HYGIENE IMPROVEMENT PROJECT

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HYGIENE IMPROVEMENT PROJECT

Five-Year Strategy

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OVERVIEW

In a recent trip to Ethiopia, the Hygiene Improvement Project's implementation coordinator visited a rural clinic to discuss with nurses the number of patients presenting with diarrheal diseases. During the visit she made a tour of the facilities and found, to her astonishment, that the clinic had no adequate sanitation facilities either for staff or for patients. The filthy facilities for the toilet, and the lack of any water on site or soap, made it impossible for even a modicum of hygiene to be present. The facilities seemed to be a place where one was most likely to catch an infectious disease rather than a place where such diseases could be treated and cured. As for the clinic setting becoming an educational model that community members could follow—unlikely. As long as these conditions persist at home and in public places, there will be need for the services of the Hygiene Improvement Project.

Diarrhea, largely resulting from unsafe water, inadequate sanitation and poor hygiene, is the second most serious killer of children under five, accounting for nearly one-fifth of child deaths—an estimated 1.7 million deaths annually (EHP, ref 5). Six thousand children die each day from diarrhea.

Over the last 30 years child survival programs and improved case management of diarrheal disease have substantially reduced diarrhea-related child mortality. The number of children under five who died from diarrhea fell from 4.6 million in 1980 to less than 2 million in 2000. But diarrhea morbidity remains virtually unchanged (2 billion episodes annually), and its negative consequences remain almost unabated. More than 80 percent of diarrhea cases worldwide result from fecal-oral contamination. While estimates vary, a recent review concludes that up to two-thirds of all diarrhea incidences in children could be avoided by implementing several well-proven and inexpensive hygiene improvement interventions already used in a number of developing countries.[1]

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What the Literature Says

To develop this strategy, the Hygiene Improvement Project (HIP) reviewed published and unpublished literature, consulted with experts to identify lessons and gaps regarding the efficacy and effectiveness of interventions to improve three key hygiene behaviors, and carefully explored best practices in achieving and maintaining these changes in hygiene behavior. A snapshot of HIP's findings is presented here within the main strategy. The more lengthy discussions of each key practice are included as annexes and will be refined for publication later.

Research in the late 1980s and early 1990s indicated that the health benefits resulting from improvements in water quality were not as great as the benefits that result from hygiene and sanitation interventions.[2] These studies and reasoning based on the F-Diagram[3] led some

[1] Environmental Health: Technical and Program Background, USAID, Feb 2004
[2] Esrey et al. 1985, 1986, and 1991

environmental health specialists to conclude, "that most endemic diarrheal disease is not waterborne, but transmitted from person to person on hands, etc. because of poor hygiene practices."[4] Conclusive evidence now exists that safely treating and storing water at the household level greatly improves its microbial quality and results in diarrheal disease morbidity reductions comparable to those achieved by hand washing and safe feces disposal.[5]

The literature does not agree on the need to work simultaneously to improve hand washing, safe disposal of feces, and safe storage and treatment of water to reduce diarrhea incidence. However, some small-scale approaches have shown that working with two or more practices reduces diarrheal disease and, more importantly, seems to assist in sustaining some new behaviors, for example, washing hands with soap after using the latrine.

Hand Washing

Clinical trials have shown that hand washing with soap can reduce the number of pathogens present and in turn reduce diarrheal disease in children under age five. When hands are washed correctly at critical times, all pathways that directly or indirectly involve fingers are blocked. A recent review of available studies suggests that hand washing with soap could reduce diarrhea incidence by as much as 47 percent and save at least one million lives per year.[6]

"The most effective programs built momentum at all levels (international, national, district, community), among all stakeholders, with each intervention happening concurrently."

HIP reviewed literature on public-sector and public-/private-sector hand washing programs to assess the effectiveness of these programs on behavior change and the sustainability of these behaviors. Two programs used what could be termed an approach "*at scale"*—the SANRU project in the Democratic Republic of Congo[7] and the SEOF project in India[8]—and both reported a statistically significant impact on hygiene practices within the community.

While only a few cost-effectiveness studies exist, two studies show that hand washing promotion programs can be cost effective, i.e. US$ 3/household/year.[9] A recent six-country study[10] indicates that up to 41 percent of mothers and caregivers sustained a key hand washing behavior—washing hands with soap after latrine use—three years after the programs had ended. A final analysis of hand washing programs in this review showed that the most effective programs built momentum at all levels (international, national, district, community), among all stakeholders, with each intervention happening concurrently.

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[3] The F-diagram shows the pathways where people come into contact with feces in their environment. It also illustrates points at which transmission can be blocked. See Joint Publication 8: The Hygiene Improvement Framework A Comprehensive Approach For Preventing Childhood Diarrhea. www.ehproject.org

[4] Clasen and Cairncross 2004

[5] Sobsey 2002; Thompson et al. 2003

[6] Curtis, 2003

[7] Cogswell, 2003/Rosenweig, et. al. 2004

[8] Zacharia, et. al., 2004

[9] van Wijk, et. al., 2004

[10] Shordt, et. al., 2004

While several countries have hand washing programs already in place through Public-Private Partnership for Handwashing (PPPHW) and its affiliate activities, there will be some countries where HIP will take the lead working closely with the private sector. There is no question that a multi-pronged approach using the private sector, mass media and interpersonal support from NGOs and CBOs is a most effective model. Supported by Government at all levels it can lead to systematic and sustained behavior change. This is the model that HIP hopes to implement. Linking with the USAID/World Bank supported PPPHW, HIP hopes to learn from other experiences and find an international platform to share its own. HIP also hopes to lend its M&E expertise to such activities as a form of technical assistance and in response to Task 4 needs.

Safe Disposal of Feces

The health benefits of improved sanitation have been widely documented:[11] Once fecal contamination in the environment is reduced, increases are seen in child health and in quality of the water supply. Yet, over 2.6 billion people[12] still lack access to sanitation.

"In sanitation, newer approaches—total community-led sanitation and market-driven approaches—seem to be having more success although there may still be a place for appropriate and well designed subsidy programs."

Much research on program approaches describes small-scale or pilot projects or studies, but no successful examples of large-scale change around sanitation behaviors exist. In addition, most studies focus on latrine-oriented behaviors, and very few deal with other issues of fecal-oral transmission, such as where infant feces or contaminated water is disposed and what happens to soiled clothes and utensils.

Research also indicates that, in the past, sanitation programs relied heavily on technical specifications rather than on target users' beliefs or practices. Thus, latrines were built to be optimal in performance and then subsidized so target users could afford them. This approach is neither successful nor sustainable and often does not reach the target users most in need. In sanitation, newer approaches—total community-led sanitation and market-driven approaches—seem to be having more success although there may still be a place for appropriate and well designed subsidy programs. The World Bank is publishing a major review of pricing and subsidies in the water and sanitation sector later this year that will add to the discussion with relevant and pertinent information from direct field experience.

Since proper latrine maintenance is critical to continued use and to continued disease reduction, any sanitation program must include latrine maintenance behaviors. In the field HIP will link with existing infrastructure programs and agencies, and look to facilitate scale leadership in this area, where possible. Early research indicates that this is a key gap in implementation and in follow-up. Finding solutions for emptying of filled septic tanks, or promoting the maintenance of clean facilities is as vital as having the latrine in the first place.

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[11] Cairncross, 1992

[12] Water for life: making it happen. WHO and UNICEF Joint Monitoring Programme for Water Supply and Sanitation, WHO and UNICEF, 2005

One aspect of sanitation that HIP will focus on, as a key strategy in all countries, is the need to find appropriate, practical and affordable models/approaches for disposal of children's feces, even in those countries where HIP may not be directly engaged with a sanitation infrastructure partner. This is also an arena where operations research is important as relatively little is known about this area of endeavor.

Safe Treatment and Storage of Water at the Point of Use

Conclusive evidence now shows that simple, low-cost strategies for safely treating and storing water at the household level can greatly improve the microbial quality of water and result in reductions in diarrheal disease morbidity comparable to those achieved by hand washing and safe feces disposal.[13]

Numerous water treatment and storage methods exist, but most have not been tested. Moreover, the economic sustainability of several point-of-use (POU) treatment and storage methods, e.g. Safe Water System, PuR, has not yet been shown. Other more affordable methods, e.g. SODIS (solar disinfection), have proven difficult to practice effectively. HIP efforts to further the field of POU will primarily be around public perception of methods and householder preference to improve adoption and maintenance of new behaviors. Early HIP activities have already produced some important findings.

It is unlikely that HIP will itself run POU programs as most countries where HIP expects to operate already have other agencies promoting and selling POU products. HIP fully intends to link with these entities as part of an integrated hygiene improvement effort. In Ethiopia and in Madagascar this is the approach that HIP is currently taking. However, HIP has decided to adopt, wherever possible, a strategy of offering choices or options to householders where such choices exist. For example, the affordability of a chlorine product versus a household filter, which seems to be universally preferred, may mean that HIP and its field partners and the private sector might experiment with voucher systems for POU, reducing the full price of such filters. The limitations to this strategy would be lack of available products on the market or lack of available efficacious products. In any case HIP intends to use, as much as possible, market-driven approaches for POU supplemented by generic promotion.

Studies of POU treatment and storage programs show that small pilot projects have been more effective than national-scale programs both in achieving behavior change and in reducing the incidence of diarrhea.[14] One possible explanation is the difficulty of finding the most effective combination of behavior change methods to modify and sustain treatment and storage behaviors in large-scale programs.

USAID's Water, Sanitation and Hygiene Investments

USAID has a long history of supporting environmental health-related projects. The **Water and Sanitation for Health (WASH) Project** (1981-1994) provided technical assistance in over 85 countries. WASH formed a key component of the U.S. Government response to and support of the International Water Decade declared by the United Nations in 1980. The focus evolved considerably during the period of implementation, from emphasizing hardware, to implementing cutting-edge

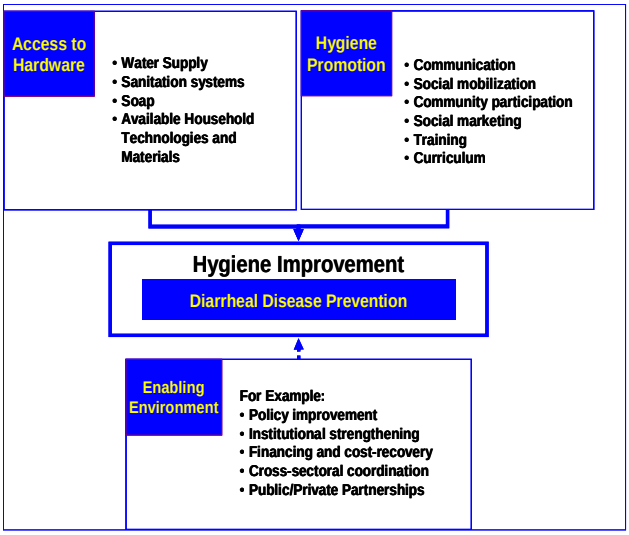
[13] Sobsey 2002; Thompson et al. 2003

[14] Bateman et al. 2002; Makutsa et al. 2001; Quick 2003; Macy et al. 2002; USAID 2004(b)

approaches, to ensuring community participation and management, and finally to achieving sustained behavior change.

The **Environmental Health Project** (EHP) (1994-2004) core resources focused on activities that directly supported child health and, later, malaria objectives—continuing the main lines of work established under WASH and other environmental health projects. EHP funding over the 10-year period was approximately $107 million, and the project supported activities in 52 countries. The integrated package of technological, social and behavioral interventions at the center of EHP programs was designed to maximize impact on health. To reduce morbidity, EHP promoted hygiene improvement—an integrated approach (developed under EHP) that combines access to hardware; hygiene promotion through hygiene behavior change; and an enabling environment through policy improvement, public-private partnerships and institutional strengthening. The Hygiene Improvement Framework (HIF), depicted in Figure 1 below, has been accepted by USAID's key development partners, e.g. UNICEF.

Figure 1: Hygiene Improvement Framework



Current Environmental Health Portfolio

USAID's Bureau for Global Health, Office of Health, Infectious Disease and Nutrition (HIDN) recently redesigned its water and sanitation portfolio to include the Hygiene Improvement Project, which focuses on hygiene behavior change, and a multi-award Environmental Health Project, which focuses primarily on hardware and technologies for hygiene improvement. Both projects were intended to be co-funded mainly by field support monies coming from missions. Concurrently, the office has just awarded a multiple award for social marketing of point-of-use water disinfection treatment and zinc treatment (POUZN project).

Hygiene Improvement Project

The **Hygiene Improvement Project** brings to the sector a strong focus on sustainable improvements *at scale* on three key hygiene practices: safe feces disposal, hand washing with soap, and safe treatment and storage of water at the point of use. Any one of these interventions typically results in a 30-40 percent reduction in diarrhea prevalence.

Key HIP tasks over the next five years include:

- Implementing hygiene improvement *at scale* in at least five countries;
- Integrating hygiene considerations into health and non-health platforms;
- Sharing USAID's global experience in the field and advocating for hygiene improvement;
- Providing support and capacity strengthening to PVOs, NGOs and networks working in the field; and
- Sharing knowledge about best practices with program managers, organizations and donors involved in hygiene improvement at international, national, regional and community levels.

HIP's approach is to build on USAID's Hygiene Improvement Framework using a behavior change focus. HIP will focus on hygiene promotion activities to motivate and maintain positive hygiene practices while ensuring that infrastructure and water and sanitation technologies, private sector and conducive or enabling environment issues are addressed.

Behavior First[15] Approach

The impact of environmental health interventions has often been limited by the failure to understand and/or influence human behavior. Technology alone is rarely sufficient to solve an environmental problem or change cultural behaviors. In many instances, people have received latrines, improved water systems or water treatment options but have not used or maintained them as intended.

"Technology alone is rarely sufficient to solve an environmental problem or change cultural behaviors."

Considering "behavior first," allows for:

- Identifying, promoting and facilitating improved behaviors that have significant positive impact on health and are also feasible for users to do, i.e. people both willing and able to make changes; and
- Designing program interventions that motivate and facilitate these improved behaviors.

Based on behavior first, HIP will develop country behavior change strategies for hygiene improvement *at scale*.

New Models for Hygiene Improvement

Health gains, particularly in Africa, are slipping. Meeting the Millennium Development Goals (MDGs) by 2015 will require increased coverage for key health issues. Even with the current infusions of new funds targeting specific goals, such as latrine construction, current approaches will not achieve the MDG targets. Innovative approaches are required to reach more people. HIP's strategy will be to identify and test new models and to document and promote those that are most promising. In addition to developing behavior change strategies, HIP will explore scale and marketing models and others that appear relevant. These models are described more fully in the Approach section.

[15] Bendahmane, Diane, Michael Favin & May Yacoob. "Behavior First: A Minimum Package of Environmental Health Behaviors to Improve Child Health," Applied Study 10. Environmental Health Project, USAID, May 1999.

Monitoring and Evaluation

As HIP applies new models, it will monitor and evaluate them to assess their effectiveness and make necessary adjustments to improve hygiene practices. HIP's approach to monitoring and evaluation is described in the Approach section of this document.

Challenges

Split between Water and Health Sectors

Historically, the water and health sectors have often acted independently—neither speaking the same language nor seeking to coordinate efforts. Overcoming this split is a challenge that HIP hopes to address through its model for starting at scale and engaging all the stakeholders simultaneously to develop a common agenda and complementary plans of action.

Context Affecting Funding

USAID's funding environment has changes greatly since this project was first conceived. Almost all budgets within the U.S. Government have been reduced or redirected. While the HIP contract commits the project to working *at scale* in five countries, given these funding realities, HIP may have to re-examine its approach to working at scale and may have to limit testing its model for starting at scale to a smaller number of countries.

Seizing Opportunities

HIP is finding a role within the water, sanitation and hygiene sector and seeking and seizing opportunities where they arise. The World Bank, the Dutch Government, the International Monetary Fund along with UNICEF, the Millennium Water Alliance and others are investing large sums in this sector. Ethiopia, for example, is expecting a $150 million investment and plans to focus on developing infrastructure. HIP clearly has a role to bring a hygiene improvement lens to this tremendous effort. Thus, though USAID may be unable to invest in hygiene improvement efforts initially, HIP may be able to leverage its core funding to provide technical assistance and limited inputs while ensuring other funding sources are available to support an effort at scale.

Expected Results

By the end of the project, HIP will have strengthened capacities to plan, implement, monitor and evaluate a systems approach to hygiene improvement in at least five countries. In these countries, hygiene improvement will have been integrated into a range of health and non-health platforms, including HIV/AIDS care and support programs. HIP will also have documented and shared key information and provided platforms for knowledge sharing. HIP will have trained staff from national and private-sector institutions to provide on-going, pre-service and in-service capacity building without intensive external support. Partner institutions will have acquired key competencies for improving hygiene practices and will be able to apply them to other technical areas. Finally, with HIP assistance, USAID will be seen as a leader in hygiene improvement at scale.

STRATEGIC APPROACH

The aim of the Hygiene Improvement Project is to reach those most affected by diarrheal morbidity and to confront access issues through appropriate market, promotional and outreach strategies. Through its behavior change approach *at scale*, HIP will address power structures that leave the

disproportionate burden of water bearing and caretaking on women and leave these women with limited ability to spend money or make changes without permission from men who act as the gatekeepers. HIP will use a gender lens in developing behavior change strategies. For example, this may mean engaging men in hygiene solutions when typically caregivers (women) have been targeted. HIP will also address economic disparities in its target populations by exploring a range of financing schemes to encourage the uptake of improved hygiene behaviors, including the appropriate role of subsidies for those least able to afford to adopt improved practices.

Scale Models

Achieving sustained, improved hygiene practices at scale is a formidable challenge, but it is the ultimate goal of this project. The literature describes some large hygiene improvement programs, yet very few have demonstrated programming at scale. Such large programs are based solely on geographic coverage, and many have a limited scope, e.g. latrine construction.

The water, sanitation and hygiene community is struggling to test and identify different programmatic models to define and reach scale. HIP is examining a variety of new models that can be adapted and tested to determine what works and why. For example, the IRC International Water and Sanitation Centre (IRC/Netherlands), a HIP partner, is using learning alliances[16] in its work. This approach aims to address sustainability issues by building horizontal and vertical alliances of relevant key stakeholders (across national, intermediate/district and local levels) to address the enabling environment necessary to sustain an innovation. This focus on the process of adopting and replicating an innovation intends to overcome typical scale up problems associated with aligning the needs and interests of multiple actors, sectors, policies and divergent implementation strategies. The learning alliance approach requires commitment from multiple stakeholders from each of the appropriate levels, ensures a relevant context, identifies resource needs/solutions, and emphasizes learning—from failure and success—for the purpose of adaptive management. HIP would like to explore this model further, piggy-backing on continuing activities where the learning alliance approach is being applied.

The CORE Group is also gathering models for scaling up from its members. The strategies used show how processes, structures and interventions can be scaled up. In partnering with the CORE Group and its members, HIP will seek to learn how the most effective models for scaling up are being applied and to assess whether they can be replicated for hygiene improvement.

The models IRC/Netherlands and CORE members are using require multiple stakeholders at different levels to engage in the change process, but these models begin as pilots and build on innovation incrementally and systematically to reach scale. These processes take time and are resource intensive.

Hygiene Improvement at Scale

The model HIP intends to adapt and test most vigorously is one developed by AED called SCALE. This model shifts the focus from health interventions to starting big by capitalizing on existing systems

"Using a system-wide approach requires stepping back from routines and specific events to consider the larger context—the web of influences (social, economic, environmental and political) that affect the problem at Using a system-wide approach requires stepping back from routines and specific events to consider the larger context—the web of

[16] http://www.irc.nl/la

already engaged in some aspect of hygiene or with available channels that can be accessed to promote hygiene.

Using a system-wide approach requires stepping back from routines and specific events to consider the larger context—the web of influences (social, economic, environmental and political) that affect the problem at hand.[17] Systems thinking is concerned with long-term patterns and trends of change and their causes. It also identifies differing spheres of responsibility within the system where change can occur and examines the implications of expected changes to ensure that change in one part of the system will not adversely affect another part of the system.

HIP will utilize its systems approach to detail the processes involved in implementation *at scale*. The strength of working at scale is identifying the underlying web of reciprocal relationships within systems and locating leverage points within those systems where targeted action will yield maximum change. Economics, weather, culture, trade decisions, taxes and political parties all directly or indirectly affect the lives of HIP's target populations and should be considered when hygiene improvement programs and interventions are planned.

Starting at scale, HIP intends to mobilize the many actors, efforts and sectors within the system, rather than focusing at the household level, to plan and act on a common goal simultaneously. The resulting synergy from all inputs drives the system to change. When all parts of the system reinforce the same improved behaviors, these behaviors become the social norm and are thus sustainable over time.

HIP defines starting at scale as more than population and/or geographic coverage: it is **coordinated actions of many stakeholders working on a common goal to the social benefit of targeted groups. Sustained behavior change at scale commences when there is a convergence of skills, interventions and availability of products and services at the same time, in the same places to benefit the same targeted communities reaching enough people to have a health impact.** While the aim is to start at scale, HIP will consider strategic opportunities to complement existing country efforts that may grow into programming at scale.

"Small-scale processes by their very nature do not mimic large-scale processes."

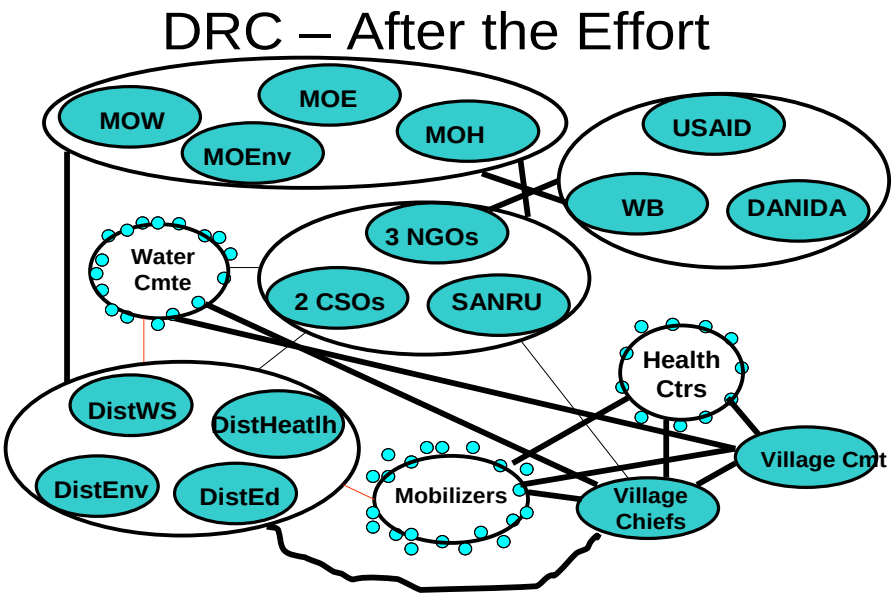
Historically, the health sector has attempted to take small-scale efforts and double or triple them to move to scale. Small-scale processes by their very nature do not mimic large-scale processes; therefore, the assumption that a small-scale effort can be tripled and will automatically become *at scale* is based on the false premise that they do imitate each other.

Plans for implementation at scale will reflect what countries need as well as what hygiene improvement requires. They will bring stakeholders together to develop a common agenda and action plan for improving hygiene. In some cases, HIP will coordinate many small-scale efforts to form the effort at scale. Scale is reached when multiple stakeholders and interventions saturate the same targets with needed activities to adopt and sustain the key hygiene practices that reduce diarrheal disease among a large enough population to have health impact.

[17] SCALE, Academy for Educational Development 2004.

A single right way to take a program to scale does not exist. Rather, working at scale requires a set of program characteristics that are necessary but not always sufficient on their own to achieve sustained new practices. HIP will explore the minimum set of characteristics necessary to achieve hygiene improvement at scale. Interestingly, these characteristics also emerge from behavior change theory and practice, reemphasizing the interwoven nature of HIP's approach. Since the very core of HIP's approach to scale is to address the system level rather than the individual household level, HIP itself will not work directly with individuals and communities but with a range of other groups (NGOs, private sector, media, government, etc.) who do. By targeting systems, HIP will not directly target individual behavior change. HIP will emphasize changing institutional approaches. However, many of these organizational partners will engage in direct household interventions, and these organizations will measure any changes in individual hygiene practices.

