

# ***Preventing Child Diarrheal Disease***

## ***Options for Action***

Approaches for improving household and community hygiene behavior for sustainable improvements in child health





UNICEF/94-0780/Nicole Toutounji

## Programming Primary Prevention

The Environmental Health Project (EHP), a centrally funded project of the U.S. Agency for International Development (USAID), prepared this guide to offer practical suggestions for programming *primary* prevention interventions—those that improve environmental conditions and change associated behaviors—to halt exposure to and transmission of diarrheal disease agents. The guide presents three options for USAID and others designing projects aimed at improving child health. All three may be adapted to available resources, varied strategic objectives, and ongoing or planned programs. In presenting the options, this guide answers the following practical questions:

- What are the most critical elements of a diarrheal disease prevention program?
- How can primary diarrheal disease prevention be integrated into an ongoing or planned USAID-sponsored child health program?
- What activities and roles are feasible for the health sector in advancing primary diarrheal disease prevention?
- What are appropriate indicators for monitoring progress and evaluating results?
- Where can more information on diarrheal disease prevention programs and techniques be obtained?

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## *The Role of ORT*

Oral rehydration therapy (ORT) has been the mainstay of diarrheal disease control for the past decade and a half. It has contributed substantially to reducing childhood deaths from diarrheal disease because it is extremely effective in treating acute watery diarrhea. ORT alone, however, has little impact on dysentery or on persistent and complicated diarrhea, which currently account for over half of diarrhea deaths (1, 2, 3, 4). A long-term, sustainable solution to childhood diarrheal disease must combine treatment with actions to eliminate diarrheal disease through prevention.



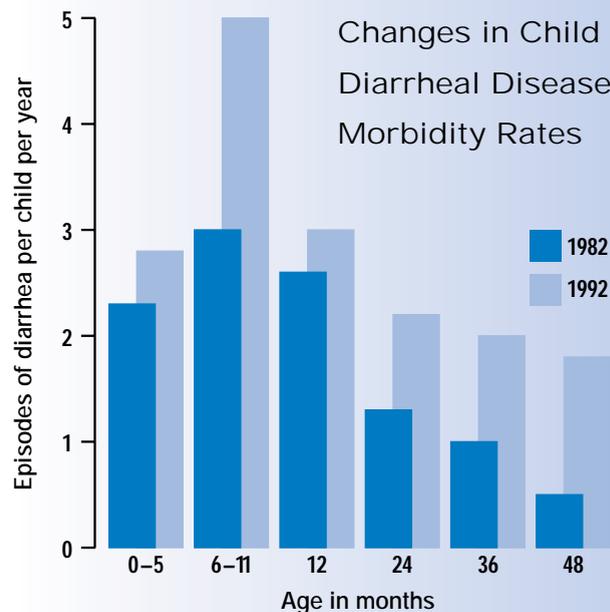
## The Public Health Burden of Child Diarrheal Disease

USAID and others in the development community can take pride in the accomplishments of Child Survival programs in reducing child mortality from diarrheal disease. Mortality from diarrheal disease for children under five has declined from 4.6 million in 1982 to 2.2 million in 1996. Despite this success in reducing child deaths, however, the overall health burden (morbidity) of child diarrheal disease has not decreased, as illustrated in Figure 1 (5, 6). With more than one billion episodes annually in India, Sub-Saharan Africa, and Latin America alone (a rate of four to five episodes per child per year), diarrheal disease remains one of the most significant child health problems worldwide, second only to acute respiratory infection as a leading cause of disease among children under five (7).

*Diarrheal disease thrives in the absence of hygienic conditions... taking the lives of 2.2 million children each year. Diarrheal episodes leave millions more children underweight, mentally and physically stunted, easy prey for deadly diseases and so drained of energy that they are ill equipped for the primary task of childhood: learning.*

— Akhtar Hameed Khan, Director of the Orangi Pilot Sanitation Project in Karachi, Pakistan (8).

Child diarrheal disease is insidious because it proceeds inconspicuously but with grave effects. Its total burden is often unmeasured, and attention is typically focused on treating symptoms rather than root causes.



What makes diarrheal disease so insidious and the need for action so urgent?

- The great majority of child diarrheal cases are not seen at a health facility. Household surveys typically show child diarrheal disease rates an order of magnitude greater than health facility records indicate.
- Repeated episodes of diarrheal disease significantly increase vulnerability to other diseases and to malnutrition.
- The overall occurrence of child diarrheal disease has continued unabated with major effects on child health, despite the success of oral rehydration therapy (ORT) in reducing mortality (see sidebar at left).
- The documented achievements of numerous projects indicate that prevention of diarrheal disease is more feasible and effective than was acknowledged even ten years ago (9).

*“Child Survival programs...have little, if any, effect on the recurrence of many illnesses or on the environmental and related-behavioral conditions which allow these diseases to exist. Unless a better dialogue is established between the two sectors, water supply and sanitation programs will continue to be implemented without an adequate health compass and Child Survival programs will continue on a path which is unsustainable.”*

— Dennis Warner, Chief, Rural Environmental Health Division, WHO, September 1997 speech, University of Notre Dame, Issues in Child Health and Children's Rights

Greater awareness of the continuing and pervasive health burden of child diarrheal disease has led to a renewed sense of urgency. More studies are documenting the relationship between repeated episodes of diarrheal disease and malnutrition, stunting, susceptibility to other diseases, and other long-term developmental impacts (10, 11, 12). Recent reports to the international donor community from UNICEF and WHO have focused especially on poor sanitation conditions and associated hygiene behaviors, which are estimated to be responsible for 90% of the child diarrheal disease burden.

## Addressing the Root Causes

Child diarrheal disease is unlikely to be reduced substantially without more attention to changing the environmental conditions and behaviors that favor its spread. The principal global conferences whose mandates include child health recognize this need: the 1990 World Summit for Children, which called for universal access to water and sanitation by 2000; the U.N. General Assembly, which in 1991 reaffirmed the Water Decade's goals of safe water and sanitation for all; and the 1992 Conference on Environment and Development, in which the Agenda 21 action



plan proposed targets of universal access to water and sanitation by the year 2025.

