



Strategies & Challenges to Handwashing Promotion in Humanitarian Emergencies

Key informant interviews with agency experts

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EXECUTIVE SUMMARY

There is relatively little information published in the peer-reviewed literature on handwashing behavior among those affected by a humanitarian emergency or on the behavioral effects of routinely applied hygiene promotion strategies in humanitarian emergencies. The international and non-governmental organizations that provide water, sanitation, and hygiene (WASH) services to internally-displaced and refugee populations in humanitarian emergencies have an abundance of field experience and expertise, institutional memory on the nature of handwashing promotion employed in emergency settings, and access to unpublished information on evaluations of handwashing promotion in the emergency context.

Our goal was to leverage the expertise of representatives of such agencies to understand current approaches and challenges to improving hand hygiene in humanitarian emergencies. Our specific aims were:

- To understand the strategies currently employed to improve hand hygiene among in humanitarian emergencies
- To examine facilitators and barriers at the institutional level to implementing hand hygiene promotion during humanitarian emergencies
- To describe monitoring and evaluation of hand hygiene promotion programs in the emergency context
- To identify data gaps and research needs in the area of hand hygiene promotion in humanitarian emergencies

We carried out open-ended key informant interviews with representatives of organizations providing, funding, or supporting WASH services to refugee populations. Eligible respondents for the study were WASH experts who were knowledgeable about water, sanitation and handwashing in the humanitarian emergency context and who had field experience in multiple humanitarian emergencies. We identified key informants at a meeting of emergency environmental health practitioners and used snowball sampling to identify additional respondents. We coded themes based on key concepts determined before and during data collection using ATLAS.ti. We used content analysis to identify trends in and across individual codes.

Our 12 respondents were experts in WASH or public health promotion in UN agencies, non-governmental organizations, and a government institution. A majority of respondents dedicated all or most of their time to work related to WASH in humanitarian emergency settings, although most were also involved with WASH in non-emergency settings. Their main responsibilities were advisement, technical support, coordination and capacity building.

Respondents consistently emphasized that the circumstances in each humanitarian emergency are unique and described a broad spectrum of settings ranging from organized camps for displaced persons, to displaced persons finding and settling in existing communities. A variety of factors influence the environment including the nature of the emergency and why different populations choose to enter displaced persons' camps. Respondents emphasized the importance of recognizing that humanitarian emergencies evolve over time. There may not be a one-size-fits-all or –always solution for handwashing promotion.

Respondents clearly deemed handwashing to be a critical component of the WASH strategy but identified several gaps in ensuring it is operationalized as a priority. Specifically, there is a lack of understanding or agreement between the relevant actors regarding the goals, objectives, and targets of handwashing promotion, thereby hampering the strategic development of programs.

Respondents emphasized that the diversity of the displaced population, their behaviors before the emergency, and prior exposure to handwashing promotion can affect handwashing behavior before introduction of handwashing promotion. Those populations who habitually washed their hands were believed to be more receptive to handwashing promotion; in contrast, the challenges were felt to be greater when dealing with populations that lack basic hygiene knowledge and have poor baseline hygiene practices. A lack of understanding regarding preexisting knowledge of disease transmission, traditional hygiene practices, and handwashing behavior prior to the emergency, limits development of a comprehensive and locally relevant handwashing promotion strategy. Such a lack of understanding prevents programs from making important decisions regarding appropriate hardware to promote handwashing, including the choice of the hand cleansing agent (e.g. ash versus soap) and water containers for washing. Most respondents indicated that it would be extremely useful to have information on habitual handwashing behaviors, residents' understandings about hygiene and the benefits of handwashing, and any prior exposure to hygiene-related media campaigns *before* developing interventions; however, respondents frequently indicated that baseline information on handwashing knowledge and behavior is not collected.

