CHILD SURVIVAL PROGRAMS IN EGYPT

A.I.D. PROJECT IMPACT EVALUATION REPORT NO. 73

by

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SUMMARY

Beginning in the early 1980s, U.S. Agency for International Development (USAID)/Cairo, in collaboration with the Government of Egypt, United Nations Children's Fund (UNICEF), and the World Health Organization (WHO), developed a donor strategy for child survival focused on two key interventions: oral rehydration therapy to control a severe consequence of diarrheal diseases and an expanded program of immunizations against the six major communicable childhood diseases. An examination of the performance and health impacts of these two interventions is the main task of this evaluation. USAID/Cairo's newer Child Survival project includes three other components, which are discussed only briefly in the report. The effectiveness of these three components -- acute respiratory infections, child nutrition, and child spacing -- cannot be assessed properly yet because of the early stage of project implementation.

National Control of Diarrheal Disease Project

The achievements of the National Control of Diarrheal Disease project (NCDDP) in Egypt are impressive. National surveys have documented high levels of success achieved by NCDDP in spreading awareness and use of oral rehydration salts throughout Egypt and in improving children's nutrition during diarrheal episodes. Statistical studies suggest that an accelerated decline in infant and child mortality in the mid-1980s is essentially the result of NCDDP efforts.

National survey data are not available that would provide definitive evidence of trends in the severity of diarrheal disease among infants and children. However, information from admissions records of various hospitals and other health facilities show a decline in the number of severe dehydration cases. While no direct attribution can be proved, it is plausible that improved home and private rehydration treatment, as popularized by NCDDP, is being used before children are brought to health facilities. While the severity of dehydration cases may have decreased, available data indicate that actual incidence of diarrheal diseases has probably not changed; this suggests that preventive aspects of NCDDP and other programs, ranging from efforts to improve hygiene practices among mothers to massive investments in potable water and sewage systems, appear to have not yet reduced the incidence of diarrheal disease.

Expanded Program of Immunization

The high priority given to the Expanded Program of Immunization (EPI) by the Government of Egypt since 1984 has resulted in considerable achievements in immunizations against communicable childhood diseases. National cluster surveys for vaccination coverage in 1984 and 1987 provide strong evidence of rapidly increasing and high coverage rates among children for all antigens as a result of the national campaigns. However, immunization coverage rates for tetanus toxoid injections of pregnant women have lagged considerably compared with the successes of the rest of the program.

As in most developing countries, reliable data on mortality or morbidity resulting from the diseases targeted by EPI are not available in Egypt. Nevertheless, it is reasonable to assume that the substantial increases in immunizations have most likely decreased both mortality and morbidity since it is clear that without vaccination Egyptian children are at significant risk from those diseases. An EPI surveillance system to monitor residual disease and program impact in the future is being planned.

Factors Influencing Program Performance and Impact

A wide variety of factors, the majority of them favorable, appear to have influenced the performance and impacts of the two major child survival interventions in Egypt:

- The cultural and linguistic homogeneity of the Egyptian population and its high concentration along the Nile have made it easier to target programs.

- The extensive health infrastructure and large cadre of trained health personnel were preexisting resources upon which the child survival interventions could draw.

- The simple, low-cost technologies of oral rehydration therapy and vaccines were readily available to the child survival programs.

- The nearly universal access of Egyptians to television permitted the program to stimulate demand for services.

- High levels of commitment, close collaboration, and agreement on a directed strategy for child survival by

the Government of Egypt and the major health sector donors -- USAID/Cairo, UNICEF, and WHO -- were important positive factors.

-- Program structures provided a degree of management autonomy and flexibility that promoted innovative behavior which helped get results.

-- The intentional concentration of program efforts on single health problems, and the inclusion of evaluation systems to track progress toward these health goals, added significantly to program effectiveness.

-- The programs' inclusion of components addressing both demand and supply aspects of child survival services was central to their successful strategies.

-- Abundant program resources, including an unusually high caliber of project leadership and technical assistance staff and an extraordinary level of dollar resources (especially in the case of NCDDP) were significant positive factors affecting program achievements.

Conclusions

While success has been achieved in a project context, the child survival program in Egypt faces several challenges in the future. A high priority is sustaining the successes of NCDDP and EPI as they shift from a highly focused, vertical project and campaign approach toward reintegration within the regular Ministry of Health structure. The high level of Ministry of Health commitment and pride in these programs, generated from past successes, permit optimism about their future. A second challenge lies in improving the impacts of these programs by shifting strategies to address unresolved problems -- for example, in NCDDP, by focusing on effective treatments for nondehydrating diarrheas and by educating mothers more thoroughly about the relationships between dehydration, diarrhea, and oral rehydration therapy. Progress in reducing the incidence of diarrhea will probably require moving more toward preventive health approaches, particularly hygiene related to infant and child care.

Partly because of the successes of NCDDP and EPI, the patterns of infant and child mortality are shifting, with acute respiratory infections emerging as the leading cause of death. To make further inroads toward improving child survival in Egypt,

strategies for dealing with the unrecognized threat of acute respiratory infections must get priority. The acute respiratory infection program, as a component of the Child Survival project with substantial funds, provides an excellent opportunity for documenting the epidemiology of acute respiratory infection, testing various approaches to disease control and mortality reduction, and launching a national acute respiratory infection program. However, to allow the acute respiratory infection component to fulfill its potential, concentrated attention is necessary to resolve the implementation problems that have seriously slowed the progress of the Child Survival project.

Lessons Learned From the Egypt Experience

The rapid success achieved by Egypt's NCDDP and EPI may not be readily replicated elsewhere because of the relatively unique set of positive circumstances contributing to their success. Thus, the rate of progress achieved by child survival programs in other developing countries should not be measured against the Egypt experience, but rather should be judged within each developing country context.

Nevertheless, several broad lessons emerged from the Egypt experience, which the evaluation team felt would be useful for designing future child survival programs. For example, because epidemiological patterns differ among countries, USAID Missions should not feel obligated to accept any prepackaged set of child survival activities; they should instead have broad flexibility and options to select activities for addressing the priority child health problems facing the country, and to take advantage of special opportunities, technologies, or resources available. Testing and evaluation in pilot areas can help ensure that an intervention is appropriate prior to nationwide implementation.

Other lessons learned include a cautionary note to avoid overburdening individual projects by attempting to solve too many health problems at once; part of the success of the early projects in Egypt lay in their single-minded focus on one health problem or technology at a time. The Egypt experience also demonstrates the usefulness of generating demand for child survival services through mass media messages and of taking advantage of private sector strengths, where circumstances permit.

1. INTRODUCTION

The Center for Development Information and Evaluation (CDIE) has recently revitalized a series of impact evaluation studies, launching new initiatives in priority program areas such as child survival, policy reform, and family planning. Key purposes of the new impact evaluation series are (1) to investigate the development impacts of Agency for International Development (A.I.D.) projects and programs and (2) to generate useful lessons that can guide future Agency management programming and policy decisions. Achieving these dual aims is facilitated by a reliance on A.I.D. direct-hire staff, including senior managers, to conduct impact evaluations that focus on future strategic options, as well as past development results. The primary intended audience of the series is A.I.D. managers. However, the impact findings will also likely be of interest to host country counterparts, other donors and international development agencies, the U.S. Congress, and the broader development community.