Historically, “water and sanitation programs” have been perceived as provision of hardware—pumps, pipes, toilets. USAID’s Water and Sanitation for Health (WASH) and EHP, backed by 18 years of experience, have clearly demonstrated that, **regardless of who funds the hardware**, the potential health benefits of water and sanitation cannot be realized without a variety of integrated hygiene activities with full community participation.

For example, numerous field studies have demonstrated the critical role of personal and household hygiene practices in achieving reductions in child diarrheal disease occurrence, even when there is adequate access to water and sanitation.

*“One practice that may be profitably promoted is the expanded use of potties. When potties are used, they are frequently emptied into a latrine” (14).*

## Key Behaviors: Reducing Child Diarrheal Disease

- Safe disposal of human excreta, particularly the feces of young children and babies, and of people with diarrhea. A variety of sanitary solutions—latrines and toilets—are available for both rural and peri-urban environments. With proper use, they break disease transmission pathways.
- Effective handwashing at four critical times: after defecation, after handling children’s feces, before feeding and eating, and before preparing food. Clean water and a cleansing agent such as soap or ash significantly increase effectiveness.
- Protection of drinking water both at the source and during transport, storage, and use.

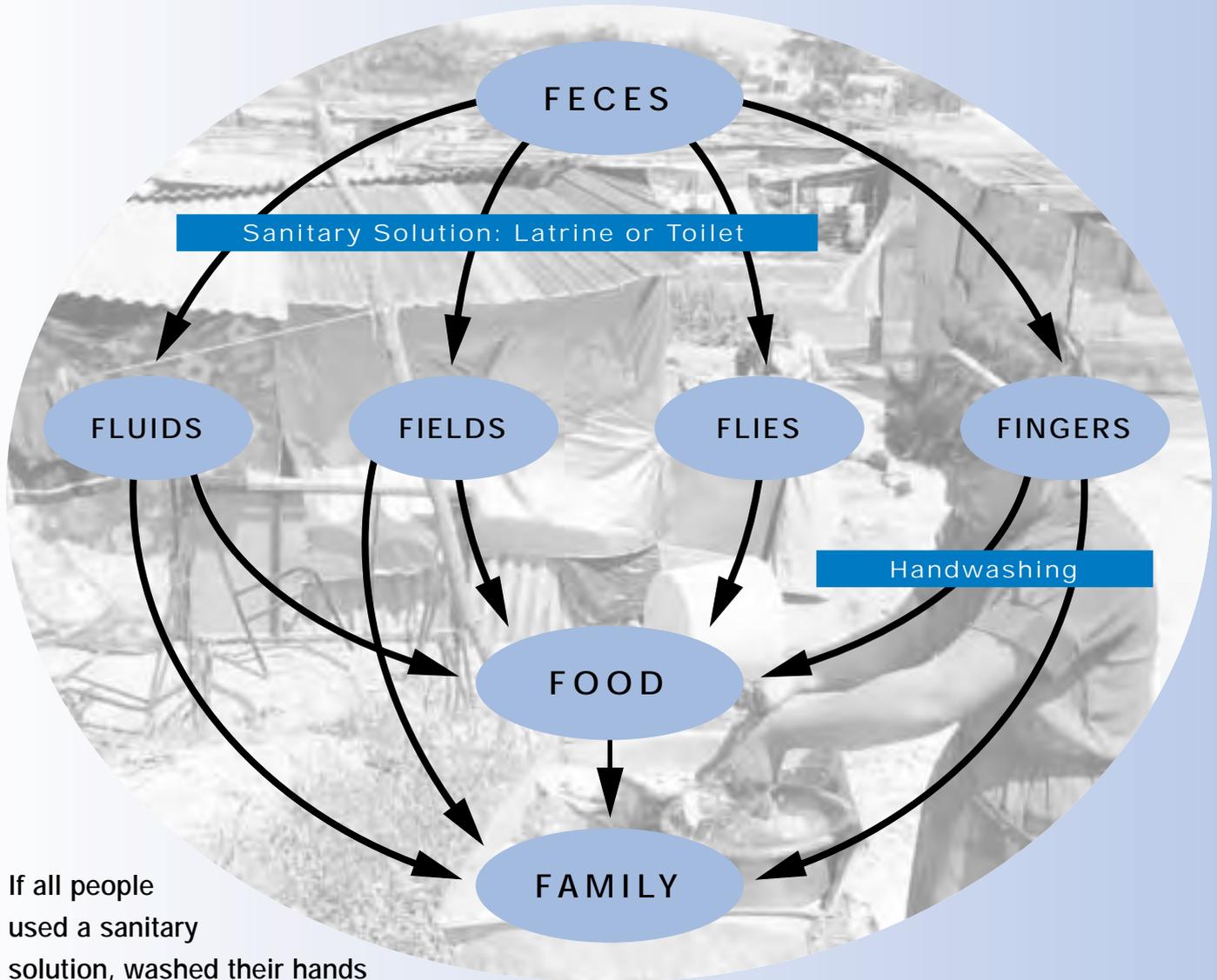
Reviews of ten hygiene intervention studies show child diarrheal disease reductions of 11-89%, with a median of 33% (9, 13).

Human feces are the primary source of diarrheal disease agents. Foods, fingers, flies, fluids, and fields contaminated with fecal matter, lead to ingestion of disease agents. Figure 2 illustrates the many paths of fecal-oral trans-

mission. Primary diarrheal disease prevention activities offer an opportunity to break the transmission cycle via the key behaviors highlighted in the sidebar above. Such activities can increase the effectiveness of Child Survival programs.

Figure 2

## Breaking the Fecal-Oral Transmission Cycle



If all people used a sanitary solution, washed their hands at critical times, and protected their drinking water supply, the occurrence of diarrheal diseases would decrease dramatically.

 Transmission barriers

Photo: UNICEF/Dennis Budd Gray

## A Two-Pronged Strategy

Water supply and sanitation infrastructure creates an environment conducive to maintaining health, while household and community-level hygiene behavior change ensures that child diarrheal disease prevention is an outcome. Both are necessary; neither is sufficient as a sole strategy. In some cases, to achieve the desired health outcome, it is necessary for the health sector to carry out an integrated program that includes hardware. However, in most instances the health sector does not fund water and sanitation infrastructure.