When asked about handwashing promotion strategies, respondents described inclusion of hardware and behavior components, and described a number of approaches for both. Several respondents indicated that, in the first phase of an emergency, agencies generally make assumptions about which motivators to use to encourage behavioral change related to handwashing. Over time, little is done to understand or incorporate changing knowledge and practices and relevant motivators and barriers in a camp population, which could undermine promotional strategies. Handwashing promotion approaches in the humanitarian setting have traditionally focused on the health benefits of handwashing as a key motivator of handwashing behavior change. Many respondents emphasized a common failure to make behavioral change approaches contextually appropriate, thus limiting the effectiveness of the overall strategy. Little research has been done to date, both in our search of the published literature and according to the WASH experts we interviewed for this study, on the motivators and barriers to handwashing in populations affected by humanitarian emergencies. Indeed, respondents cited this as a core data gap, which they emphasized is needed to develop effective behavior change communication in their handwashing promotion strategies.

Strong coordination between staff involved in providing hardware and staff implementing strategies for improved behaviors was considered essential, with one respondent stressing that, if staff responsible for each approach work separately instead of jointly, the effort may be largely unsuccessful. Respondents cited a lack of sufficient numbers of experts trained in behavior change relevant to handwashing, as well as other hygiene behaviors. There appears to be a need for behavior change experts at the global level in many (not all) organizations, through to local levels. Indeed, there is a substantial need to develop the capacity to train up, supervise, and later strengthen a relatively unskilled workforce from the local community to deliver what can be complex, participatory methods to improve behavior.

Organizations aim to distribute soap routinely in quantities indicated by SPHERE standards. Respondents indicated that these standards do not specify quantities of soap for handwashing, like those for bathing and laundry. There are also no SPHERE standards for water dispensers for handwashing. Containers can be repurposed or used for multiple purposes other than handwashing, and use for handwashing may become less of a priority and less convenient. Some respondents indicated that tippy-taps are not acceptable everywhere and do not last long. Efforts to develop pre-fabricated, individual devices are being explored. Consistency and frequency of soap and water dispenser distribution is highly variable in the post-acute phase and depends on funding, prioritization, availability of local markets for procurement of materials, transport networks for movement of such goods, weather and seasonal changes. When choosing hardware for handwashing, there is a tradeoff between using locally available materials which are less costly and easier to obtain and distribute, and improved materials that are typically more costly, but desirable. Respondents described a lack of transparency and questionable motivations on the part of the private sector for getting involved in humanitarian aid. While some felt collaboration with the private sector could drive innovation, there seems to be a general mistrust of the private sector. Communal handwashing stations situated next to communal latrines are common in the acute phase of an emergency, but maintenance of soap and water are core problems due to a lack of ownership. Evaluating hardware uptake and acceptability is rarely done despite the perceived utility of such data for emergency response agencies.

Most respondents felt monitoring and evaluation efforts are an appropriate use of funds but are not considered a priority. While most organizations put forth efforts to monitor handwashing promotion programs, evaluations of programs are rare. Respondents felt the data on handwashing behavior is seldom collected and when it is collected, it relies on self-report through KAP surveys. While respondents agreed that evaluations would be valuable, the resources, expertise and time are often not available. Due to the unpredictability of emergencies, it is difficult to get third party evaluators who are available to be mobilized quickly after the onset of the emergency. Several respondents mentioned using formative research, generally involving focus group discussions, to understand certain facets of their program and to assess how conditions and behaviors change over time as the emergency evolves. However, several respondents said that these data are often not used to improve existing programs or programs implemented in other emergency settings. Overall, there is substantial reliance on anecdotal evidence, rather than on systematic data collection.

Scalability and sustainability of a program or individual program components were overarching concerns for developing and implementing any handwashing promotion approach. A key issue for sustainability relates to the maintenance of facilities and materials and building capacity for communal ownership.