Figure 2: This example from the Democratic Republic of Congo of an *at-scale* effort illustrates the interconnected relationships within a system in which HIP might work.



Program Characteristics of Scale

HIP has identified key characteristics that help to achieve scale: multiples (stakeholders, levels, options and interventions), partnerships, private sector involvement, mainstreaming, sustainability and saturation. These characteristics are intertwined when working to achieve scale.

Multiples

To work *at scale,* HIP will ensure that a full complement of players, at different levels, uses a range of interventions and provides appropriate options to promote and achieve sustained change. Key ways programs should be inclusive are:

Multiple Players – Achieving change at scale requires the collaboration of a wide range of health and non-health as well as public and private sector players, to participate in a coordinated effort for

hygiene improvement. Essential stakeholders include various public agencies—water , education, road and water works; agriculture and health ministries; and private sector players including PVOs, FBOs, indigenous and international NGOs, media and manufacturers. For example, addressing the issue of child sanitation (of particular interest to HIP) for both program design and promotion will require support and participation of local cultural experts, health experts, landlords where people are tenants, sanitation infrastructure specialists, local plumbers and contractors, water specialists, researchers, anthropologists, mothers and other caretakers of children, the media, and could eventually extend to other players in policy, taxation and land use.

Multiple Levels – Involving multiple players implies working with players at the international, national, regional, district, community and household/individual levels. This allows for impact *at scale* because working at various levels allows planners to ensure the enabling environment and access to necessary products. Specifically, areas addressed by the various levels might include policy, norms and access to information, products and services. Including regional and local governments, local leadership, raises the responsibility for local actions and local health. In countries especially where devolution is taking place, responsibility and even budgets for water, health and sanitation is fixed at these lower levels. These are also governance issues and HIP intends to integrate with such donor-supported programs, where possible, to ensure continued support for HI by local and regional governments. HIP's subcontractor, ARD, has exceptionally good experience in this arena.

Multiple Interventions – A coordinated strategy for behavior change must involve a range of interventions to address hygiene improvement within a given context. Multiple interventions include: 1) communication through various channels; 2) capacity building through training, supervision and other approaches; 3) service provision, infrastructure, hours and consumer-focused services; 4) increased accessibility of products such as soap, water, containers and water purification products; 5) policy and advocacy at district, national and international levels as well as within organizations; 6) other social and organizational change interventions such as social marketing and community mobilization. It can also include such sectors as school education programs, clinic improvement programs and programs for other public settings. HIP intends to team up with agencies engaged in such sectors as part of its own strategy.

Multiple Options – Having choices is important when encouraging new practices. Often, development has overlooked the importance of offering choices to the poor. These options can be technological (different latrine models for children or soap sizes to assure the poor can afford it) or financial (different financing schemes for technology to assist in adopting or maintaining practices), or sets of practices from which to choose. All choices must be efficacious and should consider a range of issues: urban vs. rural, socio-economic status, gender differences and water access.

Multiple Hygiene Practices – The literature is not clear on the effect of promoting one versus multiple key hygiene practices at a time. In general, behavior change theory supports limiting the number of practices to address at one time, but promoting related cluster behaviors has been successful in the hygiene and sanitation field. Therefore, HIP will examine the implications of working simultaneously with these three key practices to achieve scale and sustained improved behavior and document good practice with regard to the promotion of single or multiple behaviors. In addressing the issue of scale there is less emphasis on ensuring that every practice be perfect but rather on ensuring that as many people as possible adopt the practice even if, at first the use or adoption is imperfect. Thus, it is often more important that householders use soap as often as possible than that they should use it only at the specific prescribed occasion and in specific

prescribed ways. Learning can be sequential and spiral—today learn that washing with water and soap is important, tomorrow learn that washing with soap and water at prescribed times is even more important.

Partnerships
As mentioned earlier, multiple players often work side-by-side but do not reach the same target groups. HIP's role is helping to coordinate these attitudes to realize synergies and achieve economies of scale. HIP will bring together donors to ensure efforts are complementary and to maximize their results. Likewise, HIP will encourage governments to promote policies that support hygiene improvement programming, that enhance private sector partnerships, and that capitalize on donor contributions. HIP's collaboration activities with other donors such as the World Bank, WSP, WSSCC, PPPHW and others is an example of expanding partnerships from advice only to active participation in field efforts (e.g. Ethiopia).

Private Sector Involvement
The private sector is not always included in health and hygiene programming, yet private-sector products are involved in most hygiene improvement efforts. HIP aims to work with a wide range of private sector partners from manufacturing and commercial entities that sell hardware and essential hygiene improvement products, such as latrines, soap and water disinfection treatment options, to non-governmental and faith-based organizations that design and deliver water, sanitation and hygiene programs for various populations.

Mainstreaming
Integrating and routinizing hygiene improvement into existing programs is seen as critical to promoting sustainable, improved hygiene practices. The literature discusses the failure of hardware without the accompanying promotion necessary to effect sustained behavior change. Thus, as hygiene improvement approaches are integrated into a wide variety of programs both in health and non-health areas improved practices are sustained. For example, mainstreaming hygiene into education[18] will mean integrating hygiene improvement information and activities into primary and secondary schools, relevant professional education such as teacher or health worker training, PTA programs, etc. Moreover, schools must have latrines, water and soap available to practice and reinforce proper hygiene behaviors. Mainstreaming hygiene improvement into HIV/AIDS[19] programs would get HIV counselors, PLWHA networks, health workers, home-based care educators and others involved in the system to include hygiene improvement in their activities. The purpose of mainstreaming is to transform hygiene improvement from being an isolated development objective to being a component of various health and development programs.

Sustainability
Hygiene improvement is contingent on positive changes being sustained over time. HIP's approach to long-term sustainability in hygiene improvement will focus on several actions.

Strengthening capacity is a key component of HIP's efforts to achieve sustained hygiene practices at scale. HIP will build the capacity of countries to design, manage and implement behavior change programs around hygiene practices so that these activities can continue long after HIP leaves the

[18] See also the UNICEF / IRC school sanitation and hygiene education programme. http://www.irc.nl/sshe
[19] See IRC's Thematic Overview Papers HIV/AIDS and Water, Sanitation and Hygiene http://www.irc.nl/page/3462

scene. The key to HIP's capacity strengthening approach is to coordinate different actors so that the whole system is refocused and structured to reinforce the improved hygiene practices. By emphasizing the system, for example, integrating hygiene into school curricula instead of only training teachers in proper hygiene practices, HIP intends to break the cycle of training individuals, who leave little behind once they leave the system. HIP will also strengthen the capacity of PVOs/NGOs involved in water, sanitation and hygiene programming to implement hygiene improvement at scale so such an approach and accompanying tools and guidelines will spread through these organizations and be replicated around the world—even beyond HIP's focal countries.

Policy also affects behaviors. Programs at scale must target policies that can enhance or inhibit adopting and sustaining new practices. HIP will work at both global and country levels to contribute to the evidence and knowledge base to support advocacy around hygiene improvement and to streamline policy decisions.

Mainstreaming, as mentioned above, is vital to the long-term sustainability of hygiene improvement. It also changes social norms, which are required to ensure that good hygiene behavior becomes habit. Long-term sustainability of hygiene improvement efforts requires incorporating hygiene improvement practices into ongoing programs that then become a routine part of established efforts, such as nutrition and child survival programs and agricultural extension projects.

Education is an equally vital area of program sustainability. While this goes hand-in-hand with mainstreaming, it places special emphasis on ensuring that hygiene improvement becomes a standardized portion of all educational curricula, i.e. in primary and secondary schools, pre-service training and in training in different sectors. Long-term sustainability requires that hygiene improvement be an established part of generation-to-generation learning, not a one-time campaign or program.

As the Hygiene Improvement Framework clearly demonstrates, hardware and infrastructure along with hygiene promotion and enabling environment are critical to sustainability: one without the others is ineffective and insufficient. In the 1980s and early 1990s, the global community focused almost exclusively on hardware, and the health impact on diarrheal disease incidence was limited. A recoil from this hardware emphasis led to an equally unbalanced emphasis on hygiene promotion over the last decade. And though hygiene promotion yielded some successes, it too was insufficient. As the HIF illustrates, all three components are necessary. Effective, sustainable hygiene improvement efforts necessitate an equitable, appropriate combination of access to hardware, hygiene promotion and enabling environments. Long-term sustainability of hygiene improvement efforts requires that the requisite hardware and infrastructure be in place.

Saturation is vital for changing social norms. Lasting change ultimately depends on a critical mass of people—individuals, families, groups, communities and countries—taking action and implementing new social norms. Accelerating social norm formation can occur when targeted individuals encounter the same focus on key practices at every key contact point in their lives.[20] Individuals then assume the promoted behavior as a social norm and adjust their own behavior to conform to it. And as many psychological and anthropological studies attest, individuals desire to conform to their

[20] Smith et al., Philippines, 2002

social peer group. Peer pressure is a powerful re-enforcer of social messages. Peer pressure accompanied by enabling environments is vital to sustainability.

Marketing Models

Because HIP is also focused on engaging the private sector to achieve scale, it will explore different types of marketing models. In recent years, marketing has become an important aspect of development programming: principles of marketing are used as a management tool to realize public health benefits. This is achieved by examining what products and services are offered and how they are offered; where they are available; what consumers can pay both in terms of time and money; what competes for consumers' time, effort and spending; and how products and services are promoted. The private sector adjusts to these areas to gain or maintain market share. For example, if consumers cannot afford to buy a bar of soap or build a latrine, manufacturers might make smaller bars of soap that are affordable or offer financing schemes for home latrines. In Madagascar, for example or in India, a mix of private and NGO supported marketing models could make latrines more affordable to the poor in peri-urban and semi-urban areas. Water disinfection products can be produced by local companies and distributed through existing networks already reaching remote areas.

HIP's target audience encompasses many impoverished households that need not only safe water and appropriate sanitation, but simple, inexpensive ways to reduce diseases. This target audience is often far from urban centers and their water and sanitation services, and far from traditional resources used by marketers to promote goods and services. But poor people often have extra money that could be spent to improve their health. HIP will explore novel ways to market improved hygiene to people with limited disposable incomes. These include a range of financing schemes, including the appropriate role of subsidies to stimulate market entry and accessibility; advancing a sustainable marketing model; and identifying new incentives for private sector involvement that reduce risk.

Sustainability and Marketing

HIP will work to advance a sustainable marketing model in the water, sanitation and health communities by fostering strategic partnerships among multiple actors, stimulating multiple interventions to present and allow access to the solution, and acting at multiple levels to create a supportive environment. HIP will progressively integrate these activities into the partner's core business so HIP can phase out while ensuring the sustainability of the intervention. In addition, to counterbalance the fragility of economic sustainability, HIP will also consider how subsidies might be used to: a) jump start the commercial market for market entry, including but not limited to product development, testing, and/or market research, b) ensure that the very poor have access to the technologies recommended for hygiene improvement, and c) ensure that public institutions like health centers, schools and marketplaces demonstrate appropriate water and sanitation technologies and model feasible options for hygiene improvement.

Social Benefits vs. Risk

In recent years the private sector has supported development initiatives either to exhibit corporate responsibility or to increase profits by boosting product sales through new markets. Several recent studies suggest that social responsibility does not necessarily increase business opportunities, and

higher prices to support social causes do not increase market share.[21] Recognizing this, the commercial private sector is seeking to reduce risk and to shift the burden of market entry and guaranteed sales to development agencies.

Multinational corporations have been active in many development programs. Several soap companies supported Central America's Public-Private Partnership for Handwashing program; Exxon/Mobil supports bed net subsidies in Ghana; Colgate Palmolive supports the healthy schools program in over 20 countries. Such corporations, responsible for maintaining profits for investors, are generally risk averse.

HIP will seek new arguments to support commercial private sector involvement in hygiene improvement efforts. HIP will build on other successful innovations in health social marketing such as bed net sales and fortified food products. HIP will also explore cogent incentives for involving the private sector as well as ways to reduce private sector risk (beyond bulk pre-purchase of product or general subsidies of products). Finally, HIP will engage the local offices of multinational companies, which may be more willing to invest in activities at the local level to benefit their consumer market.

Influencing Hygiene Behavior

HIP's mandate is to apply behavior change approaches to improve hygiene practices *at scale*. Improved hygiene practices protect individuals from contact with pathogens in the environment. The specific hygiene practices HIP will focus on include: hand washing with soap, safe disposal of feces and safe treatment and storage of water at the point of use.

HIP will draw on the existing evidence base in hygiene promotion and health behavior change to develop an overall strategy and country-specific approaches. HIP will apply a mixed theoretical base appropriate to each particular context, incorporating traditional psycho-social models of individual behavior change; evolving change models which include the role of policy, culture and access to products and services; and systems theory and approaches.[22]

The criticisms of most traditional behavior change theories are that they emphasize the individual's role in deciding to change current practices and that they pay insufficient attention to socio-cultural and physical environmental influences on behavior. In the last decade, however, ecological and social norm approaches have begun to emerge, focusing on increasing participation and enlarging the sphere of influence on practices by considering the effects of systems. Environmental approaches have also emerged, concentrating on changing individual and community practice.

"In environmental programs, the immediate benefits are often negative for the individual."

USAID's GreenCOM Project, an environmental communication program, learned early on that behavior change in the environment is far more complex than in health where individual behavior changes are often rapidly and individually rewarded and where there are few behaviors that need to be addressed. (e.g. Use a family planning method and you have no more pregnancies; get a child immunized and he will no longer get the particular disease). In environmental programs, the immediate benefits

[21] The Economist, April 22-28, 2000.
[22] National Cancer Institute reference

are often *negative* for the individual and require a great many people to practice them before differences and amelioration can be seen. People whose cultural/social practices are being changed from field defecation to latrine defecation are expected to make a heavy investment in the latrine, and the benefits for doing so are neither directly linked to the practice nor the individual. It takes an entire village or large population to adopt the new practice before exposure to contaminated feces becomes sufficiently limited that a noticeable drop in diarrheal diseases can be seen. The Total Sanitation approach directly tackles this difficulty and brings a "group behavior change" approach to the sector, rather than an individual behavior change approach. HIP's scale efforts will also use "group change" models to achieve changes in social norms, while yet understanding that there is an important place for individual behavior change. But it is important to know that current behavior change models in vogue are heavily geared to individual change.

HIP will use an amalgamation of individual and systems approaches, applying lessons learned in the health, environmental health and water systems sectors. Because hygiene behaviors are influenced by a myriad of individual, interpersonal, cultural, institutional, community and policy factors, HIP's approach must be expansive enough to address this range of behavioral determinants. Though a stock approach might be desirable, changing and sustaining new practices is highly dependent on context. Understanding this context will be HIP's first step in developing a behavior change strategy.

To promote improved behaviors, HIP will seek to understand both current and improved practices in their contexts. This will require a careful examination of existing behavior information and may require additional formative research, as needed and appropriate, including multiple consultations with target groups to learn about motivations/supports for improved behaviors as well as practical and perceptual barriers to adopting such behaviors. Complex interactions often occur, and HIP must explore these to develop appropriate behavioral solutions. Motivations for hygiene behaviors, particularly those related to sanitation, do not usually revolve around health issues.

Based on a thorough understanding of the context, HIP will devise a comprehensive, multiple-component behavior change strategy that considers motivations and supports and addresses barriers through actions in many areas—communication, training, policy change, technology, community participation, advocacy—using the basic elements of USAID's Hygiene Improvement Framework. This highlights the importance of approaching hygiene improvement issues at multiple levels and stressing the interaction and integration of factors within and across levels.

Including systems theory widens the focus of behavior change strategies by encouraging change *at scale*. A fundamental concept underlying systems theory is activating interconnected sectors and stakeholders in concert to deliver multiple complementary and reinforcing interventions that reach individuals everywhere they turn in their communities. This concept will reinforce behavior change approaches and strengthen all strategies developed.

Behavior Change Approaches

A strategic behavior change approach must be context specific, however, much is already known about effective approaches to changing hygiene behaviors. And, other health and environmental areas have many documented good practices from which HIP can extrapolate and apply to the hygiene arena. HIP will examine the existing evidence base, apply what is needed, and examine new areas, as appropriate. HIP will also document experience and findings to contribute to the existing literature of good practice.

While the specific behavior change strategy will certainly vary by country, HIP will bring together key stakeholders collectively to:

- Identify priority audience segments for action
- Define behaviors and solutions based on existing practice, resources and culture
- Consider the elements necessary to practice the behaviors effectively
- Delineate those factors most influential in motivating and facilitating improved behaviors
- Coordinate/organize stakeholders to plan and act strategically to influence those multiple factors

General barriers and motivations to performing the three key hygiene practices have been documented. Approaches based on this strategic behavior change approach will be based on available research and best practice data. HIP will continue to add to the knowledge base for these barriers and motivators.

Harm Reduction Model[23]

HIP country interventions will apply and test a harm reduction model. Rather than promoting ideal hygiene behaviors that may not be feasible for priority audiences, HIP will apply the well-honed techniques of negotiating improved practices—working with communities and institutions influential on key practices—to identify feasible behaviors appropriate to the context that may not be 100 percent effective. This approach can encourage more individuals to adopt feasible practices.

This incremental behavior change approach to hygiene improvement compromises by promoting the practice of less than 100 percent adherence to behavior recommendations, or by promoting behaviors that are less than 100 percent efficacious in blocking pathogens. A non-hygiene example, in the area of exercise promotion, would be to promote adding a 10-minute introduction of walking to the daily routine on two days per week, rather than promoting the CDC recommendation of 30 minutes of aerobic exercise at least four days per week. The goal is to introduce the ideal, but to have the adopter move incrementally toward this goal in manageable steps. For hygiene, this might mean promoting a water filter that is highly but not 100 percent efficacious, promoting latrines that meet minimum standards but do not adhere completely to VIP specifications, or promoting hand washing after defecation and food preparation rather than the 26 times a day that would be required for ideal hygiene practice.

In addition to formative research techniques to identify feasible behaviors, HIP will assess the context thoroughly through applying marketing analyses; epidemiological assessments; educational, environmental and organizational diagnoses; and administrative and policy assessments to assist in designing the components for the behavior change strategy.

Promoting All Three Key Hygiene Practices

HIP will promote the improved practice of all three hygiene behaviors, as possible given the country context. Targeting these particular multiple behaviors virtually demands a strategy that incorporates both individual and systems or community approaches. An intervention aimed at influencing washing hands with soap, for instance, would appropriately incorporate the expanded psychosocial approaches, based on increased knowledge and skills, increased perception of risk, sense of efficacy and access to necessary products. All of these elements target the individual (and when targeting

[23] "Harm Reduction Bibliography," Harm Reduction Coalition, 2002. http://harmreduction.org/hrb/hr_bibliography_2002.html.

children, caregivers). A person practicing effective hand hygiene can reduce fecal-oral contamination without the community around them participating. Individuals improving their own latrine use, however, would not necessarily yield improved health outcomes unless a critical mass of the surrounding community also used latrines and disposed of feces appropriately. To influence this behavior, a systems approach is appropriate. A systems approach can also help to make private behaviors public, which in turn exerts social pressure to try and maintain the improved hygiene practices, such as water disinfection. The above examples are not listed to imply a formulaic calculation of the best mix of approaches, rather to highlight that hygiene behavior change requires approaches involving mixed theory and practice.

The Role of Technology and Products

Availability and supply of water, latrines, soap, water disinfectant technologies and other key products is critical to HIP's behavior change approach. Finding solutions to improve hygiene behaviors can be easier or harder depending on the technology available. For example, promoting hand washing to households with piped water will be easier than to households with limited access to river water. In the latter example, the absence of technology makes the practice of hand washing more difficult, and locally appropriate alternatives must be found that can still enable households to practice the behavior.

Sustaining Improved Hygiene Practices

Sustained practices can be encouraged in a number of ways, but evidence indicates the most effective and long-lasting changes include: 1) when visible rewards and positive outcomes can be seen by the practicing households and communities, e.g. five communities in Indonesia witnessed such a significant decrease in diarrheal disease after improving hand washing practices that they maintained this behavior over many years; and 2) when social change occurs within the community, i.e. increased social desirability of the behavior (practice by the elite) or achieved threshold practice by the population, e.g. communities in Bangladesh assess the value of their community based on the number of latrines that are used and hygienic. HIP will learn through formative research what motivations are most immediate and meaningful and incorporate those into programs.

Monitoring and Evaluation

HIP has developed a monitoring and evaluation (M&E) plan that responds to both USAID's core and field-funded programs. The indicators presented in the plan address global concerns, especially those connected to global leadership (Task 4) and knowledge management (Task 6). They also address anticipated mission requests for support that require field implementation (Task 2), capacity development of NGOs and PVOs (Task 5) and integration (Task 3).

The indicators associated with scale, institutional strengthening and individual behavior change are proposed as standard measures across sites to facilitate cross-country comparisons and decision-making. That is, the HIP partnership proposes that such indicators for Tasks 2, 3 and 5 be used consistently across country programs. Only new, essential data necessary for HIP will be collected, analyzed and used. Existing data-gathering mechanisms will be used to the extent possible.

The M&E plan proposes a range of data collection approaches that include qualitative and quantitative methods. Participatory evaluation methods and traditional survey methodologies will be used when applicable. Data gathered will be used by program implementers, program managers and USAID at the central and field levels. Both methods and approaches used will satisfy the

information needs of the different stakeholders. HIP is aware of the guidelines concerning both research and monitoring and evaluation for health sector projects funded by USAID. Following those guidelines, it proposes to use methodologies such as sentinel sites, lot quality assurance sampling (LQAS) or 30-cluster sampling to reduce the cost of data gathering at the household level.

HIP proposes to measure the extent to which scale is reached with an effort index. Because HIP must achieve scale in country programs, the effort index is associated with Task 2. The effort index integrates a systems approach and the hygiene improvement framework. The effort index addresses aspects of hygiene promotion (communication, education and social marketing) as well as aspects of the enabling environment (policies, institutional strengthening, community involvement and financing and cost-recovery). The effort index will be developed, tried and refined while implementing of HIP's activities at the country level.

HIP's M&E plan includes indicators that measure both process and effectiveness of programs at scale at the international, institutional and individual levels. Those indicators are associated with each of the tasks and will be presented later when the tasks are described in more detail. Although indicators at the individual level are included in HIP's M&E plan, these will be measured by implementing agencies and will not be HIP's responsibility. However, HIP will ensure that these indicators are included in activities implemented by partners in the field.

TASK 1

HIP will develop a comprehensive hygiene improvement strategy for field activities over the life of the project. The strategy will document how HIP will plan and implement each task outlined in the contract. It will include a comprehensive behavior change component, define scale, and outline a combination of approaches that HIP will utilize to improve hygiene behavior *at scale*.

TASK 2

HIP will implement its strategic approach to improve the quality hygiene improvement interventions at scale in a minimum of five countries. By the end of the project, HIP will have strengthened capacities to plan, implement, monitor and evaluate a systems approach to hygiene improvement in at least five countries. HIP will also have documented and shared key information. HIP will have trained staff from national and private sector institutions to provide ongoing, pre-service and in-service capacity building without intensive external support. Partner institutions will have acquired key competencies that they can then apply to other technical areas.

USAID has outlined several elements to guide the implementation of Task 2. These are to:

- Design programs to achieve large-scale implementation
- Design program approaches to develop human resources and build capacity for hygiene improvement that can be institutionalized at country level
- Design and implement operations research
- Develop, test and refine appropriate strategies and tools for monitoring and evaluating hygiene improvement in field settings

Whenever possible, HIP will address the three key practices of hand washing, safe storage and treatment of water at the point of use, and safe feces disposal by complementing existing country

activities or by facilitating a comprehensive approach at scale. Good practices in behavior change will be incorporated into all field interventions.