*It is estimated that 90% of the child diarrheal disease burden is the result of poor sanitation conditions and inadequate personal, household and community hygiene behaviors (15).*

When budget or programmatic restrictions prevent this two-pronged approach, the health sector can still have a significant impact on child diarrheal disease prevention by working in partnership with other donors, NGOs, or municipalities that do have the resources to provide water and sanitation services. In this scenario, the health sector's role is to raise awareness of the health aspects of infrastructure development and provide the relatively inexpensive component of household and community-level hygiene behavior change.



The Hesperian Foundation



## Hygiene Behavior Change: A Cost-Effective Intervention

Hygiene behavior change interventions for preventing diarrheal disease are both effective and cost-effective compared to other Child Survival interventions. A recent analysis by EHP illustrates the cost-effectiveness of an investment in hygiene education for behavior change. When hygiene education is provided to people who already have adequate access to water and sanitation, its cost-effectiveness is approximately \$3.00 per case of diarrhea averted and \$20 per disability-adjusted life year (DALY) saved (16).

USAID can cost-effectively increase the child health impact of infrastructure investments

*“Huge investments in water and sanitation hardware over the past 20 years in many countries present a favorable opportunity for highly cost-effective water and sanitation ‘software inventions’ that induce changes in behavior to improve health outcomes (16).*

by providing low-cost household and community-level hygiene behavior change programs in partnership with projects, donors, or ministries responsible for water supply and sanitation hardware investments. For example, a donor or

project may specialize in wells, pumps, and trained well-drilling teams. However, drilling a large number of wells, or similar hardware investments, may have little or no child health impact unless they are accompanied by strong community participation and household hygiene behavior change.

## Examples:

### *Benefits of Hygiene Behavior Change*

- In 22 studies of the effect of water, sanitation, and hygiene education reviewed by Esrey (13) the median reduction in child diarrheal disease morbidity from six rigorous programs promoting proper handwashing was 33%. Studies of other interventions that promoted health knowledge and hygienic behaviors, such as defecation in a proper site and suitable disposal of waste and feces, also documented considerable reductions in diarrhea prevalence. Esrey concluded from his review that increasing the quantity of water used, with presumed improvement in domestic and personal hygiene, was more effective than improving the quality of water in reducing diarrhea morbidity rates in children.
- In Mexico, the impact of interventions for reducing diarrhea among children under five was tracked over 15 years. Diarrhea mortality decreased progressively: 1.8% during the first stage (pre-ORT); 6.4% during the second (promotion of ORT); and 17.8% during the third (improvements in basic education and sanitation) (17).
- In Indonesia, researchers demonstrated an 89% reduction in child diarrheal episodes as a result of providing mothers with hand soap, explaining to them the fecal-oral route of diarrhea transmission and suggesting specific handwashing times and techniques to prevent child diarrhea, compared to a control period before the intervention (18). The intervention included ten follow-up visits with health educators over a 20-week period, once the soap and educational messages had been provided.

## Evaluation of SAFE

Knowledge, Practices, and Health Status	Control	Intervention
<b>Diarrhea Prevalence</b> Sampled households in which the mother or caretaker reported that at least one child had an episode of diarrhea during the previous two weeks.	65%	23%
<b>Understanding Diarrhea Prevention</b> Sampled households expressing knowledge of diarrhea prevention (five or more means of prevention mentioned: clean water, latrine use, environmental cleanliness, food hygiene, handwashing).	0%	13%
<b>Latrine Use</b> Reported latrine use: <ul style="list-style-type: none"> <li>• Mothers</li> <li>• Men</li> <li>• Children &gt;5 years old</li> <li>• Children 3-5 years old (latrines or fixed place)</li> </ul>	91% 81% 57% 27%	98% 94% 94% 91%
<b>Handwashing</b> Sampled households demonstrating proper handwashing technique (all five correct elements demonstrated: uses water, washes both hands, uses cleansing agent, rubs hands three times, dries hands hygienically).	3%	74%
<b>Environmental Cleanliness</b> Sampled households in which: <ul style="list-style-type: none"> <li>• no feces were observed in the yard</li> <li>• no feces were observed inside the latrine structure</li> </ul>	82% 53%	99% 88%

## Expected Results

For many years, the only environmental health data collected on a widespread and regular basis have been access to water and sanitation. The health benefits from increased access were often assumed, but seldom measured. In the last ten years, data from many developing countries have established that providing access alone does not necessarily change the behaviors that lead to child diarrheal disease. In fact, even when access to water is limited, child diarrheal disease can be reduced substantially through sanitation and hygiene behavior change programs.

CARE/Bangladesh's Sanitation and Family Education (SAFE) Pilot Project package of personal and household hygiene behavior interventions reduced child diarrhea

*"Examples of good hygiene practice should be locally formulated, and care must be taken to ensure that hygiene is not considered inappropriate and an 'unaffordable luxury'" (19).*

prevalence by 65%, when compared with the control area, without major additional hardware investments by the project (20). Improved hygiene knowledge and

behaviors, as well as demand creation for sanitation solutions, appeared to be the key elements in reducing diarrhea, as shown in Table 1. SAFE encouraged a high level of community sanitation coverage, in which at least two-thirds of the families had a latrine. Studies have shown that the positive effects of sanitation increase significantly when the majority of the community has coverage.



Sean Sprague/Panos Pictures

## Child Survival Projects

Including primary diarrheal disease prevention in Child Survival projects offers an opportunity for USAID to significantly reduce the health burden of child diarrheal disease. By adding primary diarrheal disease prevention to a diarrheal disease control program, USAID could expect to reduce child diarrheal disease morbidity by at least 30%. The three programming options presented in this section open new avenues for imaginative, cutting-edge programming through integrating activities in hygiene behavior, and water and sanitation.