Respondents identified a number of data gaps and research needs necessary to strengthen their organizational capacity to improve handwashing among emergency-affected populations. Broader data gaps/ research needs are listed below (more details in the body of the report):

- Understanding barriers and motivators for handwashing behavior including triggers and ways to sustain behavior
- Establishing reasonable or feasible targets for handwashing behavior

- Understanding the pre-emergency and immediate post-emergency context in order to design a tailored handwashing promotion strategy
- Designing behavior change approaches
- Assessing sustainability and financing of approaches
- Identify handwashing hardware that improves the effectiveness of handwashing promotion programs
- Understanding how to motivate maintenance of handwashing facilities

This research was limited to individuals working in emergencies at the global and regional levels, rather than individuals at the country or local levels. The data from these experts suggest that information sharing happens primarily among global level staff, with infrequent involvement of staff at country and local levels in sector-wide learning. While a lot of effort has been devoted to preparing handwashing promotion materials, there has been limited awareness and sharing of these materials. To further elucidate the challenges to handwashing promotion among those working on the ground, the next phase of this research will involve data collection among hygiene promotion program managers, hygiene promoters, and refugees themselves in an ongoing humanitarian emergency.

In conclusion, handwashing promotion is deemed important by experts in WASH in emergencies. However, there are a number of constraints to success of programs to promote handwashing among emergency-affected persons. These include a lack of targets for prevalence of handwashing practice among the target population, lack of attention to and capacity for developing and implementing effective behavior change communication approaches, lack of understanding of best practices and use or acceptability of different types of handwashing hardware, and limitations in improving programs based on existing knowledge derived from the development context.

INTRODUCTION

Diarrhea and acute respiratory infections account for nearly 30% of deaths among children displaced due to humanitarian emergencies¹, with diarrhea causing up to 40% of child deaths in acute emergencies². Intense crowding and acute and chronic malnutrition may contribute to diarrhea and respiratory infections in refugee camps. Sanitation infrastructure can be overwhelmed quickly³ with the influx of displaced persons, and water quality can be poor^{3, 4, 5, 6}, contributing to the high diarrhea risk. Water scarcity is also a common problem. Given these conditions, hand hygiene is of substantial concern to populations affected by humanitarian emergencies. Findings from non-emergency settings indicate the potential to reduce diarrhea and pneumonia by up to 50% among young children by promoting handwashing with soap⁷. A meta-analysis by Aiello et al. found summary risk reductions of 31% for gastrointestinal illness (n=24 studies), and 21% for respiratory infections⁸.

Despite robust evidence for the health benefits of handwashing, recent data collected by the London School of Hygiene and Tropical Medicine and the International Rescue Committee indicate that, in long-standing refugee camps, handwashing is practiced infrequently, especially at critical times when pathogens may be transmitted to or from hands^{9, 10}. Some of the challenges to hand hygiene, and potential barriers to responding to handwashing promotion in such settings, may include lack of consistent supply of water, crowded living conditions, sometimes novel mix of ethnicities and cultures, and relatively poorly formed handwashing habits (as shown in data from non-refugee populations¹¹).

There is relatively little information published in the peer-reviewed literature on handwashing behavior among those affected by a humanitarian emergency or on the behavioral effects of routinely applied hygiene promotion strategies among displaced persons. In a 2012 evidence review by Sanitation and Hygiene Applied Research for Equity (SHARE) at the London School of Hygiene & Tropical Medicine, investigators identified only five “systematic studies” on hygiene, an all-encompassing term used in the paper to include handwashing and other behaviors such as menstruation management¹². Among these, only two studies, both focused on health effects of presence or absence of soap, were conducted among refugees or internally displaced persons; two others were conducted in the midst of cholera outbreaks and the last in a flood-prone area. There is, thus, a substantial gap in the literature regarding the approaches to, challenges of, and effects of handwashing promotion in the humanitarian emergency setting.

