD mid-level training course in Western and Northwestern provinces, and so forth. A simple Gantt chart listed planned dates for each activity and the names of the organizations responsible for each. By November 1986, visible progress had been made -- a National Coordinating Committee, a National Program Manager, the establishment of the PRITECH ORT Project, and financial commitments by WHO and UNICEF.

Dr. Freund, the PRITECH representative, took responsibility for adding greater detail to the implementation plan, in collaboration with the MOH and other donors. The implementation plan has been revised annually, always with the agreement of the MOH and donors. Dr. Freund closely monitored this plan each month indicating progress and delays, which would then be discussed at the CDD National Coordinating Committee meetings.

Several committees were set up by the CDD Secretariat to focus on various aspects of the program. The largest and most important of these is the CDD National Coordinating Committee, which meets every quarter to discuss general issues, to compare progress against the implementation plan, to allocate tasks and responsibilities, to recommend policy, and to draw up short- and medium-term plans, such as the supervisory-tour schedules. This committee, which is chaired by Dr. Himonga, includes the CDD Secretariat (which comprises Peter Mphande, Mary Kaoma, Annie Muphinde, and Dr. Freund) and representatives of WHO, UNICEF, and UTH Director, Mr. Illuya of GPL, the Director of Pharmaceutical Services, Dr. Chikusu, and other members of the MOH.

The ORS subcommittee monitors ORS production and distribution and is convened on an ad hoc basis when problems are evident in ORS supplies. Members include representatives of Medical Stores Limited, the General Pharmaceuticals Limited, MOH, PRITECH, UNICEF, and WHO. Another committee involved with ORS, as part of the essential drug program, is the Essential Drug Task Force, comprised of Dr. Himonga, Dr. Chikusu, Mr. Iluya, and representatives from SIDA and UNICEF.

Dr. Freund was instrumental in forming the Health Education Materials Committee and in sending out invitations to representatives of the MOH Health Education Unit, the University Teaching Hospital, the National Food and Nutrition Committee, mass media experts, medical illustrators, education professionals, and popular-theater organizers. At the second meeting of this committee in January 1987, a detailed health-education strategy was

developed allocating specific tasks and a timetable for their completion. Individuals with appropriate expertise were assigned tasks related to posters, flipcharts, popular theater, radio programs, newspapers, and translation.

This committee has continued to meet frequently over the past two years and has proved to be an invaluable body. The committee discusses and decides on its strategy and then has the authority to approve specific educational materials, an authority which significantly simplifies and speeds up the development of these materials. The original CDD Health Education Committee is currently being reformed into an ad hoc Child Survival Health Education Committee, to better coordinate the communications efforts of donor agencies and government organizations (for example, SIDA, NORAD, UNICEF, PRITECH, CMAZ, ADRA, SAWSO, PPAZ, the Institute for Cultural Affairs, etc. There had previously been several discussions on how to coordinate health-education efforts in CDD and UCI, but expanding this coordination to all child-survival interventions of all and any involved organizations will encourage integrated efforts across the board.

The UTH ORT Unit Subcommittee meets on an ad hoc basis to address and solve pressing problems. The committee members include the CDD Secretariat, the UTH Board, PRITECH, WHO, and UNICEF. Work on the ORT Training Unit at the UTH has been in process since late 1986 when negotiations began with architects from the Ministry of Works and Supply. The architects produced a set of plans based on the WHO ORT Unit guidelines as well as on input from a subcommittee of the National CDD committee, which had reviewed staffing requirements and other technical details.

Since then, the MOH, and the CDD Secretariat in particular, has worked in close collaboration with WHO, UNICEF, and PRITECH to establish this national and WHO regional training center at the University Teaching Hospital. Renovations were completed by mid-1988, but the unit's opening is still dependant upon furniture, equipment, and a commitment of staffing by the University Teaching Hospital.

The Canadian High Commission granted funds to purchase the needed furniture and equipment. Although these funds have been available for more than six months, a decision must be made regarding whether the MOH or the University Teaching Hospital would place the order. This hurdle now appears overcome and the first national training course is expected to occur during the last week of June 1989. WHO and PRITECH sponsored the consultancy of Dr. F. Davachi in 1988 to assist the MOH in planning for this first course.

The National Primary Health Care (PHC) Development Committee, which convenes quarterly, is an interministerial committee with representatives from the Ministries of Agriculture, Health, Education, and Water that works to achieve intersectoral

integration in PHC. The PHC Functional Committee examines the implementation plans of the various programs (UCI, CDD, MCH, etc.) and pulls together a master overall plan for the Permanent Secretary, detailing the activities of each program for the year.

The GRZ/UNICEF Interministerial Committee is responsible for planning UNICEF's contribution and participation in the various programs, including health, education, labor, social services, food programs, and functional literacy. The CDD Program Manager and the Secretariat (including Dr. Freund) are involved in most of the committees mentioned above, all of which meet in Lusaka.

Dr. Himonga reports directly to Dr. E.K. Njelesani, Permanent Secretary, because there is no Director of Medical Services. Another role for Dr. Himonga occasionally is that of Acting assistant director of Medical Services (PHC). Policy decisions and planning initiatives, to a large extent, come from the central CDD secretariat, although decisions for training courses in the districts are taken at the provincial level. The line of command and communication from Dr. Himonga is to the Provincial Medical Officers. In addition, Dr. Himonga has designated CDD focal persons on the staff of each of the PMOs, but similar designations still need to be made at the district level. The CDD focal person at the provincial level is often either a health inspector or the Primary Health Care Coordinator. This person is responsible for implementing and organizing provincial and district training courses; monitoring ORS distribution to districts; monitoring the distribution of CDD health-education materials; coordinating visits of CDD staff; achieving CDD integration with other programs -- EPI, PHC, nutrition, and MCH; verifying that the CDD policy is being implemented (for example, that ORT corners are being set up); and reporting back to the CDD Secretariat.

Since 1984, the CDD program has been carrying out training in diarrhea case management. The main objective of this training is to provide two supervisors in each district with CDD skills and knowledge that they can subsequently pass on to other health workers in their districts. UNICEF and WHO have been the primary sponsors of training. The WHO CDD modules are used, but until recently (when WHO/Geneva sent a large order of materials) there has been a serious lack of charts, modules, and reference books.

## 2.8 CDD Staff

The CDD Secretariat is responsible for day-to-day management of the national CDD program. This management role includes training, supervisory tours, monitoring ORS availability and distribution, distributing health-education materials, coordinating national courses, sometimes facilitating provincial and district courses, and working with the donors to ensure that the necessary contributions and assistance are available.

## Chapter 3

### SURVEY FINDINGS REGARDING THE CDD EFFORTS IN ZAMBIA

This chapter of the report focuses on the principal findings of three research studies concerning the control of diarrheal diseases (CDD) in Zambia, which were conducted during the past several years. These studies, which were carried out with the support of PRITECH, involve a major CDD survey regarding mothers' knowledge, attitudes, and practices (KAP) vis à vis diarrhea; a follow-up survey investigating the effective use of ORT by mothers; and a survey of the public health staff, private physicians, and chemists concerning their practices in the case management of diarrhea. This chapter then discusses three constraints to the Zambian health system: AIDS, economic declines, and the influx of foreign doctors.

#### 3.1 Summary of Research Studies

##### 3.1.1 The 1986 KAP Survey

With assistance from WHO, UNICEF, and PRITECH the Ministry of Health carried out a major CDD/EPI survey in Zambia between October and December 1986. Following closely the research design used by WHO in many countries, this survey was aimed at mothers with children under five. Data were collected from the total of 8,417 households, with 16,309 children under the age of five.

Following is a summary of the major findings concerning diarrheal disease:

- o Based on a two-week recall, there were 4,075 diarrhea cases in the under-five population (45 percent of the households).
- o More cases were cited in urban areas than in rural areas: 53 percent versus 47 percent.
- o The urban incidence was 27 percent; the rural incidence was 22 percent.
- o The seasonally adjusted number of diarrheal episodes per child annually was 5.1.
- o Breast-feeding was continued during diarrhea among 82 percent of the mothers surveyed.
- o Food during diarrhea: 27 percent of the mothers gave more food to the children during diarrheal episodes; 27 percent gave the same amount; 40 percent gave less; 8 percent gave none.

- o Fluids during diarrhea: 63 percent more, 23 percent the same, 13 percent less; 9 percent none.
- o SSS awareness: 84 percent; ORS awareness: 67 percent.
- o ORS was used by 27 percent of the mothers (32 percent urban, 22 percent rural).
- o A sugar-salt solution (SSS) was used by 42 percent of the mothers (50 percent urban, 34 percent rural).

Because no questions were asked regarding either how to mix or how to administer these solutions, no information exists concerning the effective use of ORT from this survey. (Information about effective use has subsequently been gathered by PRITECH in a study reported below.) These high rates of awareness stem almost entirely from information received either in a clinic or in a hospital setting rather than from community health workers or the media. Despite limitations of the formal health system, it is by far the most effective actual and potential source of health information for the population nationwide.

In addition to ORT, treatment categories for diarrhea included tablets, injections, antidiarrheal mixtures, I.V. fluids, and traditional medicine, as follows:

- o Tablets 24 percent (28 percent urban, 20 percent rural).
- o Injections 13 percent (16 percent urban; 10 percent rural).
- o Mixtures such as kaolin 38 percent (43 percent urban, 32 percent rural). (It should be noted that these mixtures have now been dropped from the MOH drug list).
- o Traditional medicine 33 percent (29 percent urban, 37 percent rural). These traditional medicines include bark preparations, roots, and leaves, with the use of leaves (guava, mango, and papaya) being predominant. Leaves are pounded, then soaked to make tea for drinking; on rare occasions, mothers added sugar and/or salt to this tea. A few mothers instructed the child to sit in the tea rather than to drink it. Root and bark mixtures were used as enemas.

### 3.1.2 The 1987 Effective-Use Survey

In 1987, PRITECH conducted a study designed to examine the effective-use question and to observe the effectiveness of ORS distribution. A research team interviewed 553 mothers, all with children under five who currently had diarrhea. These interviews were conducted in seven districts in seven different provinces

throughout Zambia. In addition, the team sampled 56 rural health centers (RHCs) and ten hospitals from these same districts concerning the treatment of diarrhea.

Some of the principal findings of this study are as follows:

- o The mean duration of diarrhea reported in children under five was six days. When this information is compared with the earlier finding of 5.1 episodes per child annually, it becomes evident that Zambian children, on the average, have diarrhea more than a month each year. This finding underscores the necessity of ensuring proper nutrition during diarrhea. With the documented increases in malnutrition in Zambia, children can be expected to suffer longer and more severe bouts of diarrhea.
- o The mean distance to a health center was 4.2 kilometers. Because other studies found mothers reluctant to walk more than 2 kilometers to seek treatment for a child with diarrhea, they need to know how to promptly administer ORT at home.
- o Blood in the stool was observed by 16 percent of the mothers, thereby suggesting that shigella may be particularly active in Zambia.
- o When asked to describe the behavior of a child who had diarrhea, mothers mentioned crying and irritability, along with failure to nurse or eat, inactivity, sleepiness, and loss of weight. The common use of phenergan in clinics suppresses crying and irritability, but reinforces failure to nurse or eat and contributes to further inactivity, sleepiness, and loss of weight.
- o Eighty-one percent of the mothers interviewed recognized and had used ORS. Virtually all of the mothers received their ORS from either a clinic or a hospital; only three mothers bought ORS. Whatever the problems of health facilities in stocking ORS (cf. below), the potential for private-sector sales and promotion of ORS is untapped.
- o Regarding the mixing of ORS, of the 454 mothers who were aware of ORS or who had used ORS, only 22 percent could correctly describe mixing. The most common error noted was the amount of water used, which probably was the result of packet size.
- o Of the 74 mothers using ORS at the time of the interviews, 42 (57 percent) had prepared the ORS correctly.

- o ORS volume averaged only 350 ml/day for these children with diarrhea. For 44 percent of the children, the volume was between 10 to 250 ml, with another 25 percent receiving no more than 500 ml. As the report concludes, "generally most mothers are not giving enough fluid. Some complained that the child often vomited. This situation may be due (in the case of ORS/SSS) to the over concentrated solutions or to the excessive amounts of salt. Clearly, health education is important in this area to teach mothers to feed slowly and frequently ..." Mixing ability and the amount of volume a child will take may be quite closely related.
- o Regarding the sugar-salt solution (SSS), of the 60 mothers using SSS at the time of the interview, correct mixing was the same as the overall figure for ORS, 22 percent. Half of those interviewed, however, were giving other fluids, and more than one-third acknowledged the use of traditional medicine.
- o More than 40 percent of the mothers in the sample reported using traditional medicine for the treatment of diarrhea in their children, and 47 percent report giving other fluids. This broad use of home fluids is a base to build upon if an adequate volume can be ensured.
- o The study of 56 health centers revealed that barely three mothers in five had ORS at all and that barely two in five received ORS regularly. Half of the health workers were unable to prepare ORS correctly; three in five were unable to prepare SSS. On average, health centers need 375 packets per month but receive only 192.
- o All ten hospitals visited stocked ORS; quantities were insufficient, however, for supplying rural health centers.

3.1.3 The 1987 Surveys: Health Centers, Private Surgeries, and Chemists

Of health-center surveys mailed, 197 responses were received. Two findings emerge, concerning training and concerning ORS stocks:

- o Most rural health center staff (59 percent) reported that they had been trained in CDD, usually through MOH courses or through courses offered by other organizations. Nevertheless, 41 percent had received no CDD training at the time this survey was conducted in February 1987.
- o Regarding ORS stocks, 59 percent of the centers (117) currently had ORS, 41 percent (80) did not. The mean for those with ORS was 310 packets, but in fact most

centers had few packets -- 75 centers had fewer than 100 packets on hand. Of the 42 centers with more than 100 packets, only two were out on the "line of rail."

- o Of those centers with no ORS, 59 percent said that they had been without ORS for six months or more -- that is, throughout the entire peak diarrhea season. Other drugs were also in short supply: 38 percent had no antibiotics, 41 percent had no penicillin, 33 percent had no chloroquine, and 50 percent were without aspirin.

The private surgery survey covered 50 surgeries in Lusaka, Ndola, and Kitwe between April and August 1987. These represent 24 percent of the 212 registered private surgeries at that time. The major findings were as follows:

- o The private doctors treated children's diarrhea mostly with a mixture of ORS and antibiotics or antidiarrheals (46 percent).
- o Thirty percent prescribed ORS or SSS alone, while 10 percent administered antidiarrheals and 8 percent gave antibiotics alone.
- o Approximately half of these physicians received formal ORT training either in medical school or from other sources.
- o ORS was available in 72 percent of the surgeries, usually Searle's Rehydrit.

The chemist's survey covered 40 retail chemists in person and by mail during June to August 1987. Only one mail questionnaire was not returned.

- o All chemists said customers asked for antidiarrheals, while only 21/40 said customers asked for ORS. Many chemists said antidiarrheals were one of their biggest sellers, second only to cough mixtures. At that time, the average number of antidiarrheals sold each month was 750 per chemist, with a range of 50 to 7,000 per shop.
- o Most chemists (88 percent) also had ORS, averaging sales of 200 per month. Searle's 250 ml Rehydrit was then the most popular because it was most consistently available.
- o The chemist's role as advice-giver was clear. All said that they offered advice about diarrhea when asked. The advice they gave ranged from very good (increased fluids) to very bad (stop feeding), thereby suggesting the need to train chemists in the effective case management of diarrhea.

### 3.2 Constraints to the Health System

To realize its goals, the CDD Program will have to overcome some major constraints to the Zambian health systems. These constraints are discussed in the paragraphs that follow.

#### 3.2.1 Acquired Immune Deficiency Syndrome (AIDS)

The facilities visited by the PRITECH team are being overwhelmed by persons with AIDS. As such, this life-threatening disease is likely to compete for health resources, to increase the demand for ORS for both adults and children, and to discredit child-survival therapies such as ORS.

#### 3.2.2 Foreign MOH Doctors Without Training

The flight of the small corps of Zambian doctors and the small number of mission doctors has prompted government officials to request the assistance of physicians from other nations. While the response has been swift, the doctors who arrive in Zambia are ill-prepared for their work, often not speaking English and having no orientation to the WHO/CDD guidelines followed by the Ministry of Health. The result is that these doctors may overrule the approach of their trained subordinates, thereby imposing discredited and dangerous diarrheal therapies onto Zambian children and dissipating the investment made in staff training in ORT.

#### 3.2.3 Zambian Economic Decline

For several years now, Zambia has been experiencing an economic decline exacerbated by the loss of copper revenues and massive debt. The government first repudiated IMF strictures, thereby avoiding some of the cutbacks in social services usually demanded by the IMF. Now the government has conceded that an IMF agreement is their last resort, meaning that the already-long daily queues for the most basic foods will get longer and that health budgets will be reduced further. A hospital of 261 beds now has a budget of 26,000 kwacha (\$2,720) annually for drugs, facilities, linens, and everything except staff salaries. In such a setting, the escalation in malnutrition among children, already noted by health workers, will accelerate and undermine all child-survival programs, including CDD. Given this situation, the evaluation team is reluctant to recommend near-term sustainability of the ORS supply by the Ministry of Health.