Infrastructure or small-scale hardware investments may be necessary to achieve the goal. In such cases, USAID can often facilitate partnerships with projects, donors, or ministries responsible for water supply and sanitation. *Low-cost, USAID-funded hygiene education/behavior change investments can cost-effectively increase the health impact of infrastructure investments, whether or not the health sector funds the hardware.*

Effective control of child diarrheal disease is achieved by combining prevention and case management. As illustrated in Table 2, comprehensive prevention includes good personal and household hygiene and access to adequate water and sanitation, the two major primary

*The only sustainable way to significantly improve child health is to “invest in a holistic public health program covering education and sanitation activities, as well as appropriate treatment of disease and its complication at the individual level” (17).*



Barbara Klass/Panos Pictures

defenses against both acute and chronic forms of diarrheal infections, along with promotion of breastfeeding and immunization.

Adapting the interventions described in Table 2 to a specific location is paramount to success in adding primary diarrheal disease prevention to Child Survival programs. Programmers should:

- Understand the local aspects of environmental and behavioral risk factors and
- Facilitate community involvement in all phases of intervention design and management.



Incorporating primary diarrheal disease prevention into Child Survival need not be costly to the health sector, but it does require a fundamental shift in how donors and ministries of health approach the control of environmentally based diseases, like childhood diarrhea, and in the types of technical assistance deemed most useful. A health ministry or USAID child health project seeking to include primary diarrheal disease prevention should take a more expansive view of the health sector's role, one that includes *advocacy for action by other sectors whose activities directly impact child health or whose resources are needed to support the behaviors that prevent childhood diarrheal disease.*



Adrienne T. Simms

USAID can model this approach internally, through cross-sector strategic objective (SO) teams, and externally in cross-sector relationships with partners. Current USAID partners often include ministries of health, the international donor community, local and international nongovernmental organizations (NGOs), cooperating agencies, contractors, and, more recently, the private sector. These multiple partners are responsible for varied actions that contribute to Child Survival: primary

health care services, training of health workers, sale of health commodities, and

*“Hygiene promoters have to stop thinking like medical people and health educators who have all the answers. Instead, they have to make more effort to think like the people for whom they are working” (21).*

health education for behavior change—to name a few. Three program options for involving these and other partners in a primary prevention program are given in the center spread.



Table 2

## Comprehensive Prevention and Control

Strategy	Program Objectives/Interventions
<b>Good Personal and Domestic Hygiene</b>	<ul style="list-style-type: none"> <li>• Effective handwashing with a cleansing agent at critical times</li> <li>• Proper disposal of feces, especially for infants and children</li> <li>• Adequate food hygiene</li> </ul>
<b>Use of Safe Water</b>	<ul style="list-style-type: none"> <li>• Use of drinking water from the safest source</li> <li>• Protection of drinking water from contamination               <ul style="list-style-type: none"> <li>– at the source</li> <li>– in the home</li> </ul> </li> </ul>
<b>Improved Nutrition</b>	<ul style="list-style-type: none"> <li>• Breastfeeding (exclusively for 4-6 months and continuing to 1 year)</li> <li>• Improved weaning practices</li> <li>• Growth monitoring</li> </ul>
<b>Immunization</b>	<ul style="list-style-type: none"> <li>• Measles immunization</li> </ul>
<b>Effective Case Management</b> (home and health facility)	<ul style="list-style-type: none"> <li>• ORT</li> <li>• Continuation of feeding during diarrhea</li> <li>• IV therapy for severe dehydration</li> <li>• Selective antibiotic therapy</li> <li>• Seeking medical care when needed</li> </ul>

*Option 1*

Work with Individuals and Households

Social marketing campaigns targeting households and communities and supplemental training for health care workers can promote the three behaviors critical for reducing fecal-oral transmission of pathogens:

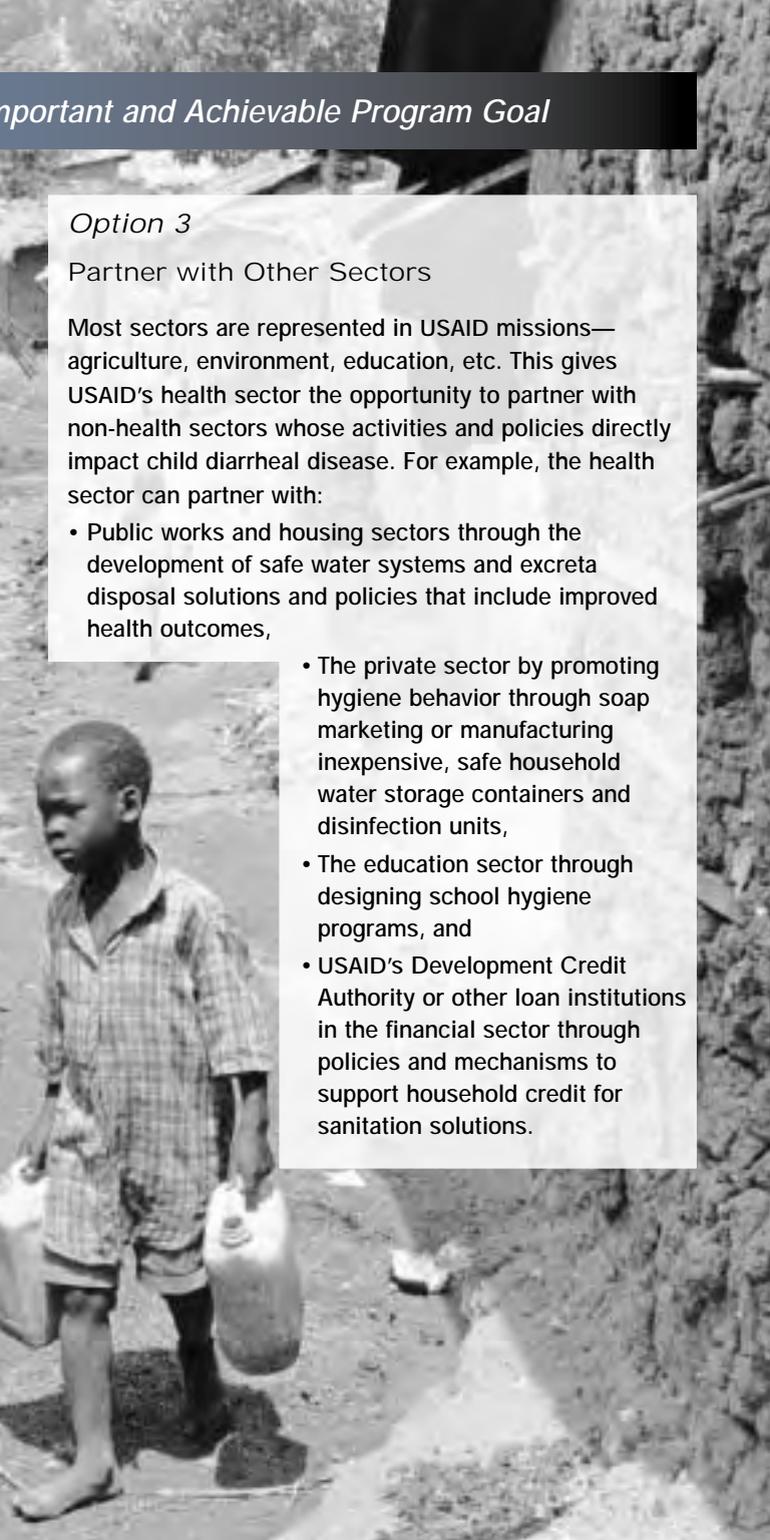
- Proper disposal of feces, especially for infants and children,
- Effective handwashing with soap at critical times, and
- Protection of drinking water.