The international and non-governmental organizations that provide water, sanitation, and hygiene (WASH) services to internally displaced and refugee populations in humanitarian emergencies have an abundance of field experience and expertise, institutional memory on the nature of handwashing promotion employed in emergency settings, and perhaps, access to unpublished internal documents describing evaluations of handwashing promotion in the refugee context, or on barriers and motivators to handwashing in this population. Therefore, we carried out key informant interviews with representatives of organizations providing WASH services to populations affected by humanitarian emergencies.

More specifically, our aims were:

1. To understand the strategies currently employed to improve hand hygiene among displaced persons in a humanitarian emergency
2. To examine facilitators and barriers at the institutional level to implementing hand hygiene promotion during humanitarian emergencies
3. To describe monitoring and evaluation of hand hygiene promotion programs in humanitarian emergency settings
4. To identify data gaps and research needs in the area of hand hygiene promotion in humanitarian emergency settings

METHODS

Study design and sampling

We carried out open-ended key informant interviews with representatives of organizations providing water, sanitation and handwashing services to emergency-affected populations. Eligible respondents for the study were WASH experts with field experience in multiple humanitarian emergencies.

Initially, we targeted a range of 4-5 key organizations with different roles in humanitarian assistance, including UN agencies, non-governmental organizations (NGOs), international institutions and donor agencies. Purposive sampling was used to include a mix of respondents with either extensive experience in operational issues related to providing handwashing hardware or developing and implementing behavioral change strategies. In order to develop a more complete picture of the challenges to handwashing promotion, we selected individuals working at both the headquarters and regional level within an organization. An initial group of potential key informants were identified at the Emergency Environmental Health Forum. Subsequently, snowball sampling was used to identify additional respondents. Specifically, at the completion of interviews we asked the initial key informants for names of other WASH experts with experience in humanitarian emergencies who could offer potentially valuable information. We subsequently contacted those individuals who were recommended to determine whether their background included experience providing handwashing hardware or developing behavioral change strategies during humanitarian emergencies and if they were interested and available to participate in the study. We discontinued identifying new respondents once we reached data saturation (i.e. new information was no longer collected).

Data collection

Interviews were carried out by the three study investigators. Prior to the onset of data collection, one of the co-investigators with extensive experience in qualitative research led a brief training on carrying out key informant interviews. Topics included strategies used to establish rapport with the respondent, ways to modify questioning during an open-ended interview, probing strategies to elicit complete information, and approaches to overcome tensions or gaps during the interview process.

Initial contact was made with eligible respondents by e-mail. In the introductory e-mail message, an information sheet about the study and a consent form were provided. Eligible respondents were asked to be interviewed on two occasions for approximately one hour each, with the possibility of a brief third interview to clarify issues raised in the hour-long interviews. The eligible respondents were also asked to indicate when they were available to participate and whether they preferred to talk by Skype conference or telephone. Before starting the interview, eligible respondents were asked whether they were willing to participate; willingness to participate was defined as a favorable response (equivalent to "Yes, I am willing to take part."). They were also notified that the conversation would be audio-recorded for ease of subsequent transcription. All interviews were audio-recorded using Evaer™, a recording software plug-in for Skype™.

A list of core questions was used to guide the initial conversation. Respondents were questioned about providing WASH services and other relevant information having to do with humanitarian emergencies overall. Specific areas of questioning focused on the humanitarian emergency setting and included the following: handwashing behaviors of beneficiaries; hardware and behavioral change strategies used for promotion of handwashing; measurement of handwashing behavior; the potential role of waterless hand sanitizer; other new or innovative hardware or behavior change strategies for handwashing promotion; gaps in knowledge related to handwashing behavior and promotional strategies associated with handwashing in emergency-affected populations; and coordination of handwashing activities. Questioning was adjusted according to the background and field experience of each respondent and ongoing probes were used to delve more deeply into information collected during the interviews. During the second interviews, we also explored topics that needed additional clarity or exploration. As key informant interviews were completed and transcripts available, questions for respondents enrolled later were modified according to the information gathered during the initial interviews.