This impact assessment of child survival programs in Egypt is one of a series initiated by CDIE in collaboration with the Asia and Near East Bureau. The objectives of the evaluations are to assess the impacts of A.I.D.'s child survival programs in selected countries in (1) reducing infant and child mortality and morbidity and (2) enhancing the system of host-country primary health care services. The child survival programs are also assessed in terms of their relevance in addressing the underlying disease patterns and trends facing the country.

In addition, the assessment analyzes the effectiveness, efficiency, and sustainability of the interventions, especially their performance in generating and maintaining greater demand for and supply of child survival services. The range of factors that have either enhanced or diminished program performance are also identified.

Finally, lessons are drawn from the Egypt program experience relevant for future Agency child survival programming in other parts of the developing world. However, some unique factors that contributed to the rapid success of the programs in Egypt may not exist elsewhere, making replicability difficult.

2. COUNTRY SETTING

2.1 Population

The population of Egypt currently exceeds 54 million, having doubled in the past 30 years, and is likely to double again in another 25 years if the current population growth rate of 2.8 percent continues. Egypt's population pyramid is typical of fast-growing developing countries, with about one-fifth of the population comprising children under 6 years of age. Although the total fertility rate has declined in recent years, it is still high, at about five children per woman.

With the majority of the population of Arab origin and Moslem, Egypt has a relatively homogeneous population that is concentrated along the banks of the Nile River; 99 percent of the population lives on 3.5 percent of the land mass. About 45 percent of the population is classified as being urban. However, much of the rural population has ready access to services and infrastructure typically associated with urban living.

Over one-half of the population is literate: in 1986, the literacy rate for men was estimated to be 62 percent and for women to be 38 percent. About 87 percent of the population lives in households with electricity, 73 percent enjoys convenient access to potable water supplies, and 98 percent has access to television.

2.2 Economy

The Egyptian economy and basic services are heavily subsidized. In the mid-1970s, following the austerity of the early 1970s war period, a major food subsidy system was introduced. While the economy was originally enhanced by oil revenues, in the early 1980s oil revenues peaked and have been rapidly declining without any signs of recovery. Nevertheless, Egypt has maintained its commitment to free public education and health services, as well as to low-cost food and housing for its population. Nearly 75 percent of the population carry cards for reduced prices for basic foodstuffs, while all consumers can buy bread at an estimated 25 percent of cost.

Although gross national product (GNP) per capita steadily

increased during the 1970s and early 1980s, since 1985 the economy has shown clear stagnation. Official World Bank estimates currently set GNP per capita for Egypt at more than $700. However, unofficial estimates by A.I.D. economists which are based on more realistic exchange rates than the official exchange rates used in World Bank calculations, place per capita GNP closer to $500. Although accurate unemployment rates are illusive, most estimates range around 15 percent. As much as one-third of public sector employment is considered to suffer some degree of underemployment.

2.3 Health Status

Infant and child mortality rates have been declining steadily during the last several decades. The infant mortality rate dropped from 116 deaths per 1,000 live births in 1970 to the current 45 deaths per 1,000 live births. Similarly, the child mortality rate has fallen from over 32 deaths per 1,000 children ages 1-4 in 1970 to a current rate of 8 deaths per 1,000. Despite overall progress, regional variations remain significant, with urban governorates and Lower Egypt having far lower infant and child death rates than rural areas and Upper Egypt.

Historically, major causes of infant and child mortality and morbidity in Egypt have been diarrheal diseases, acute respiratory infections, tetanus, and measles. In 1970, more than one-half of all infant deaths were related to diarrheal disease. In recent years, a sharp decline in infant diarrheal disease deaths means that it is no longer the leading cause of mortality and has been replaced by acute respiratory infections. Although food availability has greatly increased through the Government of Egypt's policy of basic subsidies on foodstuffs, there is still significant malnutrition among mothers and children because of iron deficiency, poor weaning practices, and other factors.

2.4 Health Policy and Services

Egypt's commitment to providing universal and free health care coverage in the past few decades has led to the creation of a very extensive health care system composed of nearly 400 general, district, and rural hospitals; 3,000 urban health centers; 2,600 rural health units; and 10,000 pharmacies. Nearly 85 percent of these health care facilities are publicly operated, with the majority under the jurisdiction of the Ministry of Health. More

than 90 percent of the population lives within 3 kilometers of a Ministry health care facility. The Ministry of Health employs approximately 95,000 Egyptian physicians and provides a physician-to-population ratio of 1:520, among the best in the developing world. Despite these assets, the quality of much of the public health care system is considered to be low, especially in the primary care units, and they are seriously underutilized.

The existence of a parallel health care structure in the private sector has been conservatively estimated to represent 15 percent of the institutional infrastructure. A majority of Ministry of Health physicians work in the free public health facilities in the morning and in private fee-for-service clinics in the afternoons and evenings. No major indigenous private voluntary organization network exists in the health sector.

During the last 25 years, per capita Ministry of Health expenditures have increased fourfold from $.90 to $3.50. The policies of providing free, universal public health care and of employing an oversupply of medical and liberal arts school graduates has placed a heavy financial burden on the Ministry of Health. The Government has coped by relying heavily on donor subsidization to maintain the massive health system, but the increasing costs have inevitably affected the quality of services. With growing problems of recurrent costs and debt burdens facing the Government of Egypt in general, the Ministry of Health has begun to explore the potential for placing the public health system on a firmer financial foundation in the next decade through concerted efforts at cost-recovery.

2.5 Donor Assistance in Health Sector

With the resumption of assistance in the mid-1970s, the United States became one of the key donors in Egypt's health, population, and nutrition sectors. In addition to the USAID Mission, the United Nations Children's Fund (UNICEF) and World Health Organization (WHO) have been major donors contributing to Egypt's health and child survival programs. The Netherlands, Finland, and France also have small assistance programs in Egypt's health sector.

By the early 1980s, USAID/Cairo and the other major health donors had begun to shift their health assistance strategy from general support of overall primary health care services to a more concentrated strategy focusing on key child survival problems.

USAID/Cairo, UNICEF, and WHO collaborated closely, developing and advocating to the Government of Egypt a consistent child survival policy approach. The three donors have met and shared their program plans regularly, accommodating and coordinating their activities. Each has brought particular strengths that have complemented the strength of the others; for example, the USAID Mission has brought its massive resources; UNICEF its capacity for quick, flexible action; and WHO its technical expertise.

3. THE A.I.D. CHILD SURVIVAL PROGRAM

Beginning in the early 1980s, USAID/Cairo, in collaboration with UNICEF and WHO, developed a donor strategy for child survival focusing on two key interventions: oral rehydration therapy to control diarrheal disease dehydration and an expanded program of immunizations against the six major communicable childhood diseases. Implementation of these focused child survival interventions relied substantially on the already established public health care system, a system that USAID/Cairo helped strengthen during the 1970s. Other major USAID Mission programs in related sectors, for example, potable water and sanitation systems and family planning programs, probably contributed indirectly to child survival efforts in Egypt.

USAID Mission health sector investments in the late 1970s aimed to strengthen Egypt's health delivery system.