*Option 2*

Support Household and Community Actions

Communities can be very creative in devising solutions to water, sanitation, and hygiene problems when provided with organizational and training support and links to resources outside their immediate sphere. Two well-tested programs for mobilizing communities to take action to reduce child diarrheal disease are EHP's CIMEP (*Community Involvement in Managing Environmental Pollution*) and WHO's PHAST (*Participatory Hygiene and Sanitation Transformation*). Examples of successful community actions to reduce child diarrheal disease include:

- Construction of child-friendly sanitation solutions,
- Local production and sale of contamination-proof water containers,
- Distribution of household water disinfection materials,
- Promotion of soap for handwashing, and
- Organization of programs in hygiene education and behavior change.



## Important and Achievable Program Goal

### *Option 3*

#### Partner with Other Sectors

Most sectors are represented in USAID missions—agriculture, environment, education, etc. This gives USAID's health sector the opportunity to partner with non-health sectors whose activities and policies directly impact child diarrheal disease. For example, the health sector can partner with:

- Public works and housing sectors through the development of safe water systems and excreta disposal solutions and policies that include improved health outcomes,
- The private sector by promoting hygiene behavior through soap marketing or manufacturing inexpensive, safe household water storage containers and disinfection units,
- The education sector through designing school hygiene programs, and
- USAID's Development Credit Authority or other loan institutions in the financial sector through policies and mechanisms to support household credit for sanitation solutions.

## Option 1

### *Work with Individuals and Households*

#### **Supplemental Training for Health Care Providers**

The simplest and most inexpensive way to begin the process of making primary diarrheal disease prevention a part of existing Child Survival programs is to add individual and household hygiene promotion to the health care provider's counseling messages. Health care workers' training can be



augmented to cover the following and other appropriate topics:

- Key diarrheal disease prevention behaviors,
- Methods for teaching families about the environmental and associated behavioral causes of diarrheal disease, and
- The role of gender relationships in a family's ability to improve environmental health conditions and hygiene behaviors.



UNICEF/5637/Sean Sprague

Health promotion messages delivered by health care providers commonly focus on case management and care-seeking behavior. Messages for mothers and caretakers consistent with the three key behaviors described here are available in *Facts for Life* and *Using Facts*

*Institutions such as schools and orphanages can be a focal point for sanitation and hygiene promotion.*

*for Life – A Handbook*, joint publications of UNICEF, WHO, UNESCO, and UNFPA. These publications are readily available in 73 countries and in more than 100 local languages. Ministries of health often respond positively to the concept of primary prevention. Promoting prevention messages throughout their organization can be an achievable first step.

To be effective promoters of primary prevention, health care providers must understand

***Diarrhea Prime Message:***  
***“Diarrhea can be prevented by breastfeeding, by immunizing all children against measles, by using latrines, by keeping food and water clean, and by washing hands before touching food.”***

— Facts for Life

that primary prevention is part of the overall case-management strategy, similar to home management of illness. USAID technical assistance could focus on bringing about this shift in perception by changing training and supervision norms

and practices. With ministry of health concurrence, USAID could add primary prevention to training curricula and introduce quality assurance monitoring schemes to maintain health care provider behavior change. A more proactive approach, which has been successful in some locations, requires health care workers to spend one day per week making home visits to promote disease prevention and to improve care-seeking behavior. Traditional healers and pharmacists can also have a role in promoting prevention.

## Social Marketing

Health-sector sponsored social marketing campaigns, directed at changing individual and household high-risk behaviors for child diarrheal disease, can be effective in achieving behavior change and creating demand for water and sanitation solutions. USAID's health sector has successfully employed social marketing in family planning and nutrition programs and could adapt the same techniques to primary diarrheal disease prevention. Periodic household assessments of child diarrhea morbidity to establish a baseline and to determine the magnitude of the problem provide families and health workers with an opportunity to evaluate the success of their interventions.

## Option 2

### *Support Household and Community Actions*

Programs to prevent diarrheal disease are most effective when they move out of the health centers and into communities and households. Examples of successful household and community actions to reduce child diarrheal disease include promotion of child-friendly sanitation solutions (pedi-pots or pots for tots), local production and promotion of contamination-proof water containers, hygiene education in the schools, and household water disinfection units. But communities need various supports to be able to take action: training in organizational techniques, links to resources outside their immediate sphere, and tools for conducting local assessments and creating partnerships. With these kinds of supports, health workers and community groups gain the capability to design and implement interventions which take advantage of or overcome locally identified strengths and constraints.

The need for community-based actions to achieve disease reduction and prevention has been recognized by the health sector, and new approaches and programs are being developed. One is Community IMCI (Integrated Management of Childhood Illness), described in the accompanying example.