After each one-hour interview, an electronic version of the interview was sent to the transcription team in Buffalo, who transcribed the recordings into a Microsoft Word document. Once the transcriptions were complete, they were sent to the co-investigator who had carried out the interview for review and, if needed, corrections were made. Identifying information, such as the name of the participant and participating organization, was initially included in the transcript in order to solicit clarifications after the review of notes from the interview. After those modifications were made, we stripped any identifying information. The investigators shared and reviewed the interview transcripts on an ongoing basis as soon as they were typed. An iterative process involving the review of completed transcripts and additional questioning continued until data saturation was reached.

Data analysis

Once all of the interviews had been transcribed and entered on Microsoft Word and reviewed, a coding system was developed. Coding categories were derived from the initial research themes and questions, as well as key concepts that emerged during data collection. Coding of the interview transcripts was done by two of the co-investigators using ATLAS.ti, a text organizing software. Content analysis was used to identify trends of concepts in and across individual codes. Data triangulation was used to ensure that the findings were validated across different respondents. Efforts were made to identify direct quotations and case studies that illuminated key data findings.

Ethical considerations

Verbal informed consent was obtained from all study respondents. The study protocol was approved by the institutional review board at the University at Buffalo (Buffalo, New York) (Protocol # 405288-2).

RESULTS

Of 17 eligible respondents contacted, 12 agreed to participate in the study. Of the other five, three did not respond to our introductory e-mails, one cited a lack of experience in humanitarian emergencies, and the fifth refused to participate. All but 1 of the 12 respondents was interviewed on two occasions; the 12th respondent was interviewed once. All interviews were carried out on Skype.

Description of respondents

Respondents were either current or former advisors or officers in sanitation and hygiene, WASH, or public health promotion at the country, regional or global level in their respective organizations. A majority of respondents dedicated all or most of their time to work related to WASH in humanitarian emergency settings, although most were also involved with WASH in non-emergency settings. The exception was one respondent who spent 20% of time on work related to emergencies. The main responsibilities reported by the respondents were advisory, technical support, coordination and capacity building. Some respondents were also responsible for assessing the quality control of programs. A few respondents were involved in writing technical proposals for program support. Five respondents provided support on a global level for their respective organizations and the rest were region or country focused. All respondents worked in regions of Africa, some reported also working in Asia and Latin America, and several reported being involved in the response to the earthquake in Haiti.

At the time of the interviews, respondents had been in their current positions between 6 months and 12 years, with some respondents having worked in the WASH sector for 20 years or more. Two respondents described having experience with or directly participating in qualitative or quantitative research related to WASH. Two respondents had been cluster or sub-cluster coordinators for hygiene in a humanitarian emergency response in the past.

Description of organizations

Respondents had worked for two different UN agencies, four different NGOs, and one government institution. The main focus of one UN agency, three NGOs, and the government institution was in humanitarian emergency settings. The other UN agency was described to have about 20% to 50% of their work focused on humanitarian emergency settings, with the remainder dedicated to development settings. The role of the UN agencies was to provide leadership and coordination in humanitarian emergency response efforts, but not to implement programs directly. These agencies coordinated with governments of countries in which the emergency had occurred, with NGOs and other national and international humanitarian emergency responders. The primary role for all NGOs was reported to involve program implementation.

Humanitarian emergency settings: diversity and evolution

Respondents consistently emphasized that the circumstances in each humanitarian emergency are unique, with key informants describing a broad spectrum of settings ranging from organized camps

for displaced persons, to displaced persons finding and settling in existing communities. A variety of factors influence the environment including the nature of the emergency and why different populations chose to enter displaced persons' camps. Some disasters result from unpredictable, rapid and highly traumatic events involving extreme violence, while others such as floods may be cyclical and therefore more predictable, thus allowing humanitarian agencies to prepare in advance. Whether the emergency is short-term or ongoing influences the stability of a camp environment and the psychological make-up of the beneficiaries. In addition, the composition of the displaced persons in relation to nationality, sex, education, religion and economic background, and whether they came from an urban or rural setting can have profound effects on the camp environment. In some settings, the diversity of displaced persons may be very complex, involving people from multiple nationalities and cultural and religious backgrounds. One respondent mentioned that particularly in war-torn regions, physical disabilities may be common in the camps, highlighting the importance of taking this into account when designing services.