HIP will seek opportunities to integrate hygiene into other health and non-health technical areas to achieve scale. This approach will also allow HIP to access the ample funds available in other technical areas such as education, HIV/AIDS, nutrition and Title II. Integrating hygiene improvement into other technical areas reinforces the comprehensive, systems approach and contributes to sustainable programming. At the country level, HIP will unite Task 2 and Task 3 to address program sustainability by integrating hygiene into other sectors and technical areas, and thus will increase the likelihood that activities will continue beyond the project lifecycle.

The key elements of HIP's approach to country implementation are to:

- Respond to USAID mission strategic objectives
- Collaborate with international organizations to leverage resources and extend scale activities
- Work closely with international PVOs and NGOs to assure focused implementation and efficient use of resources

Current Situation

Evidence regarding the impact of hygiene improvement in reducing diarrheal disease is indisputable and impressive. Hand washing, sanitation and safe drinking water have reduced diarrhea rates by 30-45 percent. Yet few USAID missions have explicit hygiene and sanitation objectives or strategies within their country portfolios, nor do most missions have "water teams" to assure water, sanitation and hygiene approaches are included in maternal and child health objectives. Without these explicit objectives, funding is more difficult to rationalize, and HIP will need to position itself with appealing offerings that resonate with mission strategies.

The challenge of obtaining solid mission support for implementation at scale is immense. The competition for field support is steep. Both within USAID missions and within countries, a divide between providing a safe water supply and offering hygiene and sanitation further stresses the availability of funding for comprehensive hygiene improvement.

"The challenge of obtaining solid mission support for implementation at scale is immense. Competition for field support funds is steep."

HIP works at the nexus where technology and people meet. The millennium development goals have anchored the importance of water and sanitation for economic and social development. Donors and countries are investing in water systems to meet the MDGs and to provide safe water to large segments of the population. This can be seen, to some degree, as reaching scale. Yet, it is rare to have an accompanying hygiene and sanitation funding stream (either loans or grants) or programming requirements to bolster this investment in hardware and to ensure that the hygiene and sanitation efforts are reaching the same level of scale and are sustained over time.

Strategic Approach

USAID has experience supporting water, sanitation and hygiene programs and expertise in behavior change dynamics, scale and systems issues in several sectors. HIP will draw and build on USAID's experience and expertise to implement hygiene improvement at scale. To apply behavior change strategies effectively, HIP will collaborate closely with those providing infrastructure because technology supports behavior change.

HIP will integrate the overarching principles of Task 2 into field implementation as thoroughly as conditions allow and will include:

- Consistently using a systems approach to maximize uptake and impact of interventions *at scale*
- Employing comprehensive approaches that address all domains of the HIF and that focus on behavior change
- Engaging partners from the public, private and non-profit sectors working at multiple levels
- Supporting the implementation of a set of individual and collective behavior change approaches for hygiene improvement to address social norms that will generate and maintain change
- Strengthening local institutional capacity to implement, including building sustainable resources for training within national institutions, schools and NGO networks

Missions want to maximize the impact of their health programs without increasing their management burden. Thus HIP's ability to provide technical assistance for scale activities working through existing mechanisms is appealing. To do this, missions may direct existing mechanisms to work with HIP to include hygiene improvement into their programs. HIP's limited management structure may require less funding than stand alone projects.

"Missions want to maximize the impact of their health programs without increasing their management burden. Thus HIP's ability to provide technical assistance for scale activities working through existing mechanisms is appealing."

HIP's initial interactions with USAID missions highlighted mission responsiveness to reaching scale and to HIP's offering of core funds to begin the process. Thus, the basic elements of HIP's strategy in reaching missions are to coordinate or provide technical assistance for implementation at scale, to work through existing mechanisms and agencies to the extent possible, and to invest core funds to start a program with the intention of securing field support to continue programming.

Identifying Potential Countries

Working closely with its CTO and partners, HIP will identify potential implementation countries, interested partners and funding configurations to support hygiene improvement at scale. HIP will only implement country activities with approval from the USAID missions. HIP will pursue four strategies to improve hygiene at scale:

- Supporting USAID country missions interested in funding hygiene improvement activities with field support funding
- Collaborating with other donors that have funds for in-country implementation, such as the World Bank's and WSP's hand washing and water and sanitation programs (also Task 4)

- Working with PVOs and NGOs where each partner brings its own resources with USAID mission approval (also Task 5)
- Engaging the private sector

Supporting USAID Missions Directly
As a USAID contract, HIP's primary mandate is to support country missions in achieving their strategic objectives. Because the mandate includes working on hygiene improvement at scale, USAID and/or other donors must invest extensively in hygiene improvement to work *with* HIP. The funding must be directed to hygiene improvement and/or water supply activities, but it does not have to go *to* HIP.

Therefore, a mainstay of the HIP strategy to attract mission field support includes establishing an early and visible HIP presence both in-country and at the global level. Through its integration, global leadership, capacity strengthening and knowledge management tasks, HIP aims to make concrete and valued contributions that should interest missions. Some examples of such contributions are: integrating behavior-focused hygiene improvement into World Bank and Water and Sanitation Program approaches and WB missions; reviewing the PVO Grant Technical Resource Materials (TRMs) to ensure integration of hygiene and scale approaches into nutrition and other TRMs; participating in global leadership forums such as UNICEF, WHO and WaterAid initiatives; and offering core indicators to measure hygiene improvement across projects and documenting good practice.

HIP considered the priorities of mission health officers when designing its project marketing. Always underscoring the high impact of hygiene improvement interventions, HIP offers technical assistance to:
- Incorporate hygiene improvement into existing child survival programs
- Integrate hygiene improvement into other health or non-health programs
- Design, plan, implement and monitor hygiene improvement programs at scale that promote hand washing, sanitation and safe drinking water at point-of-use
- Utilize the right mix of approaches and interventions to promote hygiene behaviors at scale
- Build coalitions and develop capacity of interested stakeholders to advocate and to formulate policy
- Use hygiene improvement to engage private sector partners
- Complement hygiene and sanitation infrastructure investments with strong hygiene behavior change programming for improved health outcomes

"HIP anticipates coordinating efforts of various PVOs and NGOs to participate in joint planning and implementation that together could achieve an approach at scale in one country."

Collaborating with Other Donors
Recognizing the essential role of water infrastructure and availability in engaging in improved hygiene practices, HIP will look for strategic opportunities to complement current and planned water and sanitation infrastructure investments. HIP's partnerships with the World Bank, WSP, the Netherlands Trust and the regional banks will help to identify these opportunities and demonstrate how hygiene promotion is critical to the success of large infrastructure projects. Naturally even these partnered efforts (also Task 4) will require mission approval.

Working with PVOs and NGOs
NGOs and PVOs are important water, sanitation and hygiene actors. CORE members and other NGOs receiving child survival funds included limited hygiene and sanitation activities into their child survival approaches. CORE members are particularly receptive to incorporating new approaches to behavior change that work at the community or systems-level. These groups, however, have not traditionally achieved scale.

In collaboration with some CORE members and other NGOs, HIP is developing a funding alternative to mission field support for implementing hygiene improvement at scale. HIP anticipates coordinating efforts of various PVOs and NGOs to participate in joint planning and implementation that together could achieve an approach at scale in one country. The pilot efforts of CARE, CRS, Plan International, WaterAid and others have increased water, sanitation and hygiene coverage and helped to shape approaches in the field. Intellectual leadership is emerging from IRC/Netherlands and CORE members around implementing and scaling up water and sanitation programs.

HIP intends to work closely with interested PVOs and NGOs where they have critical mass to bring their own resources to contribute to an effort at scale. Early discussions with these organizations suggest interest. HIP intends to explore what can be achieved through existing funding streams without requesting additional field support from the participating country mission. HIP will also seek opportunities to engage local NGOs and CBOs, favoring local universities and institutions for research and evaluation and using local rather than international expertise where possible.

Engaging the Private Sector
After selecting a focal country, HIP will identify and include private sector agencies as direct participants in hygiene improvement planning and implementation. HIP will also consider these entities as potential sources of funding and technical assistance. Rotary International and the commercial private sector (Coca Cola, Colgate Palmolive, Lever Brothers, Pepsi and Proctor and Gamble (P&G)) have already supported hygiene improvement programs. HIP's marketing activities and its participatory approach encourage a wide range of partners. Other agencies, such as PSI, are already functioning in many countries to stimulate production of POU products, and HIP will partner with them where appropriate. HIP will encourage other commercial private sector agencies such as Unilever (a HIP resource agency in India) and P&G to collaborate where possible. Moreover, commercial distribution channels can be accelerated through links with NGOs and local CBOs that can facilitate access and affordable options. HIP's private sector focus is particularly appropriate in an era when USAID is focused on strengthening local/national economies. HIP will contact local manufacturers of soap, latrines and water disinfectant products to assess capabilities and opportunities. As an example, HIP intends to use local soap manufacturers where possible and encourage local business to provide hygiene services and products. This tactical approach resonates with governments and missions and is one that AED has found to be fruitful and cost-effective.

Criteria for Identifying Countries
HIP clearly defined flexible but essential criteria for implementing hygiene improvement *at scale*. These include:

- Solid mission interest in integrating hygiene improvement into existing programs to achieve family and child health objectives specifically for diarrheal disease control

- Demonstrated current or near-future availability of funds, whether from USAID field support for implementation at scale or from funds directed to other implementation partners, and cooperating agencies that support hygiene activities
- An enabling environment suitably hospitable to implementation at scale, such as policies and general support from federal institutions like the ministries of health, water and education; a certain degree of political stability to allow geographic access to much of the country; other donors contributing to ensure a stable water supply on which any hygiene improvement must depend[24]
- Multiple stakeholders already implementing some facet of water and sanitation improvement, who are willing to collaborate on shared goals
- Geographical balance – with the emphasis on Africa and representation of at least one Latin American and one Asian country

Note that these criteria are intentionally subjective and require discussion and interpretation, rather than an algorithmic formula to screen a country for implementation or not.

Building Local Capacities/Avoiding Parallel Structures
These country selection criteria assume that HIP will focus on building local institutions and working in partnership with existing USAID cooperating agencies already established in country, rather than setting up parallel structures for implementing approaches at scale. This implies embedding HIP assistance and approaches into existing structures, essentially de-emphasizing HIP presence and promoting strengthened capacity of local partner institutions.

Strategic Efforts

Outreach
HIP will employ several marketing strategies to attract initial USAID mission field support commitments. HIP's strategy involves general and personal contact with country missions, strategic offering of core funds to seed potential future funding from the mission, working through PVOs, NGOs and relevant commercial companies, and leveraging USAID existing funds and interest in water and sanitation, and partnering with World Bank and other funded stakeholders.

Prior to and following the HIP contract award, USAID/Washington sent an introductory e-mail to health officers in all missions to invite them to address child health objectives in their portfolio through HIP. This invitation yielded some response, but few missions sent concrete commitments of field support to invest in hygiene improvement at scale. HIP CTOs and technical staff communicated with colleagues at interested missions to identify opportunities for exploratory visits.

Early in its first year, HIP reconfigured its approach to gain country support and designated modest core funds to attract mission interest and leverage other funding. USAID sent out a HIP-developed Mission Challenge, an innovative marketing strategy that offered an initial outlay of HIP core funds ($100,000 – $200,000) to selected USAID countries where missions expressed an interest in HIP's approach and showed a current or future financial commitment to hygiene improvement activities.

[24] Howard, Bartram. Domestic Water Quantity: Service and Health. World Health Organization, 2003.

While few USAID missions responded to the challenge, it provided entry points for HIP through personal contact with interested health officers in missions. HIP will offer core funds for technical assistance to start a country-level activity, while leveraging and coordinating existing activities funded by USAID and/or other sources. In this way, missions reduce their risk of investing in a newly emerging project such as HIP with few documented results.

Leveraging Strategic Opportunities to Work at Scale

HIP's strategy to engage Ethiopia in *at scale* efforts is an alternate implementation model. It recognizes opportunities that complement water and sanitation infrastructure investments to stimulate hygiene improvement at scale. HIP will explore this model to determine its viability.

USAID's country strategy does not explicitly identify hygiene and sanitation interventions as a means to achieving strategic objectives. Nevertheless, USAID/Ethiopia engages in these areas through its existing child survival projects and the Millennium Water Alliance.

Since signing its contract, HIP has participated in regular discussions with World Bank and WSP to collaborate on global and country-level activities incorporating a behavioral approach to implementing the Hygiene Improvement Framework, specifically to applying state-of-the art approaches to hygiene promotion to accompany water and sanitation infrastructure investment.

HIP received an invitation to work with WSP and the World Bank to develop a process for implementing the national hygiene and sanitation strategy, including hygiene promotion to complement water infrastructure. Following this work, WSP and the World Bank requested that HIP submit a proposal to help develop implementation guidelines, using a learning-by-doing approach in Amhara. In this effort, HIP would provide technical assistance and leverage regional government, NGOs, UNICEF, other international donors and USAID-cooperating agencies in a coordinated hygiene improvement effort at scale. Additionally, the World Bank will consider enhancing existing hygiene and sanitation efforts by targeting water systems in places where this work is already occurring.

HIP and USAID/Ethiopia also discussed hygiene improvement. The mission invited HIP to apply for PEPFAR funding to integrate hygiene into home and clinic-based HIV care and support programs in collaboration with Centers for Disease Control and PSI.

Implementation

Applying the principles outlined in the above section, HIP will provide technical assistance to cultivate a systems approach to hygiene improvement. Although this will be a continuous process,

HIP's role will decrease over time as national counterparts and other technical assistance partners engage multiple stakeholders in hygiene improvement.

HIP will adapt and modify the SCALE approach developed through USAID's GreenCOM project, to stimulate and maintain hygiene improvement at scale. This approach draws on several systems approaches and incorporates tools and strategies from proven models. The most useful tools are in the area of systems thinking for strategic planning.

By the end of year one, HIP will have identified at least two countries for *at scale* implementation. HIP will have also engaged in preliminary discussions with the USAID mission. By year two, HIP will have agreed upon initial work plans and budgets with two country missions, negotiated collaborative agreements with key partners, established a country presence and begun the process of implementation at scale. Significant progress will be made toward identifying other potential

"HIP will provide technical assistance to assure that good practice in hygiene behavior change is incorporated, messages are harmonized, key actors are coordinated, and institutional capacity is strengthened."

countries, so that by the end of year two, HIP will have established a country presence at scale in at least two additional countries. [N.B. This strategy presumes an adequate level of funding to accomplish four programs at scale.]

Some ambiguity remains in how to identify whether a country activity is at scale. USAID/Nepal provided a small amount of technical assistance funding at contract signing and quickly supplemented these funds through field support for HIP assistance on a fairly narrow scope of work that focuses on developing a point-of-use marketing plan. Political conditions are challenging and forbidding, lending doubt that geographical scale can be obtained.

After HIP sets country agreements with the mission and key country counterparts, it will implement the basic steps of a SCALE approach to hygiene improvement.

Prepare
To begin the process, HIP will:

- Establish a HIP in-country presence, including a country coordinator and an appropriate place to situate the coordinator
- Identify the range of key donor, governmental, NGO and private sector stakeholders vital for participating in planning hygiene improvement at scale
- Assess the market: the players, options, size and trends
- Map the context graphically, including networks, relationships, hardware and software resources
- Access all relevant behavioral, social and epidemiologic data, and analyze them for hygiene improvement applications and gaps
- Conduct additional formative research as needed

Catalyze/Partner/Strategize
Early in the process, HIP will facilitate a participatory advocacy and planning session with multiple stakeholders who were identified in the preparation phase. The outcome of these sessions will be commitments from these players to work individually and in concert toward the common goal of

hygiene improvement at scale. This phase will culminate by defining a behavior change strategy that reflects shared goals, strategies and individual stakeholder action plans. HIP will identify formative research gaps and essential missing components for programming at scale. HIP will also seek to identify resources to fill essential gaps.

Act

Multi-sectoral partners will implement the shared behavior change/hygiene improvement strategy, including hardware and software components. Because of the funding realities, HIP will not finance partners to implement hygiene improvement interventions. Rather, HIP will provide technical assistance to assure that good practice in hygiene behavior change is incorporated, messages are harmonized, key actors are coordinated, and institutional capacity is strengthened. Any limited implementation and program funds HIP receives through field support or other mechanisms will likely support the above actions. HIP may develop and produce key support materials currently unavailable but identified as cross-cutting and essential, such as a radio soap opera or a hand washing reminder material for placement at school latrines. HIP might also develop pre- and in-service training curricula and support materials with ministries or training institutions to build capacity.

Monitor/Assess/Value

To improve the quality and standardization of monitoring and evaluation among participating partners, all country efforts will incorporate monitoring and evaluation to document program impact. HIP will work with implementing partners to incorporate core indicators and to build capacity in applying rapid-catch assessment and survey tools that will be developed as part of HIP's monitoring and evaluation strategy. It will draw from the HIF Indicators and Assessment Guide.[25]

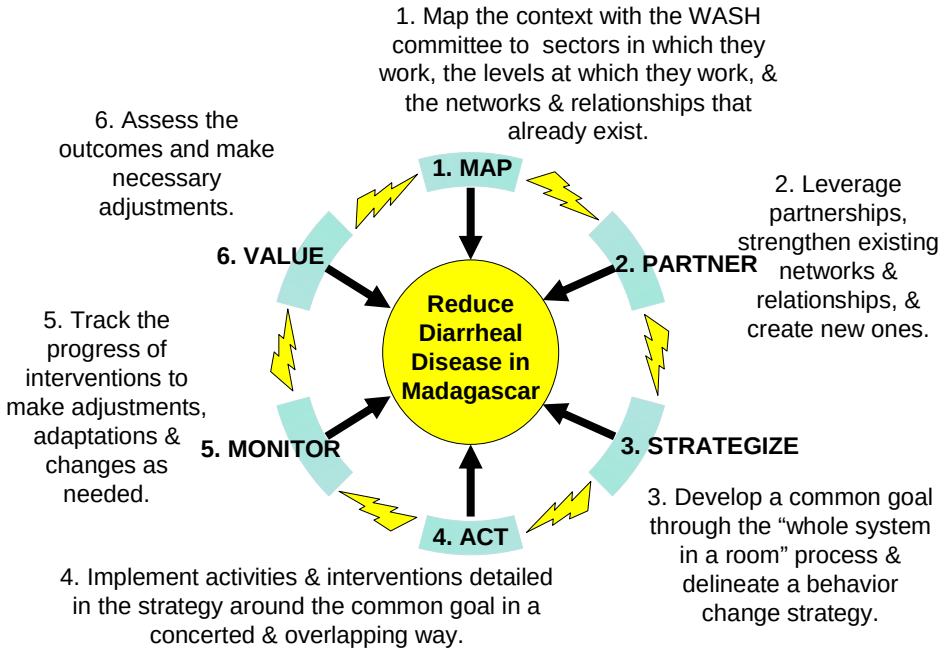
Adjust/Keep Acting

Based on monitoring and evaluation data, changes in infrastructure, changes in funding environment or stakeholder implementation experience, the participating partners will adjust the hygiene behavior change strategy as needed and continue implementation. HIP's technical assistance will likely shift emphasis from implementation to monitoring and evaluation as activities are coordinated and harmonized and messages and behavior change strategies are strengthened.

[25] Joint Publication 8, The Hygiene Improvement Framework: A Comprehensive Approach for Preventing Childhood Diarrhea, 2004.

Strategy for Scale in Madagascar

The HIP team will use the SCALE model already developed and used by USAID's GreenCOM project. HIP has modified the model slightly for the hygiene improvement context. The scale process steps developed for the Madagascar hygiene improvement context are delineated in the diagram below.



Challenges

Getting mission field support dedicated to hygiene improvement may be a formidable challenge, given the overall funding environment and the absence of hygiene improvement in most USAID child and family health portfolios at country level. HIP may revisit the commitment to work in five countries at scale.

HIP will need to demonstrate the project's uniqueness and potential for high impact hygiene improvement interventions to missions. The challenge will be to stimulate extensive multi-sectoral participation in the scale approach in a short timeframe and to document impact on strategic objectives. These early successes will then be shared with other missions to build credibility for HIP approaches and encourage mission support.

Many challenges exist in securing the necessary funds for a hygiene improvement effort at scale in a given country. These are discussed in more depth in the Overview of this document.

Monitoring and Evaluation

HIP will attend to dual evaluation objectives—country-level documentation of process and impact; and progress toward achieving state-of-the-art (SOTA) hygiene indicators to be applied globally.

HIP's systems approach to reach scale assumes that different stakeholders will be mobilized to support hygiene improvement practices. To capture the extent to which stakeholders are engaged and to design the appropriate support structure for promoting and adopting hygiene practices, HIP proposes to use a hygiene improvement effort index based on the HIF**.** This index offers the opportunity to give a country/state/province a grade for its commitment to hygiene improvement. It also allows interested parties to track changes in the grade over time.

HIP is also interested in ensuring that the USAID core hygiene improvement indicators are incorporated into the different hygiene improvement activities being implemented by partner organizations at the country level. These indicators are household-level indicators. HIP will not be responsible for the conduct or management of household surveys, rather for working with country partners to harmonize and integrate core indicators into their existing data collection mechanisms and/or for supporting their use of new cost-effective sampling techniques for household surveying.

HIP will also work, as possible and feasible, with MEASURE Evaluation to identify innovative, cost-effective strategies to collect household-level information. HIP will make suggestions to both missions and country program partners using cluster sampling and LQAS as possible M&E strategies. Consideration will be given to the need to aggregate data collected through different partners using equivalent methodologies in specific countries to get a better sense of whether or not behavior change scale is being achieved at the national level when HIP is participating in the implementation of country-wide programs.

Types of Indicators HIP will use for Task 2

- #/% of targeted institutions with implementation/integration/replication capacity score higher than x%
- # of institutional partners replicating hygiene improvement programming capacity development with affiliates
- # of collaborative efforts jointly identified by type of organizations (PVOs, NGOs, networks)
- # of approaches developed for integrating hygiene improvement into other health and non-health programs (e.g. nutrition, family planning, maternal health, education)
- # of institutions engaged in dialogue to implement activities at scale
- # of participants in training event by type of training and institutional affiliation
- # of institutions integrating hygiene improvement into curriculum or strengthening existing curriculum on hygiene improvement
- % of trainees mastering relevant knowledge
- % of trainees applying newly acquired knowledge/skills
- Volume of sales of hygiene improvement products promoted by type of product as reported by wholesalers

Expected Results

- Five countries will have strengthened capacities to plan and implement a systems approach to hygiene improvement; monitored and evaluated the efforts; and documented and shared key information.

- National and private sector institutions will be trained to provide ongoing, pre-service and in-service capacity building without intensive external supports.
- Partner institutions will be agile enough in employing key competencies that they can apply them to other technical areas.

TASK 3

One element of HIP's strategy for improving and sustaining key hygiene practices focuses on integrating hygiene improvement into other health and non-health technical areas and into all sectors of society to achieve impact at scale. Hygiene improvement is a multi-sectoral issue requiring multi-sectoral approaches, and all stakeholders—in public, private and civil society and in all technical sectors (health, agriculture, education, environment, water and sanitation)—must be involved in the effort to improve the key hygiene practices.

USAID has outlined several elements to guide the implementation of Task 3, which are:
- Provide technical assistance to integrate hygiene promotion into HIV/AIDS programs more effectively
- Implement integrated programming in the context of multiple platforms, e.g. Title II and IMCI, and in at least one African country
- Design and implement operations research in at least one country to demonstrate the efficacy of integrating hygiene into HIV/AIDS care strategies
- Develop innovative approaches for implementing integrated population-health-environment programs
- Provide technical assistance to collect and analyze information on special needs of the urban poor

HIP's strategy for improving the quantity and quality of hygiene improvement programming builds on the Hygiene Improvement Framework and utilizes a systems approach to design and implement behavior-focused hygiene improvement programming. This approach to integration uses multi-sectoral partnerships and programming across technical areas to bring about improvements at scale in the three key hygiene practices. It is sustainable because it builds the capacity of public agencies and PVO/NGOs and introduces cost-effective opportunities to commercialize hygiene products, in addition to integrating hygiene improvement into a range of sectors.