UNICEF/Marcus Halevi



### An Opportunity for USAID to Collaborate with Other Donors and NGOs on Achieving Child Diarrhea Reduction

Since 1992, USAID and others in the development community have expanded the Child Survival paradigm to incorporate Integrated Management of Childhood Illness (IMCI) and promotion of care-seeking behaviors. In October 1997, UNICEF, WHO, USAID, and others went a step further by introducing the concept of "Community IMCI." Although the technical and programmatic aspects are still under discussion, it is clear that

Community IMCI offers an opportunity to include household and community primary prevention interventions to strengthen the child by reducing the causes of

infection. This expanded Child Survival paradigm would promote wellness, protect children from the repeated bouts of illness that jeopardize their full development, and enhance the sustainability of hard-won Child Survival achievements.

- *Goals include creating a safe environment for children.*
- *Hygiene and sanitation are among 12 key elements.*
- *Effort is being led by UNICEF and WHO with assistance from USAID.*
- *Approach offers opportunity to identify and work with other sectors, including those whose activities directly influence child diarrhea morbidity.*

In some cases, USAID may be able to partner with or sponsor NGOs who are already working with communities. Two well-tested programs for mobilizing communities are EHP's CIMEP (Community Involvement in Managing Environmental Pollution) and WHO's PHAST (Participatory Hygiene and Sanitation Transformation) (22). Two publications on CIMEP are available from EHP: a brochure in English, French, and Spanish describing the methodology in general terms and a longer report detailing steps in the

process, including design of workshops and training materials. Both programs facilitate broad community involvement and provide support and tools for health districts and communities to identify local disease risk factors and design and implement interventions. CIMEP provides additional methods for achieving municipal and cross-sectoral program support and scale-up planning. In Bolivia, as described in the accompanying example, a CIMEP process reduced child diarrheal disease by 49%.

Under option 2, USAID technical assistance can:

- Adapt and sponsor programs such as CIMEP or PHAST to focus on the primary prevention of child diarrheal disease,
- Provide technical assistance on conducting and incorporating gender analyses to design feasible and sustainable interventions,
- Build capacity for carrying out low-cost participatory baseline assessments to identify local risk factors,
- Provide technical assistance and credit for local design and production of small-scale,

low-tech household and community hardware, such as pots for tots, water storage containers, latrine components, etc., and

- Promote participatory monitoring and evaluation techniques.

Examples of primary diarrheal disease prevention interventions that could be integrated into a district-level Child Survival program, using a participatory program such as CIMEP or PHAST, are given in Table 3.

## USAID Bolivia

### Community Interventions Lower Diarrheal Disease Prevalence

Decentralization efforts in Bolivia, including passage of a law in 1995 mandating public participation at all levels of government, are giving municipalities and communities an opportunity to decide locally what health issues are of most concern and to make funding decisions accordingly. In the Santa Cruz area of Bolivia, where previous USAID funding of water and sanitation infrastructure did not result in the expected reduction of child diarrheal disease, the USAID mission and EHP mobilized local NGO groups and the Bolivia Child Health unit within the Ministry of Health to take a new, community-based approach to child diarrheal disease

prevention, modeled after CIMEP. Baseline household morbidity data, collected as part of this activity, revealed that the actual burden of child diarrheal disease was an order of magnitude greater than what clinic data indicated. Furthermore, child diarrheal disease prevalence was

- *Actual burden of child diarrheal disease is an order of magnitude greater than clinic data indicate.*
- *Locally identified risk factors are used by community teams to design interventions.*
- *Community-implemented interventions change household hygiene behaviors and reduce child diarrheal disease by 49%.*

highly correlated with poor hygiene behaviors and lack of knowledge of the causes of diarrhea among mothers and caretakers, not with water source or type of sanitation. Community-initiated interventions have produced significant improvements in household hygiene behaviors and reduced child diarrheal disease prevalence by 49% (23).

## Participatory Hygiene and Sanitation Transformation (PHAST) Series: A Step-by-Step Guide

The PHAST Step-by-Step Guide (22) provides a detailed tool for community workers to change community hygiene behavior and improve water and sanitation facilities. The guide, which was revised after two years of field testing in Africa, includes a conceptual framework, management and facilitation guidelines, and detailed methods for participatory activities. Problem identification and analysis, planning for solutions, selecting options, planning for new facilities and behavior change, and participatory monitoring and evaluation are among the topics covered. A joint program of WHO and the UNDP/World

Bank Water and Sanitation Program, PHAST has been an official Ministry of Health program in Zimbabwe since 1994 and has been incorporated into sanitation programs in Uganda and Kenya.

- *Methodology allows community workers to successfully engage communities in changing hygiene behaviors and improving water and sanitation conditions.*
- *It can be adapted to or combined with existing sanitation programs.*
- *Most PHAST programs are in Sub-Saharan Africa.*

## *Community Partnerships for Diarrhea Prevention*

### *Proper Disposal of Feces*

#### **Demand creation for latrines**

Develop public/private partnerships with communities to promote and provide resources, such as household credit, to enable greater latrine coverage.

#### **Latrine design and use**

Design culturally appropriate latrines and hold community trials to encourage full utilization.

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### *Effective Handwashing at Critical Times*

#### **Soap marketing**

Work with soap manufacturers to include health promotion messages in soap marketing strategies.

#### **Handwashing**

With women's groups and school children, target improved handwashing timing and techniques.

### *Protection of Drinking Water*

#### **Water source protection**

Develop public/private partnerships with communities to maintain and protect water supply sources.

#### **Household water storage**

With private sector, promote local design, manufacture, and proper use of low-cost contamination-proof water containers.

#### **Household water quality**

Where appropriate, promote household disinfection of drinking water.

## Option 3

### *Partner with Other Sectors*

Although important diarrheal disease prevention results can be achieved, especially short-term, with a minimal package of interventions at the household and community level, it is important not to lose sight of the longer-term, big picture. Comprehensive and sustainable primary prevention on a regional or national scale requires regional and national efforts to develop new partnerships between the health sector and non-health sectors whose activities directly impact child health.