Respondents emphasized the importance of recognizing that humanitarian emergencies evolve over time. The period immediately following a disaster was often described as highly chaotic, with many respondents explaining that displaced people, particularly those affected by a rapid onset emergency, are generally under extreme stress as they seek out protection from danger, look for basic food and shelter and any medical needs, and try to locate family members. There appears to be no formal definition of the initial emergency period, with our respondents defining the time period from anywhere from six weeks to six months. Respondents explained that the period depends upon the nature of the emergency and the psychological effects experienced by the displaced persons, the extent to which displaced people were able to transport household items to the camp, the distances they traveled, and the rapidity by which basic facilities and infrastructures such as latrines and water are mobilized. One respondent explained that it generally takes at least six weeks for large shipments of basic materials such as soap or hygiene kits to arrive in camps. From an operational standpoint, another respondent indicated that the acute phase may be defined by the financial resources available to provide services and materials, which may continue over a prolonged period. A few respondents indicated that different acute emergencies can occur in the same camp. For instance, in Haiti there were two acute emergencies, with the first occurring with the earthquake in 2010 and the second being the cholera outbreak. In this example, the hygiene strategy was somewhat different and based on the specific health risks for each of these emergencies.

In the post-acute phase, the camp setting transforms into a more stable environment, with people free to move in and out of the camps. As the camp stabilizes, residents typically gravitate to people from the same social and ethnic background, and social structures and community leadership are established. Gradually, local businesses offering staple products may become available, and a cash economy starts functioning. As the marketplace gets established, some organizations introduce vouchers systems in exchange for both food and non-food items such as soap.

Handwashing behavior among displaced persons prior to hygiene promotion

Respondents emphasized that each of the following can affect the handwashing behavior of the displaced population before introduction of handwashing promotion: the diversity of the displaced population, their behaviors before the emergency, and prior exposure to handwashing promotion. Some respondents noted that, at the outset of an emergency, practices are generally poor either due

to lack of knowledge regarding the benefits of handwashing with soap or because basic materials and designated handwashing locations are not available. Respondents frequently indicated that baseline information on handwashing knowledge and behavior is not collected by agencies working in humanitarian settings. But, most respondents indicated that it would be extremely useful to have information on the beneficiaries' habitual handwashing behaviors, understanding about hygiene and the benefits of handwashing, and any prior exposure to hygiene media campaigns *before* developing interventions. Representatives from one agency indicated that it carries out multi-sectoral, rapid assessments of water and sanitation needs and hygiene behaviors among camp residents. We were told that these assessments occur during the acute phase and typically involve both qualitative and quantitative methods. Based on these initial assessments, recommendations for more short-term, intervention responses over a period of six weeks to three months are developed. Subsequently, the agency conducts ongoing assessments aimed to evaluate the evolving health and hygiene situation and to collect information that can guide program modifications to ensure that minimum hygiene standards are met. Personnel from another organization indicated that, although they do not collect any baseline data, they do evaluate hygiene behaviors about two months into the emergency and also set up ongoing systems to monitor approaches.

Understanding the context of handwashing promotion in humanitarian emergencies

Evolution of the emergency: from acute to post-acute

During the acute phase, the humanitarian community is generally focused on providing essentials such as food, drinking water and latrines. Hygiene and handwashing promotion, which are considered less of a priority, become secondary. This is in part because hygiene and handwashing promotion require that populations are stable and a basic infrastructure is in place with materials such as soap and water available, and that accompanying mobilization and communication strategies, which were described as far more challenging to implement, can be implemented. Typically, humanitarian agencies initially set up communal handwashing stations adjacent to the latrines. As infrastructures are implemented and routines are established, agencies put more emphasis on hygiene promotion.