In the late 1970s, USAID/Cairo launched several health interventions that strengthened the Ministry of Health's primary health care delivery system in numerous rural and urban areas, with A.I.D. investments totaling about $80 million. The Urban Health Delivery System project ($45.6 million) improved urban primary health care in poor neighborhoods of Cairo and Alexandria. The project renovated and constructed numerous clinics, trained over 3,000 physicians and other health personnel, and instituted health service improvements in areas such as maternal and child health, community outreach, management and record-keeping, oral rehydration therapy, nutrition education, and family planning. The Strengthening Rural Health Delivery System project ($13.7 million) developed and tested a variety of health and family planning delivery service approaches that were to be replicated in rural areas and trained over 3,500 physicians and other health personnel. Examples of services developed include

improved supervisory systems, village outreach programs, tetanus immunizations, and oral rehydration therapy programs. The Suez Community Health Personnel Training project ($15.9 million) developed a cadre of community-oriented primary health care physicians for the Suez Canal area. The Nutrition Education project ($0.3 million) provided pilot nutrition education and growth monitoring to about 30 percent of the public health centers.

USAID Mission's child survival initiative in the early 1980s focuses on control of diarrheal diseases.

By 1982, with the successful completion of pilot tests of oral rehydration therapy under the health delivery projects, USAID/Cairo had assisted the Government of Egypt in launching a nationwide effort to control diarrheal diseases, the major cause of infant and child deaths in Egypt at that time. The National Diarrheal Disease Control project (NCDDP [$36 million]) was set up as a semi-autonomous unit under the Ministry of Health, and by 1986, when A.I.D./Washington had officially adopted the "twin engines" strategy of focusing on oral rehydration therapy and an expanded program of immunization, Egypt already had a fully operational, nationwide oral rehydration therapy program. Oral rehydration therapy services are currently available in both public and private facilities, local oral rehydration salts production capacities have been established, 40,000 health personnel have been trained, and a national media campaign has stimulated demand for oral rehydration therapy and serves as a model for other health media campaigns.

Child Survival project in Mid-1980s focuses on remaining threats to child health.

In 1985 the Government of Egypt and USAID/Cairo formalized other child survival interventions through the creation of a semi-autonomous Child Survival Secretariat within the Ministry of Health. Components of the Child Survival project, which were to be administered by existing units within the Ministry of Health, included four programs: an expanded program of immunizations; early diagnosis and treatment of acute respiratory infections; child nutrition; and child spacing.

Progress of the Expanded Program of Immunization (EPI), while substantial, has been achieved with UNICEF as the lead donor and with USAID/Cairo responding to fill critical equipment shortages funded under the Child Survival project. Due mainly to delays in the processes of contractor selection, negotiation, and fielding

of technical assistance staff, the other three components of the Child Survival project have only recently begun activities. Of the $54.9 million authorized for the Child Survival project, funds obligated through FY 1988 have totalled $26 million.

A wide array of project activities have recently begun -- for example, filling technical assistance and project management positions, preparing the project building, holding orientation courses for project staff and coordinators, preparing work plans and medical staff training manuals for each component area, testing child survival interventions in the pilot site of Qualama Village, preparing initial television spots and other marketing techniques for child survival messages, and developing a computerized management information system.

The nutrition component seeks to improve nutrition education on breast feeding and use of proper, locally available weaning foods. Efforts are underway to test approaches to child-growth monitoring, iron deficiency treatment, and demonstration kitchens. The child-spacing component aims to reduce neonatal mortality by improving health care during pregnancy, delivery, and postpartum, and by preventing or managing high-risk births. Activities underway include developing training courses for Dayas (traditional midwives) and television spots encouraging child spacing. The acute respiratory infection component aims to improve the Ministry of Health's capacity for early detection, correct diagnosis, and proper treatment of acute respiratory infections. Progress to date includes establishment of an acute respiratory infection research center at Belbeis and the development of a comprehensive acute respiratory infection work plan.

Other USAID/Cairo programs with probable child survival implications.

During the 15 years since A.I.D. resumed its development assistance programs in Egypt, several other A.I.D. project activities may have had impacts on child health. The more important of these include potable water and sanitation systems rehabilitation and expansion in Cairo, Alexandria, and numerous Canal and provincial cities throughout Egypt (totalling over $1.3 billion); population and family planning projects ($170 million); local development activities, including construction or renovation of more than 350 health clinics, and more than 4,000 potable water and sewerage systems ($65 million); and scientific research in vaccine development and disease control ($73 million). Since 1975, Public Law (PL) 480 Title II and III programs have invested

over $250 million on food programs in maternal and child health centers, day care centers, and orphanages and school lunches, as well as on upgrading basic village services, including health-related potable water, sanitation, family planning, health, and nutrition services.

4. DEVELOPMENT RESULTS

The evaluation team found substantial evidence of effective program performance and positive impacts for NCDDP and EPI. Findings concerning the other Child Survival project interventions (acute respiratory infection, child nutrition, and child spacing) are far more preliminary because these activities are just beginning. This section begins by reviewing evidence on the effectiveness, efficiency, and sustainability of the interventions. It then assesses program impacts, especially in reducing infant and child mortality and morbidity and in enhancing the institutional capacity of the health care system. The programs are also assessed in terms of their relevance in addressing the major health problems affecting child survival in Egypt.

4.1 Program Performance

4.1.1 Program Effectiveness

The evaluation team assessed child survival program effectiveness by examining various measures available on the extent to which the target population was being reached by program services. For both the NCDDP and the EPI, reliable and comparable national surveys provide data on trends in oral rehydration therapy and immunization coverage after 1984.

NCDDP creates a strong demand for oral rehydration therapy and generates a reliable supply.

Figure 1: Indicators of NCDDP Effectiveness

The achievements of NCDDP in Egypt are truly impressive, all the more so because of the rapidity with which the use of oral rehydration therapy spread throughout Egypt. Levels of access to

and use of oral rehydration therapy in Egypt far exceed those in neighboring countries, such as Morocco, Sudan, or Yemen. The success of NCDDP is the result of the balance struck in the project between creating an enthusiastic demand for and ensuring a steady supply of oral rehydration salts and appropriate treatment procedures. This high level of effectiveness in oral rehydration therapy use was achieved rapidly within the first 1 or 2 years of the program's implementation, peaking in 1985-1986. Several indicators confirm the creation of a strong demand for oral rehydration therapy:

-- Surveys show that, as a result of NCDDP's television media campaign, Egyptian mothers' awareness of oral rehydration salts has become nearly universal, reaching 98 percent as early as 1985.

-- Before the project started, it is estimated that less than one-fifth of diarrheal episodes in children were treated with oral rehydration therapy. Since 1985, surveys have consistently found that about two-thirds of mothers have ever used oral rehydration therapy and about one-half had used oral rehydration salts during their child's last diarrheal episode.

Figure 2: Indicators of NCDDP Effectiveness

-- While the effectiveness of oral rehydration therapy use in the home is difficult to assess, surveys indicate that by 1988 nearly all mothers (98 percent) knew the correct way to mix oral rehydration salts solutions.