## CHAPTER 4

### FINDINGS AND RECOMMENDATIONS

This final chapter of the report sets forth the recommended actions of the PRITECH evaluation team regarding the national CDD Program in Zambia. Following is a listing of the program components that were assessed:

- o Case Management of Diarrhea
- o Training
- o Supervision
- o Communications
- o ORS Production, Supply, and Distribution
- o Program Management
- o Health Information Systems
- o Community Participation
- o Coordination with Other Groups, Associations, and Organizations
- o Evaluation
- o Problem-solving Studies.

The approach to this chapter has been to first describe the team's general observations regarding each of the foregoing components and then to present recommendations for the Ministry of Health's consideration.

#### 4.1 Case Management of Diarrhea

The evaluation team visited a total of six hospitals and four health centers in Lusaka and in the Southern and Copperbelt provinces. At the facility level, the team discussed CDD activities with the administrators; interviewed and observed doctors, nurses, and other health workers; reviewed patient records; and interviewed the mothers of diarrhea patients. Members of the team also discussed CDD activities with regional and local coordinators. In general, staff were aware of the WHO/CDD guidelines for the case management of diarrhea, the fundamentals of ORT, and the importance of using ORS in treatment. Appropriate practices were not, however, always followed.

##### 4.1.1 Case Management of Diarrhea at Facilities

Although all of the Zambian health staff at the facilities visited knew how to assess a case of diarrhea orally, often their suggested therapies indicated inappropriate patient evaluations. They took incomplete histories, made partial recordings of physical signs of dehydration, and wrote inadequate prescriptions. Assessment of the type and length of the diarrheal episode, differentiation of the level of dehydration, definition of the nutrition status of the

child at admission, and the weighing and treatments prior to admission were rarely recorded. Unfortunately, almost all of the hospitals started treatment with an intravenous solution, regardless of the dehydration level. When ORS was prescribed, there was no indication of the amount or how long it was to be taken.

Reassessment of the patient, an important part of the case management of diarrhea, was not conducted on a regular basis. Many cases assessed by the team did not require I.V. treatment. Further, the average length of admission of a diarrhea case in the hospitals was five to seven days. The team considered this a long and unnecessary period that results in an additional financial burden to the Zambian health system.

#### Recommendations:

The CDD program should prepare a series of booklets with the standard guidelines and procedures for assessment, treatment, and follow-up. Information also should be prepared regarding the methods for counseling and educating mothers, either individually or in groups, about the identification, home treatment, and prevention of diarrhea in children. This series of booklets should contain documents that are designed for the varying levels of health-care professionals as well as for the different levels of facilities within the health care system. Further, the program should design either a diarrhea patient's form or a specific type of register system in which the cases of diarrhea would have to be recorded in the same fashion as the guideline booklets concerning the case management of diarrhea.

#### 4.1.2 Treatment Policy Regarding ORS, SSS, and HAF

Health personnel knowledge of ORS in health facilities is sufficient. The absence of packets at both the facilities and at the dispensary outlets, however, creates a variety of inadequate liquid combinations used by health workers to treat dehydration or as a liquid treatment recommended to mothers. In general, while the theory of ORS use is known, it is unclear to health workers where, when, and how to use ORS, SSS, and home available fluids (HAF). Policies regarding ORS, SSS, and HAF are not well defined. The team felt that this situation was creating confusion and misinterpretation among health workers and that consequently different messages were being given to mothers.

The promotion of ORS packets as a policy to prevent and treat all diarrheal cases at home and in health institutions would require a considerable increase in ORS supply. On the basis of the under-five population and diarrheal incidence, the annual requirement would be approximately 13 million packets. Promotion of ORS for home treatment as well would increase program expenditures and would require extended and improved distribution systems.

The use of SSS as a home treatment has not yet been defined by the program. Considerable confusion exists on the part of health workers in recommending SSS, ORS, or HAF to mothers. On the other hand, neither health workers nor mothers prepare SSS correctly. It is also relevant to note that salt and sugar are not always available in Zambian markets.

Home available fluids are referred to in health education materials and by health workers. Health workers and mothers, however, are not knowledgeable regarding definition of the types of fluids, the amount to be given, and the frequency of administration. The general statement concerning the prevention of dehydration is to "give more fluids," but health workers do not seem to know what this instruction means in practice. Clearer definitions of the appropriate use of all three therapies are, therefore, necessary and indeed are critical in terms of establishing standard treatment under the CDD Program.

#### Recommendations:

A study should be conducted of what home fluids are available and traditionally used in Zambian homes for treating diarrhea. This approach would provide objective insight regarding the policies of home treatment of diarrhea and prevention of dehydration so that they can be specific and recommend appropriate fluids in correct amounts.

The Ministry of Health should clarify and make more specific the policies concerning ORS and SSS for home treatment and at health institutions. On the basis of lessons learned in other programs, the Zambian program should consider whether to discontinue recommending SSS for home treatment and instead substitute home available fluids. The program also should weigh carefully the role of ORS in homes because of the cost and the difficulties in marketing it in every neighborhood or household. ORS may be the most effective treatment in the health facilities and at homes for some dehydration cases due to diarrhea. The program should define such policies in line with the objectives of the program calling for the improvement of diarrhea case management and the training of health workers and health education of mothers. The MOH should make such policies official and should distribute a letter of information among all health workers and institutions of the country.

#### 4.1.3 The Use of Antidiarrheal Drugs

In December 1986, antidiarrheal drugs were eliminated from the MOH central drug list. At the same time, the MOH made a decision to prohibit commercial advertisement of antidiarrheal drugs on TV and radio. Both of these decisions were excellent. Nevertheless, although a bill is pending in Parliament banning the retail sales

of antidiarrheal mixtures, these drugs are still being sold at pharmacies. Consequently, mothers and health care providers outside the MOH system continue to use them.

Phenergan seems to be universally used by all health workers in Zambia to treat vomiting. This drug is not indicated for children with diarrhea because it makes the patient lethargic, sleepy, and uninterested in food or fluids by mouth, the very therapies that are needed. In truth, this drug is usually given to quiet a fussy child, and fussiness is a characteristic of children with diarrhea until they become weaker as a result of the lack of food and liquids.

Antibiotics, in general, were found to be in wide use in the majority of the health facilities visited. Multiple antibiotic therapy was commonly observed in hospitals as well as in centers. At one center, the clinical officer in charge informed team members that the shortage of ORS "forced him" to prescribe antibiotics, because the mothers would not leave the center without medication. Unfortunately, the inappropriate use of antibiotics is endangering the health of Zambian children and adding unnecessary costs to the MOH health budget.

#### Recommendations:

The CDD program and the MOH should take the necessary actions to convince Parliament to pass the bill banning the sale of antidiarrheal drugs for children by all pharmacies.

The CDD program should draft and propose to the Ministry of Health a circular letter of instruction to MOH physicians defining the appropriate use of drugs in treating diarrheal episodes. This letter should indicate the danger of using phenergan as the treatment for vomiting in dehydration cases. It also should describe the appropriate management of children who seek medical attention for watery diarrhea, bloody diarrhea, and diarrhea that has lasted more than 14 days. Antibiotics should be used only when indicated, and the recommended products should be made available at the facilities.

#### 4.1.4 Placement of Assessment and Treatment Charts

Assessment/treatment charts were available in most of the facilities visited, but they were not posted in those areas where patients were assessed and treated. For example, the team found these charts in storerooms, nutrition demonstration rooms, and in administrators' offices. Posters on CDD were observed only in Monze Hospital, where the ORT ward had two and the pediatric ward had two, and at Mukuni RHC, where the WHO assessment chart was displayed in the corner where patients were assessed and ORS or SSS was prepared.

## Recommendations:

The placement of charts and posters, and explanations of their functional importance, should be addressed during the training program. These areas also should be included in the supervisory checklist. The location of charts should be confined to the assessment and treatment areas when the number of charts is limited. It is strongly recommended that posters be displayed in places where mothers will easily spot them, for example, in waiting and treatment rooms. The program should request more charts from WHO and provide at least one to every facility that is involved in the case management of diarrhea.

### 4.1.5 Establishment of ORT Corners

In most of the health centers and hospitals the team visited, the health workers had information concerning the development of ORT corners. Some health workers who were recently trained had received instruction on how to develop an ORT corner. In most facilities, however, there were no specific areas designed for ORT. This situation again indicates a gap between knowledge and practice.

As a result of the heavy patient load at most health centers, a child with diarrhea is examined briefly by a clinical officer. A clinical officer in an urban health center in Livingstone told us that because he works alone, he has to see up to 50 to 100 patients daily. As such, he had little time either to assess the child or to instruct mothers in the management of diarrheal episodes. If the child was not severely dehydrated, he prescribed ORS, which the mother received from the dispenser.

It is likely that an ORT corner in a typical health center not only would serve the purpose of improving case management of diarrhea but also would provide an opportunity for the health center staff to communicate health education messages on ORS/ORT and on the prevention of diarrhea. Several health officers indicated that they did not set up an ORT corner because they felt that specific guidelines had to be sent from the CDD Program Manager to the provincial medical officer before such corners could be established. Others mentioned the shortage of personnel to supervise the treatment given by mothers as a constraint.

An example of a successful ORT program implementation at the health-center level was reported from the Western Province, Lukulu District, where a clinical officer organized ORT corners in seven rural health centers in his district. This particular individual had completed a CDD supervisory skills course.

The team concluded that there is almost a universal belief among health workers that the creation of ORT corners is an elaborate task that involves special permission to use space, material,

equipment, and furniture. Health workers perceive that the authority lies with the provincial medical officer, who is authorized by the Ministry of Health.

#### Recommendations:

CDD training staff should revise information concerning the establishment of ORT corners, which is currently provided in CDD training courses. Information concerning where an ORT corner should be located within the health facility, the equipment required to establish one, the management of patients at the ORT corner, and the information to be given to mothers during treatment should all be made clear during the training sessions. A manual with illustrations of what an ORT corner is and its primary function should be considered for publication and distributed among all concerned MOH staff. The provision of equipment for an ORT corner may be considered by the program as an incentive to health workers who draft plans for ORT corners.

#### 4.1.6 Nutrition Communication with Mothers

The maternal and child health (MCH) nutrition demonstration programs of the MOH in all of the hospitals appear to be effective in educating mothers. The program includes information on breast-feeding, weaning practices, malnutrition prevention, hygiene, diarrheal disease prevention, ORT, and immunization. Most of the mothers questioned at the facilities had a child growth card on which basic information about their child's growth and health/illnesses was recorded. The few mothers interviewed indicated a good understanding of the treatment and prevention of diarrhea. Most of them informed the team that their knowledge came from the under-five clinic education program. According to health workers, nutrition education was also available at the outpatient department of these hospitals and at some rural or urban centers.

In some facilities, the hands-on training of mothers regarding nutrition was excellent. For example, at Monze Hospital there is a separate nutrition rehabilitation center located just off the grounds that is run by the diocese. Mothers and malnourished children stay here from days to weeks, while the child is restored to health and the mother receives cooking lessons and works in the center's gardens. At the Livingstone Hospital malnutrition ward, there is a nutrition corner where only mothers of malnourished children receive daily instruction on foods and food preparation, growth monitoring, ORT, and immunization. Unfortunately, the mothers of patients from the rehydration ward do not participate in this training program. Prior to the child's discharge from the ward, the mothers of dehydrated patients were counseled individually by the nurses about mixing and administering ORT at home and about proper nutrition during diarrheal episodes.

In general, outpatient departments at health centers and hospital outpatient departments have designed a health education program with an implementation schedule for the year to give to mothers. The programs seemed to be an excellent way to communicate with mothers as well as to educate them about prevention and treatment of diarrhea and proper nutrition of children under five. In 1988, at Mukuni rural health center there were sessions on CDD in June and December for mothers of children under five and for pregnant women. (Zambia's diarrhea seasons varies by region, but overall, runs from August through January). Each month these programs cover a mother and child health subject, and in some clinics, it seems the subjects are related to either seasonal problems or clinic activities.

#### Recommendations:

An institutionalized system of communicating with mothers about nutrition and feeding is already in place and seems effective within the health system. It is important for the CDD program to coordinate its messages and activities with the nutrition program. In many health facilities, it may be more effective and efficient to have the nutrition unit staff educate mothers, especially where ORT staff are lacking. This approach should be required for any diarrhea patient who shows signs of developing malnutrition. Specific guidelines concerning what should be communicated to mothers about diarrhea management at home, its prevention, and the importance of weighing the child at regular intervals and child nutrition during and after diarrheal episodes should be incorporated in the existing program.

#### 4.1.7 Leaflets for Mothers

Leaflets containing information for mothers on what to do in case of diarrhea were unavailable. In all of the facilities, health staff said that they gave oral instructions to mothers about ORT at home, including breast-feeding and weaning practices; neither written nor pictorial reminders were provided, however.

A program that provides only oral instructions to mothers regarding ORT will be ineffective in bringing about the desired behavioral changes. PRITECH staff, therefore, created leaflets for health workers to review with mothers, who were, in turn, able to keep that information at home for later reference. Such informative leaflets should be made available at every health facility in Zambia, and health workers should be able to explain the information clearly and accurately.

#### Recommendations:

Every mother of a diarrhea patient should be given an instructional leaflet upon leaving the health facility. The printed material should be written for local consumption and might be linked to an

effective distribution effort to promote vaccines or essential drugs. Specific modules to instruct health workers on how to use the leaflets as part of their routine interaction with diarrhea patients and their mothers should be developed. Sessions using these modules should be included in the curriculum for ORT/diarrhea clinical training and in continuing education efforts at routine district management meetings.

#### 4.1.8 Preventive Messages to Mothers

Those mothers interviewed showed more knowledge than expected regarding measures for preventing diarrhea. They indicated an awareness of the need for washing hands before handling food or after using toilets.

Instruction concerning preventive measures was offered through MCH education programs at the under-five clinics or the PRITECH/MOH-sponsored popular theater on health education. General information given to mothers by the health workers on continued breast-feeding, the giving of more food and liquids to children, and the boiling or keeping of the water source safe during and after diarrhea were accurately described to the team. Specific preventive messages, which should be communicated by the health workers to the mothers, however, were unclear.

#### Recommendations:

Again, the CDD Program has to define the messages that it wants the health workers to communicate to mothers. Because the MCH and nutrition programs have already prepared messages, and the popular theater is promoting the use of ORT among women and children, it is important for the program to review and revise existing messages, as necessary. It is suggested that at this stage of program implementation a field study be undertaken to identify all of the existing messages. This study would then be followed by focus group interviews with mothers regarding the effectiveness of the messages. The results of these studies should indicate to the CDD Program which messages should be used by the health workers for instructional purposes.

#### 4.1.9 Breast-feeding and Continued Feeding During and After Diarrheal Episodes

Information concerning breast-feeding and continued feeding during diarrheal episodes are recommended in health education materials. The hospitals provide food for their patients and encourage mothers to breast-feed by encouraging their presence in the wards caring for their children. More information is needed, however, regarding the frequency of breast-feeding, the types of food to be given, and so forth.

#### Recommendations:

Operational and more specific instructions for health workers on frequencies and contents of feedings should be drawn up during the 1989 CDD retreat meeting. The bases for such guidelines can come from departmental data on the nutritional KAP of mothers in Zambia. When the guidelines are defined, the information should be included as a section in the guideline booklet for health workers, which was described earlier.

#### 4.2 Training

The national CDD training program, which was inaugurated in 1984, has trained regional CDD coordinators in supervisory skills courses. The cadre of professionals included in these courses are at the level of supervision as public health nurses, health educators, health inspectors, clinical officers, and nurse matrons. The mid-level supervisory skills course has training clinical staff at the level below the physicians within the MOH health system, who care for diarrhea patients. Physicians in the country have not received any national CDD training, other than the formal pregraduate medical curriculum training that does not follow the new orientation of ORT.

Following are data regarding the number of national health workers trained to date:

Supervisory Skills (Training-of-Trainers): 315  
Mid-level Supervisory Skills: 1,400

Internationally trained CDD professionals: 11, 6 of who are physicians and 5 of who are nurses:

CDD Program management: 7  
Clinical Management of Diarrheal Diseases: 4

Training efforts of the program are encouraging. The widespread knowledge of ORS/ORT among health personnel reflects the fairly high coverage of CDD training courses. As a direct result of CDD training efforts, most of the health staff working at the provincial, preventive-care level, that is, public health nurses

and health inspectors, had theoretical knowledge about ORS/ORT and the case management of diarrhea.

Despite this accomplishment, this high level of theoretical knowledge of ORS/ORT and case management was not reflected in the team's assessment of practice during health facility visits. This situation may be related to the lack of hands-on experience with actual diarrhea cases in training courses, which currently follows the WHO supervisory skills modules.

Even though the training program follows the WHO modules, the actual curriculum being presented has never been monitored or evaluated. It was evident to the team that some information received during the training has been misinterpreted. For example, those health workers interviewed erroneously reported a need to boil water when preparing ORS, even if the water is not from a contaminated source.

#### 4.2.1 Training of National Physicians

The Zambian doctors working with the MOH health care system have not yet had CDD training, and few have been internationally trained. While they are aware of ORT, they still prescribe drugs and I.V. fluids for all levels of dehydration. When they prescribe ORS, they often prescribe these other therapies' as well. Hence, nurses and other health staff who have received CDD training or prefer ORT, and who are under the supervision of one of these physician's, are not receiving reinforcement in promoting ORT.