A new camp environment, where social comforts may be absent and security is often poor, presents a range of challenges to changing behavior. Those populations who habitually washed their hands will likely be more receptive to handwashing promotion; in contrast, the challenges may be greater when dealing with populations that lack basic hygiene knowledge and have poor baseline hygiene practices. However, some respondents insisted that aspects of the camp environment may present unique opportunities for handwashing promotion. For instance, a population without substantial demands on their time is more available, and the population may have more regular access to basic materials such as soap and water than in their indigenous setting; the confined and somewhat regulated environment makes for greater potential for campaigns to raise hygiene awareness; and the high population density in a camp setting is likely to increase the health risks and also affect risk perceptions. The greater perceived risk of disease can be addressed during communication campaigns, and the confined, densely populated environment may facilitate social pressures and a greater willingness to accept messages and pursue altered behaviors.

Some respondents emphasized that when hygiene and handwashing promotion are introduced, it is important to use familiar promotion mechanisms and behaviors, which facilitate habitual behaviors and thus allow the refugees to feel better adjusted in their new environment. For instance, one respondent suggested that introducing such a widely recognized promotional symbol as the animated character called SOPO (http://www.unicef.org/wash/malawi_45225.html) to camp residents in East Africa might help to normalize them to their new surroundings. However, respondents admitted that they generally fail to identify the hygiene approaches that people have been exposed to in the past. Rather, they typically introduce a standard rapid response.

Over time, camps can transform into village-like settings. However, some respondents stressed that it is difficult to identify specific indicators that show when a community becomes more self-sufficient, which varies according to the demographics and background of the inhabitants and the extent to which the government permits residents to engage in a cash economy. Our key informants stressed the need to modify handwashing approaches and educational advice according to the changing camp setting, taking into consideration that as people become more settled and health and WASH services are routinely available, hygiene practices change.

Diversity of beneficiaries and, yet, largely uniform programmatic response

Respondents agreed that socioeconomic, religious and demographic factors influence previous handwashing practices and the extent to which camp inhabitants are willing to improve handwashing behaviors in the camps. Diversity within the camp makes for additional challenges related to interpersonal communication and adapting messages to address varying bottom line sociocultural practices and knowledge associated with water-related diseases and hygiene. Some respondents indicated that there can be resistance to sharing communal facilities, particularly in settings where different populations co-reside. A camp in Eritrea presents an example of the extreme variation that can exist in the camp setting, as described in the case study.

Case Study: Shimelba camp, Ethiopia

In the Shimelba camp in northern Ethiopia, where most inhabitants were Eritreans escaping forced conscription into the military, there was a gender imbalance represented by more men than women. Furthermore, the camp was comprised of two very distinct populations, one consisting of Eritrean Kunama and the other, Eritrean Tigrinya. The Tigrinya men were mostly highly educated, having completed a university level education before they were to be forced into joining the army, which was why they were fleeing. The Kunama were generally traditional farmers, much less educated, and described as family-centered. They had fled Eritrea because the government had taken their land and/or they were forced off their land, causing conflict and leading to a mass exodus. Therefore, even though they were all Eritrean and in the same refugee camp, the narratives behind why they had entered the camps were quite different. The two populations settled in different parts of the camp, so that there were Kunama and non-Kunama areas of Shimelba camps. Despite these variations, there were no differences in terms of the hygiene promotion approach.