In addition to educating mothers on appropriate use of oral rehydration salts, the project also reversed a dangerous widespread practice of mothers' stopping breast feeding and other fluids during their children's bouts of diarrhea. By 1985, more than four-fifths of mothers surveyed continued to breast feed during their child's diarrheal episode.

However, concern remains about the depth of mothers' knowledge about oral rehydration therapy, knowledge that may affect sustained use. For example, research indicates that most mothers think that stopping diarrhea is a sign of effective treatment, a perception that may discourage mothers from using oral rehydration therapy if diarrhea continues. Few mothers understand the

connections between diarrhea, dehydration, and oral rehydration therapy. The idea that oral rehydration therapy prevents the loss of body fluids (dehydration) caused by diarrhea and is not a cure for diarrhea is still not widely understood (see Figures 1 and 2).

On the supply side, indicators of effective oral rehydration salts production, distribution, and treatment include the following:

-- By 1986, just 2 years after in-country public sector production of oral rehydration salts packets was launched, a fairly stable level of production adequate to meet existing demand of about 30 million packets annually was reached. Two-thirds of oral rehydration salts distribution is through a network of 7,000 private pharmacies, and the remaining one-third is through 3,000 public health facilities.

-- By 1987, more than 40,000 medical staff had been trained in oral rehydration therapy. Oral rehydration therapy is now standard treatment for diarrheal cases in virtually all public health facilities, and 85 percent of these facilities have established and equipped special rehydration units.

-- Initial medical community resistance to oral rehydration therapy has been effectively overcome, in part by an NCDDP strategy of using media messages to create direct demand for oral rehydration therapy among mothers and in part by a campaign to inform and convince physicians. While NCDDP has been quite successful in getting physicians to use oral rehydration therapy in diarrheal cases, it has been less successful in getting them to discontinue administering inappropriate and even harmful antibiotics and antidiarrheals.

Questions remain. For example, observations at several public health units raise the possibility that the dosage of oral rehydration salts given to children may be standardized without regard to the severity of diarrhea or age and weight of the child. It is also not known what percentage of serious diarrheal episodes are nondehydrating, thus not responsive to oral rehydration therapy. An appropriate treatment procedure for such cases has not yet been developed. Another issue is the low utilization of the public health units by mothers with children suffering from diarrhea. A recent demographic and health survey indicates that in 1988 less than 20 percent of diarrheal cases were treated

by the Government health system, 60 percent involved consultation with private physicians and pharmacists, and the remainder were presumably treated at home or not at all. The same survey also indicates that somewhat less than one-half of diarrheal cases are treated with oral rehydration salts and about an equal amount are treated with either other medicines or intravenous fluids.

Donor collaboration promotes childhood immunizations

Before 1984, Egypt's childhood immunization program operated quite passively within the health-center-based primary health care system, reaching average coverage rates of less than one-third of all children. Since 1984, the Government of Egypt has given high priority to EPI, as indicated by the reorganization of EPI into a vertical program, with strong management, an "acceleration" strategy including campaigns, and greater resources.

Since the 1980s, UNICEF has taken the lead in assisting the Government to carry out Egypt's national EPI program. The USAID Mission has played a critical supportive role in developing a coordinated program policy and strategy and by providing urgently needed cold-chain equipment and syringes under the Child Survival project.

USAID/Cairo's provision of "spot funding" to overcome routine and emergency bottlenecks in Egypt's EPI program has been invaluable, but perhaps the greatest contribution has been the USAID Mission's coordinated and concerted lobbying with UNICEF to have the Government of Egypt focus sustained attention on EPI as a national priority equal to oral rehydration therapy. This advocacy, as well as the modest resources spent thus far under the Child Survival project, has been very successful. National cluster surveys for vaccination coverage in 1984 and 1987 provide strong evidence of rapidly increasing and high coverage rates for all childhood antigens as a result of the national campaigns. Increases in the coverage rates of children ages 12-23 months during 1984-1987 were as follows (see Figure 3):

-- The proportion of children protected by measles vaccinations increased from 41 percent to 76 percent.

-- Children receiving three doses of polio vaccine (OPV 3) increased from 67 percent to 88 percent.

-- Children given a series of three doses of the combined vaccine against diphtheria, tetanus, and pertussis (DPT 3) increased from 57 percent to 82 percent.

-- Children protected against tuberculosis by the BCG vaccine increased from 53 percent to 72 percent.

-- The survey indicated higher overall immunization coverage rates in urban areas compared with rural areas, and in Lower Egypt compared with Upper Egypt.

However, contrary to the success of EPI in increasing the vaccination coverage rate of children, the national cluster survey shows a low and declining coverage rate for tetanus toxoid injections among pregnant women, slipping to 12 percent by 1987. This low level of coverage indicates an overly conservative policy that emphasizes vaccinating only pregnant women, rather than all women of reproductive age.

Figure 3: Indicators of EPI Effectiveness

The progress of EPI in Egypt is impressive, with coverage equaling levels achieved in Morocco and far exceeding those achieved in the Sudan or Yemen. Nevertheless, further improvements to the delivery system could be made in such areas as supervision and logistics, vaccine distribution, transportation, storage, and cold-chain maintenance. Substantial funding is available under the Child Survival project to support commodities procurement, training, management systems, vaccine production, and the like. Unfortunately the Ministry of Health is reluctant to use the funds available because of its negative experiences with the prolonged A.I.D. audit of NCDDP and bureaucratic procedural hurdles. It is likely that national EPI progress is slower than would otherwise be the case if the Ministry of Health did not perceive A.I.D. funds as such "hard money."

It is too early to assess the effectiveness of other child survival interventions.

The effectiveness of the remaining Child Survival project components, acute respiratory infections, child nutrition, and child spacing, cannot be properly assessed yet because of the early stage of implementation. Pilot activities of the Child Survival project are proceeding in Qualama village in Kalubeya

Governorate. The rural health center at Qualama has received newly renovated buildings, improved equipment, and a strengthened medical staff through training, supervision, and provision of information systems. Activities in this center cover all Child Survival component activities. Although extensive data on the patients attending the facility are kept, unfortunately no population-based surveys are yet underway that could provide information on effective coverage or health impact of the program in the pilot area.

The USAID Mission, understanding the importance of acute respiratory infections in causing infant and child mortality in Egypt, began planning an acute respiratory infection program in the early 1980s, far ahead of much of the rest of the world. USAID/Cairo and the Government of Egypt have developed a consensus on a program plan to investigate and deal with the acute respiratory infection problem; and because of their high commitment and substantial funds this program is well suited to comprehensively document the epidemiology of acute respiratory infection, test various approaches to disease control and mortality reduction, and launch a national program. However, with an opportunity of such worldwide importance comes a commensurate responsibility. Excellent plans have been developed, but impediments to subproject implementation in the cumbersome A.I.D. and Government of Egypt bureaucracies have seriously slowed progress. It is hoped that all levels of A.I.D. and Government of Egypt management can agree on ways to let this important subproject fulfill its potential.

4.1.2 Program Efficiency

Measures of program efficiency are elusive.

Efficiency measures examine program outcomes in relation to their costs, by, for example, estimating program cost per immunized child or per diarrheal episode treated with oral rehydration salts. However, in the Egypt program context, it would be difficult to determine what proportion of the overall public health service resources to attribute exclusively to NCDDP or to EPI. Despite these conceptual difficulties, NCDDP is considering undertaking a cost-effectiveness study of its program. The findings of such a study would be particularly interesting to A.I.D., because the claim is sometimes made that such vertical child survival interventions are more cost-effective than integrated primary health care approaches.