#### Recommendations:

A course plan to train medical officers should be developed. The training of at least one pediatrician from every hospital in the country is a priority. Hands-on ORT training is fundamental. The Zambian staff involved in training at the University Teaching Hospital (UTH) and the MOH CDD program, with a CDD curriculum consultant, must work together in developing these plans.

#### 4.2.2 Diarrhea Training Unit at University Teaching Hospital (DTU-UTH)

The building for the diarrhea training unit at the UTH has been renovated and ready to function since November 1988. Materials to care for patients, a conference room, and teaching equipment are in place. To date, however, the opening of the ORT training unit has been delayed because of the lack of furniture. The Canadian High Commission in Zambia donated funds to the MOH to cover the cost of local purchase of the necessary furniture; the release of the money was delayed and orders for the furniture have only recently been placed.

The UTH representatives, CDD manager, and PRITECH team agreed that the present delay is unfortunate and unacceptable. According to the university dean, sufficient staff exist to open the ORT unit. He informed team members that there are two pediatric nurses recently trained in CDD supervisory skills and another one who was trained in clinical case management in Bangladesh in 1987.

Plans exist to recruit more clinical officers for the pediatric ward; no permanent, full-time physician, however, has been appointed as the director of the unit. Dr. Mubita, who was appointed the director of this unit and who was trained in diarrhea case management in Bangladesh in 1987, has been transferred to the Arthur Davidson Pediatric Hospital in Ndola, the only pediatric hospital in the country. Dr. Mubita has expressed a keen interest in participating as a facilitator during the upcoming case management courses at the unit.

According to Professor Mukelabai, the dean of the Medical School, it is anticipated that another Zambian pediatrician, Dr. Henry Mulenga, will be appointed as the director of the unit when he returns from postgraduate training in the U.K. in June of 1989. The latter participated in a CDD training course in Addis Ababa in 1986.

The dean of the Medical School and the CDD manager agreed that there will be a need for external technical assistance during the initial phase to assist in getting the unit operational. WHO has allocated funds for the national and international courses to be offered. The first course is scheduled to be offered during the last week of June. The course will be for Zambian pediatricians and general medical officers (maximum of 10 physicians per course). The first international course is scheduled for August 1989 and the second national course for October/November 1989. Plans and detailed curricular activities for the courses and those which will follow have not yet been developed, however.

#### Recommendations:

In order for the DTU to open, priority should be assigned to:

- o Resolving the problem of furniture procurement
- o Determining the curriculum and materials to be used in the June, August, and October courses
- o Requesting the assistance of a curriculum specialist
- o Preparing a training plan to include all of the pediatricians/doctors in future training courses.

#### 4.2.3 International Course for CDD Staff

Among the staff working with the Ministry of Health, only the CDD program manager has attended an international CDD program manager's course, but he did not have the opportunity to experience direct, hands-on involvement with rehydration cases using ORT or to observe a well-run facility. Of the other staff working with the CDD program, none have participated in any of the WHO courses or visited a well-run ORT unit. Without such experience it is difficult for these staff to be effective in training or managing the CDD program in their country.

Recommendation:

Training of the principal program people is fundamental to the success of this program. We recommend that the CDD Program Manager be given the opportunities to visit programs in other countries, in particular where there are well-organized and functional DTUS. Also, one or two of his staff should either be trained in CDD management and/or visit a successful national program, such as the one being implemented in Egypt.

4.2.4 Foreign MOH Doctors without Training

The exodus of Zambian doctors and the small number of mission doctors have prompted the government to ask for physicians from other nations. While the response has been swift, many of the doctors who arrive in Zambia are unprepared for their work. They are often unable to speak English and often do not receive health care guidelines. When they receive some training or clinical orientation that is presented in English, a question exists as to how much these physicians are able to absorb.

The evaluation team found that these doctors often do not practice the case management of diarrhea correctly and often overrule the more correct approach advocated by their trained subordinates. They constantly impose discredited and dangerous therapies on Zambian children, while dissipating the investment made in staff training in ORT.

Recommendation:

The MOH and WHO should plan the training of these professionals without draining further resources from the Zambian health system. Alternatively, these doctors should be trained in their own countries or at WHO training sites previous to their arrival in Zambia.

4.2.5 Revision of the Supervisory Skills Courses

The supervisory skills courses are offered on two levels, as follows:

1. The national training-of-trainers' (TOT) course, which is given to administrators or supervisors, public health nurses, health inspectors, and hospital matrons, is offered once a year with 60 trainees from all provinces and is given by the CDD manager and his staff.
2. The mid-level supervisory skills course, which is also conducted once a year in every province, with an average of 20 trainees per course, is offered by the nationally trained provincial staff of the training-of-trainers' course.

Both of the foregoing courses use the WHO supervisory skills modules and are solely theoretical. Neither course has been revised or supervised since 1984. Further, there have been no refresher courses or in-service supervision offered. It is possible that the gaps observed by the team between knowledge and the practice of diarrhea management among the staff interviewed is produced by information or the lack thereof given at these courses.

#### Recommendations:

The program should promote appropriate revisions in these courses and refresher courses for health personnel already trained. These courses should be coordinated in terms of curriculum with the soon-to-be-initiated clinical course for medical officers at the diarrhea training unit. A practical training component of at least two days should be added to the revised supervisory skills courses. Personnel trained in the first, training-of-trainers' course should be involved in revising the curriculum for the mid-level supervisory skills course. Participation of experts with experience in adapting these modules elsewhere should be considered.

#### 4.2.6 Follow-up of Training

The foregoing courses include activities aimed at implementation after trainees return home. The team noticed, however, that the trainees do not apply what they have learned when they return to their homes. Part of this problem can be attributed to the lack of support, monitoring, and supervision following the training sessions.

#### Recommendations:

Priority should be given to monitoring and supporting trainees after they return home, to ensure effective implementation of the lessons learned. In addition, the current course activities preparing for implementation should be revised and, if necessary, strengthened.

#### 4.2.7 Inventory of Trained and Untrained Health Workers

No inventory exists of trained health workers by district or by position in the system. Even though the training component of the CDD Program has ample coverage, it was clear from the team's visits that many of the health personnel caring for diarrhea patients in the institutions visited have not yet been trained.

##### Recommendation:

The program should maintain an up-to-date inventory by district of all trained and untrained by positions and by type of facility throughout the health system. Such an approach would be useful for planning training, retraining, and supervision efforts.

#### 4.2.8 Training of Community Health Workers

Until 1986, community health workers were trained by a number of different organizations including SIDA, IRDPs, UNICEF, etc. At present, however, these health workers are not included in any training program. They also seemed to be lost in the system, without clear roles or resources, many having abandoned their posts from the lack of direction and support. The Swedish International Development Agency (SIDA) has proposed to support the training of community health workers by May 1989.

##### Recommendation:

The program should also prepare an inventory of community health workers, define their roles, and prepare a guide with a clear description of training needs and procedures, including training in the treatment of diarrhea and the nutritional status of a child during diarrheal episodes.

#### 4.2.9 Revision of Curricula for Nursing and Clinical Officer Colleges

From May to September 1988, the MOH and PRITECH assessed the training materials in use. This study identified the problems of CDD training at the different schools. As a result, the General Nursing Council and the CDD Secretariat are planning to review and standardize the nursing curriculum according to WHO guidelines for nursing schools. PRITECH has provided the Council with the training modules prepared by PRITECH and WHO for nursing schools in the Sahel Region. Assuming that this cadre of professionals is less likely to leave the local health care system, it is

appropriate to see that they are well trained in the case management of diarrhea.

Recommendation:

A curriculum consultant should be provided to the CDD program to help these schools adapt their current curricula to the CDD program guidelines on managing diarrhea.

4.2.10 Training of Traditional Healers

In 1984, the World Bank reported a total of 10,000 traditional healers in Zambia providing patient care on the range of 5 to 100 patients daily. The pre-analysis of "The Traditional Healers Diarrhea Case Management Study" indicates that at least 50 percent of a sample size of 160 are willing to introduce ORS in their treatment of diarrhea. Because the CDD manager is also the manager of the traditional medicine program in the MOH system, coordination of the introduction of ORS with the Traditional Healers' Association should not be difficult.

Recommendation:

The CDD manager should include coordination with the Traditional Healers' Association in his agenda, and prepare a guideline booklet for the treatment of diarrhea to be distributed among the practitioners

4.2.11 Training of Private Practitioners

One-third of the physician population of Zambia was in private practice in 1984. They saw a range of 25 to 50 patients daily, but did not have access to private hospitals or clinics or government hospitals. When their patients required admission to a hospital, they were sent to the MOH health system or to the mission hospitals. "The 1987 Private Surgery Chemist Survey" conducted by the MOH/CDD Program and PRITECH (sample size 24 percent of the 212 registered private surgeries in 1987) indicates that private practitioners are willing to be trained in the case management of diarrhea. The only concern of these professionals is the amount of time involved in such training. Some considered the possibility of giving a two-day weekend for this training an acceptable option.

Recommendations:

The CDD Program, with the participation of private practitioner representatives of the medical association, should plan a practical training program for this cadre of professionals during weekends at the diarrhea training unit of the University Teaching Hospital, after it is functioning. Formal invitations should be issued, and key professionals should be chosen to be the first participants.

### 4.3 Supervision

Regular and adequate supervision is an essential component of a successful CDD program. Supervisory visits provide an opportunity to monitor and evaluate health worker performance, solve problems, provide encouragement and important information to the CDD program. Supervision is a crucial element of training. Training must be followed by adequate monitoring and supervision not only to gauge progress but to correct any problems and can serve as a way to inform health workers of new program developments/policies. To date supervisory tours have been carried out by the CDD secretariat and PRITECH representative in four provinces. The tours were designed to review the present state of the supervisory system with regard to CDD and to identify the constraints/problems hindering effective supervision at the district, provincial, health center level. A number of problems were noted including lack of transport, lack of checklists and /or schedule for visits, lack of feedback to health workers, lack of integrated program visits and infrequent visits to CHWs by HC staff.

Ideally, a supervisory system would include coordinated plans for visits (including frequency, team composition). These should be worked out by PMO's office for district tours and by district health management teams for health center level visits. Each health center in turn should develop a schedule for visits to CHWs in their catchment areas. The composition of the supervisory teams at the provincial and district level should include representatives of several programs (UCI, MCH, CDD) in order to achieve program coordination and to be more cost/personnel effective. It is also vital that a checklist is used which includes assessment of drugs, vaccines, ORS, equipment as well as observation of case management by health personnel (actual cases can vary i.e. malaria, diarrhea, ARI, etc.) Supervision must always include follow up of problems identified to provide feedback and encouragement to health center staff. While it is difficult to provide the ideal supervisory system in view of the constraints noted above every effort should be made to improve the current situation where only a few districts were carrying out regular integrated supervisory visits using checklists. Even in these districts feedback to the health centers visited was often lacking. A possible cost effective method is to utilize mail surveys to assess some of the problems at the health center level and to provide rapid feedback. Actual supervisory visits involving observation can then be carried out every three months.

#### Recommendations:

A person responsible for CDD activities (monitoring ORS, seeing that ORT corners are established and functioning,

passing on CDD program information, etc.) should be designated at each district.

A supervisory checklist should be used along the lines of examples already in use in some districts or as suggested by CDD secretariat.

Integrated supervisory tours (UCI, MCH, nutrition, CDD) should be encouraged.

A schedule for supervisory visits should be drawn up at provincial level and by district health management teams.

Every effort should be made to improve supervision of CHWs in view of their importance in the delivery of services to the community level.

#### 4.4 Communications

In the past, the Health Education Unit of the MOH developed a schedule for materials development and production. As with their colleagues in so many other countries, however, the health education unit team in Zambia serves many masters and many agendas, with each master generally underestimating the burden of their needs. Currently, AIDS has become a major activity of the unit, and justly so -- but the increase in demands on the unit's time, with no increase in personnel, reduces the amount of attention given to CDD efforts. In addition, the orientation of the unit is a traditional one: depressingly understaffed and underfunded, relegated to poor facilities, reactive to crises, not given to systematic pretesting or post-testing, disciples of the "bullet theory" of communications that equated materials production with media coverage with audience effects.

PRITECH has therefore, sought to work with the unit in a parallel fashion that does not make production of CDD materials vulnerable to the many constraints of the unit. A Health Education Committee has been formed, at PRITECH's initiative, to be the gatekeeper for materials -- that is, the committee approves or disapproves draft materials developed by committee members. The committee does not develop materials; it simply approves or disapproves the development work of its members. Members are drawn not only from the HEU but also from WHO, UNICEF, the Zambian Broadcasting System, UTH, MOH units such as Nutrition, PHC, and CDD, SIDA, and PRITECH.

PRITECH has the flexibility to develop certain materials in draft form and, if the drafts are approved by the Committee, PRITECH can carry the job through to the production phase. All materials produced are emblazoned with the MOH Health Education Unit logo, with PRITECH support mentioned below that. This arrangement deftly builds upon the role of the HEU as a materials-production unit, while recognizing and bypassing the limitations of the HEU.

PRITECH has sought to strengthen the HEU, as for example by supplying a 35mm camera for use by the HEU photographer.

Under this arrangement, the CDD program has set out to produce a broad array of educational materials. In any materials development involving PRITECH, materials have been pretested with a sample of the intended audience. An obvious gap to be bridged is the integration of these materials into health-worker training, to ensure that standard messages are reaching mothers both through personal and media channels.

### Flyers

These pamphlets are for mothers, and ideally should be given to them when ORS is given. Whoever dispenses the ORS should use the flyers to explain how to mix and administer ORS. The mother can then keep the flyer at home as a guide for her the next time diarrhea strikes her children. Approximately 50,000 have been printed, all in English; later runs are anticipated in local languages, produced by provincial health education officers, based on the English pamphlet.

### Posters

Posters are available for all of the health facilities, schools, and other public places. A total of 10,000 posters have been printed in English for each of the nine provinces.

### Radio

Six series for 12 radio programs on CDD have been completed and another series is under way. Broadcast for 30 minutes at 12:30 p.m. on Monday and Friday, these programs consist of interviews with physicians, nurses, clinic staff, and mothers.

PRITECH has also underwritten a six-week series of sports promoting GPL's Madzi-a Moyo ORS. The series was of 15-second spots in five languages, with the messages produced by a commercial advertising firm. Though frequent spots are generally to be preferred to longer programs, the cost, 29,000 kwacha, was high, since time had to be purchased. As of April 1, 1989, government programs will have to pay as well -- an additional constraint on all social programs such as CDD.

In addition, radio is not as widespread in Zambia as it is in many developing countries, with fewer than 30 percent ownership. Further, the cost squeeze on sets and batteries reduces listenership. In terms of health-communication channels, a 1988 UNICEF study looked at women with access both to radio and to clinics (a small subset of Zambian women) and found that clinics were the main source of information about health, with the nurse the most important information source at the clinic. While many

women noted hearing health messages on their radios, recall was poor. Hence, radio, when available, has not been as effective as the clinics in getting health messages out. This finding corroborates most studies -- radio is an information source and a source of reinforcement, but face-to-face communication is the key to learning and behavior change. Without well-trained clinic staff, radio effects will dissipate.

### Popular Theater

Another medium exploited by PRITECH has been popular theater, a well-received form of entertainment in Zambia. Theater groups usually perform in the open air and can draw crowds of hundreds of people. PRITECH contracted with two theater groups to develop plays around diarrhea and Madzi-a-Moyo, and these groups have performed frequently in the Lusaka area. It is estimated that they have reached 200,000 people, including door-to-door campaigns spreading the ORT message.

#### 4.4.1 Issues in Communication

The communication efforts over the next two years should address issues of health-worker materials, take-home materials for mothers, use of mass media and popular theater, and opportunities of ORS distribution through the private sector. It will be important to develop mediated communication materials that: (1) will raise awareness so that mothers seek face-to-face communication from health workers or friends about ORT and (2) will reinforce behavior changes that face-to-face communication brings about. Expectations of what the communications component can do for the program must be in line with other program components. Communications promoting ORS, in the absence of a reliable ORS supply, will create disillusionment, and communications urging ORT communications, in the absence of trained health workers, will put mothers at odds with clinic and hospital staff. Accordingly, we propose the following communication activities for the next two years.

#### Recommendations:

##### Production of an ORT Manual

This manual should be an illustrated document, summarizing the main aspects of diarrhea case management and should be published with the endorsement of the MOH. The manual is intended for all clinical staff, except doctors. Its purpose is to standardize case management and to serve as an instrument for issuing MOH CDD policy, which heretofore has remained obscure and not widely known. The manual is meant to be a reference document, easily consulted by an active clinician.

##### Availability of ORS Treatment Posters in More Places and More Languages

These posters, which have already been produced, need to be distributed more widely and to be more available in local languages. Reliance on the provinces to translate these posters and distribute them needs to be examined in terms of feasibility.

#### Availability of ORS Mixing Flyers in More Places and in More Languages

These flyers, which have also been produced, need wider distribution and translation into local languages. Each mother should receive one of these flyers when she buys or is given ORS; hence, the distribution of the flyer should be linked to the distribution of ORS.