Current Situation

The strong interrelationships between diarrheal disease and other health outcomes support integrating hygiene into multiple platforms to increase the scale, impact and sustainability of hygiene improvement. Studies show, for example, that 50-90 percent of people living with HIV/AIDS (PLWHA) experience potentially life-threatening diarrhea.[26] HIV/AIDS, child survival, nutrition and other health and non-health programs offer the institutional infrastructure (field presence, staff and systems) that can support successful hygiene improvement efforts.

Integrating hygiene into education has already demonstrated results. Water and sanitation projects are supporting integration efforts that include school sanitation and hygiene and/or infrastructure

[26] Hayes, et al., 2003

development as components. Evidence shows that separate, appropriate and well-maintained sanitation facilities with adequate supplies of soap and cleaning materials coupled with hygiene education can reduce dropout rates (particularly among girls) and can create conditions where children themselves are agents of change among their families and communities.

Other integration possibilities exist, but have not yet been tested or documented.
Health workers in PLWHA programs can educate caregivers on diarrhea prevention and control with behavior change strategies that emphasize soap, timing and frequency for washing hands, and safe disposal of young children's feces. Health workers can offer technologies associated with POU disinfection, or simple technologies such as tippy taps that improve water use efficiency. Programs can highlight the importance of water and review the minimum amounts of water necessary to ensure a reduction in opportunistic infections.

Existing programs offer an ideal organizational and programmatic context to introduce hygiene improvement. They also provide an added route for sustaining improved behaviors and achieving scale. The USAID Title II program framework, for example, advocates for including hygiene promotion activities in its programs. Other successful program approaches (Hearth Nutrition Model, IMCI and HIV/AIDS care and support) also include hygiene improvement components. However, gaps exist in quality and effective programmatic linkages at the field level.

While a strong conceptual basis has been established for the links between hygiene and other sectors, program integration has been limited. Very little has been published on the impact and operation of such programs, so it is very difficult to determine how and where integration is occurring and how successful these programs are. For instance, although hygiene improvement is being integrated into community-based HIV/AIDS and nutrition programs, it is not known whether these materials contain the key hygiene messages or whether home-based care providers or nutrition counselor training include a hygiene component.

Strategic Approach

HIP will strive to integrate hygiene improvement programming at two levels: at the global level and in countries. HIP will provide program guidance on how to incorporate hygiene improvement behavior change approaches into HIV/AIDS care and support policies, strategies, programs and implementation tools. In countries, HIP will work at scale to improve the three key hygiene practices. HIP will collaborate with partners to adapt program guidance to specific program and country contexts and to integrate hygiene into national guidelines, training modules and counseling and mass media materials.

The systems approach that HIP espouses to improve hygiene at scale reinforces Task 3's objective by emphasizing a thorough understanding of current hygiene practices and engaging multiple stakeholders from a variety of sectors in participating in a comprehensive behavior change approach.

HIP will integrate hygiene improvement components into health and non-health areas in four ways by:

- Engaging in joint activities to promote key hygiene practices to and through existing sectoral programs,
- Conducting operations research,

- Developing and encouraging uptake of program tools and approaches
- Strengthening organizational capacity to incorporate hygiene improvement offerings into existing programs.

Strategic Efforts

HIP will begin by researching current approaches and models of integration. HIP will then develop and test two to three implementation plans and conceptual approaches to integrating hygiene improvement into health and non-health programs, in collaboration with partners.

Develop Joint Activities to Promote Hygiene Improvement

HIP will work with a range of programs to incorporate hygiene into existing activities in an attempt to ensure long-term sustainability, to capitalize on the synergies that exist between sectors, to keep costs low and to maximize limited resources. HIP will engage other sector programs to identify common linkages and to determine a shared vision so the benefits outweigh the added complexity of managing multi-sectoral partnerships. In addition, HIP will collaborate with cooperating agencies and other USAID-funded projects (e.g. FANTA, IMPACT etc.) to review policies, program designs, implementation plans and materials to identify opportunities to integrate hygiene improvement.

Develop and Ensure Uptake of Tools and Approaches

HIP will assess the capacity of the organizations delivering programs and develop training plans and tools based on these assessments. HIP will draw these tools from existing materials, research reports and programs, where possible. Some additional country-specific materials may be necessary, particularly for non-health partners. Opportunities for integrating hygiene improvement into programs outside the HIP focus countries will be reviewed on a case-by-case-basis.

Strengthen Organizational Capacity

HIP intends to work at multiple levels, with organizations from multiple sectors, to incorporate hygiene efforts into existing development programs. For example, HIP may collaborate with local governments to integrate hygiene improvement into a range of activities. HIP may also assist local governments and NGOs to develop the capacity of community-based organizations to include hygiene into their programming. HIP will strengthen PVO/NGO capacity in hygiene improvement at country and headquarters levels so these organizations can replicate hygiene integrations efforts across countries.

Operations Research

Operations research may be necessary to study how effectively hygiene can be integrated into existing programs. The implementation of operations research will be determined by country needs and opportunities. HIP will seek field funding for operations research, when applicable. HIP will also coordinate operations research efforts with the HARP project when possible.

Given the current HIV/AIDS pandemic, HIP may use operations research to assess how hygiene improvement can contribute to HIV/AIDS programs. Operations research may help to fill gaps in understanding by answering the following questions:

- What constraints do PLWHA and their caretakers encounter at home to practice appropriate hygiene behaviors?
- What constraints to improved hygiene practices do institutional HIV care settings encounter?

- What constraints do HIV+ mothers face when preventing mother-to-child transmission of HIV?
- Does training caretakers of PLWHA (adults and children) in home and institutional settings lead to the adoption of improved hygiene behaviors by adults and children receiving care?
- Are the support systems operational, and do they contribute to hygiene behavior adoption and sustainability?
- Does the adoption of hygiene behaviors by caretakers of PLWHA in home and institutional settings lead to reduced diarrheal incidence among PLWHA?
- What is the impact of the key hygiene improvement behaviors on diarrheal disease reduction in PLWHA?

Operations research can also be conducted on other issues such as hygiene programming that targets the urban poor. The following are illustrative questions that HIP might explore:

- What are the hygiene needs of the urban poor?
- What constraints and opportunities do programs targeting the urban poor need to address?
- How effectively have public and private sector institutions catering to the urban poor incorporated hygiene improvement programs into their activities?
- Which strategies have yielded the best results?

As other operations research questions around integration arise, HIP will consult closely with USAID to determine which areas should be emphasized.

Challenges

The integration mandate is not limited to hygiene improvement. In fact, programs throughout the health sector are seeking ways to integrate key health topics into existing programs, particularly programs that are currently well-supported such as HIV/AIDS and malaria. The challenge, then, is to ensure uptake and maintenance of hygiene improvement practices in existing programs, without confusing people with too many messages that lead to incomplete adoption of improved practices.

Funding integration efforts may be a challenge, especially for monitoring and evaluation and operations research. Very little is known about the success or failure of existing integration efforts. Operations research may help to determine what approaches are working and why. It could also evaluate past and ongoing integration efforts to determine lessons learned and good practices. Implementing agencies are generally reluctant to fund operations research or evaluation, and HIP has little discretionary funding to use for such efforts. The funding situation may require HIP to partner with other organizations or leverage funds from other organizations or USAID missions.

Integrating hygiene improvement activities into health and non-health sectors will require resources for training, strategic planning and developing guidelines and materials. NGOs, PVOs and government agencies may be unable to devote resources for the development of materials unless the benefits clearly outweigh the cost.

Monitoring and Evaluation

HIP will monitor and evaluate its integration efforts at both the global level and in focal countries. Overarching monitoring and evaluation indicators for Task 3 could include:

- # of approaches developed for integrating hygiene improvement into other health and non-health programs (HIV/AIDS, nutrition, FP, MCH)
- # of health and non-health programs that have integrated hygiene improvement into their activities

Expected Results

- PEPFAR proposal guidelines will include hygiene improvement information and activities
- At least three technical platforms in HIP focal countries will include hygiene improvement information and activities
- At least eight international NGOs/PVOs will have adopted a HIP approach to integrating hygiene improvement into one of their health or non-health platforms
- USAID global and mission programs in child survival, HIV/AIDS and other areas will have integrated hygiene improvement and HIP tools into their global/mission programs
- HIP will have developed and disseminated a guideline for integrating hygiene improvement into various types of programs

TASK 4

Through Task 4, HIP will project USAID's contribution to hygiene improvement onto the global stage. Task 4 activities will also establish hygiene improvement internationally as a critical, low-cost approach to improving health outcomes. The goal of Task 4 is to support USAID to advance global leadership for hygiene improvement. USAID identified the following key elements to guide implementation of Task 4:

- Identify key elements of an advocacy strategy to increase demand for hygiene improvement programs, services and products for both internal (global, regional and USAID missions) and external audiences
- Support USAID to convene, as necessary, international meetings on hygiene improvement and health related to Task 2 in collaboration with partners
- Test and refine appropriate indicators for measurement of hygiene improvement
- Support USAID to achieve consensus on indicators
- Support USAID to build organizational linkages with international partners e.g. Public-Private Partnership for Handwashing, The International Network to Promote Household Water Treatment and Storage
- Support USAID to collaborate on the international level with global and country partners for sanitation, advocacy and policy e.g. WASH, WSSCC (Water Supply and Sanitation Collaborative Council)
- Conduct joint field tests with other partners to apply hygiene improvement tools

Each key element above has implications for all other HIP tasks. In pursuing the goals of Tasks 2, 3, 5 and 6, HIP will address several of the Task 4 goals.

Current Situation

Given USAID's multiple activities in water and hygiene (bilateral country programs with hygiene improvement components, stand-alone bilateral programs, support for international initiatives and PVOs/NGOs) and the financial support provided to other international and multi-lateral agencies (WHO, UNICEF, World Bank, UNDP), USAID is already active in many areas. However, total investments are difficult to calculate and dispersed funding arrangements mean that USAID is not often given the recognition it deserves. Moreover, USAID not only funds activities but is also an important repository of much of the world's knowledge about water resources and hygiene improvement. The recently concluded Environmental Health Project produced many current state-of-the-art best practices that are being accessed and used by various organizations around the world.

"With developing-country urban areas growing at more than three percent, the number of urban poor with real water and sanitation needs is growing and will increase, not lessen."

USAID needs to reassert its leadership, particularly in the arena of hygiene improvement, which does not receive international support commensurate with the critical role of diarrheal disease.

Two actions are critical for USAID to be recognized as a leader: U.S. support of Millennium Development Goals and a more strategic dispersal of funds.

Millennium Development Goals

Since 2000 when the UN established the Millennium Declaration and its eight development goals, donors have increased funding in water, sanitation and hygiene. The Netherlands, DFID and JICA, for example, have substantially increased their efforts in this arena. At a time when the world seems to be coalescing around achieving the Millennium Development Goals, the U.S. Government has never officially adopted them.

The recent 2005 summary review of the MDG health goals,[27] presented to the World Summit for action, omitted hand washing or point-of-use water disinfection as two of the proven low-cost ways to reduce diarrheal disease or infant mortality. Instead, the document focused on clinical/curative measures such as oral rehydration solution (ORS).

Evidence indicates that efforts around water and sanitation are falling far short for many poor people. The 2005 statistical overview of the MDGs indicates that some 2.6 billion people still lack appropriate sanitation, even with the gains that have been made since 2000. With developing-country urban areas growing at more than three percent, the number of urban poor with real water

[27] "Just five diseases — pneumonia, diarrhea, malaria, measles and AIDS — account for half of all deaths in children under age 5. Most of these lives could be saved by expanding low-cost prevention and treatment measures. These include exclusive breastfeeding of infants, antibiotics for acute respiratory infections, oral rehydration for diarrhea, immunization, and the use of insecticide-treated mosquito nets and appropriate drugs for malaria. Proper nutrition is part of prevention, because malnutrition increases the risk of dying from these diseases. Better care for mothers and babies before and after birth would address the challenge of the one third of these deaths that occur in the first days of life."

and sanitation needs is growing and will increase, not lessen, and donor countries must resolve to address these issues.

Strategic Funding

Many governments are focusing their substantial grants on a few key, but narrow strategic areas. Some targets are very ambitious and not limited to small-scale actions. The Netherlands, for example, has focused entirely on supporting the MDGs related to sanitation – providing latrines for more than 55 million inhabitants of developing countries. The funding is for technical assistance and infrastructure development (including latrine construction)—very real products for the poor. A recent multi-million dollar grant from the Netherlands to WSSCC and similar large grants to other international agencies (UNICEF, UNESCO) have also fueled the perception that the Netherlands is leading in hygiene improvement. USAID's effort to concentrate on drinking water quality at the household level for the poor does indeed address the water target within the environmental MDG.

Today many NGOs and PVOs spend more than the U.S. Government on water and hygiene issues. For example, Plan International's annual $40 million budget includes a sizable contribution to water issues, and water and hygiene budgets for CARE, the Red Cross, International Rescue Committee and CRS are also quite large. Recent emergencies in have helped focus the world on water's critical role in human survival, and the heroes of these emergencies have been the NGOs and PVOs, albeit with USAID funding.

Within hygiene improvement, sanitation is the issue most difficult to address. Sanitation installations are expensive, especially for the rural poor, and the products are heavy and often difficult to distribute. Knowledge about care and maintenance is weak, yet the needs are startling. In a recent survey in Nepal, fewer than 17 percent of the population had access to a latrine, the quality of which was often substandard. In Madagascar 7 percent of the population has access to a latrine. Providing approaches that ensure access to sanitation options and promote proper use and maintenance are areas in which USAID can focus and emerge as a leader.

Strategic Approach

HIP will support USAID on the global stage wherever possible and ensure that country-level activities that have international implications are documented and shared with the water, sanitation and hygiene communities. HIP will help USAID to take the lead in integrating hygiene improvement activities within the entire development context. In addition to outside leadership, HIP will help to promote hygiene efforts within the Agency in ways that will illustrate how integrating simple, proven, effective hygiene interventions into development programs can improve public health outcomes around the world. Moreover, HIP will encourage USAID to make strategic partnering decisions, help to make international initiatives more effective, and promote linking with other international agencies to maximize scarce resources.

As the NGO/PVO community has become increasingly active in steering the international agenda, their contributions must be considered and valued. Governments often base their decisions on research reports, recommendations and background papers produced by NGOs and PVOs who advocate for them. The NGO community welcomes discussion with international, multinational and bilateral agencies, but feels it is best equipped to develop the intellectual framework to address poverty issues. NGOs hold parallel meetings around UN/governmental conferences and develop

their own platforms for action. HIP will work within this NGO community under Tasks 4 and 5 to promote USAID goals and strengths.

Finally HIP will work with ongoing efforts to harmonize indicators for monitoring and evaluation so that standard measures can be used around the world.

Strategic Efforts

Provide Policy Leadership and Advocacy for Integrating Hygiene Improvement into Programs

Hygiene improvement activities indirectly affect almost all USAID strategic objectives. HIP, in tandem with USAID/GH/HIDN/EH, will promote hygiene improvement efforts among other USAID programs and projects to accelerate hygiene integration. HIP will strive to identify opportunities to influence policy within the Agency: for example, all new projects might be required to identify opportunities to integrate hygiene where possible and relevant. Without an explicit policy in place, HIP will work with existing projects and programs at both global and country levels to identify integration opportunities. For example, HIP is currently reviewing the Child Survival and Health Grants Program's technical reference materials and providing guidance to several global health programs on integrating hygiene into its programs and materials. With very little effort and funding, hygiene can be incorporated into training programs, materials and media messages.

Identifying high profile champions to promote strategic approaches can be an effective tool to garner increased support for development causes. As an example, USAID's Administrator hosted a dinner for First Lady Laura Bush at the 2005 World Summit to promote USAID's malaria strategy, particularly the treated net programs that have saved the lives of countless people. Over time HIP will assist USAID to identify such hygiene champions to advance the importance of this issue at home and abroad. HIP will also support USAID to host one or more conferences to share its findings with other departments. These events will raise the profile of hygiene improvement within the Agency and seek to increase political, financial and technical support. HIP will also support USAID efforts by providing appropriate documentation, materials, PowerPoint presentations and research/M&E results that can validate the importance of hygiene improvement as an independent sector as well as for integration into such issues as HIV/AIDS.

In addition to USAID, HIP will call upon PPPHW, UNICEF, WSSCC and others to encourage other international agencies to initiate similar efforts within their own agencies.

Make Strategic Partnering Decisions

HIP will help make USAID's hygiene improvement partnerships more strategic. For example, USAID funds the PPPHW secretariat to collaborate with other agencies and to implement hand washing programs in selected countries. HIP will assist USAID to engage PPPHW in reexamining its role and focusing efforts on strategic inputs that yield maximum results.

Few agencies have the World Bank's reputation to assist in country policy formulation and to influence the UN. Through its lending policies, the Bank also has the ability to include hygiene improvement into all relevant declarations and programming. Such strategic realignment will enable USAID to increase its leadership role.

Emerging Opportunities

The growing Avian Flu pandemic may provide an opportunity for USAID and HIP leadership to integrate anti-flu hygiene messages and behavior change approaches into its own work and that of others. Though transmission modes are not clearly defined, the CDC suggests improving individual hygiene, including hand washing.

USAID's leadership in HIV/AIDS support provides additional opportunities to integrate hygiene, contribute to the research base and lead the world in assuring proven interventions are used to get results.

UN documentation suggests that the rural poor pay five to twelve times more than urban residents for water. HIP will assist USAID in addressing equity issues in the sector by developing and promoting a package of pragmatic, realistic and strategic water, sanitation and hygiene options. HIP can also assist in repackaging groundbreaking research, e.g. water supply research published by WHO, and exploring ways that USAID and other agencies can address the issues raised. This research can be used as an entry point to forge partnerships and new collaborative efforts.

Promote USAID's Goals and Strengths Among NGOs

Tasks 4 and 5 converge in many ways. In water, sanitation and hygiene, NGOs, including CARE, CRS, Millennium Water Alliance and WaterAid, are extremely vocal, eloquent and able to advocate and formulate policy. HIP intends to be active in this NGO community and become accepted as an equal partner to bring USAID's strengths and influence to this growing and important community. HIP will do this by attending NGO/PVO forums, participating in the intellectual discussions and presenting papers.

Develop and Promote M&E Protocol and Standardized Indicators

HIP can help USAID to fill specific gaps in the field. In particular, HIP will work with USAID and other international partners to assist in developing a centralized monitoring and evaluation protocol. Further, HIP will assist in implementing M&E efforts to provide the evidence that supports hygiene improvement. With sufficient USAID funding, HIP can provide clear technical leadership in this area.

HIP can support USAID's efforts to standardize indicators and collection methods for water, sanitation and hygiene improvement. At present HIP's involvement in efforts of USAID-supported agencies to formulate indicators is only occasional. To maximize HIP's effectiveness, USAID must utilize HIP M&E staff in the intellectual discussion around indicators. HIP will become familiar with what has been tried and failed and will understand the goals for tracking indicators. HIP will work with WHO and the JMP as well as with agencies like UNICEF and the World Bank, all of whom are anxiously looking for indicators around hand washing, in particular. For example, HIP could evaluate the World Bank's programs and provide simple indicators for hand washing. HIP will also provide USAID with M&E guidance to evaluate programs and to identify other research efforts such as the DHS survey indicators.

Develop and Promote Sanitation Marketing Methods

The MDGs refer to improved latrines, but these are scarce, and few countries have adequately promoted them. In collaboration with the WSSCC, HIP will explore developing sanitation marketing models that will stimulate the market so that products are more accessible. HIP will focus simultaneously on the behaviors associated with improved sanitation. In particular, HIP will try to focus on public settings, such as health centers, schools and communities, to provide models for the poor as well as promoting disease-free areas safe for the public. As part of its comprehensive approach, HIP will develop sanitation support methods that international agencies can share. HIP will also focus on sanitation models for young children. Little is known about this issue, and HIP will contribute to the evidence and promote USAID as a leader in this area.

Challenges

The above strategy is intended to show that a systematic approach will assist HIP in achieving its Task 4 objective to support USAID to advance global leadership for hygiene improvement. As HIP interacts more fully within the international water, sanitation and hygiene context, it will highlight U.S. leadership within the sector, despite the current de-emphasis of the MDGs. For HIP to assist USAID in developing monitoring and evaluation activities and demonstrate leadership in this area, the project will need to place more emphasis and more resources on this area.

Monitoring and Evaluation

To demonstrate USAID's commitment to hygiene improvement, HIP will extrapolate from its activities the numbers of people it has reached. USAID can use these numerical data (numbers of deaths averted, diarrheal disease cases averted, etc.) in public forums and conferences.

Illustrative Indicators

- # of implementing agencies using HIP models/approaches
- #/% of institutional recipients of how-to publications that have used them to design/implement activities
- # of indicators refined/validated

Expected Results

- Two international agencies will have adopted standardized indicators for measuring hand washing
- Two international agencies will have accepted HIP guidelines on how to structure activities for PLWHA programs
- In response to USAID requests, HIP will have collaborated on at least two public panels each year promoting HI and produced and distributed relevant materials
- HIP will have collaborated long term in two countries with other international organizations in sanitation marketing
- HIP will have developed long-term relationships with at least four agencies, providing short-term support (review of prospective programs, identifying TA) that will substantially improve the quality of their work

- HIP will have at least one international private sector partner collaborating on programs
- HIP will have collaborated on providing the evidence base for the approaches and models to be used in hand washing through HIP's M&E efforts

TASK 5

Water, sanitation and hygiene program efforts to strengthen capacity have traditionally focused on discrete, single-focused activities such as hygiene materials development, masonry training or distribution of water treatment products. These efforts have not emphasized the overarching processes and capacities needed to carry out efforts at scale.

USAID has outlined the following elements to guide the implementation of Task 5:
- Provide technical assistance to organizations and PVO/NGO networks
- Build sustainable capacity for hygiene improvement programming
- Develop capacity strengthening tools
- Document PVO/NGO implementation of enhanced hygiene improvement programming

Using mutual learning and a participatory approach to capacity strengthening and to hygiene improvement at scale, HIP will work with at least three PVOs and NGOs, two umbrella organizations and one network to strengthen capacity to design, implement and evaluate hygiene improvement programs at scale, focusing on improved and sustained hygiene behaviors. This approach will result not only in additional implemented, integrated and replicated hygiene improvement programs at scale, but also in enhanced capacity of targeted institutions to implement, integrate and replicate hygiene improvement at scale.

Current Situation

Past environmental health projects and programs have worked extensively with PVOs and NGOs, networks and umbrella organizations. These activities traditionally have focused on single-task activities such as materials development (produce posters), hygiene promotion (train community hygiene promoters), infrastructure provision (cap wells, construct latrines), or product provision (distribute soap) as well as, often, corresponding capacity. This lack of cohesive, comprehensive efforts and a proliferation of piecemeal capacity strengthening activities have reduced the potential effectiveness of these hygiene interventions. There has been little emphasis on the overarching processes and procedures requisite for hygiene improvement at scale, such as working at multiple levels with multiple stakeholders, implementing multiple appropriate interventions or providing multiple options. While a solid foundation has been established, more is needed. While building on this solid foundation and continuing these relationships, strengthening the overall capacity in hygiene improvement programming is needed, focusing on institutional and organizational capacity needs at the headquarters and country level.

Strategic Approach

The essence of a collaborative effort is developing and planning activities that are mutually beneficial to all partners and players, and to the extent possible, constructing a plan of action that addresses one or more of each individual organization's mandates. A successful partnership is based on several fundamental premises that include developing a forum that enriches all partners, encouraging

an environment that promotes equal sharing and learning among all partners, increasing communication and understanding of common goals and objectives among all partners, and providing clear expectations and defined roles and responsibilities for all partners. It also includes each partner bringing available resources to the enterprise as a prerequisite to participating in the partnership. HIP will base all its Task 5 activities on these fundamental premises.