For purposes of obtaining some very rough estimates, the evaluation team compared average monthly NCDDP distribution of ORS packets with average monthly project costs in 1988. Simple calculations indicate project costs of about $.07 per ORS packet distributed or about $.25 per diarrhea episode treated. Similarly, making some rough calculations for the period from NCDDP start in 1983 through the end of 1987, a minimum average project cost of $200 per child death averted is estimated. This estimate should be considered a minimum cost for USAID and not the more difficult to estimate Government of Egypt contributions. Second, the calculations for deaths averted is based on the assumption that all observed reductions in infant and child mortality from diarrheal disease since 1983 can be attributed to the NCDDP, whereas the project is probably only responsible for some unknown share in that reduction.

Systemwide inefficiencies affect individual interventions.

The efficiencies of any particular intervention should be examined within the context of the broader health system in which it must operate. In Egypt, a number of underlying inefficiencies in the public health care system affect the child survival interventions implemented at least in part through that system. For example:

-- The requirement that the Ministry of Health absorb as many as 4,500 medical and other school graduates annually has led to excessive staffing.

-- It is widely felt that very low public sector salaries for medical staff make additional monetary incentives a prerequisite for inducing staff to undertake nonroutine tasks such as NCDDP or EPI activities.

-- Government outpatient health facilities operate only a few hours a day and carry a relatively light patient load. Physical facilities and staff for public health care appear to exceed demand from the population, which tends to prefer readily available private medical care.

-- Free public health care policies imply fewer resources for providing quality care systems.

Such systemwide problems in the public health care system raise the issue of whether child survival interventions would be made

more efficient by placing greater emphasis on private sector channels where feasible, or by undertaking programs that tackle the underlying inefficiencies of the public health care system, as USAID/Cairo is planning in its new Cost Recovery Programs in Health project ($95 million).

4.1.3 Program Sustainability

Sustainability issues are under serious discussion in NCDDP.

Under Phase 2 of NCDDP the major emphasis is on institutionalizing diarrheal disease control management and services so they will be sustained after USAID/Cairo project support ends in 1990. The Government of Egypt, USAID/Cairo, and the project management are highly motivated to sustain project success. Aspects of sustainability are being seriously and extensively discussed.

Generated by innovative television campaigns, current demand for oral rehydration salts is high and is likely to be sustained in the short term. This demand may exert pressure on the Ministry of Health to continue to provide oral rehydration salts. However, in the longer term, demand for oral rehydration salts may begin to wane unless effective media campaigns continue. Countervailing factors to sustaining oral rehydration therapy demand include (1) the existence of competing products such as antidiarrheals and antibiotics, (2) lack of clear understanding by mothers that oral rehydration therapy relieves dehydration but does not stop diarrhea to be effective, and (3) new generations of mothers who have not been exposed to oral rehydration therapy messages. Even if television messages continue to be produced through the Ministry of Health's media information unit, care will have to be taken to ensure the message's effectiveness. This can be done through a combination of technical review processes, market research techniques, pretesting, and a creative audience-oriented approach typical of private sector communications firms.

Decisions must be made about whether to continue production of oral rehydration salts after A.I.D. subsidies end. Under the current price structure, neither the parastatal Chemical Industrial Development (CID) nor any private sector firm would likely be able to cover production costs. However, a recent Ministry of Health agreement to raise the price of oral rehydration salts during the next 2 years should encourage continued production by

CID. In addition, NCDDP is exploring the possibility of transferring a portion of the production of oral rehydration salts to a private company, using a variety of incentives.

Negotiations are underway to determine the future of core project staff and program. Options being discussed include integrating the staff and program into the Ministry of Health as a unit or scattering them among various divisions or incorporating them into the USAID/Cairo Child Survival project as a fifth component. A concern among staff at all levels is whether monetary incentives will continue. Removal of incentives may adversely affect the degree of attention paid to oral rehydration therapy activities. Integration of NCDDP activities into the Ministry of Health structure, if divided among numerous departments, could substantially reduce the program's effectiveness by removing the vertical structure and focus on a single health problem. The future of NCDDP research, surveys, and special studies is of particular concern. It is through these efforts that program effectiveness and impact have been demonstrated. This documented success has generated commitment to the program. Furthermore, the applied research has been crucial to managers' making program revisions that have led to more effective and sustainable approaches.

Immunization rates may not be sustainable without continued campaigns.

The high public visibility of EPI, achieved through mass media and special campaigns, in recent years contributed to a distinct increase in childhood immunization rates. However, it is unclear whether efforts to institutionalize immunizations in the regular heath care system at the higher rates can continue without further campaigns. A factor likely to enhance future sustainability of immunizations is a plan for increased in-country production of bacterial vaccines and new production of measles and polio vaccines.

4.2 Program Impact

4.2.1 Health Status Impacts

Mortality rates have decreased because of NCDDP.

NCDDP sought to reduce infant and child mortality by improving

curative care for diarrheal disease through increasing use of oral rehydration therapy, improving children's nutrition during and after episodes of diarrhea, and improving diarrhea case management by health care providers. Several statistical studies, using various data sources, show that it is plausible that the accelerated decline in infant and child mortality is largely due to NCDDP's efforts.

-- Trends in overall infant mortality rates, as identified from registered deaths, show a steady decline from 1970 through 1984 and a sharp decline in 1985, remaining more or less stable thereafter. Mortality rates for children also followed a trend of long-term decline during the early 1980s, followed by subsequent greater declines in 1983 and 1986.

-- More compelling evidence that NCDDP has had an impact on reducing infant and child mortality can be found in cause-of-death data. Between 1970 and 1978, infant diarrheal and nondiarrheal death rates declined at about the same pace. After 1978 there was no further decline in the rate of nondiarrheal deaths, while diarrheal death rate continued to decline steadily until 1985, when it dropped even more sharply. From 1978, when oral rehydration salts became available in Ministry of Health facilities, until the start of NCDDP in 1983, the rate of infant mortality from diarrheal disease fell by about one-third; from 1983 to 1985, it fell again by nearly one-half. Essentially the same pattern emerges from the child mortality data (see Figures 4 and 5).

-- Analysis of data on seasonality patterns of diarrhea-associated mortality and of overall child and infant mortality provide supporting evidence of the impact of the oral rehydration therapy program on reducing mortality. Diarrheal disease is highly seasonal in Egypt; between 1979 and 1987 nearly two-thirds of the seasonality of infant mortality in Egypt disappeared.

-- In 1980 (before NCDDP) an evaluation of a pilot Oral Rehydration Therapy Program effort in Dakahlia used experimental and control areas to assess the impact of oral rehydration salts use on child mortality. Diarrhea-caused mortality was reported to be much lower in the experimental areas, where oral rehydration salts usage rates were higher. A repeat of the research in 1986 (after NCDDP) found that use of oral rehydration salts in both areas was higher and

diarrhea-caused mortality lower than in 1980, with most of the decline concentrated in 1983-1985. Other locally based studies have found similar evidence of linkages between increased use of oral rehydration salts and declines in infant and child mortality.