#### Production of ORT-Corner Posters

These posters will be made up to illustrate the configuration and components of an ORT corner and should be distributed to health workers responsible for setting up these corners. The current perception seems to be that creation of an ORT corner is a major burden, next to impossible; this poster is meant to help health workers visualize an ORT corner and realize how straightforward is the process of creating one.

#### Continuing Use of Radio as the Preferred Mass Medium

As noted above, radio is not a strong presence in Zambia, but it is the most widespread of the broadcast media. Nevertheless, radio can play a role along with other media; like those media, radio should not be abandoned because of its weaknesses. We must add that this channel may become more problematic if air time is to be paid for after April 1, 1989. Up to now, the cost of air time has been very low. Despite these caveats, and to the degree radio remains affordable, short spots broadcast frequently are to be preferred over lengthy interview programs -- especially from a cost perspective, but also with a view to creating awareness in non-ORS users and to providing reinforcement for ORS users.

UNESCO has just completed a major mission to Zambia and is about to propose the establishment of regional FM stations (initially four, ultimately one in each of the nine provinces), whose purpose is to broaden access to the radio and to localize programming. A good deal of time on these new stations is slotted by public-service broadcasting, and this expanded channel warrants attention from health communicators. Whether air time must be paid for is not clear yet, but the intention of UNESCO seems to be that it would not need to be paid for. The constraints mentioned above however, cost of sets and batteries, the need for excellent face-to-face communication -- will not be solved by additional stations. In any case, implementation of this UNESCO plan is at least a year, and many bureaucratic hurdles, away.

### Expansion of the Use of Popular Theater

This medium, used extensively during PRITECH I, should be extended to provincial areas. A new play is being written, along with a new song promoting Madzi-a-Moyo.

### Opportunistic Use of Television

If free opportunities arise to place a spokesperson on a program, these should be pursued, but TV does not offer great coverage in Zambia, though it may reach doctors and other influentials in the cities.

### A Major Effort to Widen Availability of ORS Through Private-sector Marketing

Evidence from the chemists' survey suggests that Zambians buy a great volume of diarrhea therapies from private chemists, but that almost all of these therapies are antidiarrheals already banned from the government's essential drug list. It is essential that ORS be promoted more extensively through chemists, because so many people look to chemists for medicine and advice. PRITECH should explore the possibility of technical assistance in marketing, to work with General Pharmaceuticals Limited (GPL) and Interchem for the promotion of their ORS products through private chemists and to alert chemists to the excellence of ORS and to the dangers of antidiarrheals. PRITECH should also lobby government to implement a ban on antidiarrheals for children. One way for government to do so effectively is through refusal of foreign exchange for local production of these suspensions.

Other elements of the PRITECH II communication strategy will include reviving the CDD subcommittee on communications, completing the primary health care flipchart based on materials from Uganda, completing two videos, one for training health workers and one of the popular theater performance, child-to-child material for primary and secondary schools, ORS promotional material for chemists, and development of an NGO committee on communications.

In sum, Zambia is a diverse nation, with no one medium that covers all of its people. Its broadcasting coverage is remarkably limited and soon to become expensive. To reach large sections of the population, a broad approach is called for using all of these channels. But while there should be diversity in media, the message should be unified and repeated from all of these outlets. The CDD Program needs a slogan; a musical signature or jingle for use on radio and in theater groups; a logo for graphics; perhaps a spokesperson for broadcast and print material. In sum, the CDD Program needs an integrated marketing campaign to make ORS the medicine for diarrhea.

#### 4.5 ORS Production, Supply, and Distribution

A recent field survey, carried out from September to November 1988, shows that the ORS supply to rural health workers has improved. Preliminary results from this survey show that 83 percent of the rural health centers and hospitals visited (N=31) had adequate ORS stocks. (These were in Western, Southern, and Eastern provinces.) This progress is the result of improved distribution from Medical Stores through the Essential Drug Kit system.

The PRITECH team field assessment noted a different problem regarding ORS supplies. This situation is mainly due to the fact that the PRITECH team visited health facilities along the "line of rail" and urban areas where the supply of ORS is irregular and inadequate. The principal problem for the urban health centers and hospitals seems to be that the ORS supplies are inadequate. Medical Stores have recently reduced the number of ORS packets from 300 per month per kit to only 100, due to a temporary shortage of ORS. For the full report of PRITECH's team member who investigated ORS supply management activities, see Appendix B.

#### Recommendations:

PRITECH should continue to assist the CDD secretariat to monitor ORS usage and make revised estimates of ORS requirements on a bi-annual basis. An estimate of buffer stock required at MSL should be made in the next six months. Meetings of the CDD secretariat and other concerned parties should continue to be held on a reasonably regular basis until there is confidence that MSL can manage this by itself. PRITECH and UNICEF should emphasize the deleterious effects of ruptures of ORS stock on the CDD program and continue to press for a firm plan for GRZ financing of the requirements, including a buffer stock.

Quality control at GPL should be called into question and assistance offered. Correct sampling protocols should be established and the actual laboratory procedures reviewed. The potential role of the production facility at MSL for quality control should be investigated.

PRITECH should offer assistance to SIDA/EDP in (a) assessing the potential for refining the ORS distribution system by calculating requirements of health centers and supplementing the amounts supplied in SIDA kits, and (b) refining the CDD information system to make this possible to do on a regular basis.

The role of the private sector in providing ORS to the public at reasonable cost should be reanalyzed in light of current economic conditions. The possibility of supporting an advertising and detailing effort targeted at chemists and private physicians should be considered, and the status of the relationship with Project SUPPORT should be clarified.

#### 4.6 Program Management

##### Management By Crisis

The Permanent Secretary, Dr. E.J. Njelesani, addressing a two-day workshop for senior MOH staff on March 10, 1989, described the administration in the MOH as "management by crisis." This situation is certainly true of the CDD Program where ad hoc committee meetings are repeatedly convened to address impending crises -- no packets at GPL and MSL, stoppage in ORS production at GPL, lack of raw materials in country, delays in the opening of the University Teaching Hospital ORT unit, staff shortages, donor dependency, and so forth.

##### Recommendations:

Develop a realistic three-year national CDD plan, in collaboration with all donors, which will be revised and updated every six months. It is recommended that the CDD Program Manager delegate responsibility to each subcommittee for its component or subcomponent of the CDD program, with the chairperson reporting regularly to the CDD Program Manager on the current situation and potential problems. For instance, the University Teaching Hospital ORT unit committee would take responsibility for ensuring that the furniture is ordered and delivered for the opening of the unit at the end of June, for planning the opening of the unit, for designing the unit's training courses, for developing a staffing plan for the unit, and for identifying future consultant requirements. The ORS subcommittee would meet regularly to monitor the production and availability of ORS packets, to anticipate raw-material requirements, and to plan their financing and timely procurement.

A task analysis would be undertaken of the jobs of the members of the CDD Secretariat to ensure that job descriptions match job requirements. After the three-year implementation plan is developed at the CDD Program Planning Retreat in April, the CDD Secretariat would develop, for each member, a detailed work plan for the short and medium term.

##### Need for Increased Commitment to the CDD Program

As noted, the CDD Program Manager is repeatedly called upon to assume other responsibilities. Originally he was to serve as full-time CDD program manager, but he was soon given responsibility for the Expanded Program of Immunization (EPI) and currently has responsibility for CDD, family health, malaria, and traditional medicine. Mr. Mphande, the Assistant CDD Program Manager, is also Chief of Health Inspectors and as such is responsible for coordinating the work of all of the health assistants. When Ms.

Muphinde was on maternity leave, no temporary replacement was appointed.

Regarding supply of ORS packets, Medical Stores Limited has up to 100,000 pounds sterling/week in foreign exchange with which to meet the annual (1989) drug requirement of K.140 million. Thus there is no lack of funds for ORS supplies; yet, the MOH commitment currently is to purchase only 1.3 million packets annually, which is inadequate by any calculation.

In another area, WHO previously provided the Zambian CDD program with an Associate Expert, Dr. Steffan Salmonsson; the departure of Dr. Salmonsson in August 1987 has deprived the program of invaluable assistance and expertise, in particular in the areas of diarrhea case management and training. At this time, WHO seems to have no plans to provide another Associate Expert.

#### Recommendations:

It is suggested that the CDD Program Manager position revert to being a full-time position.

All members of the CDD Secretariat would be sent, at different times, to the WHO CDD program manager's course (for example in Ethiopia).

The CDD Secretariat would be expanded to include a clinical Officer who would provide administrative assistance.

WHO is urgently requested to place a CDD technical officer in Zambia. This request is made particularly in view of the University Teaching Hospital's future role as a WHO subregional training center. This technical officer could then provide assistance to the Secretariat in the case management of diarrhea.

#### Need for Delegating CDD Authority Through MOH System

As described above, policy-making and most programmatic decisions are made at the central level in Lusaka. Because the CDD Secretariat is so heavily overextended, delegation of CDD authority for organization at the provincial and district levels would alleviate the Secretariat's work burden.

#### Recommendations:

The CDD Program Manager would formally designate a specific person to be the CDD focal point at the district level, as has already been done at the provincial level. The CDD Program Manager, in making these appointments, identifies the tasks he expects to be undertaken and the reporting he requires on a regular basis.

Each provincial CDD person would report on a monthly basis to the CDD Program Manager on progress and problems (for example, setting up of ORT corners, regularity of ORS supplies, training needs as a result of transfers and resignations, etc.). Similarly, the district CDD staff should report to the provincial CDD person.

Every six months the provincial CDD staffers meet with the Program Manager to discuss the program and develop detailed workplans for the following six months. The District CDD staffers also would meet with the provincial CDD staffers on a six-month basis.

#### Need to Use all Available Resources

The MOH delivers approximately 50 percent of health care in Zambia; the other 50 percent is delivered by the missions, the mines, and the military. In addition, there are in Zambia many nongovernmental and/or voluntary organizations, with access to significant sectors of the population, which are willing and able to assist the CDD program in promoting messages, distributing materials and packets, teaching diarrhea treatment, etc.

#### Recommendations:

It is recommended that the Churches Medical Association of Zambia (CMAZ), which provides 50 percent of rural health care, participate in the CDD national program planning retreat, to coordinate its child-survival efforts with the public system. Diarrhea case management would be included in the curricula of the CMAZ-administered training programs for GENs, EMNs, laboratory assistance, community health workers, and traditional birth attendants.

The multidonor committee for health-education materials for child survival should be convened to pool materials and resources and streamline development and production of materials. The aim is for integrated programs, consensus on messages, and shared distribution channels.

The CDD Program should pursue integration with other MCH programs, where possible, in such areas as training, supplies, materials, distribution, supervision, and evaluation.

#### 4.7 Health Information Systems

The Health Information Unit (HIU) at the MOH headquarters was initiated as a small reporting unit with a limited number of supportive administrative staff. Basically, the office's function was initially to consolidate figures that were collected monthly and annually from various health institutions in the provinces. The main tasks of the HIU now include data collection, processing and compiling of aggregates, analysis of data, preparation of reports, and dissemination of reports to health institutions.

The present routine reporting system for health data in Zambia is based on monthly reporting forms. These completed forms are submitted to the HIU, with copies sent to the provincial medical officer and, in some cases, to the district centers as well. The number of monthly returns received is between 60 percent and 90 percent. The routine reporting system from hospital groups' patients by age: 0-1, 2-14, and over 14. This is a major constraint for the CDD Program, whose target group is the under-five population.

Compiling and tabulating the monthly returns is done manually at the MOH Statistics Unit. There used to be a four-to-five-year lag between the gathering and the publication of statistics. With the assistance of SIDA, however, the MOH has been able to update the routine reporting system to some extent. The figures covering data for 1986 will be published in April 1989.

The problems and constraints with the current health-information system have been detailed in several recent reports and reiterated by a wide range of annual program reviews. In the 1985 World Bank report, for example, a list of several constraints were identified, as follows:

- o Delays in receiving reports, in processing data, and in publishing
- o Too many reporting formats to be completed by field staff and too detailed information which is not used properly by program managers or by the central level
- o Too many forms, duplication, overlapping and poorly designed forms (At present, more than 200 different forms are now in use in the MOH.)
- o Analysis and feedback lacking
- o Objectives and targets of each health program are not clearly defined.

In the evaluation of SIDA Health Sector Support to Zambia 1979 to 1988, SIDA identified these same continuing constraints as well as the shortage of qualified staff at the HIU. Some of the problems listed above have been partially alleviated by more staff, increased training, SIDA support, and computerization of the MOH Statistics Unit. For the most part, however, aggregation and compiling of data are still performed manually by MOH statisticians. Another problem with the present system that will have to be addressed is the tendency of adding new forms as new primary health care program areas are initiated. For example,

there are separate forms for EPI, nutrition surveillance, essential drugs, CDD, AIDS, etc., thereby adding new burdens to the already overloaded system.

The current system is also cumbersome because of the large number of reporting centers (965 health institutions -- 82 hospitals, 883 RHC/UHC) throughout the country. This means that monthly returns (which make up the bulk of the forms submitted) come to more than 75,000 annually. As a result, the majority of the time spent by the medical statisticians is devoted to tabulating the data from the monthly returns. Reports from the different subprograms are sent directly to program managers.

In view of the problems which exist, the health-information services are clearly in need of streamlining. A newly formed Health Record Committee has set as a goal of the revision of present health-information system. This committee will be actively considering the possibility of implementing a sentinel surveillance system, as proposed by Salmonsson and Freund, which is likely to be of use for improved data collection of the CDD program indicators. It is important, however, that such a system has to represent a total revision of the present system, rather than another addition to it.

#### SIDA Recommendations:

SIDA should provide technical assistance to the HIU in the form of a Health Information Planner to be based at the MOH headquarters. This officer was appointed in early 1988 with the following functions and duties:

- Planning and supervising the proposed revision of the present National Health Information System
- Developing and designing the revised system as well as testing activities, corrections, implementation, evaluation, and monitoring of the system
- Training HIU staff and planning and conducting seminars and workshops
- Designing medical forms and supervising printing and typesetting
- Assisting the Head of HIU with day-to-day supervision and activities of the HIU
- Cooperating with health institutions and all of the various programs.

The recent appointment of the SIDA-sponsored Health Information Planner should be appreciated and supported. To make the officer effective, the government should reliably provide such supportive back-up services and facilities as equipment (including the reported need for calculators), stationery, office accommodation, printing forms, and transport facilities.

Donor support in the improvement of the Health Information System should also be directed toward the computerization of the HIU as well as the data-processing unit of the Nutrition Surveillance Program, which currently is also constrained by the volume of received but unprocessed data.

Technical support to the National Health Information System is required in the provision of specialists in the organization of training workshops for personnel involved in the collecting of health information at the health-center level. Equally important, technical assistance is needed in providing both in-country and external training of medical statistical personnel and trainers. Such support is urgently required considering the fact that statistics are usually incomplete and unreliable.

Provided that the back-up services are working properly and the earlier analyzed routine duties are minimized, the Health Information Planner's contract should be limited to two years. Should there be any need for further support to the HIU in the area of planning, short-term consultancy assignments should be sought, but before the two-year contract expires.

#### 4.8 Community Participation

During the past two-and-a-half years, the CDD Program has laid important preliminary groundwork for disseminating ORT through community-level organizations and PVOs. Although a common constraint noted by the health workers, donors, and other governmental sectors promoting lower-level programs (CHWs, women's project, etc.) has been the lack of community participation, there is sufficient evidence that this potentially valuable area should be accessed more fully.

The existing structure of the Zambia government party (UNIP) extends from the Central Committee level to the ward (groups of villages), sections (villages), branch (25 families), with representation at each level. This structure provides a mechanism for spreading health-education messages, such as PHC/ORT to households, village development committees, and village health committees. UNICEF has sponsored two workshops (in 1987 and 1989) to bring together central and provincial political leaders, women's league (UNIP), and health personnel and donors to develop ways to use the Party organization to promote child-survival messages. PRITECH and the CDD Secretariat have participated and contributed to these and will continue to explore this avenue for social mobilization.

Other community groups include agricultural extension officers and community-development officers. Both of these work closely with communities and are trained by the Ministry of Agriculture and Department of Labour and Social Services, respectively. The PRITECH representative has made preliminary contacts with the appropriate

offices in Lusaka through his participation on the GRZ/UNICEF Interministerial Committee and National Primary Health Care Development Committee to assess the possibilities for ORT promotion. The Department of Labor and Social Services, which is responsible for the Functional Literacy and Child-to-Child Program, seems to be the most promising in that they already have health-related materials available and are developing and expanding the Child-to-Child Program beyond urban Lusaka.

In addition to the government ministries and departments, community participation is being promoted by such organizations as CUSO (Canadian University Service Overseas), which has women's projects and youth-development projects in several areas of rural Zambia. There are also integrated rural development projects supported by the German, British, Canadian, and Swedish governments, which are involved in community health worker training, primary health care, and health education.

Self-help projects, particularly in the area of building clinics and schools, have been fairly extensive in Zambia although communities are frequently disappointed because of the shortage of personnel to staff them. Nevertheless, the fact that more than 100 self-help clinics have been built does indicate that community participation exists.