Task 5 will respond to programmatic and technical needs of hygiene improvement *at scale* by:

- Identifying interested partners, establishing possibilities for going to *scale* collectively and working with them at multiple levels, on multiple interventions and with multiple stakeholders
- Reinforcing and strengthening capacity in policy making, mainstreaming tactics and integration approaches, and identifying resource partners for hardware and infrastructure provision
- Identifying partners with resources, expertise and interest in pursuing a specific, needed research topic and by assisting in the design of the research to ensure that information gathered is essential, targeted and useful
- Collectively developing capacity-strengthening forums that directly correspond to identified capacity needs, ensuring availability of expertise and resources to address these needs, and providing opportunities to apply and refine skills learned/shared

Each year's activities will build on the activities of the preceding year, thereby creating and bolstering the foundation needed for hygiene improvement efforts at scale. HIP will use a variety of strengthening modalities, including peer education, mentoring, coaching, distance, formal and informal training sessions, workshops and seminars. Though partners will collectively select topics and capacities for development, some possible focal areas might be: use of a systems approach and systems thinking; hygiene policy design; development of comprehensive, behavior change strategies *at scale*; knowledge management; and monitoring and evaluation.

Strategic Efforts

Through Task 5, HIP will support and increase the hygiene improvement programming capabilities of selected partners. The main thrust of this task will be to work collaboratively with at least two umbrella organizations, at least three individual PVOs/NGOs, and at least one network; and in at least two countries, to work intensively with a local partnership. Task 5 capacity-strengthening activities will focus on changing hygiene behavior at scale. Task 5 will encourage dynamic partnerships and interactive sharing and learning opportunities for both HIP and participating groups, organizations and networks. Assessment and strategic planning, both informal and formal, will be the starting point for all participating in Task 5 activities so that HIP can learn with its partners about their needs. This learning will guide the design of activities that will address identified capacity gaps. In turn, Task 5 will enable HIP to leverage expertise and resources of its capacity-strengthening partners. HIP will identify existing mechanisms that will allow HIP to work with these organizations and networks, to draw them into the HIP activities, and to assist them in their own organizational activities. While building organizational capacity, HIP will document the capacity-strengthening process and adapt clear capacity-strengthening

"Assessment and strategic planning, both informal and formal, will be the starting point for all participating in Task 5 activities so that HIP can learn with its partners about their needs."

guidelines and indicators for hygiene improvement programming. Finally, Task 5 will enable at least two partners to train other, similar organizations as early as the third year of the project through mentoring or peer-skills transfer programs. HIP will integrate Task 5 with Tasks 2, 3 and 6.

Task 5 will work with four target groups: the CORE Group; individual PVOs/NGOs such as Christian Children's Fund, Plan International and WaterAid; networks such as the Network for Water and Sanitation (NETWAS) or the West Africa Water Initiatives (WAWI); and in-country representatives of the PVOs/NGOs such as CARE Ethiopia and Vohary Salama/Madagascar. To work in these four arenas, HIP will collaborate to develop comprehensive training and capacity development materials to address collectively identified needs, processes and capacities required for hygiene improvement *at scale*.

The first year will focus on fundamental activities requisite for long-term capacity strengthening, including selecting partners, establishing solid relationships, strategic planning, including capacity assessment and development of partner plans of action as necessary, and designing initial capacity-strengthening activities. These activities will include involvement from AED, Manoff, IRC/Netherlands, ARD, IRC/New York representatives as well as interested PVOs/NGOs. Documentation and knowledge management will be ongoing throughout the project as needed and appropriate.

Second-year activities will build on identified needs and relationships started in year one and providing specific technical assistance to the partner PVOs and NGOs collectively and individually. In year two, HIP will also begin to develop its hygiene behavior change toolbox for work at scale and will complete it in year three. Initial modules and sessions will be based on the needs clearly identified in year one. Implementation at scale in a partnership selected country will begin in year two (see also Task 2). ARD will play a key role in WAWI activities, and IRC will be involved in NGO/PVO capacity strengthening activities regarding knowledge management.

The third year will focus on continuing activities and efforts *at scale* started in year two and providing capacity strengthening opportunities both for headquarter staff and for in-country staff. The third year will be used to finalize many of the tools and materials developed and tested in year two as well as designing and developing the next needed set of tools and materials. Evaluation of activities carried out to date will be conducted and adjustments made accordingly. Year three will also see the start of in-country mentoring and peer education from our partners to in-country counterparts—both international and indigenous.

"Task 5 also faces two significant opportunities because of HIP's approach to capacity strengthening—eagerness of partners to participate and wealth of experience and expertise available through a solid partnership."

Fourth-year activities will focus on the continuation of behavior change capacities and implementation as well as the in-country capacity strengthening of counterparts and indigenous partners. HIP will focus on knowledge management to ensure all needed tools and materials have been completed, packaged and disseminated as well as designing an additional, broader dissemination plan for pieces developed.

Fifth-year activities will focus on completing evaluations of activities and documenting lessons learned. Throughout the five years, periodic seminars will be held to share lessons and to discuss challenges and opportunities for additional hygiene improvement at scale activities.

Challenges

Task 5 faces two main challenges to successful completion. While HIP and partnering organizations will all bring financial support to the efforts and strengthening activities, budgets are tight, and funds have already been programmed for other activities. HIP will creatively work with partners to alleviate this challenge by programming and planning early, assisting with budgeting of activities for partner agencies, preparing justification pieces for funding decision makers within the partner organization to use when vying for funds, and collectively developing a strategy that makes the best use of the funds available. Time, on the other hand, will continue to be a challenge throughout the project. As with all partnerships, each member must divide time between organizational work and voluntary work on the capacity-strengthening effort. HIP will seek to reduce this challenge by programming and planning early and developing a clearly defined and executable strategy that will allow partners to better manage their time and participation in activities.

However, Task 5 also faces two significant opportunities because of HIP's approach to capacity strengthening—eagerness of partners to participate and wealth of experience and expertise available through a solid partnership. By respecting what each partner and partnering organization brings to hygiene improvement capacity strengthening, HIP and its partners will significantly expand their human capital and potential in-kind resources.

"HIP's knowledge management strategy focuses on establishing and managing environments so that people can access, use and create information and share knowledge to help advance hygiene improvement programming and the uptake of sustained, improved hygiene practices."

Monitoring and Evaluation

As with all Task 5 activities, monitoring and evaluation will be participatory, hands on and strengthening-oriented. Overarching monitoring and evaluation indicators associated with Task 5 include:

- # of collaborative efforts jointly identified by type of organization (PVO, NGO, network)
- #/% of targeted institutions with implementation/integration/replication capacity score higher than X% on the institutional capacity index
- # of institutional partners replicating HI programming capacity-strengthening with affiliates

Expected Results

- Increased number of collaborative efforts jointly identified by PVOs, NGOs and networks
- Enhanced capacity of targeted institutions to implement, integrate and replicate hygiene improvement at scale

- Increased number of targeted institutions that can implement, integrate and replicate hygiene improvement at scale
- Improved materials and methods for strengthening capacities to implement hygiene improvement at scale
- Increased number of institutional partners replicating hygiene improvement program capacity-strengthening with affiliates

TASK 6

HIP's fundamental goal is to engage partners at multiple levels—policymakers, program managers, the private sector, country-level implementers and donors—in exchanges that will advance the state of the art in hygiene improvement and expand evidence-based programming at the country level. HIP's knowledge management objective is to improve the strategic use of knowledge for hygiene improvement by getting the right information to the right people at the right time at both the global and country levels. HIP has defined knowledge as "information in use"—uniting knowledge management's two main characteristics: information and capacity to use the information.[28] HIP's knowledge management strategy focuses on establishing and managing environments so that people can access, use and create information and share knowledge to help advance hygiene improvement programming and the uptake of sustained, improved hygiene practices.

USAID has outlined several elements to guide the implementation of Task 6:
- Develop and maintain an interactive web site
- Develop a strategy to link resources, activities and networks of diverse organizations
- Transfer experience strategically
- Produce targeted publications on priority issues
- Publish articles in peer-reviewed journals

Knowledge management will support the work of all other tasks under HIP by ensuring that the knowledge generated is accessible and relevant and that good practice is documented and incorporated into programming. HIP will establish concrete structures and systems to ensure technical quality and ready access to usable information.

Current Situation

While much has been studied, written and documented about the efficacy and effectiveness of HIP's three key hygiene practices—hand washing, safe disposal of feces and safe treatment and storage of water at point of use—the knowledge base[29] around hygiene improvement programs and good practice remains elusive. This is either because programs have not been documented or because the effort has been so small or so contained that the information and lessons from the programs have not been adequately shared.

In particular, only insufficient information about approaches and programs that aim to change and maintain key hygiene behaviors is available. Gaps identified by numerous actors in the water, sanitation and hygiene arena include materials and guidelines to implement hygiene behavior change

[28] See IRC website: http://www.irc.nl/km
[29] Knowledge base refers to the collections of quality-assured information and knowledgeable people.

programs. It is important, therefore, to review what information exists and needs to be repackaged for different audiences; what knowledge exists but needs to be captured, stored and disseminated appropriately; and what knowledge still needs to be discovered.

"If a water disinfection treatment is not 100 percent effective, is it still beneficial to promote a change in behavior if the result is reduced incidence of diarrhea?"

In addition to behavior change, several information gaps exist in understanding the role of technology while promoting hygiene. For example, if a water disinfection treatment is not 100 percent effective, is it still beneficial to promote a change in behavior if the result is reduced incidence of diarrhea? This question and others, including the role of hygiene improvement in other health and non-health programs such as HIV/AIDS or education, still need to be studied, documented and disseminated appropriately to contribute to a more robust knowledge base.

Additionally, very little documentation exists about working *at scale* to improve hygiene practices. This is largely because most hygiene programs have been pilots and have not been scaled up successfully.

Though lack of information is one focus, knowledge management is more than just information. Three other factors make knowledge management even more critical than in the past. Knowledge that can only be volunteered and resides in people's heads is increasingly transitory, so it must be captured before it is lost. The fluid work environment where people move frequently often requires systems to support knowledge generation and sharing. New tools are available to manage knowledge more quickly and efficiently than ever before. While the Internet is an excellent medium to hold information collections and to organize communication among HIP's target groups, organizing knowledge-sharing events and capacity-building activities are equally important to maintain focus on connecting people who share knowledge.

In-country capacity for collecting, storing and sharing information and knowledge is often lacking or limited to a basic report that may not adequately capture the extent of existing knowledge. Several organizations have begun to address country capacity for managing knowledge, including IRC, WEDC and others. HIP can strengthen these efforts, particularly in countries where HIP will focus on implementing hygiene improvement at scale.

Strategic Approach

Knowledge management is essential to the success of any hygiene improvement effort at scale and as such, it will support all tasks under the HIP contract. Knowledge management has two distinct mandates to ensure that: 1) information flows, and 2) knowledge is developed and shared appropriately. For information to be used, it must also be promoted and shared proactively. Task 6 will explore expanding local capacity to advocate for and share knowledge. HIP's objective is to improve the strategic use of knowledge for hygiene improvement, first by getting the right information to the right people at the right time, and later by facilitating and strengthening capacity for international and local organizations to capture and manage knowledge themselves.

As HIP starts its work at scale through exploratory country visits and other start-up activities, HIP's knowledge management team will first focus on establishing the groundwork and the systems necessary to collect and store relevant information so that others can find it easily. The HIP web site will function as the central repository while recognizing that knowledge sharing and capacity strengthening depends more on face-to-face and interpersonal than digital contacts.

As HIP pursues efforts at scale and coordinates activities among all key stakeholders working in hygiene, HIP's knowledge management team will map out the networks of people and organizations involved. HIP will also ensure that knowledge management capacity is strengthened at all levels in tandem with efforts to enhance technical knowledge in improved hygiene practices.

In particular, at the country level, HIP will act as a knowledge-hub by identifying the most relevant hygiene improvement knowledge and tools and making them available to those who seek them.

Strategic Efforts

Task 6 will respond to the knowledge management needs of hygiene improvement *at scale* by:

- Developing internal communication structures to share knowledge
- Ensuring strategic transfer of experience
- Creating information
- Strengthening the capacity of other organizations to manage knowledge

Developing Internal Communication Structures

Internal communication will support HIP tasks and ensure that all partners understand HIP's ongoing and prospective activities. HIP will apply a knowledge management lens to all of its other activities to ensure that HIP is identifying and gathering knowledge through the various tasks. In addition, writing and editing support will provide a cross-over between other tasks and Task 6. Further, in collaboration with other relevant tasks, knowledge management will work to support information requests from both USAID and others, as appropriate and as feasible.

HIP will communicate regularly with partners through several channels, including a biweekly update (HIp-LIGHTS), periodic phone conversations and annual partner meetings to share information, to facilitate collaborative activities and to provide updates on activities. An Intranet, open to project partners, will be part of the HIP web site. It will facilitate information sharing and project collaboration. Knowledge management also ensures that HIP produces high-quality, timely deliverables, such as quarterly reports, trip reports and annual reports. Knowledge management supports all the tasks within HIP, and results will likely appear in the other tasks as well.

Ensuring Strategic Transfer of Experience

HIP will aim to get the right information to the right people at the right time in a manner that is easily usable. HIP will establish and maintain systems for collecting and sharing knowledge that are strategic and targeted. Promising practices in hygiene improvement may exist but have not been adequately shared. HIP will first establish criteria to ensure technical quality and then document and disseminate promising practices that can be replicated and/or adapted to the local context. Project documentation will capture lessons quickly and share them with multiple audiences in accessible ways. Using targeted dissemination strategies and links to existing information channels, HIP will push state-of-the-art hygiene information into communities at multiple levels, including partners,

program managers and policy makers. The web site will function as a central repository of HIP's knowledge for those who seek out current information. HIP's relationships with both international and local organizations will focus on building the hygiene improvement knowledge base.

At the same time, HIP will prepare targeted materials and presentations for major international conferences and smaller country-focused meetings to share new findings and strategies being adopted for hygiene improvement. As country experiences flourish, HIP will focus on bringing these experiences to international attention.

An obvious extension of the emphasis on implementation at scale is encouraging application of successful approaches in other places. This strategic transfer of experience can be facilitated by disseminating implementation information through multiple channels and in multiple formats (for example, moderated discussion groups, low-cost print-on-demand materials or CD-ROMs of guidelines, or publication in peer-reviewed journals). For replication, however, information content is as important as format and channel. Peer-reviewed articles that are necessary because they establish an intervention's effectiveness but contain only scanty details of the actual implementation will be supplemented by guidelines and training materials to ensure adequate transfer of implementation know-how. HIP will also encourage South-South collaboration: mentoring of those who wish to replicate interventions by those who have participated in them.

Creating Information

HIP will ensure that relevant information is generated to enhance hygiene improvement activities *at scale*. HIP will create information because it fills a gap, rather than because it exists. Working closely with Tasks 2, 3 and 5, Task 6 will assist to develop training materials and to identify and produce state-of-the-art publications, particularly on results from HIP's hygiene improvement approach *at scale*. Another strategic way to engage a variety of stakeholders is to hold periodic electronic conferences around specific topics of interest. These conferences will bring different stakeholders together and generate new information or thinking around these issues. Finally, to promote adoption of state-of-the-art approaches in hygiene improvement and to support HIP's advocacy goals, Task 6 will seek to publish articles in peer-reviewed publications.

Strengthening Knowledge Management Capacity

HIP will work with a range of organizations and networks to ensure that quality hygiene knowledge is widely available and used to improve hygiene practices long after HIP has left the scene. Through technical assistance, training and monitored follow-up activities, HIP will work closely within countries to build capacity within existing institutions to filter, repackage and disseminate information to specific target audiences, so this can also continue after HIP. Tailored assistance might include special compilations of tools or bibliographies, assistance in launching a list serve or community of practice or strategic knowledge management training to enhance an organization's ability to capture its own information. In addition to strengthening the capacity of organizations, HIP will focus on engaging networks in sharing and managing knowledge at all levels through communities of practice, visits to centers of excellence and targeted meetings.

Challenges

Identifying and collecting information and knowledge is a formidable challenge. It requires time, resources and constant effort to keep the information and knowledge needs on the agenda and current.

The evolution of information communication technology has made communication quicker and more accessible in many arenas. It is important to remember that these new tools are but channels to assist in making knowledge available, not a panacea. First, in many parts of the world, electronic connectivity is a dream. In places where access exists, it often remains impossible to get the information—the technology is often cumbersome, documents are too large to download, organizational structures are rigid, and information is hoarded or printing costs are excessive.

Moreover, this age of instant communication requires new skills and information literacy techniques to determine the quality and validity of the information itself. New information filters are needed so the right information can be found in a timely manner. Filtering requires additional sets of new skills. The culture of electronic communication is new to many, and thus, searching for information and contributing to online communication and knowledge development requires a host of new behaviors and skills.

As mentioned earlier, the knowledge base on hygiene improvement programming may exist for small pilot activities, but programming at scale has not been documented. HIP will undertake the challenge of identifying the knowledge that exists but has not been captured on hygiene behavior change programs. Another challenge will be to identify appropriate ways, not fully dependent on new technology, to share promising practices with field implementers.

HIP will make hygiene improvement good practices and approaches available to a wide range of audiences for replication and scale up. Good practices help program implementers use lessons learned to avoid repeating past mistakes, to move the field forward and to bolster the effectiveness and efficacy of future investments. In addition, HIP will contribute to developing a hygiene improvement community of practice.

Monitoring and Evaluation

The indicators proposed for Task 6 are associated with the project's global leadership function. The indicators focus on three major points: 1) the production of documents that summarize the models, approaches, lessons learned and results achieved by HIP interventions; 2) the use of these materials, with an emphasis on the extent to which the proposed good practices are being adopted or adapted by other institutions in their hygiene improvement interventions; and 3) the extent to which hygiene improvement documentation centers in countries where HIP implements activities are strengthened via training, materials, equipment, etc.

HIP will use the following indicators for Task 6:

- # of implementing agencies using HIP models/approaches
- #/% of institutional recipients of how-to publications that have used them to design/implement activities
- # of technical documents (models, SOTA papers, lessons learned documents, peer-reviewed documents) produced by type of document
- # of documentation centers established or strengthened
- # of networks able to capture, share and manage knowledge
- Proxy indicator—web statistics: # of different users/# of downloads

Expected Results

At the end of five years, HIP expects to have the following results:

- KM systems will be established to allow knowledge sharing to continue after the project has ended
- Hygiene improvement tools and guidelines will be used in all HIP country efforts *at scale*
- Articles will be published in peer-reviewed publications
- Hygiene center of excellence will be developed in each HIP-focused country
- Hygiene improvement networks that share knowledge regularly will be functioning

CONCLUSION

The Hygiene Improvement Project is pleased to submit this five-year strategy to USAID in fulfillment of its Task One deliverable.

Annex 1

HIP GLOSSARY

Advocacy is any action directed at changing the policies, positions or programs of an institution, including governments. It is raising the public profile of an issue and building support to address that issue through social change and legislative and policy reform.[30]

At Scale is used to describe a program or project in which the coordinated actions of many stakeholders work on a common goal to the social benefit of targeted groups. It is dependent on the convergence of skills, interventions and availability of products and services at the same time, in the same places to benefit the same targeted communities reaching enough people to have a health impact.

Scale is reached when multiple stakeholders and interventions saturate the same targets with needed activities to adopt and sustain the key hygiene practices that reduce diarrheal disease among a large enough population to have health impact.

Program Characteristics of Scale

Multiple Players: All stakeholders from various public agencies (e.g. ministries of water, education, energy and mines, agriculture and health) and private organizations including private voluntary and faith based organizations, indigenous and international NGOs, media, manufacturers and other commercial companies.

Multiple Levels: Working with players at different levels, including international, national, regional, district, community and household/individual.

Multiple Interventions: Using a range of different interventions within the program including, communication through various channels, capacity building through training, supervision and other approaches, ensure availability of services and infrastructure, policy and advocacy, social marketing and community mobilization.

Multiple Options: Offering technological, financial, or behavior change choices to the target groups to improve uptake of improved hygiene practices

Multiple Hygiene Practices: Working simultaneously with the three key hygiene practices: safe feces disposal, hand washing with soap, safe storage and treatment of water at point of use.

Partnerships: Engaging multiple players each of whom brings available skills and resources to work in a coordinated fashion to reach the same target groups.

Private Sector Involvement: Engaging manufacturers and other commercial entities in hygiene improvement efforts since private-sector products are involved in most hygiene improvement efforts

[30] WHO

Mainstreaming: Integrating hygiene into other platforms both health and non-health and helping to make hygiene improvement a central development cause and making core hygiene messages and practices routine.

Sustainability: Ensuring that improved practices continue to be practiced over time.

Behavior Change: Approaches used to motivate individuals to practice an improved behavior.

Behavioral determinants are factors that most influence or 'determine' how key behaviors are practiced.

Bottom-up is a strategy for planning or interventions that is driven from the local or community level. Bottom-up strategies gain support at local levels and build momentum so as to influence programs and policies at higher levels (district, national, international).

Capacity building provides or strengthens skills for individuals to enable them to do their job more effectively.

Capacity development is the learning process by which individuals, groups, organizations, institutions and countries develop their abilities, individually and collectively, to perform functions, identify opportunities, solve problems and achieve objectives.[31] The aim of capacity development and capacity building is to help governments, organizations and people attain a level of self-sufficiency that enables them to manage their own affairs effectively.[32]

Cost effective is something that is economical, based on the tangible benefits produced by the money spent. It occurs when a reasonable cost is incurred to generate adequate or intended benefits.

Effort Index grades countries/states/provinces on their commitment to hygiene improvement. The Effort Index permits interested parties to see how the grade changes over time. The grade will reflect contributions by different institutions and partners. The elements of the index need to be clearly defined and the rating process pretested. Validating this indicator might be a first activity under Task 4.

Hygiene Improvement Framework (HIF)
Consists of three main components to achieve hygiene improvement:

- *Access to hardware*: infrastructure and water and sanitation technologies such as latrines, water pumps, soap, improved water containers and water treatment
- *Hygiene Promotion*: private sector involvement and hygiene promotion techniques such as communication, training, community mobilization and social marketing are applied to motivate and maintain positive hygiene practices.
- *Enabling Environment*: policy, systems issues, advocacy and financing schemes. An enabling environment should have a certain degree of political stability to allow geographic access to much of the country.

[31] An amalgamation of UNDP and IDRC definitions.
[32] UNDP

Institutional Strengthening is putting systems into place to enhance an organization's ability to function. Such systems would create forums for learning and sharing knowledge and opportunities for building new skills among individuals.

Knowledge Management is to improve the strategic use of knowledge for hygiene improvement by getting the right information (tools and materials) to the right people at the right time at both the global and country levels. HIP's KM strategy is concerned with establishing and managing environments for people to access, use and create information and share knowledge to help HIP achieve its goal to advance hygiene improvement programming and the uptake of sustained, improved hygiene practices.

Saturation is when targeted individuals encounter the same message at every key contact point in their lives (Smith et al, Philippines, 2002).

Social Norms: The practices followed by the majority of the population that reflect religion, custom, habit, tradition, or law.

Systems Approach is stepping back from routines and specific events to consider the larger context – the web of influences (social, economic, environmental and political) that affect the problem at hand.

Top-down is a strategy for planning or interventions that is driven from outsiders or "experts" (e.g. ex-patriot or "top level" institution) without parallel input from other levels, including community. Top-down strategies are usually imposed on lower levels without regard to perceived or real needs or a thorough understanding of the context.