Figure 4: Trends in Infant Death by Cause of Death, 1970-1987

Figure 5: Trends in Child Dealth Rates by Cause of Dealth, 1970-1987

Data linking decreases in child mortality to Expanded Immunization Program are unavailable.

In Egypt, as in most developing countries, reliable reporting on mortality from diseases covered by EPI is not available. Yet it is clear that without immunization Egyptian children are at significant risk from those diseases. Increases in coverage with EPI vaccines, along with improvements in program management, have most likely decreased mortality and morbidity. As EPI matures, it is important to develop surveillance systems to monitor residual disease, as well as EPI impact.

Evidence on interventions' impacts on morbidity is inconclusive.

National survey data are not available that would provide definitive evidence of trends in the severity of diarrheal diseases among infants and children. However, time-series data from hospitals and other health facilities show declines in recent years in the proportion of admissions of severe dehydration cases. Similarly, since 1983, the percentage of cases in Ministry of Health units and rehydration centers treated with intra-venous solution (a proxy for serious dehydration) has dropped by about one-half. Although it may not be possible to prove that these changes are attributable to NCDDP, it is reasonable to assume so, implying improved home and private rehydration treatment before children are brought to institutions.

The considerable survey data available on trends in the incidence of diarrheal disease indicates that incidence may not have decreased. While, of course, it is not expected that oral rehydration therapy would reduce the incidence of diarrhea, the data indicate that preventive aspects of NCDDP and other programs,

for example, encouraging mothers to practice proper hygiene, have not yet had any measurable impact on reducing diarrhea incidence. More significantly, the data indicate that the large investments in potable water and sewerage systems alone, without behavioral changes, appear not to be reducing the incidence of diarrhea. Although no evidence could be found, it is possible that these improvements are affecting the spectrum of etiologies and the severity of diarrheal cases, even though overall incidence of diarrheal diseases may not have changed.

4.2.2 Health System Impacts

In addition to reducing infant and child mortality and morbidity, a second objective of the Child Survival project is to enhance the overall institutional performance, capacity, and innovation within the primary health care system.

Intervention successes set high standards and energize staff.

Although there is no quantitative evidence, comments by key informants within the Ministry of Health have asserted that the successes of NCDDP and EPI have set higher standards for performance in other parts of the health system. Moreover, the rapid achievements and measurable results of these programs have instilled pride and motivation in the program staff, thus enhancing the likelihood of success in the future.

Lessons learned are being applied elsewhere.

Lessons learned from the interventions' experience, for example, the importance of focusing efforts on a specialized problem like diarrhea control to achieve effectiveness, are being applied elsewhere within Egypt's health system. NCDDP introduced a new strategy for tackling health problems in Egypt: a concentrated, vertically organized effort directed at a single health problem. The traditional approach of the Ministry of Health and the donor community had been to stress integrated primary health care covering a wide variety of services. Often energies were scattered and measuring effectiveness and impacts was difficult. The design of the Child Survival project largely adopted the NCDDP approach of focusing on a few key health problems, but the extent to which the components will actually be implemented as vertical and highly focused programs remains unclear.

Media messages on oral rehydration salts became social marketing prototypes.

One NCDDP innovation was often mentioned by informants as an important prototype that has been adopted by other health programs: the introduction of television spots to reach mothers directly with health messages. Through television, the message that oral rehydration therapy saves babies' lives was transmitted to 98 percent of mothers. Research showed the superiority of television over other forms of media and communication in Egypt in reaching the target population. Besides the Madison-Avenue techniques of market research, product testing, and concern for a creative and entertaining approach, the private sector firm Center for Development Communications used an advisory panel of prominent health experts to ensure the accuracy of the message.

The success of the television spots institutionalized the medium's use in communicating other public health messages, including messages about immunization, family planning, and schistosomiasis control.

4.2.3 Unintended Social Impact

Mothers incited to action.

An interesting concept raised by several key informants was that of "empowerment of women." Women absorbed the television message about oral rehydration salts, acted on it, and saw the immediate results of their actions on their children's health. For example, in early 1989, a temporary shortage of oral rehydration salts occurred, but the public pressure exerted by women demanding oral rehydration salts broke the bureaucratic bottle-neck. Such experiences were reported to have helped mothers gain confidence in their ability to control aspects of their health environment and may make them more receptive to acting on other health or social messages.

4.3 Program Relevance and Future Priorities

The evaluation team reviewed the relevance of the NCDDP and EPI interventions in Egypt in light of the key health problems that existed at the time the programs were initiated. In the early 1980s, the leading cause of death in infants and children was

diarrheal diseases, followed by acute lower respiratory illnesses like pneumonia and acute bronchiolitis and other less significant causes, including complications due to mother's pregnancy, communicable diseases, and so on. The evaluation team also reviewed recent trends in causes of death and assessed how these trends might affect the future agenda of priorities.

Oral rehydration therapy technology was highly appropriate.

The strategy of promoting use of the low-cost, simple-to-use technology of oral rehydration therapy in Egypt was most appropriate given the prominence of dehydration from diarrheal disease as a major cause of infant and child mortality in the early 1980s. However, the sharp declines in diarrhea-related death rates seen in the early years of NCDDP are now leveling off. It appears that to make further progress in reducing diarrhea-related mortality, the more complicated problem of deaths from nondehydrating forms of diarrhea deaths must be addressed. Future research and program efforts will now have to address the chronic and dysentery types of diarrhea, about which little is known in Egypt. Also, NCDDP will need to succeed in reaching heretofore resistant mothers and physicians not yet using oral rehydration therapy.

Also, a longer term agenda of preventing diarrheal diseases in addition to curative approaches is needed. The stage for long-term prevention has already been set with major investments in potable water and sewerage systems. However, an effort to change the population's attitudes and behavior in hygiene is also crucial to stopping the transmission of diarrheal diseases. For example, various studies have shown that even in the presence of a purified water source, habits persist that contribute to wide-spread transmission of various diarrhea pathogens -- for example, village women's preferences for using heavily polluted canal water for washing, people not washing hands before meals, and children defecating on the streets.

Immunization campaign was a rational decision.

The availability of the relatively simple, low cost, and effective vaccination technologies pointed logically to a nation-wide immunization campaign, despite uncertainties concerning the exact magnitude of childhood mortality attributed to diseases covered by EPI.

Next Priority: Combating acute respiratory infections

Recent data indicate that acute respiratory infections have now replaced diarrheal disease as the number one cause of infant and child mortality in Egypt. The Government of Egypt, with USAID/Cairo and WHO support, is pioneering a plan of action for the early diagnosis and treatment of killer acute lower respiratory infections like pneumonia and bronchiolitis. Implementation of this plan will be forthcoming under the Child Survival project. Because an acute respiratory infection strategy is a more complicated undertaking than oral rehydration therapy or immunizations, substantial epidemiological research and testing of appropriate early detection and treatment procedures is necessary before a national-scale program can be launched.

Nutrition and child spacing are important secondary concerns.