Religious groups are yet another important resource, which can be used to promote ORT and the health-education messages. The Seventh Day Adventist Church, for example, has a system of Dorcus Mothers who act as health educators in the community. This network is extensive, as the Seventh Day Adventist Church is found throughout Zambia, even in the most remote areas. The key Dorcus Mother leaders are brought to Lusaka for training in health education using materials printed in Zimbabwe. Contacts by the PRITECH representative with the ADRA (Adventist Development Research Arm) officer indicated that they are willing to adopt and spread any available material on CDD through their network.

The Salvation Army and other denominations also have community projects, often as part of their PHC outreach activities or women's projects, etc.-- although they are usually confined to specific areas and would be more difficult to access.

Organizations with headquarters in Lusaka, such as the YWCA, the Red Cross, and the Christian Council of Zambia, also have community-level projects, some of which are already reaching mothers with health education, including ORT. Some members of the small, poorly staffed Red Cross office have used their own initiative to help distribute ORS to periurban Lusaka compounds. The YWCA women's-project coordinator and health projects officer have expressed interest in teaching and promoting ORS in Lusaka and other areas where they have projects.

Two community programs were active in Lusaka periurban areas in 1988. These included the Child-to-Child Program originally initiated in 1985 by UNICEF in collaboration with the Child Health Department of the London School of Tropical Medicine and Hygiene. Responsibility for this program was then shifted to the Ministry of Education and eventually to the Department of Labour and Social Services. A Child-to-Child Committee has been established with representatives from UNICEF, WHO, the MOH, the Ministry of Education, and the Department of Social Services. Activities to date include a diarrhea KAP survey in four Lusaka schools, design of materials, and a workshop for teachers. During the UCI/CDD Baseline Survey and the Traditional Healers Survey, there was some indication that school teachers are telling students about ORS and diarrhea prevention.

UNICEF has supported a Lusaka periurban area, Matero compound, which includes training of small groups of mothers in ORT and other simple health measures. The CDD Secretariat has assisted in the training sessions and will monitor the activities of the mothers. The intention is that the trained mothers will spread what they have learned throughout their communities, similar to the Red Flag volunteers in The Gambia. This program will probably expand to other areas in Lusaka depending on the funds available.

The ORT/diarrhea-prevention message is also being spread to provincial/district levels through popular theater. A training workshop for 60 teachers on health education through popular theater was held in 1987, sponsored by UNICEF with logistical, technical, and financial support from PRITECH. These teachers returned to their respective provinces and organized popular-theater groups for health education or taught existing groups plays with a child-survival theme. The leader of the Maloza theater group, which has been working closely with PRITECH, has been conducting training for theater groups in several provinces in Zambia.

The training of CHWs will begin again with SIDA support in April or May 1989, after a moratorium of two years. Surveys carried out by the PHC Secretariat, SIDA, and the University of Zambia have all noted a fairly high drop out rate of CHWs (up to 40 percent in some districts), largely due to a lack of community support and poor supervision by RHC staff. This problem has been frequently discussed by the National PHC Development Committee, as well as by other donors involved in PHC activities (UNICEF, SIDA, WHO); several projects have been designed to investigate ways to enhance CHW retention rates. One of these case studies proposed by WHO failed to receive funding; the other (the Mumbra Intersectoral Cooperation for Health Project) is continuing, albeit with altered objectives. Clearly, the CHW community-support problem will have to be addressed and creative solutions found.

PVOs are another important group which have, to varying degrees, been directly or indirectly involved in ORT/diarrhea-prevention activities. To date, the Jaycees have been active in promoting ORT and distributing ORS packets in various communities where they have chapters (large urban areas, including the Copperbelt). Recently, a two-day soccer tournament was organized to raise money to buy ORS for distribution. It appears that the Jaycees will continue their interest in ORT and will be an important channel to disseminate health-education materials as well. There are other groups, such as Rotary International, which have been involved in water and sanitation activities and have used the Maloza theater group to present plays on diarrhea hygiene and sanitation for the communities where they are digging wells (in a few rural areas near Lusaka and in Southern Province). The Rotary Club has also provided 100 percent of the polio vaccine requirement in Zambia. Finally, smaller PVOs such as the Lions Club provide occasional health-program support in the form of the operation of mobile clinics in rural areas and of equipment donations to the UTH.

#### No Community Health Worker Training Was Conducted During 1988

The means for implementing the PHC policy in rural areas are rural health centers (RHCs) and community health workers (CHWs). CHWs are volunteer workers elected or selected by a community to carry out day-to-day PHC activities. Under the PHC program, SIDA has since 1981 provided the funds for training and retraining of CHWs. Bicycles were provided to the CHWs by SIDA. SIDA has also, in the 22 rural districts where the SIDA Essential Drug Program is functioning, provided CHWs with drug kits containing aspirin, chloroquine, paracetamol, tetracycline eye ointment, ORS, gentian violet, bandages, cotton wool, and soap. Each drug kit is expected to last for two months and is delivered to the RHC along with the RHC kit; CHWs collect kits from the RHC.

Assuming that the rural population is about four million and each CHW is supposed to serve 500 people, roughly 8,000 CHWs are needed to cover rural Zambia. A total of approximately 4,000 CHWs have been trained to date, but of these only about 3,000 are active.

#### Recommendations

It is suggested that SIDA continue to support CHW training and retraining. SIDA recommends a gradual transition of this program to the Government of Republic of Zambia.)

The MOH and SIDA would train approximately 570 new CHWs annually.

SIDA support is redirected to strengthening supervision of CHWs (for example, funding the training of CHW trainers and PHC coordinators).

#### Need For Greater Community Participation

### Recommendation:

To achieve sustained community involvement, existing groups, such as the Dorcus Mothers (SDA), should be exploited fully to assist in promoting standard CDD program policies and distributing health-education materials.

#### 4.9 Coordination With Other Groups, Associations, and Organizations

Many NGOs are working in the health sector and related sectors in Zambia, but with little coordination. The government's National Commission for Development Planning NGO Coordinating Committee can review only broad objectives of donors and cannot devote attention to the myriad activities subsumed in all donor plans of operation. Moreover, coordinating bilateral support programs also complicates the situation. UNDP provides some coordination and publishes an annual report on development cooperation but is unable to address all of the complexities of donor coordination with their limited personnel.

For the health sector, there are two major coordinating committees, the GRZ/UNICEF Interministerial Committee and the National PHC Development Committee, which both meet quarterly and discuss program and policy issues on an intersectoral level. A PHC/NGO committee, which was active for two years (1984 - 1986), has now ceased to function due to the gradual loss of interest by some key members, including the CMAZ representative. While the remaining members do perform a valuable and necessary coordinating role, there is still need to coordinate specific health activities to avoid overlap and to integrate programs such as nutrition, PHC, MCH, CDD, and UCI. Fortunately, the UCI/CDD coordinating has been revived and now meets biweekly to discuss these two programs and should help achieve integration of a UCI/CDD manual, training, and other activities.

The PRITECH representative and a consultant on growth monitoring have suggested forming an ad hoc committee to coordinate NGO and MOH activities in regard to child-survival health-education materials. Representatives would come from UNICEF, WHO, SIDA, PRITECH, MOH, National Food and Nutrition, NORAD, Save the Children, Oxfam, World Vision, Africare, etc. Work is already under way among PRITECH, the MOH, and the consultant mentioned above on an integrated child-survival package of materials for health workers. One of the main tasks of the ad hoc committee is to integrate ORT messages in as many programs as possible, such as TBA training, women's programs, agricultural extension, community development, and functional literacy.

Need For Greater Coordination With Other Groups,  
Associations, And Organizations

The possibility of direct PRITECH collaboration with CMAZ has been considered for several years and may now be able to follow the precedents of UNICEF and WHO, both of which are providing direct support to CMAZ. The MOH is notified of these collaborations but does not insist on brokering the arrangement. CMAZ representatives have expressed interest in working with PRITECH. Targeted support to CMAZ institutions could be of critical importance to mission hospitals, which face drastic reductions in the 60 percent of their budgets supposedly covered by government. The Monze Hospital, which had its government allocation cut in half, is a prime example. Mission staff are motivated and can get the most out of any support available. As a first step to collaboration between the CDD Program and CMAZ, Dr. Touma, Chairman of the PHC Committee, CMAZ, would attend the three-year planning meeting of the CDD program in July 1989.

#### Recommendations:

The present coordinating committees should continue.

The suggested ad hoc child-survival coordinating committee idea should be implemented.

As a follow-up to the CDD planning retreat, appropriate PVOs/NGOs should be convened to discuss their interested and current activities in Child Survival. The first meeting should assess what specific activities PVOs/NGOs are doing in regard to training CHWs and TBAs and in regarding to ORT promotion.

The PRITECH representative should attend the PHC CMAZ Committee.

#### 4.10 Evaluation

The Zambian CDD program will need to press forward on many components over the next three years, and it is important that the program be able to evaluate that progress. To make evaluation possible, now is the time to define program goals for this three-year period. The principal evaluation issue now is definition of measurable goals. Too often, evaluation is left until the end of a program, at which time goals have not been defined. In such an instance, an assessment of program improvement becomes impossible. The Zambian program has the advantage of having had a baseline survey completed in 1986, with a follow-up scheduled for November 1989 and another for November 1992. In addition, there have been several PRITECH studies summarized above.

#### Recommendations:

The CDD program should prepare a plan of evaluation for every component of the program. The plan should determine the objectives of the evaluations and what facts are necessary to gather and

orientations to give at the time of supervisory visits. This plan should coordinate with the Program Problem-Solving Study and Health Information System to preclude overlapping of information or activities.

### Case Management

Definition of the national policy on the different aspects of case management for clinical staff in hospitals and health centers. Case-management policies should be defined and issued by the end of 1989 by means of a health-workers' manual.

Plan to establish ORT training units in additional central hospitals to cover regional training in case management. Plans for implementing ORT training and treatment units should be made by the end of 1989, and there should be an ORT unit/corner in 70 percent of district hospitals by the end of 1991.

Development of an implementation plan for establishing ORT corners in all health centers and hospitals. Implementation of ORT corner should be ready by end of 1989, and there should be ORT corners in 70 percent of the health centers.

Further definition of the national policy regarding the home treatment or prevention of dehydration. Use of home-available fluids versus sugar-salt solutions.

A need exists for a more specific case-management policy on the use of antibiotics in treating acute and persistent diarrhea. A similar policy statement is needed to restrict the use of antiemetic drugs (for example phenergan) in treating diarrhea in children.

### Training

#### 1. UTH Training Unit

Three UTH courses should be offered annually with follow-up supervision within six months, from 1989 to 1992. This vital unit, expected to be opened by mid-1989, would train approximately ten physicians at a time, and will offer three such courses annually. These physician-trainees should be asked ahead of time to provide basic information about diarrhea case management in their facilities. This information would include:

- o Case-management policy
- o Presence of an ORT corner
- o Availability of health-education materials: handouts for mothers, posters, flipcharts, etc.

- o Training of facility staff in ORT
- o Presence of a record of diarrhea cases of the under-five population.

UTH trainees would receive a follow-up visit within six months, during which CDD program staff would review their implementation of their CDD course and lend assistance in carrying out the lessons of their training, with specific attention to the items set forth above.

## 2. Mid-level Supervisory Skills Training

Follow-up supervision should be offered within six months, of mid-level supervisory skills training from 1989 to 1992. This training, which uses the WHO modules, has so far been a misnomer, with no supervisory follow-up. CDD program staff would make a supervisory visit to trainees' facilities within six months to review the effects of the training. The PRITECH assessment team is aware, however, that these courses generally train lower staff who are not always able to implement the recommendations of their training due to lack of training for their superiors, especially doctors.

## 3. Case Management Training

Three case-management courses will have been offered by year three -- one each for government medical officers, nurses, and chemists.

### Health Education Materials

ORT posters, pamphlets, flipcharts, and manuals would be distributed to all provincial and district health facilities and to all RHCs by the end of 1990.

### ORS Supply

By the end of year two, 80 percent of the rural health centers and 100 percent of the urban health centers will have a regular stock of ORS, with no stockouts, and all RHCs will have a regular stock by the end of 1991. By distribution of ORS through RHCs, 40 percent of the community health workers would have ORS regularly by the end of 1991.

### Mothers

At the end of 1989, 30 percent of mothers will be able to describe effective ORT use, meaning mixing, administration, feeding, and referral. This figure will be 50 percent by the end of 1991.

### 4.11 Problem-solving Studies

Since 1986, the Zambia CDD Program has carried out numerous research studies oriented toward issues or problems faced by the program. Most of this research was supported by PRITECH. By developing the research plan with the CDD manager, carrying through the field work with the CDD Secretariat, and analyzing the data with the MOH statistician, PRITECH has played an important role in this program component.

The research studies either under way or completed include the following:

- o CDD/UCI National Baseline Survey of Mothers KAP of ORT, 1986/87
- o ORS Distribution Survey of Health Centers, 1987
- o Survey ORS Availability in Private Chemist survey, 1987
- o Case management and ORS Use Patterns of ORS of Private Surgeries, 1987
- o Effective Use of ORT in Health Centers of Seven Districts/Supervision Assessment, 1988
- o Assessment of Use of Training Materials in Nursing School/College of Health, 1988
- o Diarrhea Treatment Practices of Traditional Healers, 1988
- o Diarrhea Case Management Practices of Health Workers in the MOH Health System/Supervision Survey, 1988
- o Missed Opportunities for Child Survival Interventions, 1988.

The Zambian CDD Program also has plans to study the following research topics during 1989-1990.

- o Pre/Post Training Assessment of Lusaka Urban Clinic Health Workers
- o Mothers Nutrition/Weaning Practices/Feeding Patterns During Diarrhea
- o KAP of Community Health Workers Diarrhea Treatment Practices
- o Follow-up of Diarrhea Treatment Practices of Mothers of Children with Diarrhea Who Visited Clinics and Received Information Education and Communication

- o Various Research Projects Proposed in Association with Opening of DTU-UTH.

The studies conducted have provided important information to the program especially in identifying the nature of the diarrhea situation in Zambia. The program is to be commended on the range of studies conducted in areas of importance to CDD. It appeared to the evaluation team, however, that the program has not been as successful in using the information generated from the research in altering its program strategies. For example, a plan to use this information to resolve the problems of the program has not been developed. Similarly, the large amount of research done and proposed raises two major questions:

- o Are the topics chosen the ones of primary importance and relevant to the program activities?
- o Should some of the energy devoted to designing, conducting and analyzing studies be directed to using the information and implementation problems noted in this report?

The issue is whether program should concentrate more on implementation actions which need improvement and on management of the program, using the information already available from studies rather than or before conducting additional research. The intent of the Program Problem-Solving Study should be to use the results of the analyses from the studies to solve the problems identified. This approach would heighten the rate of achievement of program goals.

#### Recommendations:

PRITECH, principally through its country representative, should promote complete utilization of study results in decision-making to improve the management of the CDD Program. Time should be taken to review past and present study recommendations, prepare synopses of these recommendations, and review them with MOH/CDD program management to determine their continuing validity or state of implementation. Budget, workload, and scheduling implications for complete implementation of these recommendations should be determined. This work should be completed over a realistic time frame with adequate participation from concerned staff. The actions should be assigned priority to assist the CDD manager in planning and implementing the CDD Program.

A procedure should be developed which makes the link between proposed research and program decisions more direct. Part of this procedure should be inclusion of decision-makers in planning research activities even before the topic is determined, so that program priorities can be reflected in the research subjects,

influence the research design, and provide orientation in analysis of the data.

The program, perhaps with the assistance of the PRITECH representative, should reassess the list of proposed research topics for the 1989-90 period to determine which are the priorities to undertake in this time frame. The questions to be addressed should be: Which information is needed for which priority program actions? How will the specific information be used?

A more systematic approach to defining research topics and scheduling studies should be undertaken balancing the "need to know" with the need for implementation actions.

## APPENDIX A

### ESTIMATED OUTPUTS

1. ORS Production: With UNICEF and PRITECH financial assistance, GPL will be able to produce at least two million ORS packets to launch the national ORT campaign.

2. ORS Distribution: The MOH will help establish a distribution system within districts, at least on a pilot basis, to ensure ORS packets reach rural health centers

3. Program Management: The functions of the CDD Program Committee and the MOH unit will be strengthened to improve management of the national CDD program.

### ACTUAL OUTPUTS

UNICEF and PRITECH donated raw materials, procured by UNICEF, which GPL used to produce 2.5 million packets of ORS for the CDD Program.

The PRITECH inputs did not occur in the form originally anticipated. The main reason was the expansion of the SIDA Essential Drugs Program in both scope and geographical coverage. PRITECH contributed indirectly by assisting in developing a management information system and carrying out baseline and followup surveys of availability. In addition, the PRITECH representative researched potential alternative distribution systems for the CDD program.

In August 1986 PRITECH hired Dr. Paul Freund to be the PRITECH resident representative. Dr. Freund became a member of the CDD Secretariat of the Ministry of Health, working in close collaboration with the other members of the Secretariat in the areas of program management, development of educational materials, training, ORS production and distribution, communications, operations research. Dr. Freund played a significant role in the creation of committees which addressed various aspects of the CDD program both within the Ministry of Health (e.g., the Health Education Committee) and between donors and non-governmental organizations. In addition, Dr. Freund conducted a number of surveys to provide information to the program.