Annex 2

ACRONYMS

AED	Academy for Educational Development
CBO	Community-based organization
CDC	Center for Disease Control
C-IMCI	Community integrated management of childhood illnesses
CRS	Catholic Relief Services
DFID	United Kingdom Department for International Development
DHS	Demographic and Health Survey
EHP	Environmental Health Program
ESA	External support agencies
FBO	Faith-based organization
FP	Family planning
FD	Feces disposal
HIDN	USAID's Office of Health, Infectious Disease and Nutrition
HIF	Hygiene Improvement Framework
HIP	Hygiene Improvement Project
HW	Hand washing
IMCI	Integrated management of childhood illnesses
IRC	IRC International Water and Sanitation Centre
JICA	Japanese International Cooperation Agency
JMP	Joint Monitoring Programme
KM	Knowledge management
LQAS	Loft quality assurance sampling

M&E	Monitoring and Evaluation
MCH	Maternal and child health
MDGs	Millennium Development Goals
NETWAS	Network for Water and Sanitation
NGO	Non-governmental organization
ORS	Oral rehydration solution
P&G	Proctor and Gamble
PAHO	Pan American Health Organization
PHAST	Participatory Hygiene Assessment
PLWHA	People living with HIV/AIDS
POU	Point of use
POUZN	Point-of-use water disinfection and zinc treatment
PPP	Public-Private Partnership
PPPHW	Public-Private Partnership for Handwashing
PSI	Population Services International
PVO	Private volunteer organization
SANRU	Santé Rural
SDC	Swiss Agency for Development and Cooperation
SODIS	Solar disinfection
SOTA	State of the art
TA	Technical assistance
TRM	Technical resource material
UNDP	United Nations Development Program
UNESCO	United Nations Educational, Scientific and Cultural Organization

UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WASH	Water for Sanitation and Health project
WAWI	West Africa Water Initiative
WB	World Bank
WEDC	Water Engineering Development Centre
WHO	World Health Organization
WM	Water management
WSP	Water and Sanitation Program
WSSCC	Water Supply and Sanitation Collaborative Council

Annex 3

REVIEW OF HAND WASHING PROGRAMS

"Hand washing has been shown to be effective at reducing the incidences of diarrheal disease, it is proving to be sustainable over the longer-term, and it has been documented to be cost-effective. Hand washing could become the 'method' of choice for reducing diarrheal disease worldwide (Curtis, 2003)."

As results become known and impact of hand washing promotion becomes more widely disseminated, hand washing has begun to take on some prominence in the hygiene improvement arena. As a result is has become the most widely documented of the three hygiene domains, i.e. of hand washing, safe disposal of feces, and safe water storage and treatment. However, documentation of hand washing programs has been quite varied across programs making comparisons on approaches used, baselines gathered, players involved or partnership formed, processes used, results/outcomes produced, and the scale at which implemented,.

To present the state of hand washing programs and to overcome some disparities in documentation, this desktop review of hand washing programs has taken a two-prong approach:

First, hand washing programs worldwide have been investigated: efficacy and effectiveness of hand washing as a behavior have been examined; key requisite hand washing behaviors have been listed; barriers to hand washing have been detailed; hand washing programs results, both successes and challenges, have been delineated; and critical issues have been discussed.

Second, in an attempt to (1) examine at least 10 of the hand washing programs across comparable issues and (2) to test an *at scale* hypothesis, four dimensions have been devised, i.e. hygiene domains, partners involved, levels employed, and interventions utilized, and programs have been researched using several sources, i.e. written reports, conducted and published studies, unpublished information and data, and conversations with implementers and experts involved in the hand washing programs, to gather sufficient information to examine the impact of these four formulated dimensions on the program outcomes and whether these dimensions could be considered instrumental to achieving *at scale* efforts.

1. EFFICACY AND EFFECTIVENESS OF HAND WASHING BEHAVIORS IN REDUCING DIARRHEAL DISEASES

Based on clinical trials conducted, hand washing with soap can reduce the number of microbes present and in turn reduce diarrheal disease in children under five years of age. Studies carried out in more that 15 countries determined that under rural settings with real life conditions, hand washing reduced the incidence of diarrhea. If hand washing is done correctly at critical times, it blocks all pathways that directly or indirectly involve fingers. Hand washing with soap can reduce the incidence of diarrhea by over 40 percent and the incidence of intestinal infections by over 50 percent. A recent review of all available evidence suggests that hand washing with soap could reduce diarrhea incidence by as much as 47 percent and save at least one million lives per year (Curtis, 2003). These figures are consistent with additional studies that found that 12 hand washing interventions in 9 countries achieved a median reduction in diarrhea incidence of 35 percent (World Bank, 2003).

Little doubt exists that hand washing, if done properly and at the most critical times (see Section 2 below), can be effective in a "real world" setting. However, it is also clear from this synopsis of efficacy and effectiveness studies done on hand washing that the following gaps exist:

- Long-term effectiveness studies on the impact of diarrheal disease have been minimal, i.e. does hand washing with soap on a sustained basis continue to have the same health impact, thereby making it difficult to make definitive claims of impact 20 years or more. As conditions change, so too can the impact on any behavioral practice and its health impact.
- Effectiveness determinants have varied considerably from study-to-study, e.g., seasonal variations, baseline incidences not given, no concurrent control group, etc., making the effectiveness validity of selected studies questionable at best, misleading at worst, and making comparative studies has been extremely difficult.

2. HAND WASHING BEHAVIORS

2.1 Initial Critical Times and Proper Technique

Early studies indicated (Greenough, 1996) that to have a positive impact on reducing diarrhea, a set of five hand washing steps at five critical times were required as well as four requisite supplies: clean water, towel, soap, and a container. The five-part steps included: (1) uses clean water, (2) uses soap, (3) washes both hands, (4) rubs both hands together at least three times, and (5) dries hygienically with a clean towel. The five critical moments included: (1) after defecation, (2) after handling child's feces or cleaning a child's bottom, (3) before preparing food, (4) before feeding child, and (5) before eating (EHP, 1996). These behaviors have traditionally been targeted at mothers and caretakers of any age with incidence of diarrheal cases being measured in children under five.

2.2 Revised Critical Times and Proper Technique

Based on extensive research, WHO and UNICEF have identified hand washing with soap or appropriate substitute after stool disposal and before preparing food, as revised key hygiene behaviors (World Bank, 2003). Additional recent evidence (Curtis, 2003) supports that simplified key hand washing behaviors have been proven to have an equal impact on diarrheal disease reduction. And while no evidence-based studies yet exist indicating that this simplified practice also has encouraged sustained hand washing behaviors, all anecdotal trends indicate that this might be the case in the long-run (Kolesar, et. al., 2003). This modified, simplified hand washing behavior comprises: Wash hands at two critical times, (1) immediately after defecation, if targeting mothers and caretakers of children under five or disposal of feces and (2) before preparing food. Wash with: (1) clean[33] falling water and (2) soap or appropriate soap substitute, (3) rub vigorously three times or more and (4) air dry.

2.3 Need for Soap in Hand Washing

Effectiveness of soap in reducing microbes on the hands is well-documented (Walsh, 2003). In one study, the presence of soap in a household showed a significant protective effect as there were 27 percent less episodes of diarrhea in households when soap was present compared to when no soap was present. Potential confounding factors were assessed and did not appear to be responsible for

[33] It should be noted that clean water does not imply "purified" water, simply unused water.

the association between the presence of soap and reductions in diarrhea incidence (Peterson, et. al. 1998). Little or no research has been done on the effectiveness of suitable soap substitutes, that while possibly less effective in reducing diarrhea in the short-run, in the long-run could greatly increase the number of people washing their hands with soap substitute regularly and in turn greatly reduce the incidences of diarrhea. (While a behavior practice might be less effective, (diarrheal cases reduced by 30 percent) if it encourages more people to adopt it, it will have more impact in the long-run (30 percent of 30 households wash with soap for the life of the project or 60 percent of 50 households wash with soap substitutes during and after the project ends (based on Transtheoretical Model of Behavior Change in Large Populations, Fava, 1998).

A study was conducted in Bangladesh in 2002. The study found that the perceptions and methods related to washing hands vary widely in Bangladesh (Hoque, 2003). About 85 percent of women studied who lived in slums and 41 percent of rural women washed their hands using only water. However, most women rubbed their hands on the ground, or used soil and rinsed them with water after using the latrine. Most women claimed that they could not afford to buy soap. Experimental trials showed that the use of soap, ash or soil gave similar results when women washed their hands under the same conditions. The washing of both hands, rubbing of hands, and the amount and quality of the rinsing water used were found to be important determinants in the reduction of bacterial counts on hands.

2.4 Barriers to Hand Washing

Research shows that four main barriers prevent the practice of hand washing behaviors, represented here in the order generally cited: (1) cost, people cannot afford soap; (2) availability, soap is not available nearby; (3) awareness, people are unaware that water alone will not clean hands, and (4) beliefs, people do not believe that cleaning hands is necessary at all critical moments (Birmingham, 1997/PRISM, 2004). Research documents that most people believe the only critical time to use soap, for example, is after defecation.

2.4.1 Access to Water

Access to water is traditionally viewed as a barrier to hand washing practices; however, studies do not support this assumption. Studies show (Karanja, et. al., 2004) that no significant correlation exists between access to a water source and hand washing, i.e. the closer it is the more likely to wash hands or if water is readily available people are more likely to wash hands. So it would appear that while water is necessary to the process, it is not a determinant of adopting the behavior. A few studies indicated (EHP, 2004) that the use of water for washing hands was one of temperature and not access, i.e. that cold water promotes/carries disease and that hot water does not, therefore, if you cannot wash your hands in hot water, you should not wash your hands at all.

2.4.2 Access to Products

Hand washing practices are usually associated with three types of "products:" soap, cloth/towel, and a basin in which to wash or a ladle or "tippy tap"-like container from which to pour water onto hands. What barriers do these products present to hand washing practices?

(1) **Soap** – What is known is that soap, in some form or another, is found in the home. However, it appears to be seldom used for hand washing, i.e. it is used for bathing, washing clothes, etc. As well, often the perceived need to use soap and water to wash hands to make

them clean is not there (as cited above). In one study (Peterson, et. al. 1998), households had soap on the average only 38 percent of the interview days. Eighty-six percent reported using soap primarily for bathing and washing clothes. Although 81 percent of mothers reported washing their children's hands, only 28 percent of those mothers used soap for that purpose.

(2) **Towel/Cloth** – Clean towel/cloth was initially promoted as a hand washing step; however, it was anecdotally found that this requirement often diminished the likelihood that a mother would practice the complete hand washing behavior (Bateman, et. al., 2001) or increased the likelihood that she wash hands and dry them on dirty cloth, thus eliminating any hand washing benefits. Recent studies (Hoque, 2003) show that air drying hands is equally effective and in most cases more so as the risk of re-contaminating clean hands is eliminated. This behavior is also more feasible to practice and sustain initially and over time.

(3) **Container or Ladle to Pour Water** – If the effectiveness of the hand washing behaviors on the health impact depends on both clean and falling water, then two additional products are needed. First, a family must have a basin exclusively for hand washing that is not constantly be filled with other, dirty, previously used water. Research shows (author, year) that this is the most likely product to be constantly available in the home as basins of varying sizes and capacities are common throughout the developing world; however, whether one would be available for hand washing purposes when needed is questionable, e.g. in many countries a basin might be dedicated to hand washing, but it is the water that is used over and over again, with many family members washing in the same water throughout the day. Second, the need for falling water presents its own unique challenges. While many affordable models of faucet/spigot-type water containers are reportedly available and even several "how-to" guides on making your own, few or no studies have examined these two products and the real barriers that they might create if promoted as part of the hand washing practice or even "shown" as part of the hand washing practice, though not explicitly promoted.

3. PROMOTING HAND WASHING BEHAVIORS IN THE FIELD

A plethora of hand washing studies document the impact of hand washing on diarrheal disease reduction in both the public-sector and through public-private partnerships. Though documentation across the board is insufficient to make accurate comparisons on approaches used, baselines gathered, players involved or partnership formed, and processes used; a cursory analysis indicates that most programs promoted two or more hygiene domains, primarily hand washing and feces disposal, for an increase in hand washing behavior after latrine use of 12 to 43 percent, averaging 27.5 percent.

3.1 Public-Sector

Public-sector programs are those that took place utilizing donor support from agencies such as USAID, the World Bank, UNICEF, just to name a few; engaging expertise from international and local NGOs such as IRC, NEWAH, SANRU, WaterAid, etc.; and implementing hand washing program activities at various levels, i.e. within a state, regionally, zonally, district-wide, within a community, and/or at the household-level. These programs did not utilize any commercial-sector involvement. Most public-sector programs have been small-scale efforts, though a few have been carried out on a large-scale.

3.1.1 Successes

In Lao PDR, in 2001, working through the Ministry of Education, and in partnership with NGOs and international donors, a primary school hygiene program was developed. The program covered around 150 schools a year, about 2 percent of the total schools yearly. The program did not use good health as the motivator to get students involved but rather asked the students to identify motivators to promote hygiene behavior change and designed lessons, materials, etc. accordingly (WSP, 2001). Furthermore, with the Ministry of Health, a World Water Day was held, using the students participating in the school hygiene programs. As well, a provincial team supported by advisors from an ESA started pilot water supply and sanitation schemes in two provinces. They used community dialogue and multi-media presentations to promote sanitation and hygiene. While no quantitative assessments were available on reported behavior change, this program did document several process/approach factors during program implementation. These included: (1) increased coordination makes hygiene promotion efforts more effective; (2) private sector participation needs to be explored; (3) monitoring needs to be focus and targeted on what needs to be assessed; and (4) the costs of hygiene promotion are still unknown.

Projects were implemented in Peru and Nicaragua (Favin, 2004) in 2002. Communities selected in both countries had high incidences of diarrhea, yet also had relatively good infrastructure of latrines and piped water and the active presence of a NGO International Plan. Hand washing, safe water, and feces disposal behaviors were promoted through communication activities and product provision. In Peru, hand washing at two critical moments showed statistically significant improvement. Washing after using the latrine increased from 29 percent to 51 percent, and before breastfeeding or feeding food to a child increased from 12 percent to 32 percent. There was no improvement seen for hand washing before eating, after cleaning a child who defecated, or before preparing food. In Nicaragua, there were marked improvements in hand washing indicators: mothers/caretakers who washed after cleaning a child who had defecated increased from 31 percent to 74 percent; the percentage who washed before preparing and serving food, from 62 percent to 76 percent; and before feeding children, from 19 percent to 49 percent. Several important process/approach factors were identified throughout these projects as well. These included: (1) excellent coverage via home visits to negotiate and monitor improved behaviors was vital; (2) reminder materials posted as intended in and around homes is needed; and (3) high level of motivation and activity among volunteers in getting hygiene products up and out was essential.

The overall impact of both the Peru and Nicaragua projects on important behaviors was very positive after only one year of implementation. Almost certainly, families' successful behavior change was due to the individualized counseling provided by community hygiene promoters as well as to the project facilitating access to key hygiene products.

Another program carried out in the Dominican Republic (Kolesar, et. al., 2003) in 2001 in nine communities. The program utilized community health workers to promote hand washing behaviors through a variety of interpersonal communication methods such as small group talks and individual negotiating. Most of the hygiene behaviors promoted as part of the program showed statistically significant improvements from baseline to mid-term. Increases in hand washing after going to the bathroom were reported by primary caregiver (a 12 percent improvement) for herself and the youngest child (a 16 percent improvement). An increase from 15 percent to 31 percent was recorded for reported hand washing of the youngest child before eating. Use of soap improved from 59 percent to 79 percent. This hygiene behavior change intervention is the result of an inter-

institutional effort. Nine institutions, including two government agencies, three NGOs, one multi-lateral and three bi-lateral organizations, came together to make it possible.

Two programs appear to have employed what could be termed an *at scale* approach, the Hygiene Behavior projects in the DRC (Cogswell, 2003/Rosenweig, et. al. 2004) and in India (Zacharia, et. al., 2004). Both utilized two or more domains in their programming, i.e. DRC combined hand washing, feces disposal, and management of water in both households and health centers, while India combined hand washing and feces disposal. Both integrated their programming into another, ongoing health program, i.e. DRC integrated hygiene into c-IMCI and India integrated hygiene into education. Both employed three or more intervention types to carry out their activities, i.e. communication, training, community, products provision, and to a certain extent hardware/infrastructure provision; and worked successfully at multiple levels including regional/state, zonal, community, and household. Reportedly, both programs also had statistically significant impact on hygiene practices within the community, i.e. DRC documented an increase of 18 percent in household hand washing behaviors and a 19 percent increase in health worker hand washing behaviors over one year and India documented a minimal 9 percent decrease in hand washing behaviors even three years after the project had ended.

While only a few cost-effectiveness studies have been conducted, two studies do show that hand washing hygiene promotion activities can be cost-effective, i.e. US$ 3/household/year (van Wijk, et. al., 2004). Documentation of sustained behavioral practices has also been minimal, but a recent six-country study (Shordt, et. al., 2004) indicates that up to 41 percent of mothers and caregivers sustained a key hand washing behavior—washing hands with soap after latrine use—three years after the programs had ended.

Furthermore, a final analysis of these hand washing programs showed that the most effective programs did not wait to complete one activity before starting with the next. Momentum was built at all levels, among all players, with each intervention happening concurrently.

3.1.2 Challenges

While, for the most part, the challenges have been minimally documented, three have arisen repeatedly in most of the programs reviewed. These three challenges comprised: (1) the cost of many communication interventions, especially interpersonal methods, can be prohibitive to long-term conduct of the program; (2) the program length can be insufficient to impact on behaviors; and (3) cooperation and collaboration at needed levels are generally inadequate and can impact negatively on program effectiveness.

3.2 Public-Private Partnerships (PPPs)

PPPs are those initiatives that, though quite similar to public-sector efforts, also heavily involve and rely on commercial-sector participation. A PPP has been shown to have several benefits to both commercial- and public-sectors. One key commercial-sector benefit is penetrating new markets particularly in rural areas that enhance corporate image as the public-sector endorses the campaign and collaborates on various activities. The public-sector, in turn, increases the possibility of reaching its desired goal to reduce the incidences of diarrhea and improve hygiene practices. This partnership can also leverage additional resources to achieve organizational goals and bring about sustainable,

public-health approaches utilizing common commercial-sector marketing methods (Nepal PPP, 2003). Most PPP initiatives are large-scale efforts.

3.2.1 Successes

A study of the hand washing PPP in Central America showed that 10 percent of the women surveyed improved their hand washing behavior during the first year of the campaign. It is estimated that over the course of the initiative, diarrheal prevalence declined about 4.5 percent among children under five (Saade, et. al., 1999). PPP large-scale initiatives include the Colgate-Palmolive integrated hand washing promotion in school programs in 17 countries and the Unilever-run hand washing program in Asia and Africa.

It appears that social marketing is the main intervention used in most PPP initiatives. Though it is "selective" social marketing in several cases, i.e. parts of the social marketing process are used and not the whole process. No studies of the impact of this modified process have been documented.

3.2.2 Challenges

Unlike public-sector efforts, challenges have been widely discussed and documented (author, year/author, year/author, year) on PPP hand washing initiatives. The overarching challenges include the need for and use of subsidies and the choice of an appropriate intervention mix on a larger scale. The subsidy issue has raised many cost questions: To what extent will the program be sustainability if it initially relies on subsidies? To what extent would the population continue to demand the products promoted during the program if they are no longer subsidized? Will the products continue to be affordable after the campaign ends? The choice of an appropriate intervention mix also raises many questions: What works best on a large-scale while keeping costs down? How can creative briefs effectively reflect implementation of several concurrent interventions? How do large-scale PPPs accurately reflect and respond to behavioral factors?

4. CRITICAL ISSUES

This desktop review identified three critical issues common to all hand washing programs examined: (1) cost-effectiveness, (2) program focus, and (3) sustainability of behavioral practices promoted.

4.1 Cost-Effectiveness

The cost of diarrheal disease care is estimated at 20-25 percent of a family's monthly income (Cercone, et. al., 2004). Comparative research has shown that investing in hygiene promotion can be at least as cost-effective by increasing productivity of mothers and caretakers and of children, i.e. healthier to do work, go to school, etc., as investing in vaccination or oral rehydration therapy. Studies suggest that the impact of hygiene promotion is larger and more cost-effective when water and sanitation facilities are in place. An investment of US$ 3 per household per year is enough to avert diarrhea in children under five when good water and sanitation are available, and US $6 per year when this is not the case (van Wijk, et. al., 2004).

The international rule proposed by the WHO's Commission on Macroeconomics and Health to evaluate the cost-effectiveness of an intervention establishes that *"…interventions that avert one DALY for less than the average per capita income for a given country of region are considered very cost-effective; interventions*

that cost less than three times average per capacity income per DALY averted are still considered cost-effective; and those that exceed this level are considered not cost-effective" (van Wijk, et. al., 2004). Also, for a more conservative estimate, the World Bank Development Report suggests a cut-off point for a cost effective intervention at US$150 per DALY. Table 1 below illustrates from two cost-effectiveness studies conducted (van Wijk, et. al., 2004/ Cercone, et. al., 2004), the cost of hygiene promotion activities related to hand washing for a public-sector program and for PPP initiatives.

Table 1: Cost of Hygiene Promotion Activities Related to Hand Washing

	Effectiveness (% reduction in diarrhea cases)	***Cost per case averted (in US $$)***	***Cost per death averted (in US $$)***	***Cost per DALY averted (in US $$)***
Hygiene Promotion	Up to 48%	-	$1520	$44
Hand Washing PPP Initiatives	Up to 30%	$8.50-$9	$3072-$4254	$91-$122

[DALY – Disability-Adjusted Life Years, widely used to determine cost-effectiveness of health sector intervention.]

4.2 Hand Washing Program Focus

Many programs reviewed appear to be more focused on program goals than on behavioral outcomes. While these programs, for the most part, seem to establish behavioral objectives, the programs are guided by fixed time frames and budgets. The intervention length was not usually associated with the current behaviors and the length of time required to change and sustain the behaviors effectively, but was determined by how long it would take to carry out the program and to achieve its designated program goals (Jones, 2003). This focus, i.e. one to two years to accomplish the program goals, regardless of the time that might be needed to actually accomplish the behavioral change and ensure that these practices and changes will be sustained, appears to have diminished the results possible and the likelihood that the promoted behavior would be adopted and sustained.

4.3 Sustained Behavior

Minimal longitudinal and cross-sectoral studies have examined whether hand washing behaviors of individuals living in program communities are sustained over time. A recent six-country study (Shordt, et. al., 2004) indicated that hygiene interventions within a community-based sanitation and water project continued to have an impact on behaviors even after the projects had ended, i.e. one to three years after program completion and in one instance nine years later. In these six developing countries in Africa and South Asia, target populations of previous hygiene promotion projects were visited at 12 month intervals and various indicators of hygiene behavior were assessed and compared. There were apparently no major differences in hygiene behavior changes between the results of those in which the interventions ended respectively in 1998, 2000, and those that were initiated in 2001. This suggests that investments in good hygiene promotion can last and that behavior changes do get sustained.

Furthermore, only in three instances was there any indication of a falling-off of hygiene behavior over time since the intervention ended, in one it was attributable to the deteriorating condition of the latrines due to wear and tear, rather than a decline in compliance. It was concluded that hygiene promotion activities likely need to be repeated from time-to-time, possibly every five years, but are not required on a continuous basis. There was no examination or discussion of what these "behavioral maintenance" activities might need to be, except that hardware needed to be in place. This six country study also showed that the way hygiene promotion interventions are implemented,

(e.g., the more intense the greater the impact, and the levels utilized, horizontal communication was more effective than vertical communication, i.e. women learned more from officials than from their peers) can have an impact on the intervention's effectiveness and the sustainability of the changes in hygiene behavior.

5. CONCLUSIONS

Based on this desktop review, several conclusions can be drawn. While some might seem elemental and obvious, all are essential to a comprehensive understanding of the state of hand washing programs and their impact. These conclusions have important implications for developing and implementing a hygiene improvement strategy and for the water and sanitation and hygiene community players involved (see section 7 on implications).