Little evidence exists of widespread calorie, protein, or micronutrient deficiencies in infants or children in Egypt, except for iron deficiency. Surveys show that prevalence of iron deficiency anemia in children is as high as 50 percent, and may be on the increase. The pockets of malnutrition that do exist appear related more to a lack of knowledge about appropriate weaning foods, an inability to breastfeed, or inefficiencies in food utilization because of diarrhea, rather than to a lack of food supply.

A major survey assessed Bitot's spots and corneal xerosis as indicators of vitamin A deficiency and found very low rates. However, no studies were found on vitamin A body stores, and nutritionists are concerned that Egyptian children's diets may be deficient in vitamin A sources. Perhaps more work on this potential problem could be considered.

Information on child spacing and its relationship to infant and child health in Egypt is limited. According to surveys, most couples do not wish to space, so breastfeeding is perhaps the major factor in spacing, rather than modern contraceptives. Data from one national survey found that nearly one-fifth of mothers had children born close together. Data from age-specific fertility rates indicate that nearly one in four births occur to women in high-risk age categories (i.e., teenagers or women over age 35). The average age of marriage is only 17 years. While the contraceptive prevalence rate is an encouraging 37 percent, it appears that contraceptives are used more for limiting total

family size rather than for child spacing. Family planning television messages supported by USAID/Cairo have recently begun to address more the child and maternal health aspects of family planning. While it is likely that the family planning project has had some positive impact on reducing high-risk births in older women, its overall effect on child survival objectives has probably been modest.

Another related concern is inadequate prenatal care. Only about half of all pregnant women receive any kind of prenatal care, most of which is for medical problems rather than regular checkups and counselling. Less than 12 percent of pregnant women have received tetanus toxoid protection, more than 25 percent suffer from iron deficiency anemia, and only one-third of their births are medically assisted.

The USAID Mission's Child Survival project includes components that focus on these problem areas.

5. FACTORS INFLUENCING PROGRAM PERFORMANCE AND IMPACT

Many factors appear to have influenced the performance and impacts of the child survival interventions. The evaluation team's assessment of these factors concentrated on NCDDP and EPI, which have considerable implementation history. Most of the factors identified were favorable and enhanced success, but others were constraints that had to be overcome. The factors can be broadly categorized as either external or related to the program.

5.1 External Factors

The external factors that influenced the success of NCDDP and EPI include characteristics and behavior patterns of the population; availability of health infrastructure, human resources, and technologies; and donor and host government commitment and collaboration.

-- Characteristics and behavior patterns of the population. The cultural and linguistic homogeneity of the Egyptian population and its high density and concentration along the Nile River have made targeting the programs easier. Also, the tendency among much of the population to seek health

care is another positive factor. However, some traditional behaviors, for example, not breastfeeding during diarrheal episodes or fearing that vaccinations might limit fertility, were constraints that the programs had to overcome.

-- Health infrastructure and human resources. The extensive Government health infrastructure, the large but underutilized cadre of trained medical personnel, and a network of private pharmacies and clinics were preexisting resources upon which the child survival interventions could draw without making large-scale, basic investments. But, the medical establishment's initial opposition to oral rehydration salts; rapid turnover of medical staff in the Government heath system, which complicated training efforts; low staff motivation, which required payment of incentives; and limited outreach capacities, were constraints that the programs had to overcome.

-- Available technology. The readily available, low-cost, and simple technologies of oral rehydration therapy and vaccines provided targets of opportunity in the programs. Similarly, the nearly universal access of Egyptians to television made the medium an ideal device for communication. Conversely, the more complex systems required for identifying and treating acute respiratory infection and nutritional problems may slow progress in solving these health problems.

-- Donor and Government commitment and collaboration. Agreement among USAID/Cairo, other major health sector donors, and the Government of Egypt on a focused strategy for child survival set the stage for close collaboration. Within the Government, high-level patronage of the child survival programs and the sophistication of the Egyptian health leadership were important positive factors. However, rapid turnover in Ministry of Health leadership may have slowed decision-making and hampered the autonomy of the projects.

5.2 Program-Related Factors

The success of the child survival interventions is considered to have been influenced by a variety of program-related factors. Some of these factors are discussed elsewhere in this report and are only briefly mentioned below.

-- Program autonomy and flexibility. The semi-autonomous project structure of NCDDP freed project management from cumbersome Ministry of Health decision-making procedures and restrictions. A flexible and supportive USAID/Cairo management style in the project's early years promoted innovative and appropriate risk-taking behavior by NCDDP management that contributed to the project's success. More recently, a protracted A.I.D. audit process, which ultimately discovered only relatively small problems, restrained NCDDP management's willingness to take actions or make decisions. In addition, the audit process inhibited development of innovative approaches, especially activities related to cost-recovery, and monopolized the time of both USAID/Cairo and project management, time that could have been spent on substantive concerns

-- Program focus on single health problem. The intentional concentration of program efforts on the single health problem of diarrheal disease control was central to NCDDP's rapid achievement in spreading oral rehydration therapy use. In contrast, the greater complexity of dealing with four separate health problems under a single management structure in the Child Survival project may scatter efforts too widely and result in some components lagging behind.

-- Program human resources. The unusually high caliber of the NCDDP project leadership and technical assistance staff (provided by John Snow, Inc.) were certainly important factors contributing to NCDDP's rapid success. The project had the right mix of technical and management skills and a staff and leadership that were highly motivated to succeed.

-- Program dollar resources. A significant positive factor that cannot be overlooked is the extraordinary level of dollar resources available to the program.

-- Program research and evaluation systems. The effectiveness of NCDDP is partly attributable to the practical research and evaluation activities, which provided useful feedback on performance. Project management acted on the results of research and survey findings to improve their implementation strategies.

-- Inclusion of components addressing demand and supply. Both NCDDP and EPI stimulated demand for services among the population through television spots and other advocacy

campaign approaches. The media campaign, as well as the strategy of ensuring an adequate supply of oral rehydration salts to meet the increased demand, was central to the successful implementation of NCDDP interventions.

-- Use of private sector. While the child survival interventions were carried out primarily through the public health system, NCDDP made innovative use of private sector distribution systems (pharmacies), research, and communications expertise, which improved project performance.

6. LESSONS LEARNED FROM THE EGYPT EXPERIENCE

6.1 Replicability

Program performance should be assessed within the country context.

The rapid success achieved by Egypt's NCDDP and EPI programs may not be experienced elsewhere. Many favorable external factors predated the interventions, enabling the right people with the right ideas, technology, resources, and approach to achieve results rapidly. The rate of progress made in other developing countries should not be measured against the Egypt experience, but rather should be judged within each country context.

The simplicity and acceptability of oral rehydration therapy and vaccine technologies may not be replicable to other child survival goals.

The success with which the low-cost, simple-to-use technologies of oral rehydration therapy and immunizations were introduced in Egypt may not be as easily replicated in cases where more complex technologies are necessary--for example, procedures required for identifying and treating acute lower respiratory infections successfully. Similarly, technologies that the intended beneficiaries may consider unacceptable or lacking obvious benefits, such as contraceptives in Egypt, may not meet with such immediate success.

6.2 Program Lessons

Semi-autonomous, vertically structured interventions

can be highly effective, but face later reintegration challenges.