#### ESTIMATED OUTPUTS

##### 4. Training and education.

During the project period, health workers in approximately three districts will be trained to participate in the national ORT campaign. A national mass media campaign will be prepared and carried out in at least three districts.

5. Supervision. Plans for supervision of health workers will be implemented in approximately three districts.

6. Evaluation. Baseline and follow-up surveys will be carried out in approximately three districts to determine changes in effective use of ORT as a result of the national campaign.

#### ACTUAL OUTPUTS

250 provincial health-workers trained. Carried out by MOH, with little PRITECH input.

50,000 flyers, 10,000 posters, six series of 12 radio programs, a 6-week series of spots promoting Madzi-a-Moyo, and popular theater presentations that have reached 200,000 people in the Lusaka area -- this media activity has gone far beyond three districts. Major PRITECH involvement, especially in theater.

Supervisory tours have been mounted to all provinces, but no systematic supervision system has been implemented. This is a goal to be coupled with future training activity. Tours were fully supported by PRITECH.

KAP survey in 1986, effective-use survey in 1987, surveys of health centers, private surgeries, and chemists in 1987, a survey of traditional healers in 1988, and a review of the nursing-school ORT curricula in 1988. All evaluation was designed, financed, and implemented by PRITECH, with the exception of the baseline KAP survey to which PRITECH contributed with technical and financial assistance

APPENDIX B

REPORT OF REVIEW OF PRITECH/ZAMBIA  
ORS SUPPLY MANAGEMENT ACTIVITIES

## I. Background

A. "PRITECH'S estimated inputs to the Zambia CDD program were as follows:

1. ORS Production: PRITECH will provide US\$30,000 towards the cost of financing an additional one million packets. PRITECH funds will be transferred to UNICEF for procurement of ingredients and packaging materials. All together, GPL could produce 2-1/2 million packets, which should be sufficient for the first twelve to eighteen months of program activity.

2. ORS Distribution: The national pharmacy (Medical Stores Ltd.) has a distribution system which can deliver ORS packets to district warehouses. Transportation is often not provided within the district to deliver ORS packets to local health centers. PRITECH will provide US\$25,000 to assess this problem, to recommend an operational solution, and help establish an improved distribution system, within districts. The PRITECH effort will be coordinated with SIDA drug supply and transportation activities. Funds to initiate the improved distribution system will be provided by PRITECH through UNICEF for administration.

B. "The original estimated outputs are as follows:

1. ORS Production: With UNICEF and PRITECH financial assistance, GPL will be able to produce at least two million ORS packets to launch the national ORT campaign.

2. ORS Distribution: The MOH will help establish a distribution system within districts, at least on a pilot basis, to ensure ORS packets reach rural health centers."<sup>1</sup>

C. Other Background Issues in Distribution, Supply Management and Production of ORS in Zambia:

1. Packet Size: At the outset of the CDD project there was considerable debate over the best volume for the ORS packet that was to be produced locally at GPL. Since bottles of 750-cc were believed to be widely available, and the apparent lack of a common 1-litre measure had resulted in difficulties with the standard UNICEF packet, the decision was made to produce a 750-cc packet, and the first lot of 750,000 to be produced with UNICEF-supplied materials was of this size. In 1987 this decision was reversed and the 1-liter size was adopted as a national standard.

2. Private Sector Production and Distribution: Several commercial brands of ORS have been imported and distributed through

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<sup>1</sup> From Scope of Work Telex, Msg 1086, 7 Feb. 1989

pharmacies and drugstores, and one local manufacturer, Interchem, has produced ORS packets. While there has never been any restriction on the over-the-counter sale of ORS, the MOH has tended to take a restrictive stand on the private-sector production of ORS. Nevertheless some accommodation was reached and Interchem has attempted to address the private market (including the ZCCM hospitals). It was proposed in the project document that assistance in marketing and promotion of ORS would be provided to Interchem through PRITECH and Project SUPPORT.

3. Method Mix and ORS Requirements: The problem of estimating the requirements for ORS packets in Zambia posed somewhat of a problem at the time the project was designed. While it was quite easy to estimate a maximum potential demand based on diarrheal incidence and the under-5 population of 10-12 million liters per year, the actual requirement for packets was indeterminate since there was little evidence of the awareness level of ORT among the population and health providers.

In addition the use of SSS was incorporated into the CDD plan but the degree that it would be used was in question because of some opposition to its use by the MOH and the potential for scarcity of salt and sugar in the country. In effect the initial UNICEF supply of 500,000 1-liter packets and materials for 750,000 750-cc packets was intended to last between one and two years, on the basis of crude estimates. The initial PRITECH/UNICEF assistance to GPL of materials for 2.5 million 1-liter packets was intended to supplement supplies from other sources for 12 to 18 months.

## II. PRITECH Activities and Accomplishments

### A. ORS Production:

1. General Pharmaceuticals Ltd. (GPL): The process of ordering and shipping the materials for ORS production has taken far longer than originally anticipated. The materials were ordered through UNICEF in two lots, the first of which (for approximately 1.5 million packets) has only just arrived in Lusaka February 1989, and the second lot is currently in shipment from Copenhagen. The major problem has been delays at the port of Dar es Salaam, as well as the normal lengthy UNICEF procurement procedures. A lead time of nine months should be considered the minimum in the future. In addition there was a delay of two months before the second lot was ordered due to negotiations between PRITECH/Washington and UNICEF/New York, but this should not account for any delays in production since GPL will still be working on the first lot when the second arrives.

Faced with a temporary lack of raw materials and under pressure from the parent company, GPL obtained foreign exchange and purchased raw materials for a million packets at a high price. About half of these have now been manufactured, Medical Stores Limited (MSL) has refused to purchase them at the price of K1.80 that GPL needs to recover its costs. GPL has sold some

of this production on the private market, and now intends to offer these packets to MSL at a lower price, probably just over K1.00.

Production capacity at GPL remains at approximately 7,000 packets per day, working a double shift, using a single semi-automatic filling machine. This is equivalent to somewhat under 2 million packets per year. Adequate space and ancillary equipment are available, so this could be doubled by the addition of another semiautomatic filling machine or a fully automatic one.

2. Interchem: Interchem has followed up with production and promotion to a degree. By 1987 they had produced some posters, radio spots, street theatre, and other media. They were supplying the ZCCM (copper mines) hospitals with approximately 200,000 ORS packets per year and kept the pharmacy outlets supplied, selling about 50,000 packets in 1987. They have not attempted to do any non-pharmacy OTC marketing through general merchandise outlets as had been suggested in the initial PRITECH proposal, but it was probably premature for this given the state of the CDD program.

A consultancy in marketing by two Project SUPPORT consultants resulted in a workplan and a tentative agreement on continued cooperation. However, Project SUPPORT was unable to provide the funds needed for the full-scale media campaign that Interchem envisaged. Production difficulties in 1988 caused Interchem to halt production, resulting in a major supply gap in the private market and in the mines health facilities. The firm is still committed to ORS as a viable product, and should be re-establishing production and marketing efforts within months. The relationship with Project SUPPORT appears to have withered, but the PRITECH representative has a good working relationship with the new sales manager, so there will be coordination of the technical content of promotional messages.

It is worth noting that ORS is frequently prescribed for under-5 diarrheas by private physicians, but usually in combination with antidiarrheals and/or antibiotics.<sup>2</sup> This suggests the need and possibility for further education, perhaps through commercial detailing, but Interchem is also a major supplier of kaolin mixture.

B. Funding for ORS Procurement: The primary constraint in ORS supply has been the MOH budget for drugs. This was the reason for the original PRITECH commitment to purchase materials. Following the initial UNICEF materials allocation, GPL paid for another 300,000 packets worth of materials under UNICEF reimbursible procurement. After the packets were produced the MOH could not pay for them, so they were purchased at a slow rate until the final purchase cleared available supplies in February 1988. An anticipated commitment for a further \$30,000 (another 1.25 million packets worth of materials) from WHO/AFRO was not forthcoming because WHO had already heavily supported the ORT Unit at UTH.

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<sup>2</sup> Op. cit. footnote 3.

The MOH was and remains unwilling to enter a contract to purchase ORS manufactured by GPL using the UNICEF/PRITECH donated raw materials for a fixed low price for a set period, even though it would be to the advantage of both parties to do so. The reasons for this decision are unclear but may have to do with a general lack of confidence in GPL and a desire to have ORS production transferred to Medical Stores Ltd. (MSL), which started production of several essential drugs last year.

In 1987 the MOH removed kaolin from its formulary, thus freeing up some funds for the procurement of more ORS. With political pressures mounting to relieve critical drug shortages, the GRZ has recently more or less given carte blanche to MSL, and now supplies up to 100,000 pounds sterling per week in foreign exchange for it to meet the annual (1989) drug vote of K140 million. The MSL warehouse is brimming with supplies, much of which has been brought in by airfreight at great cost. Among this lot are 1.12 million 1-liter ORS packets purchased recently from IMPAS (Holland) and ECHO (UK) at a landed cost of K0.59 (it seems unlikely that this is the true landed cost since many were airfreighted.) These were procured to fill the deficit due to production delays at GPL. It remains to be seen if MSL will be able to meet the increasing demand for ORS, but the situation now is more favorable than in recent years. At present the MOH commitment is to purchase 1.3 million packets per year, but it is probable that this would be increased if the need is demonstrated.

C. ORS Demand and Supply:

1. Actual Near-Term Demand: PRITECH has contributed to several field studies on the availability and use of ORT/ORS which have made it possible to calculate with some accuracy the present and projected actual demand for ORS. Based on a quick sampling of returned CDD information forms for the past 12 months (Annex 1), the present usage rate at Rural Health Centers (700) is close to 200 packets per month, and at Urban Health Centres (183 including Copperbelt) close to 300 per month. These figures include church and mission health facilities, which get the majority of their drugs from MSL. District Hospitals (82) use about 1,000 per month, and the central and specialty hospitals (5) about 5,000 per month. Community Health Workers (total trained of 4,000) use about 50 packets per month.

RHC's	1,680,000
UHC's	658,800
DH's	984,000
C/SH's	<u>300,000</u>

3,622,800

CHW's 2,400,000 [1,440,000 if only 60% are working]

Total 6,022,800 [5,062,800]

The true near-term demand for ORS packets (assuming continued negligible use of SSS) is likely to be between 5 and 6 million per year, depending primarily on the degree to which CHW's are functioning. It should be noted that on the basis of a preliminary examination of the CDD returns there was evidence of overuse of packets in some centers. This will be clarified when a full analysis of the data is completed, but if it exists and can be rectified through retraining or supervision, it could reduce the requirements significantly.

The question of private-sector demand will be ignored for the moment. For 1987, the last year that supplies were freely available, total sales of ORS through pharmacies was about 100,000 (roughly half the Interchem product and half from GPL). It is difficult to say whether sales would increase significantly if ORS went on sale again at pharmacies, since the assumption is that ORS will be widely available for free at urban clinics. Given the extremely low purchasing power of most of the urban population at the present time, it is questionable that sales would reach important numbers.

2. Near-Term Supply: The most important source of ORS over the coming few years is likely to be outside donors. SIDA and Dutch Cooperation, through the Essential Drugs Programme (EDP), are now supplying drug kits to 24 districts (health center and CHW kits), with about 600,000 to 800,000 packets per year, at a present level of 150/kit. In the first phase of the EDP, 200 packets per kit were supplied, but it was observed that surpluses were accumulating in many centers. According to the SIDA EDP Advisor there would be no particular constraints to increasing the number per kit back to 200 or even more if demand required it. The program plans to cover all 37 rural districts by 1990, representing about 1.25 million packets supplied by SIDA/Dutch Cooperation, with the potential for reaching 1.7 million if the number per kit is increased to meet the apparent actual demand in rural centers. The MOH would then be able to increase its ORS supplies to the urban health centres. UNICEF will continue to provide approximately 500,000 per year for cholera and other emergencies. Interchem will probably attempt to produce and supply the ZCCM urban centers and hospitals, private clinics, and pharmacies, with as many as 300,000 packets per year. Other sources including CMAZ, Red Cross, and other NGO's, may contribute a total of 250,000.

Estimated Annual National Requirements 1989-1990:	<u>Low</u> 5,000,000	<u>High</u> 6,000,000
Supplies From:		
SIDA	1,700,000	
UNICEF	500,000	
Interchem	300,000	
CMAZ, NGO's	250,000	
	<u>2,750,000</u>	
Required MSL/MOH Supplies:	2,250,000	3,250,000

Medical Stores Ltd. will therefore need to procure one to two million more packets per year than now planned. This will not be a problem in 1989, since it has made what is in effect an extra purchase of 1.13 million packets. After the PRITECH/UNICEF donated materials are turned into finished packets of Madzi-a-Moyo, there will be a stock of 2.5 million at GPL, and if the final price is competitive (with the 59n price from IMPAS/ECHO) the MSL will purchase them. The total stock of 3.6 million should provide about a year of uninterrupted supply - more or less, depending on how quickly the SIDA/Dutch program expands into the remaining rural areas. For the near-term it is difficult to forecast the exact stock situation at MSL since their procurement plans are still not final. It is important to remember that a substantial buffer stock of ORS is absolutely necessary if shortages are to be avoided in the future, given the irregular purchase intervals, long lead times, and seasonal peaks in consumption.

3. GPL Production: GPL in Kabwe has an installed production capacity of 2 million packets per year, using two shifts. When they have had materials in the past, they have been able to produce Madzi-a-Moyo, but there are several potential problem areas that require attention if a reliable supply is to be guaranteed in the future:

a. Cost Control: The price of locally-supplied materials, especially the packet inserts, has been rising and will be reflected in the price GPL asks from MSL.

b. Management and Coordination: On the basis of one frustrating visit to GPL when it was possible only to speak with the production manager but not see the production area, it must be said that there appears to be room for improvement. There has been a general inability to establish a good working relationship with MSL, in spite of both organizations being parastatals. This is exemplified by the seemingly irrational decision by GPL to not sell the present stock of Madzi-a-Moyo to MSL at the "donated materials" price and replenish their own stock for the private market with the packets made with donated materials.

c. Quality Control and GMP: On the basis of an interview with the Production Manager it was determined that:

(1) Sampling procedures are inadequate - three samples are taken from the mixer during batch production and only one finished packet per batch of 5,000 is fully analyzed.

(2) The General Manager has been acting as quality control manager since the person who filled that post left several months ago.

(3) Since production has been intermittent, the ORS production line is staffed by casual labor, in contravention to GMP.

d. Production capacity: If the original goal of providing the MOH's requirements of ORS is to be met, the production capacity will have to be doubled by adding another semi-automatic filling machine.

D. ORS Distribution: In the past few years it has been possible to attribute problems in drug supply to both shortages of drugs and inadequacy of transport. Responsibility for distributing ORS to MOH facilities along with other drugs has always been the responsibility of Medical Stores Ltd.; there is no regularly organized distribution system for ORS through the CDD/EPI program. Due in large measure to the assistance of SIDA, the MSL has made great improvements in supply management and logistics. PRITECH has contributed to this effort by assisting in the development of a monitoring system and carrying out a baseline study that included information on availability. The major constraint to better performance is a shortage of serviceable heavy trucks as the fleet ages.

The availability survey<sup>3</sup> carried out in 1987 revealed that 41% of health centres had no ORS in stock and that 64% of those that had stock had less than 100 sachets. Most of the centres claiming stocks were along the line of rail (Central, Southern, Copperbelt, and Lusaka provinces.) One indication that the situation has improved comes from a preliminary analysis of CDD information system returns (Annex 1). Only 22% of health centre/hospital returns sampled had no ORS left at the end of the previous month. This percentage is an average of all provinces, but the highest percentage of stockouts occurred in Copperbelt and Lusaka which are served by MSL but do not receive SIDA drug kits. The average in provinces receiving SIDA kits was only 17%. The "line-of-rail" provinces (not served by SIDA) also have higher than average monthly ORS usage rates, so the high stockout rate would be expected given the shortage of ORS in Medical Stores throughout 1988.

Most centres sampled had between 0.6 and 3.1 months worth of ORS in stock, based on their average monthly consumption, but there were exceptions that had acquired a large stockpile. About 15% of centres had more than 3 months stock. The Essential Drugs Programme is still in the process of refining the stock management system, so more improvement can be expected. The situation at present is that SIDA assists with the distribution of kits within districts (by supplying vehicles, training, etc.) only where reasonable infrastructure already exists. In principle, overstocks of drugs at health centres are removed by the District Management Team to the district hospital, and then distributed to other health centres in the district. In practice, either there is insufficient transport for the team to make their supervisory visits, or the surplus drugs are kept for use at the district hospital. This situation will gradually improve, but in the meantime the only solution

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<sup>3</sup> Availability and Distribution of ORS - A Survey of Health Centres, Private Surgeries and Chemists with a preliminary Assessment of Alternative Distribution Networks. by Dr. Paul J. Freund and P. Mphande, M. Kaoma, and A. Muphinde.

is to refine the method of calculating drug requirements so that health centres that treat many diarrhea cases can receive a supplementary supply of ORS from MSL. The SIDA EDP advisor stated that redistribution between districts in the same province is also a possibility within the program in the future.