USAID can assist in mobilizing national and regional support for cross-sectoral as well as community-based efforts by providing technical assistance at the appropriate levels for the types of activities discussed in the following sections.



### *Central American Soap Marketing*

#### Private Sector Benefits from Promoting Effective Handwashing at Critical Times

Recent field tests have indicated that collaboration with the private sector may prove fruitful in diarrheal disease prevention. USAID/EHP and BASICS, USAID's Child Survival project, teamed with several soap manufacturers in Central America to develop an advertising campaign promoting handwashing with soap to

- *Six major soap companies teamed with USAID to promote handwashing for disease prevention.*
- *Effort has expanded market for soap companies.*
- *Campaign promotes effective handwashing at critical times for diarrheal disease prevention.*
- *Program began with baseline market research study on handwashing practices.*

prevent diarrheal disease. The soap manufacturers provided their marketing research teams to assist in a baseline knowledge, attitudes, and practices (KAP) study of current handwashing behaviors and child diarrheal disease prevalence. The advertising messages were based on the results of the KAP study.

Table 4

## Cross-Sectoral Links

Sector	Prevents Diarrheal Disease By:
Health	Promoting measles immunization, breast feeding, nutrition, personal and household hygiene behaviors
Education	Teaching about food, water, excreta, personal and household hygiene and helminth control in schools
Municipal, Public Works and Housing	Providing water supply, protection of water sources, low-cost sanitation solutions, and individual credit for household water and sanitation improvements
Private Sector	Soap marketing with health messages, manufacture of hygienic water containers, and promotion of hygienic food handling and storage practices in markets

### Identification of the Cross-Sectoral Components of Causality

The first step in creating cross-sectoral partnerships for primary child diarrheal disease

*“Hygiene behavior and the prevention of water and sanitation-related diseases are influenced by socio-economic factors, such as proper housing, nutrition, clothing, education, and [available] time” (24).*

prevention is to identify the specific activities of non-health sector institutions whose activities either directly impact or could impact child diarrheal disease.

Table 4 gives examples of cross-sectoral links

at the national and regional level that could support diarrheal disease prevention interventions at the community level.

### Creation of Cross-Sectoral Partnerships to Identify Prevention Interventions

When the cross-sectoral links have been identified, USAID can take the lead in creating and supporting cross-sectoral teams to design prevention interventions and establish potential partnerships.

USAID’s El Salvador mission used a cross-sectoral approach to achieve synergy among sectors within the mission and to leverage resources from other donors and multilaterals, as described in the accompanying example. The mission supported a range of activities to achieve goals in child diarrheal disease prevention as well as in environment, democracy, education, and economic growth. With most of these sectors represented in USAID missions, USAID’s health sector can model and implement partnerships with non-health



### Four USAID Sectors Unite under One Strategic Objective

A comprehensive childhood diarrheal disease prevention strategy was developed recently by health, environment, economic development, and democracy officers at the USAID mission in El Salvador. Communities in the project area identified improved water supply and sanitation as their highest priority, and USAID was able to build in a health focus with the program goal of reducing child diarrhea morbidity.

- *Four USAID centers were represented on El Salvador's SO team: Health, Environment, Economic Development, and Democracy.*
- *Programs included hygiene education, community participation, water and sanitation, and cost recovery.*
- *Three NGOs were the implementors.*
- *Partners included the Ministry of Health, Inter-American Development Bank, Pan American Health Organization, and UNICEF.*
- *Approach was subsequently used by community to address other problems.*

Indicators to be reported on a semi-annual basis include child diarrhea prevalence, percent of families demonstrating adequate sanitary practices for use and maintenance of latrines and water, and percent of local water and health committee members who are women. Community involvement in all aspects of program and local cost-recovery mechanisms are key elements.

sectors whose activities directly impact child diarrheal disease. The financial sector can also play a role. USAID's Development Credit Authority, Regional Urban Development Offices, or other loan institutions can support household credit for sanitation solutions or credit for microenterprises that manufacture water- and sanitation-related products.

These and other partnering activities can substantially increase the health impact of USAID's Child Survival programs. For example, many donors and NGOs that provide environmental services simply assume health benefits will result from their efforts. USAID and

ministries of health can promote and guide two important steps: identifying site-specific diarrheal disease risk factors and then designing implementation strategies specifically to address them.

#### ***Fostering Supportive Policy Change***

USAID can work with multilateral organizations such as UNICEF, WHO, and UNDP to influence national policies. For example, USAID/EHP collaborated with UNICEF to formulate and promote stronger sanitation policies and better programming through the

joint development and dissemination of a handbook for sanitation programming, as described in the accompanying example.

In addition, USAID policy assistance can focus on:

- Developing cost-recovery mechanisms for activities critical to primary diarrheal disease prevention,
- Influencing national and regional environmental health-related policies, and
- Advocating for decision making to be placed at the lowest appropriate level.



## USAID/UNICEF Sanitation Programming Handbook

### USAID Joins UNICEF to Promote Improved Sanitation Programming

Working collaboratively, UNICEF and USAID/EHP prepared a handbook for sanitation programming professionals as a guide for implementing UNICEF's new water, environment, and sanitation strategy (25).

The new strategy, developed in 1995, emphasizes gender-balanced participatory approaches, capacity building for operations and maintenance, community-based cost recovery mechanisms, intersectoral linkages, and greater attention to the urban poor. The detailed guide, which has been widely disseminated at the field level within

UNICEF, provides a new conceptual framework for expanding the scale and targeted populations for sanitation programs, as well as a compendium of approaches and methods to achieve community participation, identify technology options, develop financing mechanisms,

establish needed institutional arrangements, and build political will. Recently, USAID/EHP assisted UNICEF/Zambia to apply the sanitation guidelines in working with the government of Zambia to develop a national environmental sanitation program.

- *USAID and UNICEF collaborate to promote new sanitation strategy.*
- *Strategy is community-based, cross-sectoral, and sustainable.*
- *Handbook can be used to influence host-country sanitation policies and programming.*



## Indicators

Re-engineering at USAID has increased the need for more rigorous indicators and for their judicious use in designing programs and measuring their results. Reliable indicators provide a technical basis for program design and assessing results. Inexpensive tools are available for collecting and analyzing baseline and follow-up data to make the interventions context-sensitive and community-based.