The Egypt experience with child survival interventions points to the advantages of having a vertically structured program that concentrates its efforts on a single health problem. The Egypt experience also demonstrates that programs of a semi-autonomous nature, which grant a degree of trust, authority, and flexibility to its management, are more effective. Autonomy is needed not only from the host government, but also from excessive A.I.D. oversight. Nevertheless, such semi-autonomous programs inevitably face the challenge of maintaining their effectiveness after special project funding ends and they are integrated into the host government ministry. In programs like NCDDP and EPI, where the successes of the interventions have generated pride and commitment throughout the Ministry, there is reason to be optimistic that child survival efforts will continue after project funding ends.

Rather than attempting to address multiple child survival interventions under one project umbrella, it may be more effective to identify the priority health problems facing a country, and then phase or coordinate single-focused activities under separate management structures. Where projects are overly complex and lack a clear, simple focus, it may be difficult to find one contractor who can provide the specialized expertise needed for all areas. Such projects may suffer from coordination problems and problems of multiple approval systems that delay actions. And they may find their energies scattered over too many activities, reminiscent of the integrated primary health care interventions of the 1970s.

USAID Missions should not feel or be obliged to accept any prepackaged set of child survival activities, but should have broad flexibility and options to select appropriate interventions for the priority health problems facing the country, and to take advantage of special opportunities, technologies, and resources available.

Generating demand for child survival services through mass media: A valid and cost-effective approach.

In countries where television or other mass media are widely accessible, health information spots can be a very powerful aspect of a successful program. At least for relatively simple, acceptable health messages, like the oral rehydration salts and

immunization messages in Egypt, mothers are receptive to information spots and willing to act on what they see. The likelihood of similar success in introducing more complex or subtle messages, as may be required for nutrition or acute respiratory infection interventions, is unknown, but the approach is worth pursuing given its relatively low cost. Perhaps creative use of entertaining dramas or well-produced documentaries as vehicles for social marketing would pay off.

Other lessons learned from using a mass media approach in Egypt include the importance of using market research techniques, thoroughly pretesting messages, carefully reviewing the technical accuracy of the message by experts, establishing quality production standards, and promoting audience-oriented creativity and entertainment. The Egypt experience indicates that private sector media groups may be more adept in these skills and procedures than are public sector organizations.

Programs should take advantage of private sector strengths.

NCDDP expanded its effectiveness and outreach by including in its program private sector distribution channels, pharmacists, physicians, and depot holders. It also drew on the talents of private firms, universities, and institutions to produce media spots, conduct research studies, and provide other inputs. While drawing on the strengths of the private sector undoubtedly enhanced the performance of the interventions, their sustainability may be doubtful if outside funding ends and the profit motive disappears.

Pilot efforts, research, and evaluation are recommended.

While implementation efforts should be initiated as soon as possible, local area experimentation with different approaches and their evaluation should precede nationwide implementation of programs. Epidemiological patterns are complex and different in each country setting. A prepackaged intervention may miss the health problems entirely. Testing and evaluation in pilot areas can help ensure that the intervention is appropriate. Data collection in pilot sites should not be limited to clinic records systems, but should include population-based surveys that clarify existing disease patterns and that track the effectiveness and health impacts of the intervention. Throughout program implementation, a practically oriented applied research, survey, and

evaluation agenda can significantly contribute to redirecting implementation approaches to improve program performance and impact.

6.3 Policy Issues

The Government of Egypt was committed for decades to rapidly expanding public health facilities, heavily staffing these facilities, and following a policy of free services with almost no cost recovery. The result is a health care system that has been plagued by redundancies, inefficiencies, and underutilization, especially at the primary-care levels.

In the mid-1980s, USAID/Cairo was asked to assist the Ministry of Health in increasing the effectiveness of child survival services, but was also encouraged to move large amounts of funding, as is typical of the overall Egypt program. The Mission's response was rational and certainly welcomed by the Government of Egypt; USAID/Cairo chose to superimpose its child survival programs as additional projects over the existing Ministry of Health system, rather than attempt to achieve the child survival objectives through the more tortuous and perhaps futile process of reforming the basic system to become more efficient and effective.

So far, the Mission strategy has worked well for oral rehydration therapy and is being applied again in the Child Survival project. However, the Cost-Recovery Programs in Health project appears to signal a new emphasis on reform of the underlying health system. It remains to be seen how far possibly unpopular reforms will or can be pushed.

APPENDIX

Table 1. Indicators of NCDDP Effectiveness
(Knowledge, Attitude and Practice (KAP) Survey results)

Indicators	1984 (%)	1985 (%)	1986 (%)	1988 (%)
Primary Mothers who:				
Heard of concept of dehydration	86	98	99	98
Heard of oral rehydration salts	94	98	99	98
Ever used oral rehydration salts	50	64	68	66
Gave oral rehydration salts during last diarrheal episode	--	58	50	51
Know how to mix oral rehydration salts appropriately	53	73	81	96
Continue breastfeeding during diarrhea	68	83	86	83
Perceive stopping diarrhea as getting well	88	83	89	67
Define dehydration as loss of body fluids	3	5	5	11
Would give oral rehydration salts when symptoms of dehydration occur	7	11	5	25
Would consult physician when symptoms of dehydration occur	81	75	90	80

Source: "Final Report: Evaluation of NCDDP National Campaign," Practice (KAP)

Table 2. Indicators of EPI Effectiveness
(Percentage of Children Ages 12-23 Months Who Are Immunized)

	1984 (%)	1987 (%)
BCG	53	72
OPV 1	82	98
OPV 2	77	94
OPV 3	67	88
DPT 1	71	96
DPT 2	65	90
DPT 3	57	82
Measles	41	76

Source: "National Cluster Survey for Vaccination Coverage in Egypt: Executive Summary." 1989.

Table 4. Infant Deaths per 1,000 Live Births and Age-Specific Death Rate for Children Ages 1-4, by Cause, 1970-1987

	Infant Mortality		Childhood Mortality	
Year	Diarrhea	Nondiarrhea	Diarrhea	Nondiarrhea
1970	65.9	50.0	17.0	15.2
1971	48.6	54.4	11.6	15.4
1972	60.8	55.6	14.4	16.4
1973	55.8	42.2	11.6	12.0
1974	59.6	41.4	11.8	10.0
1975	49.3	39.7	10.3	11.2
1976	52.8	34.2	9.6	8.5

1977	49.0	36.3	9.7	9.1
1978	43.7	29.8	6.7	6.3
1979	42.3	34.1	9.5	7.6
1980	39.2	36.8	5.7	5.5
1981	35.8	34.2	4.9	6.3
1982	33.0	37.0	5.9	7.7
1983	29.1	35.6	4.0	6.0
1984	25.7	36.3	4.0	6.4
1985	15.3	33.9	2.7	6.9
1986	15.2	32.0	2.6	5.2
1987	12.3	32.8	2.3	5.5

Source: Central Agency for Public Mobilization and Statistics, Cairo, Egypt.

GLOSSARY

A.I.D.- Agency for International Development

CDIE - Center for Development Information and Evaluation

CID - Chemical Industrial Development

EPI - Expanded Program of Immunization

GNP - gross national product

NCDDP - National Control of Diarrheal Disease project

PL - Public Law

USAID - Agency for International Development field Mission

UNICEF- United Nations Children's Fund

WHO - World Health Organization

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