E. Alternative Distribution Channels: This possibility was raised during the initial PRITECH visit in 1986, and has been explored by the PRITECH representative. The results were reported in the previously-referenced study<sup>4</sup>. At present it appears that no existing alternative distribution system is feasible. As the MSL distribution continues to improve, the need for an alternative becomes less important, but the situation should be monitored closely, particularly in regard to the private sector.

F. ORS Usage: The preliminary survey of CDD returns suggested two important aspects of ORS usage that could affect the future supply situation. These should be confirmed after the full analysis is completed and the situation should be monitored:

1. The average usage rate may be higher than the two sachets per case amount that is the basis of all demand calculations. This appears to occur mainly in centres that have a large supply of ORS on hand, but was also noted in some centres that ran out of ORS.

2. Many centres reported treating cases of diarrhea in children over 5 years, and some returns suggested that ORS was given to adults also.

G. Other Supplies: Requirements for IV fluids and antibiotics used to treat some diarrheas have not been considered by the CDD programme, but rather are part of the essential drugs supply to health centres and hospitals. No particular complaints concerning the availability of these items was noted aside from the general shortage of drugs experienced recently. Requisition and reporting forms have been in short supply at times due to paper shortages, but the actual provision and printing is done on a provincial basis and improvisation often helps in muddling through. Educational materials are the responsibility of the Health Education Unit and are produced in accordance with the CDD/HE plan. This has been largely successful.

### III. Conclusions and Recommendations

A. ORS Production: The strategy of assisting in ORS supply by supplying raw materials appears to have been appropriate, given the shortage of drugs in general in 1986 when the PRITECH interventions were planned, and the recent establishment of a local production facility. With the benefit of hindsight, it could be said that the serious shortage of ORS in 1988 would have been avoided if finished packets

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<sup>4</sup> Op. cit.

rather than raw materials had been brought in by a donor, but at the time the long lead times involved in getting raw materials into the country could not have been predicted. Neither these delays, nor the MOH's inability to commit adequate funds to ORS procurement, can fairly be attributed to PRITECH.

Production of ORS did commence at GPL and continued as long as materials were available. ORS materials were procured through reimbursable procurement thanks largely to the efforts of PRITECH and UNICEF, and the donated materials have now arrived in country. Production and management problems at GPL have been noted above. Production capacity of under 2 million per year will not be sufficient to meet the entire needs of the MOH CDD Programme, but MSL may prefer to procure part of the requirements from outside the country due to increasing production costs at GPL.

The decision to change packet size was without doubt the correct one. At the time the issue was under debate the major argument against the 750-cc size was the presence of donated 1-liter packets in Zambia. Rather than decreasing, the proportion of donated 1-liter packets has increased, and appears likely to remain high. At the same time, the 750-cc container, a bottle used for orange squash, is no longer widely available due to decreased purchasing power of the population, and an alternative (half-liter) measuring cup has been identified.

**Recommendation 1:** PRITECH should continue to assist the CDD Secretariat monitor ORS usage and make revised estimates of ORS requirements on a biannual basis. An estimate of buffer stock required at MSL should be made in the next six months. Meetings of the CDD Secretariat and other concerned parties should be continued to be held on a reasonably regular basis until there is confidence that MSL can manage this by itself. PRITECH and UNICEF should emphasize the deleterious effects of ruptures of ORS stock on the CDD programme, and continue to press for a firm plan for GRZ financing of the requirements, including a buffer stock.

**Recommendation 2:** Quality control at GPL should be called into question and assistance offered. Correct sampling protocols should be established and the actual laboratory procedures reviewed. The potential role of the production facility at MSL for quality control should be investigated.

**B. ORS Distribution:** The PRITECH inputs planned in the area of ORS distribution have not occurred in the form originally anticipated. The main reason for this is that the SIDA Essential Drugs Programme has expanded in scope and geographical coverage to include distribution within districts. There is good reason to believe that once the supply situation at MSL has stabilized, the MOH and CMAZ health facilities will be well-supplied. A level of stockouts of 15% nationally is within reach and 10% could be expected in a year's time. PRITECH has contributed significantly but indirectly to the overall effort as noted above, by assisting in developing a management information system and

carrying out baseline and followup surveys of availability. It is difficult to imagine how the \$25,000 initially allotted for the improvement of district distribution systems could have been usefully spent.

The PRITECH representative has researched potential alternative distribution systems for the CDD programme, but as noted above none has been identified as feasible, nor probably necessary any longer. There may still be a need to identify a parallel distribution system in the private sector, but the importance of the private market in ORS supply should be re-evaluated in light of recent movements towards user fees at government health facilities and the continuing erosion of individual purchasing power. Interchem remains the major player, with a strong interest in ORS, a good production facility, and the potential to distribute outside the network of private chemists.

**Recommendation 3:** PRITECH should offer assistance to SIDA/EDP in a) assessing the potential for refining the ORS distribution system by calculating requirements of health centres and supplementing the amounts supplied in SIDA kits, and b) refining the CDD information system to make this possible to do on a regular basis.

**Recommendation 4:** The role of the private sector in providing ORS to the public at reasonable cost should be reanalyzed in light of current economic conditions. The possibility of supporting an advertising and detailing effort targeted at chemists and private physicians should be considered, and the status of the relationship with Project SUPPORT should be clarified.

## Annex 1: ANALYSIS OF CDD RETURNS BASED ON A RANDOM SAMPLING

### Column Headings:

- (1) - Average monthly ORS Packet Use If Not Reported Out Of Stock At End Of Month
- (2) - Range Of Stock Balance in Sampled Centres In Months Consumption
- (3) - Average Stock Balance in Months Consumption
- (4) - Percent of Centres Out Of Stock
- (5) - Percent Centres Having More Than 3 Months Stock at End of Reporting Period
- (6) - Number of Returns Sampled

PROVINCE	(1)	(2)	(3)	(4)	(5)	(6)
Central	123	0 - 5.76	1.34	20%	10%	10
Luapula	148	0 - 2.25	0.98	33%	0%	10
Western with outliers	306	0 - 50.5	5.38	14.3%	21%	14
w/o outliers	334	0 - 10.4	1.91	15.4%	23%	13
Eastern	94	0 - 14.0	2.14	20%	13%	15
Northern	88	0.16 - 17.5	3.11	0%	20%	10
Southern with outliers	348	0.73 - 9.0	2.85	0%	25%	4
w/o outliers	247	0.73 - 0.96	0.79	0%	0%	3
Lusaka with outliers	118	0 - 33.7	4.50	40%	20%	10
w/o outliers	135	0 - 6.29	1.26	44.4%	11%	9
Copperbelt	378	0 - 4.0	0.61	50%	10%	10

### NATIONAL

#### A: Including Sampled Outliers:

Average	200	0.11 - 17.1	2.61	22.4%	14.9%
Range	88-378	0 - 50.5	0.61-5.38	0-50%	0-25%

#### B: Excluding Outliers:

Average	192	0.11 - 7.63	1.52	22.8%	10.9%
Range	88-378	0 - 17.5	0.61-3.11	0-50%	0-23%

### RANKINGS

Above Average ORS Use: Copperbelt, Southern, Western, Luapula

Highest ORS Stock Levels: Western, Lusaka, Northern, Southern

Most Centres Out Of Stock: Copperbelt, Lusaka, Luapula, Eastern

**Persons Contacted, Feb. 6-11, 1989**

**Mrs. Malombe, Sales Manager, Interchem**

**Mary Kaoma, CDD Programme**

**Peter Mphande, Ass't CDD Programme Manager**

**Dr. Himonga, CDD/EPI Programme Manager**

**Mr. Siecharan, Acting Managing Director, MSL**

**Mr. Shakalima, MSL**

**Mr. A. Manyindo, UNICEF**

**Bjorn Von Hofsten, SIDA EDP Advisor**

**M. N. Imakumbali, GPL Production Manager**

ZAMBIA: SURVEY OF FACILITIES VISITED

TABLE 1	Assessment/ Treatment Records	ORS Available	ORT Corner Unit	Treatment Adequate	Weight Record	Anti- biotic Use	IV Use	Other Drugs	HE Poster Treatment Chart	Staff Trained in CDD	Other Observations
Mazabuka Dist. Hospital	Poor Knowledge No Records	Yes	No	No multiple drugs, in- adequate rehydration	No	Multiple use in some RX	Always	Phenegan Diworm	No	No	Physician staff could'nt com- municate with patients un- aware of ORT.
Living- stone Dist. Hospital	Good Knowledge No Records	No	No	No	No	Multiple use	75%	Yes Phenegan	No	One RN	This hospital has a rehy- dration unit within the Pediatric Ward and Malnourished Ward
Urban H.C. Livingstone	Good Knowledge No Records	Yes Inadequate Use	No	No	No	Majority	No	No	Yes	Yes Clinical Staff	No support/ supervision after training. Treat- ment chart at the malnourished ward.
Rural H.C. Mukene	Good Knowledge Incomplete Recording	No	No	No	No	No	Some	Yes Phenegan Chloroquine	Yes	No	Water measurement container for ORS/ SSS was 800 ml.
Choma Dist. Hospital	Good Incomplete Recording	Yes	Yes	No	No	Some	Common	Yes Phenegan	Yes But Dis- placed	No	Treating client in kitchen room. Zambian staff committed to the CDD Program but no formal education on it.

TABLE 1

	Assessment/ Treatment Records	ORS Available	ORT Corner Unit	Treatment Adequate	Weight Record	Anti- biotic Use	IV Use	Other Drugs	HE Poster Treatment Chart	Staff Trained in CDD	Other Observations
Monze Mission Hospital	Good KAP & Records	Inadequate Supply	Yes	Yes	Yes on Admis- sion	Adequate	10-15%	Yes	Yes	Yes	Phenegrans used as standard treatment
UTH Lusaka	Good KAP Inadequate Records	Yes	Yes but not Oper- ational	Yes at the Nut.Ward	Yes on Admis- sion	Mulitple use	Adequate	Yes	Yes at the Nut. Ward	Yes	ORT is done at the Nutrition ward at the present. DTU will open in June
Chawama UHC Lusaka	Good Knowledge Inadequate Practice Recording	No	Yes But Not in Use	No	No	Some	No	Yes	HE Poster in waiting Room.No Treat/Chart	No	The staff member trained in CDD has been transferred to another H.C.
Chainama Training H.C.	Good KA Inadequate Practice Recording	No	No	Inadequate Patient sent home	No	No	Some	No	Yes	No	The training school wants to revise its curriculum on CDD.
Arthur Davison H.	Good KA Inadequate Practice Recording	No	No	Yes	No	Adequate	Adequate	No	No	Yes	The treatment practiced is acceptable. Half strength Darrows solution are used to replace ORS.

APPENDIX D

REVIEW OF PRITECH/ZAMBIA  
ORS SUPPLY MANAGEMENT ACTIVITIES

A Report Prepared By PRITECH Consultant:  
STEVE FABRICANT

During The Period:  
FEBRUARY, 1989

TECHNOLOGIES FOR PRIMARY HEALTH CARE (PRITECH) PROJECT  
Supported By The:  
U.S. Agency For International Development  
CONTRACT NO: AID/DPE-5969-Z-00-7064-00  
PROJECT NO: 936-5969

AUTHORIZATION:  
AID/S&T/HEA: 1/4/90  
ASSGN. NO: STP 013-ZA

## I. Background

A. "PRITECH'S estimated inputs to the Zambia CDD program were as follows:

1. ORS Production: PRITECH will provide US\$30,000 towards the cost of financing an additional one million packets. PRITECH funds will be transferred to UNICEF for procurement of ingredients and packaging materials. All together, GPL could produce 2-1/2 million packets, which should be sufficient for the first twelve to eighteen months of program activity.

2. ORS Distribution: The national pharmacy (Medical Stores Ltd.) has a distribution system which can deliver ORS packets to district warehouses. Transportation is often not provided within the district to deliver ORS packets to local health centers. PRITECH will provide US\$25,000 to assess this problem, to recommend an operational solution, and help establish an improved distribution system, within districts. The PRITECH effort will be coordinated with SIDA drug supply and transportation activities. Funds to initiate the improved distribution system will be provided by PRITECH through UNICEF for administration.

B. "The original estimated outputs are as follows:

1. ORS Production: With UNICEF and PRITECH financial assistance, GPL will be able to produce at least two million ORS packets to launch the national ORT campaign.

2. ORS Distribution: The MOH will help establish a distribution system within districts, at least on a pilot basis, to ensure ORS packets reach rural health centers."<sup>1</sup>

C. Other Background Issues in Distribution, Supply Management and Production of ORS in Zambia:

1. Packet Size: At the outset of the CDD project there was considerable debate over the best volume for the ORS packet that was to be produced locally at GPL. Since bottles of 750-cc were believed to be widely available, and the apparent lack of a common 1-litre measure had resulted in difficulties with the standard UNICEF packet, the decision was made to produce a 750-cc packet, and the first lot of 750,000 to be produced with UNICEF-supplied materials was of this size. In 1987 this decision was reversed and the 1-liter size was adopted as a national standard.

2. Private Sector Production and Distribution: Several commercial brands of ORS have been imported and distributed through

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<sup>1</sup> From Scope of Work Telex, Msg 1086, 7 Feb. 1989

pharmacies and drugstores, and one local manufacturer, Interchem, has produced ORS packets. While there has never been any restriction on the over-the-counter sale of ORS, the MOH has tended to take a restrictive stand on the private-sector production of ORS. Nevertheless some accommodation was reached and Interchem has attempted to address the private market (including the ZCCM hospitals). It was proposed in the project document that assistance in marketing and promotion of ORS would be provided to Interchem through PRITECH and Project SUPPORT.

3. Method Mix and ORS Requirements: The problem of estimating the requirements for ORS packets in Zambia posed somewhat of a problem at the time the project was designed. While it was quite easy to estimate a maximum potential demand based on diarrheal incidence and the under-5 population of 10-12 million liters per year, the actual requirement for packets was indeterminate since there was little evidence of the awareness level of ORT among the population and health providers.

In addition the use of SSS was incorporated into the CDD plan but the degree that it would be used was in question because of some opposition to its use by the MOH and the potential for scarcity of salt and sugar in the country. In effect the initial UNICEF supply of 500,000 1-liter packets and materials for 750,000 750-cc packets was intended to last between one and two years, on the basis of crude estimates. The initial PRITECH/UNICEF assistance to GPL of materials for 2.5 million 1-liter packets was intended to supplement supplies from other sources for 12 to 18 months.

## II. PRITECH Activities and Accomplishments

### A. ORS Production:

1. General Pharmaceuticals Ltd. (GPL): The process of ordering and shipping the materials for ORS production has taken far longer than originally anticipated. The materials were ordered through UNICEF in two lots, the first of which (for approximately 1.5 million packets) has only just arrived in Lusaka February 1989, and the second lot is currently in shipment from Copenhagen. The major problem has been delays at the port of Dar es Salaam, as well as the normal lengthy UNICEF procurement procedures. A lead time of nine months should be considered the minimum in the future. In addition there was a delay of two months before the second lot was ordered due to negotiations between PRITECH/Washington and UNICEF/New York, but this should not account for any delays in production since GPL will still be working on the first lot when the second arrives.

Faced with a temporary lack of raw materials and under pressure from the parent company, GPL obtained foreign exchange and purchased raw materials for a million packets at a high price. About half of these have now been manufactured, Medical Stores Limited (MSL) has refused to purchase them at the price of K1.80 that GPL needs to recover its costs. GPL has sold some

of this production on the private market, and now intends to offer these packets to MSL at a lower price, probably just over K1.00.

Production capacity at GPL remains at approximately 7,000 packets per day, working a double shift, using a single semi-automatic filling machine. This is equivalent to somewhat under 2 million packets per year. Adequate space and ancillary equipment are available, so this could be doubled by the addition of another semiautomatic filling machine or a fully automatic one.

2. Interchem: Interchem has followed up with production and promotion to a degree. By 1987 they had produced some posters, radio spots, street theatre, and other media. They were supplying the ZCCM (copper mines) hospitals with approximately 200,000 ORS packets per year and kept the pharmacy outlets supplied, selling about 50,000 packets in 1987. They have not attempted to do any non-pharmacy OTC marketing through general merchandise outlets as had been suggested in the initial PRITECH proposal, but it was probably premature for this given the state of the CDD program.

A consultancy in marketing by two Project SUPPORT consultants resulted in a workplan and a tentative agreement on continued cooperation. However, Project SUPPORT was unable to provide the funds needed for the full-scale media campaign that Interchem envisaged. Production difficulties in 1988 caused Interchem to halt production, resulting in a major supply gap in the private market and in the mines health facilities. The firm is still committed to ORS as a viable product, and should be re-establishing production and marketing efforts within months. The relationship with Project SUPPORT appears to have withered, but the PRITECH representative has a good working relationship with the new sales manager, so there will be coordination of the technical content of promotional messages.

It is worth noting that ORS is frequently prescribed for under-5 diarrheas by private physicians, but usually in combination with antidiarrheals and/or antibiotics.<sup>2</sup> This suggests the need and possibility for further education, perhaps through commercial detailing, but Interchem is also a major supplier of kaolin mixture.