- Hand washing is both efficacious and effective in reducing diarrheal diseases.
- Soap is an essential component of hand washing for it to be an effective in reducing diarrheal diseases.
- Barriers to hand washing practices, i.e. access to products and awareness and beliefs, have been insufficiently documented and have yet to be overcome.
- Access to water, i.e. distance to source, has not been proven to have an impact on hand washing behaviors.
- Further simplified, but effective hand washing techniques; have yet to be worked out, i.e. techniques that while possibly somewhat less effective in the short-run, have the potential to more effective in the long-run because of the higher recruitment in the behavioral practice(s).
- Small-scale and large-scale hand washing programs can achieve some behavior change in the short-run, i.e. three years or less.
- Interpersonal communication has proven to be effective at getting people to try new behaviors, both in small-scale and large-scale programs, though the cost has been questioned as prohibitive to longer-run continued program efforts.
- The combination of mass media and social marketing, albeit "selective" social marketing in several cases.
- There does not appear to be a significant difference in the behavioral impact of public-sector programs and public-/private-sector initiatives. The only discernable difference and this has not been adequately documented is the size of the impact, i.e. 30 percent of how many mothers or 43 percent of how many households.
- Hygiene promotion activities such as hand washing, accompanied by water and sanitation efforts, can be quite cost-effective, around US$ 3 per household per year.
- Sustainability of behaviors is contingent on sustainability of the hygiene domains, length of the project in relationship to the behavior to be changed and sustained, and on the partnerships established and the levels used.
- Hand washing hygiene behaviors can be sustained over a period of one to three years if the effort was comprehensive, i.e. provided the what, how, and tools, and was carried out over a sufficient period of time for the target audience to inculcate the skills and knowledge necessary to practice the behavior.
- Male involvement in behavioral sustainability, though not yet sufficiently documented and evaluated, appears to have an impact on hand washing practices in the long-run.
- Hygiene hand washing programs need to be revisited every three to five years to insure that all necessary elements are still in place to continue to effectively practice the behaviors.

- There is insufficient documentation on the sustainability of behaviors in the long-term, i.e. 5 years, 10 years, 15 years, etc., to draw substantive conclusions on effective intervention mixes at either the small-scale or large-scale and on the effectiveness of PPP initiatives.

"True social norm changes take place over generations (20-25 years), they do not happen over night (in 3-5 years), they must become 'habit-forming,' i.e. they become a routine, subconscious act..." (HPP, 2004).

6. HYGIENE IMPROVEMENT FRAMEWORK AT SCALE

6.1 At-scale Hypothesis

It has been postulated that four key dimensions are instrumental to achieving an *at scale* hygiene effort: (1) using multiple domains, i.e. hand washing, feces disposal and management of water; (2) involving multiple partners and players, i.e. encouraging integration, working with all sectors, across sectors, involving international and local NGOs, PVOs, FBOs, CBOs, etc.; (3) using multiple interventions, i.e. selecting and implementing an effective, appropriate mix of communication activities, training activities, product provision choices, hardware/infrastructure, policy development, social and communities activities, and other enabling environment activities; and (4) employing multiple levels to support and implement efforts, i.e. international, national, regional, district, community and household .

6.2 Rationale

These dimensions, while encapsulated in the Environmental Health Project's (EHP) Hygiene Improvement Framework (HIF) (EHP, 2002), have yet to be examined individually for their impact on behavior change or collectively, i.e. combinations of these dimensions, to see if there are priority dimensions - requisite elements to designing and implementing hygiene efforts. Furthermore, the extent to which the HIF has been used has not been examined systematically. This section attempts to explore these dimensions and their impact on the behavioral results.

6.3 Methodology

Due to varying methodologies used for documenting hand washing programs, differing indicators for success, differing purposes for which the documentation and/or studies were written, no consistent attempt to examine "best practices" in studies or results, and/or little or no attempt to correlate results/outcomes to approaches and interventions used; it was problematic to gather sufficient, appropriate data to compare programs across the dimensions. To overcome this difficulty and deficiency in documentation, at least for purposes of comparing programs, written reports and documented studies were examined, staff involved in the programs was consulted, and unpublished information on the programs was gathered. Of the more than 25 total hand washing programs examined for this desktop review, 11 programs emerged that provided sufficient information so that programs could be looked at across the common dimensions.

6.4 Findings

These 11 hand washing programs were conducted in between 1994 and 1998. It appears that 4 programs employed the HIF in one fashion or another. Reportedly, all of these programs used at

least two critical times and at least a four-part, proper hand washing technique as the basis for their hand washing promotional activities (see section 2.2 above). Furthermore, all programs were conducted over a 1-2 year period of time. All programs utilized at least two hygiene domains in their hygiene programs, i.e. combined hand washing promotion with feces disposal and/or management of water. Only two programs used only hand washing promotion as the basis of their efforts.

Table 2 below looks at the information collected in each of the categories listed: (1) multiple dimensions - domains, players/partners, types of interventions, levels, (2) cost-effectiveness, and (3) results. A "yes" to a multiple means that the program used, involved, employed at least three or more of the sub-dimensions of each dimension as listed above. A "yes" to "cost-effectiveness" indicates that a study was conducted and it was assessed to be cost-effective. Results were detailed as presented in reports and/or studies. Not all results were listed, just those that were comparable, to the extent possible. Determination of whether the program was carried out *at scale* was made based on whether the program utilized the HIF to the fullest and most comprehensive extent through the application of all multiple dimensions.

Table 2: Comparison of Programs Promoting Hand Washing Hygiene Behaviors

Program/Country [HW-hand washing, FD-feces disposal, WM-water management at point-of-use]	***(1) Multiple dimensions -***				***(2) Cost-Effectiveness Assessed?***	***(3) Documented Results***	***OPERATED AT-SCALE?***
	Hygiene Domains Promoted?	***Players Involved? Partnerships Formed?***	***Interventions Utilized?***	***Levels Employed?***			
1. Sinaya – Burkina Faso (van Wijk, et. al., 2003)	HW FD	No-Ministry of Health, External Support Agencies (ESAs)	No-communication (media, print, & home visits)	No-community, household	Yes- - to practice hygiene behaviors $8 per household per year - $24 per case diverted - 8638 diarrhea cases averted at a total program cost of $292,000	- Increase HW from 12% to 31% after clearing child's bottom - Increase HW from 1% to 17% with soap after latrine use	No
2. ZimAhead – Zimbabwe (van Wijk, et. al., 2003/Rosensweig, et. al., 2002)	HW FD	No-Ministry of Health, ESAs	Yes-policy, training, & social/community activities (health clubs)	Yes-national, community, household	Yes- - $.67 per household - $1.40 per household if include health staff salary	Increase HW by 6% & 37% in 2 districts respectively	No
3. PPP Hand Washing Central America – Guatemala, Costa Rica, El Salvador (Saade, et. al., 2001/Cerone, et. al., 2004)	HW	Yes-NGOs, manufacturers, ministries, ESAs	No- social/community activities (social marketing & community activities) & communication (mass media)	Yes-global, national, community, household	Yes- - $8.50 per case diverted - 232,500 diarrhea cases averted at a total program cost of $1.79 million	- 30% increase in mothers washing hands - est. 300,000 fewer cases of diarrhea in Guatemala	No
4. Hand Washing Promotion – Pakistan (Luby, et. al., 2004)	HW	No-	No-communication (home visits with print & non-print materials) & product (soap given)	No-community, households	No studies conducted	- 39% fewer days of diarrhea in homes of infants - 42% fewer days of diarrhea in homes of under 5s	No
5. Nepal Water for Health – Nepal (Rai, et. al., 2004)	HW FD	Yes-Ministries, NGOs, ESAs	No-communication & training (classes)	No-community, household	No studies conducted	- 57% of households could demonstrate proper hand washing techniques - 79% of households have soap and water available - no sign of decrease in these two years after program end	No
6. Hygiene Promotion – Myanmar (Bajracharya, 2003)	HW FD	Yes-NGOs, community authorities, Dept. of Health, ESAs	No-communication (mass media & workshops) & social/community activities (social marketing, community mobilization, & National Sanitation Week)	Yes-national, divisional, community, household	No studies conducted	Increase from 18% HW after defecation in 1998 to 43% in 2001	No
7. Hygiene Behavior Change & Water & Sanitation – Dominican Republic Kolesar, et. al., 2003()	HW FD WM	Yes-NGOs, ministries, ESAs	No-communication (print, non-print) & training	Yes-national, community, household	No studies conducted	- 27% increase in rubbing hands 3 times - 12% increase of self-HW after defecation	No

Program/Country [HW-hand washing, FD-feces disposal, WM-water management at point-of-use]	***(1) Multiple dimensions -***				***(2) Cost-Effectiveness Assessed?***	***(3) Documented Results***	***OPERATED AT-SCALE?***
	Hygiene Domains Promoted?	***Players Involved? Partnerships Formed?***	***Interventions Utilized?***	***Levels Employed?***			
						- 16% increase of HW of youngest child after defecation - 22% increase in HW of youngest child before eating - 20% increase of both presence & use of soap	
8. Hygiene Behavior Change within C-IMCI – Peru (Favin, 2004)	HW FD WM	Yes-integration, NGOs, ministries, ESAs	No-communication (print materials) & products (community soap & towel promotion)	Yes-national, district, community, household	No studies conducted	Increase in hand washing: - 24% to 51% increase after latrine use - 12% to 32% before breastfeeding or feeding food to child Improvement in technique: - 37% to 92% use of soap - 22% to 66% use of soap & rub hands 3 times - 12% to 50% use of soap, rub 3 times, & dries hygienically	No
9. Hygiene Behavior Change within C-IMCI – Nicaragua (Favin, 2004)	HW FD WM	Yes – integration, NGOs, ministries, ESAs	No-communication (print materials) & products (community soap & towel promotion)	Yes-national, district, community, household	No studies conducted	Increase in hand washing: - 31% to 74% after cleaning child feces - 62% to 76% before preparation & serving of food - 19% to 49% before feeding children	No
10. Hygiene Promotion – DRC (Cogswell, 2003/Moise, et. al., 2004)	HW FD WM	Yes-ministries, NGOs, ESAs, integrated	Yes-training, communication (print) & social/community activities (meetings)	Yes-national, zonal, district, community, & household	No studies conducted	- 19% increase in mothers washing child's hands at 3 critical times - 19% increase in nurses who wash hands with clean water	Yes
11. Hygiene Behavior – India (Zacharia, et. al., 2004)	HW FD	Yes-ESAs, ministries, NGOs	Yes-communication (home visits, videos, non-traditional, etc.), training, & social/community activities (community mobilization)	Yes-district., community, household	No studies conducted	- 81% households could demonstrate good hand washing - 59% reported hand washing both hands with soap and water - 9% decrease to 50% since project end less likely to wash both hands with soap and water	Yes

As can be seen from Table 3 above:

(1) Several programs involved multiple players (8 out of 11) and these programs demonstrated an increase in hand washing behaviors, on the average, of about 27 percent in mothers after latrine use.

(2) Only a few used multiple intervention types (3 out of 11) in their hand washing efforts. Those who appear to have used three or more intervention types in the conduct of their programs had a resulting impact on hand washing behaviors of up to 37 percent.

(3) Furthermore, most (9 of 11) relied primarily on one type of intervention – communication, though varying types of communication activities were carried out, for an increase of 25 percent to 30 percent in hand washing behaviors.

(4) Of the programs which utilized only one intervention of any type, an increase of 19 percent in hand washing behaviors was documented.

(5) Employment of multiple levels (8 out of 11) appears to be a widely used dimension. This could be due to the nature of the types of interventions utilized or it could be based on a concerted effort to employ as many levels as possible, studies were not clear on this point. However, whatever the reason, this employment of multiple levels appears to have a significant impact on the results. These 8 programs had the highest changes in hand washing behaviors among mothers with an increase of up to 74 percent.

(6) While only 2 out of 11 actually conducted cost-effectiveness studies, these two do show that hand washing hygiene promotion activities are cost-effective, i.e. $3 per household per year.

(7) Though sustained behavioral practices still have been minimally documented (2 out of 11), there was reportedly, from baseline estimates, a sustained increase in hand washing practices by mothers/caregivers of 41 percent to 50 percent.

(8) 2 out of 11 programs were conducted "*at scale*," as defined in this document and each document a positive impact – DRC reported an increase the hand washing behaviors of 59 percent and India documented sustained behavior with only minimal decreases noted three years after program end, 59 percent drop to 50 percent.

6.5 Multi-Dimensional Analysis

In addition to looking at the use of the dimensions individually, it is important to examine them multi-dimensionally as well. Table 3 details the use of dimensional strategies by hand washing programs. This use is then corresponded to the most comparable and most commonly reported behavioral impact has been. To compare programs fairly and equitably, 6 programs from Table 2 above have been eliminated from this analysis as their documented results could not be equitably compared. To make the analysis more valuable and valid, one key behavior that was common to all remaining 6 programs was selected-increase in hand washing practice after use of latrine/defecation. Those selected for this analysis have been reordered below based on highest to lowest impact to facilitate the analysis. Program identifying numbers from Table 2 have been maintained to facilitate cross-comparisons with that Table. The assessment of whether a multi-dimensional strategy was used was based on the use of two or more dimensions.

Table 3: Use of Multi-Dimensional Strategies

Program/Country [HW-hand washing, FD-feces disposal, WM-water management at point-of-use]	***Multiple dimensions -***				***Multi-dimensional Strategy Used?***	***Documented Results***
	Hygiene Domains Promoted?	***Players Involved? Partnerships Formed?***	***Interventions Utilized?***	***Levels Employed?***		
6. Hygiene Promotion – Myanmar	Yes	Yes	No	Yes	Yes	43% increase in hand washing (HW)
2. ZimAhead – Zimbabwe	Yes	No	Yes	Yes	Yes	37% increase in HW
8. Hygiene Behavior Change within C-IMCI – Peru	Yes	Yes	No	Yes	Yes	26% increase in HW
10. Hygiene Promotion – DRC	Yes	Yes	Yes	Yes	Yes	19% increase in HW
1. Sinaya – Burkina Faso	Yes	No	No	No	No	17% increase in HW
7. Hygiene Behavior Change & Water & Sanitation – DR	Yes	Yes	No	Yes	Yes	12% increase of self-HW

As can be seen from Table 3 above:

- All used more than one domain in their promotional activities.
- All had statistically significant impact on hand washing practices.
- Per the established criteria noted above, 5 of the 6 used a multi-dimensional strategy.
- Interestingly, the program with the highest reported impact, used only two intervention types-communication and social/community activities.
- The most widely used dimension was "multiple levels."
- The least used dimension was "multiple interventions" with most using only two, primarily communication and social/community activities.
- 2/3 of the programs examined here used multiple players/partnerships
- While one program did use all four dimensions, it did not increase the impact on hand washing behaviors. *[It should be noted that these programs are not being compared across "length of project," which could account for some of the disproportions in results.]*
- Based on number of programs examined and the quality of the data collected, there is insufficient information at this point to trace patterns or trends on whether one dimension must absolutely be used to achieve more behavioral impact or whether a combination of dimensions is more effective than another combination or whether use of all is best.

6.6 Conclusions

While all programs have been documented to have had positive results, it would seem that those programs using multiple hygiene domains, multiple players, multiple levels, and/or multiple intervention types can encourage significant behavioral impact.

Conclusions drawn from this HIF *at scale* examination include:

- Despite the fact that several documented efforts have been successfully carried out on a small-scale and a few number have been successfully carried out on a large-scale; there has been no real effort to conduct a hand washing program "*at scale*," thus making the support for and the needed ingredients for success of such efforts still to be determined. However, trends from this cursory analysis of hand washing programs and studies point to the need for multi-dimensional implementation. *"Do incorporate hand washing into a range of interventions, do offer a range of technologies, do integrate hand washing into other programs, do establish partnerships at all levels among all players (World Bank, 2003)."*
- While studies show that the health impact of multiple facets is not cumulative, i.e. the percent reduction in diarrheal disease is not more if you have two or more facets being used; behavioral research does indicate that the likelihood of changing behavioral practices and increasing and sustaining the practice of a desired behavior is greater when behaviors are promoted and reinforced in "clusters," e.g. wash hands with soap after using the toilet, instead of just wash hands with soap.
- As with interventions, while one or two players can row the boat and move in small incremental strokes to improve hygiene, it seems that it will take the involvement of all players to capitalize on the efforts and activities to be carried out, to maximize resources and expertise available, to ensure appropriate and requisite buy-in, and to optimize *at scale* coverage.
- While one type of intervention, e.g., communications; training; service improvements; products; policy; and social/community activities can have a positive impact; integrated, multiple concurrent types of interventions could double the impact on sustained behavior.
- All levels, i.e. global, national, regional, district, community, and household, need to be not only employed, but committed to behavior-centered hygiene programs so that appropriate players will be included and involved, and a comprehensive integrated intervention package is utilized for sufficient time to have the desired impact; behavior change *at scale* can become a reality not just a phrase.

7. IMPLICATIONS

The implications of these findings and conclusions are enlightening and illustrate gaps in the hand washing efforts and possible recommendations (see section 8 below).

7.1 Behavior-Centered

- The 30/60 principle needs to be tested for *at scale* behavior change in the hygiene arena; changing social norms has not been the impetus of hygiene improvement efforts.
- Programs still need to be more behavior-centered; the focus is too heavily on program goals.

7.2 Reinforcing Domains

- It would seem to be valuable to promote all three domains, even if a program chooses to do only one.

7.3 Players/Partnerships

- If many players are involved, then some sort of small grants program will be required.
- Coordination will be essential and might in some instances necessitate one lead agency.
- Partnership forums will be needed.

7.4 Diversity of Interventions

- There needs to be a drive to use the whole HIF focused on behavior change, emphasis has been on social marketing or behavior change communication.

7.5 Commitment at all Levels

- Behavior change is generational, i.e. 20 to 25 years, thus a long-term commitment of 20 years or more is required by in-country hygiene efforts.

7.6 Cost

- Options are a must, whether they are low-cost, no-cost, and/or affordable-cost.

7.7 Sustainability

- There is still a question of the sustainability of promoted behaviors *at scale* and the sustainability of the hand washing programs themselves "*at scale*." Insufficient evidence and documentation exists to extrapolate the actual likelihoods.

7.6.1 Behavior

- Choice is a must; people must know that there are options available to them to carry out a behavior or behavioral practice.
- The length of the interventions period needs to be more closely linked to the time required to effect behavioral change.
- Behavioral maintenance is required. Behavioral efforts need to be revisited every 3-5 years, but through lower scale, softer interventions.
- Hygiene efforts must account for behavioral decision making processes.

7.6.2 Program

- Focus needs to be on behavioral objectives not program goals, and this needs to be reflected in length of program and program conduct.
- Integration of hygiene into ongoing programs offers the option for hygiene improvement programming not just hygiene programs.
- Policy is essential and necessary to the long-term survival of hygiene efforts.
- Budgetary commitments on the part of a government to hygiene efforts can establish the legitimacy and positioning of hygiene.

8. GAPS IDENTIFIED AND RECOMMENDATIONS

Based on these conclusions and these implications from both the desktop review of all available hand washing programs and the HIF *at scale* examination, the following major gaps were found and possible corresponding recommendations for hand washing programs were identified.

Table 4: Hand Washing Gaps and Recommendations

GAPS	RECOMMENDATIONS
1. Insufficient research on sustained behavior over time, i.e. after than 5 years, 10, 20 years	• Conduct evidence-based studies on *at scale* sustained hygiene improvement behavior change three or more years after project implementation
2. Insufficient research on use of behavioral approaches *at scale* in developing world	• Test "multiples *at scale*" using the 30/60 benchmark
3. Insufficient correlation between combination of interventions types, i.e. communication, training, policy, community/social, products, service improvements, and their impact on behavior change and sustained behavior	o Document "best practices" on a small-scale, large-scale, and when possible, *at scale* to share what is working and why. o Develop state-of-the-art behavior change pieces that offer a menu of options for programs to use based on behavioral needs of audiences
4. Insufficient integration of hygiene into broader health and non-health programs	Begin to consider hygiene improvement programming and not programs.
5. Lack of strong partnerships	Develop hygiene coalitions from which programs can pull expertise and technical assistance.
6. Insufficient investigation on social normative change mechanisms, i.e. less effective but more recruitment in the short-run for a more effective, more impact in the long-run	Investigate further the "less effective but more recruitment in the short-run for a more effective, more impact in the long-run."
7. Insufficient comprehensive use of the HIF	Encourage 3-5 countries to use the full HIF with HIP technical assistance and monitor and document the process fully to share and update the framework.

Annex 4

REVIEW OF SAFE DISPOSAL OF FECES

Despite the international water decade (1980-1990) and the focus on improving access to sanitation globally, current research shows that over 2.4 billion people still lack access to sanitation, particularly in India and China, and that access in Africa is declining (Cairncross, June 2003). In addition, in many areas, improved sources of sanitation may be available but not used, either because they are improperly maintained or culturally unacceptable.

Improved sanitation is a term used to describe access to adequate excreta disposal, generally in the form of a latrine or a sewer system rather than open fields or open water sources. The World Health Organization lists improved sanitation as one element that can decrease diarrhea and improve health, particularly in children under 5 years of age, though Cairncross cites research from Hoque et. al. that indicates people with toilets are more likely to wash their hands thoroughly (Cairncross, 2003). Thus, it may be difficult to separate hygiene behaviors into discrete actions.

It is widely recognized that sanitation programs focusing on hardware have not been very successful in changing behavior, despite the increase of improved sanitation sources throughout the world. Yet, without access to hygienic latrines, improved sanitation behaviors are not possible. Thus, experience over the past 20 years indicates that although hardware is necessary, it is not enough. The necessary complement to sanitation hardware – latrines – is hygiene promotion and education to ensure that users understand why and how to engage in these improved sanitation behaviors. And knowledge awareness, though a first step, is not enough to change behavior. Therefore, classic behavior change methodologies are required to achieve sustainable behaviors that will improve health.

In 2000, the Water Supply and Sanitation Collaborative Council (WSSCC) helped to develop a millennium development goal to improve access to sanitation. This, in turn, has helped to renew global focus on this issue. The World Health Organization has summarized key thinking about how to meet the improved sanitation targets. This 2004 publication, *The Sanitation Challenge: Turning Commitment into Reality*, outlines some key issues and identifies practical actions for the diversity of players to take. While this document does not identify specific program elements, it can be used as a roadmap to identify the various players and focus on different issues to address.

Efficacy

The health benefits of sanitation have been widely documented (Cairncross, 1992). Improved hygiene and sanitation provide health benefits at both the individual household and community levels. At the household level, sanitation may assist in decreasing incidents of diarrhea, preventing worms that cause stunted growth and impede cognitive development, and reducing trachoma. A DFID guidance note cites research from Brazilian shantytowns indicating that 1) children in households without toilets are twice as likely to have incidents of diarrheal episodes as those children in households with toilets; and 2) children in communities without sanitation infrastructure are three times more likely to have diarrheal episodes. Once fecal contamination in the environment is reduced, increases are seen in child health and quality of the water supply. These findings suggest

that individual households should not bear the entire cost for a process that has a larger public health benefit (Cairncross et. al. 2003, Cairncross, 1992).

Program Effectiveness

It is widely recognized that research is lacking on the range of sanitation issues (Gil et. al. 2004). Moreover, the research available focuses on behavior around latrine use and virtually ignores other critical questions, such as, "Where does the caretaker dispose of water contaminated with feces?" or "What happens to the bowl used to wash an infant's bottom or the soiled clothing?" In a Water and Sanitation Program (WSP) study in Cambodia, householders indicated that they threw babies' feces into a corner of the compound or surrounding banana groves rather than into the latrine. Wastewater was also disposed of either in pools around the compound or in the surrounding banana groves. This study notwithstanding, these seem to be fecal-oral transmission routes that have not been adequately studied or documented.

Much research on program approaches describes small-scale or pilot projects or studies, but nothing points to success at large-scale behavior change around sanitation behaviors. Indeed, much of the literature is ten years old. For example, the PHAST approach to participatory behavior change in hygiene, developed by UNDP, World Bank and WHO, was tested in four African countries in 1994 and found to have promising results. Multiple stakeholders were involved, including governments, donors, multilateral agencies, and NGOs. The methodology worked, but scaling up was advised to be very slow. A projected 1997 external review of PHAST was not found (WHO 1997).

Another 1994 pilot project, (SAFE) in Bangladesh, demonstrated two models for improving sanitation behavior. The first focused on educating one community group on safe hygiene practices while the second added hygiene promotion activities with a range of other actors so messages were coming from multiple places: for example, through schools, child-child, X, Y. While both models were successful, the behavior change was higher in the second model intervention areas. This project highlights the efficacy of involving multiple players at many different levels reinforcing the same messages (Bateman, 1995). The intervention still relied on interpersonal communication to change behavior.