Table 5 lists representative indicators for diarrheal disease prevention that could be used in the field to design and monitor activities. Most are relatively easy to measure. They are all derived from empirical studies on the effectiveness of various types of interventions. At the USAID mission level, the most reliable indicators would be diarrheal disease prevalence (health status), feces disposal methods, and handwashing behaviors. These indicators were developed by EHP with the assistance of a technical advisory group.

## Representative Indicators

### Health Status

*Proportion of households...*

- With a child under 3 (or under 5) who has experienced one or more episodes of diarrhea in the past two weeks.

### Cleansing of Hands

*Proportion of households...*

- Where the mother (or caretaker) reports washing her hands at least once within the previous 24 hours on each of the four critical occasions.<sup>1</sup>
- Where the mother (or caretaker) demonstrates all elements of adequate handwashing technique.<sup>2</sup>

### Sanitary Disposal of Feces

*Proportion of households...*

- Where all family members 3 years or older usually use a well-maintained sanitary facility for defecation.
- Where the feces of children under 3 are disposed of in a sanitary fashion.
- Where the house area and yard are free of human fecal contamination.

### Drinking Water Free of Fecal Contamination

*Proportion of households...*

- That use water from an acceptable source for cooking and drinking.
- That either have in-house piped water or have a system of water collection, transport, storage, and access that maintains water free of contamination.

### Food Free of Fecal Contamination

*Percent of infants 6 months and under*

- That are exclusively breast-fed.

*Proportion of households...*

- Where the mother reports washing her hands before preparing or serving food or feeding children.
- Where food is eaten within 3 hours of cooking.
- Where cups and spoons rather than bottles are used to feed infants and small children.

<sup>1</sup> Critical Occasions: after defecation, after cleaning babies' bottoms, before eating or feeding, and before preparing food.

<sup>2</sup> Adequate Technique: both hands cleansed with water and soap or ash, rubbed at least three times, and dried hygienically.

## Baseline Assessment and Evaluation Tools

Rapid baseline assessment tools collect data needed to:

- Demonstrate the overall burden of childhood diarrhea,
- Identify local beliefs and practices related to diarrheal disease,
- Identify the role of gender relations in family and community hygiene practices,
- Assess environmental conditions related to diarrheal disease, and
- Identify and prioritize key behavioral and environmental risk factors to target.

These data, collected in combination with a community involvement process, can give a detailed picture of local needs and desires. With such information in hand, planners can design effective and sustainable interventions on a strong foundation.

When baseline assessments are unidimensional, they collect only one type of data rather than collecting data on the multiple factors that affect diarrheal disease morbidity. For example, KAP data may be collected without any corresponding information on disease prevalence or household environmental conditions. This makes it impossible to correlate environmental and behavioral factors and disease

occurrence to identify local risk factors. It is not possible to design effective interventions unless it is clear what the risk factors are. For diarrheal disease, the frequent lack of household data on prevalence is especially frustrating

“We learned to study our communities and find out what was needed before making plans together.”

— Bolivia Community Participant

because a simple, standard two-week recall on the part of the child’s primary caretaker has been shown to give a reliable estimate.

In the long run, a relatively simple, yet broad baseline assessment can prevent costly and demoralizing mistakes in program design and implementation (for example, an intervention not related to the cause of a health problem). Such assessments can be economical and do not require long periods of time in the field. They do, however, demand careful planning, implementation, and analysis.

USAID/EHP, in the course of its work in Bolivia and Benin, has refined a tool for this type of baseline and impact assessment. It is available from EHP: Applied Study 9: *The Environment and Children’s Health: A Practical Guide for Measuring Health Impacts.*



UNICEF/1880/Sean Sprague

*Focused baseline assessments identify local risks and opportunities for change*

Local institutions in Lombok, Indonesia, and Bangladesh provide good examples of the effective use of baseline assessments to determine local child diarrheal disease risk factors and design targeted interventions (18, 26). In Bangladesh, the baseline assessment determined that the most important child diarrheal disease risk factors were lack of handwashing before preparing food, open defecation by children in the family compound, and inattention to proper disposal of feces and garbage. The educational messages resulting from these findings formed the basis of an intensive, eight-week training program in 25 communities (937 families) with local trainers utilizing a variety of approaches with community leaders and families to change hygiene behaviors. For children under five, the overall incidence of diarrhea decreased by 26%, while for 2-3 year olds the decrease was approximately 40%.

The Lombok assessment revealed a minimal level of handwashing after defecation and prior to food handling and almost no use of soap. A dramatic 89% reduction in the incidence of child diarrhea was achieved through provision of hand soap and health messages delivered during home visits by community organizers encouraging handwashing at key times.



*Repeated bouts of diarrhea can adversely affect nutritional status.*

## Resources to Implement Options

**Option 1** Implementing this option would take approximately one year. Technical assistance from USAID would include the services of three specialists, as listed below.

Environmental Hygiene Trainer (3 months)

- Interviews district health workers and community members on site
- Prepares and conducts five-day national training-of-trainers program for health personnel (including monitoring and evaluation techniques)
- Provides follow-up quality assurance/coaching (at one month and six month intervals after implementation)

Social Marketing Specialist (3 months)

- Carries out formative research
- Develops a marketing strategy and materials

Monitoring and Evaluation Specialist (6 weeks)

- Works with training and social marketing participants to design a monitoring and evaluation protocol

**Option 2** Implementing this option would take approximately two years. Technical assistance from USAID would be provided by seven different specialists, listed below.

CIMEP- or PHAST-Type Program

- Project Manager (1 month)
- Team Leader (4 months)
- Lead Trainer (3 months)
- Content Specialist (2 months)
- Local Trainer (6 months)
- Local Manager (full time)
- Monitoring and Evaluation Specialist (2 months)

**Option 3** Varies significantly depending on program-specific details regarding partnering agreements with local government, NGOs, bilaterals, etc.

**For all options, the use of local consultants lowers costs and fosters capacity building.**

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