B. Funding for ORS Procurement: The primary constraint in ORS supply has been the MOH budget for drugs. This was the reason for the original PRITECH commitment to purchase materials. Following the initial UNICEF materials allocation, GPL paid for another 300,000 packets worth of materials under UNICEF reimbursible procurement. After the packets were produced the MOH could not pay for them, so they were purchased at a slow rate until the final purchase cleared available supplies in February 1988. An anticipated commitment for a further \$30,000 (another 1.25 million packets worth of materials) from WHO/AFRO was not forthcoming because WHO had already heavily supported the ORT Unit at UTH.

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<sup>2</sup> Op. cit. footnote 3.

The MOH was and remains unwilling to enter a contract to purchase ORS manufactured by GPL using the UNICEF/PRITECH donated raw materials for a fixed low price for a set period, even though it would be to the advantage of both parties to do so. The reasons for this decision are unclear but may have to do with a general lack of confidence in GPL and a desire to have ORS production transferred to Medical Stores Ltd. (MSL), which started production of several essential drugs last year.

In 1987 the MOH removed kaolin from its formulary, thus freeing up some funds for the procurement of more ORS. With political pressures mounting to relieve critical drug shortages, the GRZ has recently more or less given carte blanche to MSL, and now supplies up to 100,000 pounds sterling per week in foreign exchange for it to meet the annual (1989) drug vote of K140 million. The MSL warehouse is brimming with supplies, much of which has been brought in by airfreight at great cost. Among this lot are 1.12 million 1-liter ORS packets purchased recently from IMPAS (Holland) and ECHO (UK) at a landed cost of K0.59 (it seems unlikely that this is the true landed cost since many were airfreighted.) These were procured to fill the deficit due to production delays at GPL. It remains to be seen if MSL will be able to meet the increasing demand for ORS, but the situation now is more favorable than in recent years. At present the MOH commitment is to purchase 1.3 million packets per year, but it is probable that this would be increased if the need is demonstrated.

### C. ORS Demand and Supply:

1. Actual Near-Term Demand: PRITECH has contributed to several field studies on the availability and use of ORT/ORS which have made it possible to calculate with some accuracy the present and projected actual demand for ORS. Based on a quick sampling of returned CDD information forms for the past 12 months (Annex 1), the present usage rate at Rural Health Centers (700) is close to 200 packets per month, and at Urban Health Centres (183 including Copperbelt) close to 300 per month. These figures include church and mission health facilities, which get the majority of their drugs from MSL. District Hospitals (82) use about 1,000 per month, and the central and specialty hospitals (5) about 5,000 per month. Community Health Workers (total trained of 4,000) use about 50 packets per month.

RHC's	1,680,000
UHC's	658,800
DH's	984,000
C/SH's	<u>300,000</u>

3,622,800

CHW's 2,400,000 [1,440,000 if only 60% are working]

Total            6,022,800 [5,062,800]

The true near-term demand for ORS packets (assuming continued negligible use of SSS) is likely to be between 5 and 6 million per year, depending primarily on the degree to which CHW's are functioning. It should be noted that on the basis of a preliminary examination of the CDD returns there was evidence of overuse of packets in some centers. This will be clarified when a full analysis of the data is completed, but if it exists and can be rectified through retraining or supervision, it could reduce the requirements significantly.

The question of private-sector demand will be ignored for the moment. For 1987, the last year that supplies were freely available, total sales of ORS through pharmacies was about 100,000 (roughly half the Interchem product and half from GPL). It is difficult to say whether sales would increase significantly if ORS went on sale again at pharmacies, since the assumption is that ORS will be widely available for free at urban clinics. Given the extremely low purchasing power of most of the urban population at the present time, it is questionable that sales would reach important numbers.

2. Near-Term Supply: The most important source of ORS over the coming few years is likely to be outside donors. SIDA and Dutch Cooperation, through the Essential Drugs Programme (EDP), are now supplying drug kits to 24 districts (health center and CHW kits), with about 600,000 to 800,000 packets per year, at a present level of 150/kit. In the first phase of the EDP, 200 packets per kit were supplied, but it was observed that surpluses were accumulating in many centers. According to the SIDA EDP Advisor there would be no particular constraints to increasing the number per kit back to 200 or even more if demand required it. The program plans to cover all 37 rural districts by 1990, representing about 1.25 million packets supplied by SIDA/Dutch Cooperation, with the potential for reaching 1.7 million if the number per kit is increased to meet the apparent actual demand in rural centers. The MOH would then be able to increase its ORS supplies to the urban health centres. UNICEF will continue to provide approximately 500,000 per year for cholera and other emergencies. Interchem will probably attempt to produce and supply the ZCCM urban centers and hospitals, private clinics, and pharmacies, with as many as 300,000 packets per year. Other sources including CMAZ, Red Cross, and other NGO's, may contribute a total of 250,000.

Estimated Annual National Requirements 1989-1990:	<u>Low</u> 5,000,000	<u>High</u> 6,000,000
Supplies From:		
SIDA	1,700,000	
UNICEF	500,000	
Interchem	300,000	
CMAZ, NGO's	<u>250,000</u>	
	2,750,000	
Required MSL/MOH Supplies:	2,250,000	3,250,000

Medical Stores Ltd. will therefore need to procure one to two million more packets per year than now planned. This will not be a problem in 1989, since it has made what is in effect an extra purchase of 1.13 million packets. After the PRITECH/UNICEF donated materials are turned into finished packets of Madzi-a-Moyo, there will be a stock of 2.5 million at GPL, and if the final price is competitive (with the 59n price from IMPAS/ECHO) the MSL will purchase them. The total stock of 3.6 million should provide about a year of uninterrupted supply - more or less, depending on how quickly the SIDA/Dutch program expands into the remaining rural areas. For the near-term it is difficult to forecast the exact stock situation at MSL since their procurement plans are still not final. It is important to remember that a substantial buffer stock of ORS is absolutely necessary if shortages are to be avoided in the future, given the irregular purchase intervals, long lead times, and seasonal peaks in consumption.

3. GPL Production: GPL in Kabwe has an installed production capacity of 2 million packets per year, using two shifts. When they have had materials in the past, they have been able to produce Madzi-a-Moyo, but there are several potential problem areas that require attention if a reliable supply is to be guaranteed in the future:

a. Cost Control: The price of locally-supplied materials, especially the packet inserts, has been rising and will be reflected in the price GPL asks from MSL.

b. Management and Coordination: On the basis of one frustrating visit to GPL when it was possible only to speak with the production manager but not see the production area, it must be said that there appears to be room for improvement. There has been a general inability to establish a good working relationship with MSL, in spite of both organizations being parastatals. This is exemplified by the seemingly irrational decision by GPL to not sell the present stock of Madzi-a-Moyo to MSL at the "donated materials" price and replenish their own stock for the private market with the packets made with donated materials.

c. Quality Control and GMP: On the basis of an interview with the Production Manager it was determined that:

(1) Sampling procedures are inadequate - three samples are taken from the mixer during batch production and only one finished packet per batch of 5,000 is fully analyzed.

(2) The General Manager has been acting as quality control manager since the person who filled that post left several months ago.

(3) Since production has been intermittent, the ORS production line is staffed by casual labor, in contravention to GMP.

d. Production capacity: If the original goal of providing the MOH's requirements of ORS is to be met, the production capacity will have to be doubled by adding another semi-automatic filling machine.

D. ORS Distribution: In the past few years it has been possible to attribute problems in drug supply to both shortages of drugs and inadequacy of transport. Responsibility for distributing ORS to MOH facilities along with other drugs has always been the responsibility of Medical Stores Ltd.; there is no regularly organized distribution system for ORS through the CDD/EPI program. Due in large measure to the assistance of SIDA, the MSL has made great improvements in supply management and logistics. PRITECH has contributed to this effort by assisting in the development of a monitoring system and carrying out a baseline study that included information on availability. The major constraint to better performance is a shortage of serviceable heavy trucks as the fleet ages.

The availability survey<sup>3</sup> carried out in 1987 revealed that 41% of health centres had no ORS in stock and that 64% of those that had stock had less than 100 sachets. Most of the centres claiming stocks were along the line of rail (Central, Southern, Copperbelt, and Lusaka provinces.) One indication that the situation has improved comes from a preliminary analysis of CDD information system returns (Annex 1). Only 22% of health centre/hospital returns sampled had no ORS left at the end of the previous month. This percentage is an average of all provinces, but the highest percentage of stockouts occurred in Copperbelt and Lusaka which are served by MSL but do not receive SIDA drug kits. The average in provinces receiving SIDA kits was only 17%. The "line-of-rail" provinces (not served by SIDA) also have higher than average monthly ORS usage rates, so the high stockout rate would be expected given the shortage of ORS in Medical Stores throughout 1988.

Most centres sampled had between 0.6 and 3.1 months worth of ORS in stock, based on their average monthly consumption, but there were exceptions that had acquired a large stockpile. About 15% of centres had more than 3 months stock. The Essential Drugs Programme is still in the process of refining the stock management system, so more improvement can be expected. The situation at present is that SIDA assists with the distribution of kits within districts (by supplying vehicles, training, etc.) only where reasonable infrastructure already exists. In principle, overstocks of drugs at health centres are removed by the District Management Team to the district hospital, and then distributed to other health centres in the district. In practice, either there is insufficient transport for the team to make their supervisory visits, or the surplus drugs are kept for use at the district hospital. This situation will gradually improve, but in the meantime the only solution

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<sup>3</sup> Availability and Distribution of ORS - A Survey of Health Centres, Private Surgeries and Chemists with a preliminary Assessment of Alternative Distribution Networks. by Dr. Paul J. Freund and P. Mphande, M. Kaoma, and A. Muphinde.

is to refine the method of calculating drug requirements so that health centres that treat many diarrhea cases can receive a supplementary supply of ORS from MSL. The SIDA EDP advisor stated that redistribution between districts in the same province is also a possibility within the program in the future.

E. Alternative Distribution Channels: This possibility was raised during the initial PRITECH visit in 1986, and has been explored by the PRITECH representative. The results were reported in the previously-referenced study<sup>4</sup>. At present it appears that no existing alternative distribution system is feasible. As the MSL distribution continues to improve, the need for an alternative becomes less important, but the situation should be monitored closely, particularly in regard to the private sector.

F. ORS Usage: The preliminary survey of CDD returns suggested two important aspects of ORS usage that could affect the future supply situation. These should be confirmed after the full analysis is completed and the situation should be monitored:

1. The average usage rate may be higher than the two sachets per case amount that is the basis of all demand calculations. This appears to occur mainly in centres that have a large supply of ORS on hand, but was also noted in some centres that ran out of ORS.

2. Many centres reported treating cases of diarrhea in children over 5 years, and some returns suggested that ORS was given to adults also.

G. Other Supplies: Requirements for IV fluids and antibiotics used to treat some diarrheas have not been considered by the CDD programme, but rather are part of the essential drugs supply to health centres and hospitals. No particular complaints concerning the availability of these items was noted aside from the general shortage of drugs experienced recently. Requisition and reporting forms have been in short supply at times due to paper shortages, but the actual provision and printing is done on a provincial basis and improvisation often helps in muddling through. Educational materials are the responsibility of the Health Education Unit and are produced in accordance with the CDD/HE plan. This has been largely successful.

### III. Conclusions and Recommendations

A. ORS Production: The strategy of assisting in ORS supply by supplying raw materials appears to have been appropriate, given the shortage of drugs in general in 1986 when the PRITECH interventions were planned, and the recent establishment of a local production facility. With the benefit of hindsight, it could be said that the serious shortage of ORS in 1988 would have been avoided if finished packets

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<sup>4</sup> Op. cit.

rather than raw materials had been brought in by a donor, but at the time the long lead times involved in getting raw materials into the country could not have been predicted. Neither these delays, nor the MOH's inability to commit adequate funds to ORS procurement, can fairly be attributed to PRITECH.

Production of ORS did commence at GPL and continued as long as materials were available. ORS materials were procured through reimbursable procurement thanks largely to the efforts of PRITECH and UNICEF, and the donated materials have now arrived in country. Production and management problems at GPL have been noted above. Production capacity of under 2 million per year will not be sufficient to meet the entire needs of the MOH CDD Programme, but MSL may prefer to procure part of the requirements from outside the country due to increasing production costs at GPL.

The decision to change packet size was without doubt the correct one. At the time the issue was under debate the major argument against the 750-cc size was the presence of donated 1-liter packets in Zambia. Rather than decreasing, the proportion of donated 1-liter packets has increased, and appears likely to remain high. At the same time, the 750-cc container, a bottle used for orange squash, is no longer widely available due to decreased purchasing power of the population, and an alternative (half-liter) measuring cup has been identified.

**Recommendation 1:** PRITECH should continue to assist the CDD Secretariat monitor ORS usage and make revised estimates of ORS requirements on a biannual basis. An estimate of buffer stock required at MSL should be made in the next six months. Meetings of the CDD Secretariat and other concerned parties should be continued to be held on a reasonably regular basis until there is confidence that MSL can manage this by itself. PRITECH and UNICEF should emphasize the deleterious effects of ruptures of ORS stock on the CDD programme, and continue to press for a firm plan for GRZ financing of the requirements, including a buffer stock.

**Recommendation 2:** Quality control at GPL should be called into question and assistance offered. Correct sampling protocols should be established and the actual laboratory procedures reviewed. The potential role of the production facility at MSL for quality control should be investigated.

**B. ORS Distribution:** The PRITECH inputs planned in the area of ORS distribution have not occurred in the form originally anticipated. The main reason for this is that the SIDA Essential Drugs Programme has expanded in scope and geographical coverage to include distribution within districts. There is good reason to believe that once the supply situation at MSL has stabilized, the MOH and CMAZ health facilities will be well-supplied. A level of stockouts of 15% nationally is within reach and 10% could be expected in a year's time. PRITECH has contributed significantly but indirectly to the overall effort as noted above, by assisting in developing a management information system and

carrying out baseline and followup surveys of availability. It is difficult to imagine how the \$25,000 initially allotted for the improvement of district distribution systems could have been usefully spent.

The PRITECH representative has researched potential alternative distribution systems for the CDD programme, but as noted above none has been identified as feasible, nor probably necessary any longer. There may still be a need to identify a parallel distribution system in the private sector, but the importance of the private market in ORS supply should be re-evaluated in light of recent movements towards user fees at government health facilities and the continuing erosion of individual purchasing power. Interchem remains the major player, with a strong interest in ORS, a good production facility, and the potential to distribute outside the network of private chemists.

**Recommendation 3:** PRITECH should offer assistance to SIDA/EDP in a) assessing the potential for refining the ORS distribution system by calculating requirements of health centres and supplementing the amounts supplied in SIDA kits, and b) refining the CDD information system to make this possible to do on a regular basis.

**Recommendation 4:** The role of the private sector in providing ORS to the public at reasonable cost should be reanalyzed in light of current economic conditions. The possibility of supporting an advertising and detailing effort targeted at chemists and private physicians should be considered, and the status of the relationship with Project SUPPORT should be clarified.

## Annex 1: ANALYSIS OF CDD RETURNS BASED ON A RANDOM SAMPLING

### Column Headings:

- (1) - Average monthly ORS Packet Use If Not Reported Out Of Stock At End Of Mon
- (2) - Range Of Stock Balance in Sampled Centres In Months Consumption
- (3) - Average Stock Balance in Months Consumption
- (4) - Percent of Centres Out Of Stock
- (5) - Percent Centres Having More Than 3 Months Stock at End of Reporting Period
- (6) - Number of Returns Sampled

PROVINCE	(1)	(2)	(3)	(4)	(5)	(6)
Central	123	0 - 5.76	1.34	20%	10%	10
Luapula	148	0 - 2.25	0.98	33%	0%	10
Western						
with outliers	306	0 - 50.5	5.38	14.3%	21%	14
w/o outliers	334	0 - 10.4	1.91	15.4%	23%	13
Eastern	94	0 - 14.0	2.14	20%	13%	15
Northern	88	0.16 - 17.5	3.11	0%	20%	10
Southern						
with outliers	348	0.73 - 9.0	2.85	0%	25%	4
w/o outliers	247	0.73 - 0.96	0.79	0%	0%	3
Lusaka						
with outliers	118	0 - 33.7	4.50	40%	20%	10
w/o outliers	135	0 - 6.29	1.26	44.4%	11%	9
Copperbelt	378	0 - 4.0	0.61	50%	10%	10

### NATIONAL

#### A: Including Sampled Outliers:

Average	200	0.11 - 17.1	2.61	22.4%	14.9%
Range	88-378	0 - 50.5	0.61-5.38	0-50%	0-25%

#### B: Excluding Outliers:

Average	192	0.11 - 7.63	1.52	22.8%	10.9%
Range	88-378	0 - 17.5	0.61-3.11	0-50%	0-23%

### RANKINGS

Above Average ORS Use: Copperbelt, Southern, Western, Luapula

Highest ORS Stock Levels: Western, Lusaka, Northern, Southern

Most Centres Out Of Stock: Copperbelt, Lusaka, Luapula, Eastern

Persons Contacted, Feb. 6-11, 1989

Mrs. Malombe, Sales Manager, Interchem

Mary Kaoma, CDD Programme

Peter Mphande, Ass't CDD Programme Manager

Dr. Himonga, CDD/EPI Programme Manager

Mr. Siecharan, Acting Managing Director, MSL

Mr. Shakalima, MSL

Mr. A. Manyindo, UNICEF

Bjorn Von Hofsten, SIDA EDP Advisor

M. N. Imakumbali, GPL Production Manager