Following the devastation of the Dominican Republic by Hurricane George, work under USAID's Environmental Health Project (EHP) focused on the dual activity of rebuilding the infrastructure accompanied by behavior change interventions. In the small intervention area, safe disposal of feces from children's potties increased to 100 percent (up 10 points), and cleanliness of the sanitation facilities increased as well, though some latrines were being used for storage, indicating non-use. Multiple players were involved in this intervention and the final phase was to disseminate tools and materials to foster replication and scale up within the country. Though expertise in hygiene behavior changes was transferred to a wider network, no organization continued to support the network after the project ended (Bendahmane, 2004).

Sanitation improvement in Cambodia, Indonesia and Vietnam was assessed by the Water and Sanitation Program of East Asia and the Pacific. The guiding values of the Cambodia small scale intervention included "optimum stakeholder participation, informed choice by all concerned, national leadership and ownership of the process and learning generated, national capacity development, bottom-up and horizontal knowledge sharing." Communities appreciated being consulted on whether and how to build sanitation facilities. Major motivating factors were: prior

experience using latrines, easy access to supplies/construction materials, diminishing access to land. And, once demand is generated, multiple options need to be in place. Behavior did change, particularly in women, but families continued to dispose of children's feces in the field, and people continued to defecate where it was convenient, indicating that sustained behavior change approaches are needed until more widespread behavior change is present. Both men and women saw cost-benefits for improved sanitation, though women felt the value more than men.

An EHP intervention in Peru and Nicaragua to promote hygiene behavior change within C-IMCI showed the importance of engaging a range of partners, building capacity and interpersonal communication. It also illustrated that having hygiene products accessible within the community through a revolving community fund increased the use of children's potties in Peru (Favin, 2004).

A study in Benin looked at household latrine adoption behavior. The study found that on main arteries out of urban areas more latrines were available decreasing proportionately to the distance from the city or town (WSP September 2004). This finding supports the Cambodia finding that prior experience with latrines may influence demand.

Community latrine development was another approach tried in India's Andhra Pradesh state. Several communal bath houses (with latrines, showers, and sinks) specifically for women were built in several villages. No evaluation was found on how this approach worked. Another important area is school latrine construction and behavior. This has gotten more attention recently as it is a strategy to improve children's health and to retain girls in school. A UNICEF, WSP, NETWAS study in Uganda showed that in most schools high knowledge of hygiene and sanitation exists, but low behavior change. Health clubs are functioning in schools and some links with the community are growing. Indeed, local and district governments have started including sanitation improvements into their own budgets. IRC and UNICEF have identified the need to document lessons learned in implementing school sanitation and health education programs to avoid replication. School sanitation programs, however, can complement and enhance community programs to influence household behavior change, provided that school latrines are used (not locked), properly maintained, and supported by hygiene education in the curriculum.

A 2002 study in Nepal measured how well behaviors were maintained once a program is completed. The findings indicated that behaviors were maintained even several years after a project has ended. However, for several behaviors, particularly those related to sanitation, behavior was maintained among more people when the intervention was two years as opposed to one year, indicating that the longer intervention period helps to solidify new behaviors (Rai, 2004).

Barriers

Research indicates that in the past sanitation programs relied heavily on technical specifications rather than on target users' beliefs or practices. Thus, latrines were built to be optimal in performance and then subsidized so that target users could afford them. This approach is neither successful nor sustainable and often does not reach the target users most in need. Current thinking espouses eliminating subsidies, offering more local and affordable choices through local construction, and focusing instead on marketing improved sanitation options (WSP, August 2004, Shayo, 2004). The WSP cites four major reasons for a marketing focus that implicate choice and scale. Thus, marketing

- Ensures that people choose what they want and are willing to pay for.
- Is financially sustainable.
- Is cost effective and can be taken to scale.
- Goes beyond providing the hardware.

When marketing sanitation, target users' motivations must be well understood and considered. For example, in Benin and the Philippines, people using new sanitation facilities ranked lack of smell/flies, cleaner surroundings, privacy/safety, and pride in having visitors over as some top reasons for getting a latrine (Cairncross 1992; WSP August 2004).

Rebuilding communities in the wake of natural disasters provides an opportunity to build hardware while reinforcing behavior change to prevent disease. Understanding the motivations for latrine use is critical. In a recent news story from the devastated Banda Aceh province of Indonesia, focus in the Tsunami relief camps is on constructing enough toilets to prevent large scale disease. Relief workers are working closely with community leaders to determine latrine placement and design to maximize use.

Latrine design is also important. Too often, programs develop only one design that may or may not be acceptable to the target population. Cairncross and others have stressed the need to provide a range of choices in latrine design as part of a marketing strategy. This focus on choice fits well with the concept that developing locally available models is critical for adoption and use. Studies have found that construction, maintenance, and use of latrines were more likely when designs used locally available products (WSP, June 2004).

The WSP study in Cambodia indicated that if families have initial negative experiences using a latrine, for example, flooding or pit collapse, such experiences will likely diminish demand. Thus, it is critical to ensure that initial users have positive experiences. Another deterrent to household installation of latrines stems from myths or fears, for example, children might fall through the hole.

Proper latrine maintenance is critical to continued use and to continued reduction in disease. If latrines are not maintained, cleaned, and functioning properly, they become disease transmission sites rather than disease prevention sites. Thus, a focus on hygienic maintenance behaviors must accompany any sanitation program.

Another clear barrier is placing the cost burden on individual families. Improved sanitation must be considered a high priority with clear benefits for a family to invest because latrine installation is an expensive capital outlay. Families are willing to pay for sanitation, but poor families, in particular, cannot pay for this hardware in cash. Thus, alternative schemes must be implemented such as mechanisms to pay in installments, through labor, or micro-credit schemes (WSP 2002).

The Cambodia study recommended that sanitation programs allocate more time for initial contact periods to explore current awareness and demands in communities and for construction and for post-construction reinforcement of behavior change (WSP 2002). This finding is substantiated by the Nepal study that showed sustained behavior changes were seen where programs had lasted longer. Too often programs are developed as short-term fixes – to get quick behavior change results – and then leave long before the behaviors have had a chance to become habit in an individual, much less normalized among entire communities.

Products and Private Sector Inventions

Meeting the sanitation challenge at a scale that can improve health outcomes as well as economic wellbeing requires new solutions. Marketing is seen as one solution, while involving the private sector as a partner – including NGOs – is seen as another. Private sector should be encouraged to develop creative and innovative solutions to the supply side of sanitation that in turn can stimulate demand. Moreover, services for the poor should not be "poor services" (SDC, 2004).

As implied throughout this discussion, research on sanitation programming is lacking, though latrines are clearly the most common commodity discussed in the sanitation literature. Ensuring viable and culturally appropriate designs at an affordable price is critical. Indeed, the literature mostly describes cement slab latrines, a device that may help to transmit disease if not kept scrupulously clean. Other options could be explored such as ceramic slabs, used regularly in Turkey, and newer designs such as Sanplat. Sanplat is an improved latrine slab that is smooth and slopes to promote hygienic cleaning, and has elevated footrests and a small drop hole – a feature that makes this product appropriate for children. Sanplat can also be constructed in a lightweight dome shape that easily fits over any pit (www.sanplat.com).

The World Bank's Water and Sanitation Program (WSP) reviewed a financing scheme in Burkina Faso that is trying to promote and fund urban sanitation through the application of a small surcharge on water bills. By implementing this surcharge, the private sector generates funds that are used by the government to promote on-site sanitation, provide targeted subsidies for soakaways, build latrines, and ensure hygiene education in schools (WSP, August 2004(2)).

Even less research exists on programs to improve the safe disposal of infant feces. While EHP reviewed the literature on knowledge and practices, the paper did not identify programs that tried to change behaviors. This review found that reported behavior was more optimistic than observed behavior. Recommendations suggested developing programs to improve disposable diaper use by children, get toddlers to use potties, improve children's use of latrines, and improve caregiver perception of dirtiness of infant feces and risk of its unsafe disposal—either in environment, wiping bottoms, washing hands and clothes (Gil, 2004). These recommendations must be studied further to determine the feasibility of such programs, particularly in areas of extreme poverty.

"Disposable diapers for all" is a recommendation that is neither practical nor environmentally sustainable. While the cost of disposable diapers in the developed world might be affordable, it presents an unrealistic, recurring cost in the developing world. Moreover, disposing of these "disposable" diapers would require more land than is available and put an unbearable strain on the environment. People seek sanitation alternatives when land becomes scarce, thus, producing more and hazardous waste would complicate matters.

The alternative then is to explore expanding the use of children's potties or developing appropriate "child seats" for latrines and to curb fears in using them. The EHP research in Peru indicated that if the commodities were available and accessible through a revolving community fund, they were more likely to be used (Favin, 2004).

Conclusions

The literature shows that building sanitation infrastructure does not automatically produce changes in the hygiene behaviors of the people. This requires separate hygiene promotion and behavior change techniques. Those programs using multiple players and multiple interventions to communicate the same message achieved greater behavior change (Bateman, 1995), but most of the behavior change work done to date has been at a small scale.

Those with sanitation experience were found to adopt sanitation behaviors more readily than those without prior experience. This suggests that programs should identify target groups most likely to succeed and use those early adopters to increase demand and promote proper sanitation practices (WSP July 2002, WSP September 2004).

Indeed, a shift in thinking has occurred that encourages governments and programs to market sanitation rather than offer subsidies to just a few people. Successful marketing strategies depend on a variety of choices: from latrine designs to payment options. The research also says that marketing should be developed around cultural values for sanitation (in general these include: reduction of smell, more privacy/safety, convenience, cleaner surroundings, pride when visitors come—all before better health).

Accompanying a more market-oriented approach to improving sanitation behaviors is a need to involve the private sector as a partner to assure that hardware options are available to support any new behaviors adopted. Although large-scale behavior change programs have not been done in this area, when considering *at scale* programs, private sector involvement will be critical.

Implications

- **Choice is key for sanitation, especially for the poor**. Sanitation engineers typically built the Cadillac type of latrine that was technically perfect but very costly and not always locally available. When users have design options that differ in cost, they can decide what model will best meet their needs given the associated costs. Moreover, locally available materials and labor make it more likely that people will choose to build a latrine.
- **A variety of costing options are necessary: incremental payments, bartering, micro-credit schemes.** Because the capital outlay for sanitation is so great relative to a household's income, different ways to finance this outlay are critical. The three mentioned have been cited in the literature, but other creative options should also be explored.
- **Multiple stakeholders are key.** Even the limited sanitation research shows that involving multiple stakeholders to deliver the same messages is efficacious. In particular, it will be important to involve the private sector in such programs both to ensure choice and to increase demand.
- **Mainstreaming should not sideline sanitation issues.** Several studies mentioned that when water and sanitation were integrated into other initiatives, sanitation was often left out of the intervention altogether or given very little attention, thereby limiting the potential benefits sanitation programs have to offer.
- **The dearth of literature suggests that more programs need to be documented and disseminated.** Behavior change results have not been well documented or disseminated. Such documentation is necessary to validate the approach as well as to replicate it around the world.

Gaps

- Large scale programs to promote sanitation behaviors have not been tried. It is impossible to say what works *at scale* when programs have not done this.
- Programs that address behaviors around the full complement of fecal-oral transmission routes, including disposal of contaminated water and cleaning practices of soiled clothes or pots.
- Documentation and dissemination of successful sanitation programs. The research that exists is scant.
- Knowledge of what works in changing behavior around disposal of children's feces.
- Knowledge of which costing schemes will stimulate demand or whether a variety of options would be most effective.
- Effectiveness of marketing sanitation to create demand. This is a new approach that has yet to be evaluated.

Recommendations

- Design, implement, document and disseminate findings from large scale programs around hygiene behavior change, particularly sanitation behaviors and disposal of children's feces.
- Determine whether marketing sanitation is an approach that works.
- Determine which costing schemes promote sanitation demand and whether a variety is more effective at stimulating demand.
- Develop behavior change programs to address the full complement of fecal-oral transmission routes.
- Determine optimal program length to achieve greatest behavior change at a reasonable cost.
- Develop strategies to keep sanitation issues at the forefront when mainstreamed or integrated into other programs such as child survival, education, HIV/AIDS etc.

Annex 5

REVIEW OF SAFE WATER STORAGE AND TREATMENT

Safe Water Management at the Household Level

Safe household water management means maintaining the microbiological quality of water through collection, transport, and storage in the home. A large body of evidence now shows that the microbiological quality of water in the home comes from a contaminated source or from a potable source that becomes contaminated during transport and/or storage (Wright et al. 2004).

A review of the literature shows that, in cases where water is taken from a safe source, transport and storage in a closed, narrow-mouthed container helps to prevent contact with contaminated items and thereby maintains the microbial quality of the water (Sobsey 2002). In cases where water is taken from a contaminated source, safe transport and storage followed by treatment in the home greatly improves the microbiological quality of the water and therefore reduces diarrhea and other waterborne infectious diseases (Sobsey 2002).

Several technologies are available for treating water in the home, including ceramic filters, water chlorination and storage in an appropriate vessel, solar disinfection using heat and UV radiation (SODIS), and combined chemical coagulation, flocculation, and disinfection. All but the ceramic filter method have been proven effective in epidemiological field studies to reduce the risk of diarrhea and other waterborne infectious diseases, including cholera (Thompson 2003).

Efficacy

Research in the late 1980s and early 1990s indicated that the health benefits resulting from improvements in water quality were not as great as the benefits that result from hygiene and sanitation interventions (Esrey et al. 1985, 1986, and 1991). These studies and reasoning based on the F-Diagram led some environmental health specialists to conclude, "…that most endemic diarrheal disease is not waterborne, but transmitted from person to person on hands, food and other fomites because of poor hygiene practices" (Clasen and Caincross 2004).

Beginning in the mid-1990s, a new body of evidence emerged showing that improved management of water at the point of use can reduce the incidence of diarrhea 30 – 40 percent (Thevos et al. 2000(a); Thevos et al. 2000(b); Makutsa et al, 2001; Quick, 2003). The earlier studies looked at the quality of water at the source while new studies look at the quality of water at the point of use.

Evidence is now conclusive that simple, low-cost strategies for safely storing and treating water at the household level greatly improve the microbial quality of water and result in reductions in diarrheal disease morbidity comparable to those achieved by hand washing and safe feces disposal (Sobsey 2002; Thompson et al. 2003).

Effectiveness

Of the methods shown in epidemiological studies to substantially reduce the risk of diarrheal and other infectious diseases, the evidence of programmatic effectiveness is strongest for safe transport

and storage methods used alone (when it is clear that the source of water is safe) and safe transport and storage combined with point-of–use-treatment with sodium hypochlorite or a dilute. USAID is funding several programs that focus on safe storage and treatment with chlorine dilute in India, Kenya, Madagascar, Malawi, Rwanda, Tanzania and Zambia. Programs in these countries are using an adaptation of the Safe Water System (SWS) developed by the Centers for Disease Control and Prevention (CDC) and the Pan-American Health Organization (PAHO). The SWS consists of 1) safe water storage in a container with a narrow mouth, a lid, and a spigot or narrow neck for pouring that helps prevent recontamination, 2) treatment of water with a sodium hypochlorite solution produced in-country, and 3) behavior change techniques that reinforce using appropriate safe storage and treatment behaviors.

Studies of point-of-use treatment and storage programs show that small pilot projects have been more effective than national scale programs both in achieving behavior change and in reducing the incidence of diarrhea (Bateman et al. 2002; Makutsa et al. 2001; Quick 2003; Macy et al. 2002; USAID 2004(b)). In addition, studies of both small-scale programs and large, national programs agree that interventions that include some form of interpersonal communication to change behavior are more successful at reducing the incidence of diarrheal and other waterborne infectious diseases than programs that rely on social marketing or hygiene education alone (Thevos et al. 2000(a); Thevos et al. 2000(a); USAID 2004(b)). Small pilot programs have also been more successful than large-scale programs in improving more than one type of hygiene behavior in the same household. For instance, several small pilot projects have achieved impressive results in improving hand washing, safe excreta disposal, and household storage and/or treatment behaviors and have reduced the incidence of diarrhea using primarily interpersonal communication techniques that focus on negotiating behavior changes with family members at the household level.

While controlled field trials of SODIS and a Proctor and Gamble product called PuR that uses combined flocculation, coagulation and disinfection have been shown to reduce the incidence of diarrheal and other waterborne infectious diseases, very little has been published about the programmatic effectiveness of these methodologies.

The SODIS methodology has been introduced in pilot projects in Kenya, Sri Lanka, Thailand, Uzbekistan, and at the national level in Indonesia. Unfortunately, no published evaluations of the national level program in Indonesia exist. Short case studies on various pilot projects found on the SODIS website (http://www.sodis.ch/) indicate that the pilot projects were implemented using community mobilization techniques, interpersonal communication through household visits by community development workers, and, in Indonesia and Sri Lanka mass media techniques. The case studies on Indonesia, Sri Lanka, and Thailand, show that the number of users continued to increase over the life of the projects. However, large numbers of SODIS users in Indonesia and Sri Lanka reported that they treated their water using SODIS only part of the time. A report on the SODIS pilot project in Uzbekistan shows an increase in users and a substantial decrease in diarrheal and other diseases over a two-year period. The main barriers to adopting the SODIS methodology included lack of plastic bottles in Thailand, skepticism about the effectiveness of the methodology, and mistakes in applying SODIS.

One drawback of both the SODIS and SWS methods of treating water is that turbid water reduces their ability to improve the microbiological quality of the water. One advantage of the PuR product is that the coagulation and flocculation product allow it to clean turbid water while disinfecting it at the same time. Health intervention trials using PuR consistently show that it reduces diarrheal

illness (Souter et al. 2003; Reller et al. 2003). Another advantage of PuR is that it removes arsenic and some heavy metals and pesticides. USAID, Johns Hopkins Bloomberg School for Public Health/Center for Communication Programs (CCP), Population Services International (PSI), and Proctor and Gamble have formed a strategic public-private partnership called the Safe Drinking Water Alliance to test the programmatic effectiveness of PuR using different approaches depending on country need. These programs will develop behavior change strategies that help ensure safe water practices using PuR and help sustain its use at the household level. The Alliance is currently testing a commercial market approach in Pakistan, a social model approach in Haiti which combines behavior change communication and social marketing, and an approach that can be used in emergency situations.

Cost-Recovery and Affordability to the Consumer

At this time, documented evidence is lacking on how well SWS or PuR work in an unsubsidized environment (USAID(c)). As a result, several sources argue that cost-recovery and sustainability are a major challenge for programs based on both SWS and PuR (USAID (a) 2004; USAID (b) 2004; USAID(c)). For instance, USAID concludes that, "…for chlorine disinfectant, subsidies are typically one-half to one-third of the direct product cost of the product, while the indirect costs for social marketing and distribution are 100 percent subsidized" (USAID(a) 2004). While some small-scale CDC studies of SWS attempted partial cost-recovery, none were conducted in subsidy free environments. Furthermore, although Proctor and Gamble is testing the viability of using an unsubsidized private sector commercial approach to distribute and market PuR in Pakistan, no information on the outcomes of these efforts is currently available.

Contradictory evidence also exists about the affordability of SWS and PuR products to the consumer, particularly the poor. Several small-scale CDC studies have concluded that both the sodium hypochlorite solution and the improved storage container are affordable to even low-income consumers (Luby et al. 2001; Makutsa et al. 2001; Semenza et al. 1998). However, an evaluation of the national SWS Zambia Clorin Program concluded that price was the reason most frequently given for stopping Clorin (a sodium hypochlorite solution) use (USAID (b) 2004). A rough estimate of the monthly cost for a family of five for PuR (about US$ 7.50/month excluding the cost of storage vessels) is many times greater than the cost of using the chlorine dilute method (about $.30/month excluding the cost of a storage vessel). This raises questions as to whether PuR will ever be affordable to very low-income households without being subsidized.

Cost-Effectiveness

One of the Millennium Development Goal's targets is to halve the proportion of people without access to safe drinking water and sanitation by 2015. Providing the water supply infrastructure needed to meet this target will cost billions of dollars and will likely not be accomplished by 2015. Both the World Health Organization (WHO) and USAID advocate providing households with knowledge, skills, and low-cost technologies to safely store and treat water in the home as a stop-gap solution to meet the MDG target (USAID (a); WHO 2003). However, no cost-effectiveness studies of household storage and treatment interventions have been published to date. WHO's *World Health Report* 2002 identified the use of chlorine dilute as cost-effective, but did not examine other methods of disinfection, such as SODIS or PuR.

Conclusions

Simple, low-cost strategies for safely storing and treating water at the household level do exist and greatly improve the microbial quality of water. Using this method reduces diarrheal disease morbidity comparable to reductions achieved by hand washing and safe feces disposal (Sobsey 2002; Thompson et al. 2003). Very few attempts have been made to implement at scale household water management interventions. In cases where large scale interventions have been attempted, very little has been done to assess and share lessons learned about program effectiveness.

Although the health impact of combining one or more of the three hygiene interventions will not be cumulative, small-scale programs have achieved substantial health impact and behavior change results (Bateman et al. 2002; Favin 2004; Torres et al. 2004). A recent meta-analysis of the literature, however, concludes that combining any two or all three interventions provides no greater health impact than a single intervention (Fewtrell et al. 2004).

Economic sustainability is a key question when considering the SWS and PuR methods both in terms of program cost recovery and whether low-income households can afford these technologies if unsubsidized. Some evidence indicates that the SODIS methodology is the most affordable for the poorest households, though getting households to practice the SODIS technique correctly and consistently has been difficult, and some households have experienced difficulties in finding enough plastic containers to utilize SODIS to meet all of their drinking water needs. Purifying turbid water is a problem for both the SWS and SODIS methods. Little published evidence exists about how effective programs are at getting households to combine these methods with others that remove sediment from the water.

Implications

- **Find the optimal mix of behavior change approaches** to change and sustain storage and treatment behaviors to take the three methodologies (SWS, SODIS, PuR) to scale. Both small-scale pilot projects and national efforts show that mass media techniques helped build brand awareness and increased knowledge about appropriate treatment and storage behaviors while community mobilization techniques or household visits helped households to adopt and sustain appropriate behaviors.
- **Explore a range of choices and new, untested methods.** If unsubsidized water treatment and storage methods are not economically sustainable, more programs need to offer a range of choices, including new, lower-cost methods.
- **Program duration is important.** The literature on sanitation behaviors showed that longer programs resulted in behaviors that were sustained for longer time periods. Very few studies have examined the sustainability of household water management behaviors.
- Household storage and/or treatment methodologies have been integrated into some disaster response and other health programs, such as HIV/AIDS and C-IMCI. Testing is insufficient to determine sustainability of behavior change, cost-effectiveness, etc.
- **Promote all three facets of hygiene**. Studies have shown that though the disease reductions are not cumulative, they may result in improved outcomes and help to sustain new behaviors.
- **Promote more than one storage/treatment method** when working in areas with turbid water.

Gaps

- More needs to be done to assess and share lessons learned about the program effectiveness of the current household water management interventions being implemented in the field.
- Little is known about whether household water management and/or storage techniques being implemented in the field are cost-effective.
- No household water treatment and storage programs have looked at the effectiveness of promoting multiple storage and/or treatment methods simultaneously.
- Little is known about whether combining interventions leads to greater behavior change results in hygiene promotion.
- Household water management interventions have rarely been integrated into other health or non-health programs.

Recommendations

- New technologies should be tested for efficacy and program effectiveness.
- Assess and share lessons learned about the effectiveness of existing large-scale projects.
- Design, implement and evaluate at scale hygiene improvement programs that use all three key facets of hygiene (hand washing, safe disposal of feces, safe water storage and disinfection).
- Explore how to improve cost-recovery. This will require offering choice of storage and/or treatment methods and cost options.
- Assess cost-effectiveness of various, large scale, hygiene improvement interventions.
- Implement and evaluate the program effectiveness of integrating hygiene improvement interventions into other health and non-health programs.
- Document and disseminate lessons learned on program effectiveness of household water management interventions.
- Support programs that try to improve hand washing, safe feces disposal, and safe water storage and/or treatment behaviors in one program in at scale situations to determine effectiveness.

Annex 6

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