Our key informant respondents acknowledged that these differences are generally not taken into consideration when developing program approaches and message content for a given emergency, thus diminishing the acceptability and effectiveness of strategies to the diverse populations affected by that emergency. When this respondent (P1) was asked whether the approach was less successful because the backgrounds of the inhabitants were not taken into account, she said:

"Well, the approach was the approach, I don't have a way of saying it was successful or not. It just was what it was, but I would think that a distinct way in which it could have been improved was by taking more of those differences into account. It's a delicate balance in these situations because you don't want to target people so much that it makes it seem as though one category of people are deficient in some way, but at the same time you are speaking to two different categories of people with different baseline practices and understandings."

Standard communication and hardware approaches are generally employed by all WASH agencies working in often radically differing camp environments. However, several respondents emphasized that the unique nature of camp settings limits the effectiveness of implementing prototype strategies. Overall, approaches that work in one setting may not be appropriate in other camps.

Pre-existing habits of handwashing

Populations characterized by strong hygiene behaviors prior to the emergency were described as likely to try to adhere to the same hygiene and handwashing practices once soap and water were available. Respondents also indicated that refugees attempt to obtain materials or employ approaches habitually used in their home setting. For example, Pakistani populations typically seek out small plastic containers to be used for anal cleaning subsequent to defecation or people who practiced handwashing in their former homes try to set up the same approach in the camp environment once soap and water are available. Previous exposure to handwashing promotion and knowledge of the relationship between handwashing and disease prevention, which can vary within the camps, were also reported to affect acceptance of good handwashing practices.

Organizational capacity

An important determinant of the response relates to the organization in charge of providing services. For instance, one respondent explained that following the Haiti earthquake, many small organizations with little experience in emergency work provided assistance to camp inhabitants, and this, we were told, was inferior to the standard approaches used by experienced humanitarian players. Maintaining ongoing supplies of water and soap is variable, with organizations with less experience and established infrastructures experiencing greater difficulties. In addition, the organization in charge of the distribution of materials may differ from the organization carrying out behavioral change approaches, adding to the challenges in regard to coordination and providing timely complementary services.

Availability of behavior change expertise

One respondent identified an imbalance between relatively many technical staff (engineers) and relatively few practitioners with behavior change expertise within the sector as a whole, thereby disproportionately prioritizing hardware provision and structural improvements over behavior change communication. There is a need for strong coordination between staff involved in providing hardware and staff implementing strategies for improved behaviors, with one respondent stressing that, if staff responsible for each approach work separately instead of jointly, the effort may be largely unsuccessful.

Hygiene Promoters

Hygiene promotion activities among displaced persons are typically carried out by female camp residents referred to as hygiene promoters. However, there were some nuances in these descriptions. In one instance, the respondent made a distinction between a hygiene promotion officer and community health workers (CHW), with the officer in charge of leading group educational sessions and supervising the promotional and sanitation activities of the CHW who go door-to-door disseminating messages. Another respondent referred to the front line workers as community mobilizers or community volunteers, with volunteers typically receiving a per diem rather than a fixed salary.

The hygiene promoters or community mobilizers report to an environmental health or health officer, an individual generally in an entry level international position with some health and hygiene promotion experience. This individual is responsible for training the front line workers on message dissemination and use of educational aides. The overall communication approach is guided by a technical working group involving agencies focusing on hygiene promotion in the camps. Working group members are responsible for establishing standard strategies with respect to payment or ways to motivate and train the hygiene promoters, as well as making decisions regarding the communication approaches and the educational tools used across the camp.

Hygiene promoters are typically responsible for specific geographic areas and make visits house-to-house disseminating messages on good hygiene and how to wash hands properly. They may also convey messages on the use of the contents of the hygiene kit. Hygiene promoters can also be stationed next to the communal handwashing stations to ensure that water is being replenished regularly, soap is available and the hardware is being used appropriately. Also, at the communal handwashing stations, the hygiene promoter can directly promote handwashing. There are also community mobilizers or hygiene promoters who may be hired for short periods of time and be involved in more intensive campaign approaches; these workers are trained, monitored and coached by more permanent hygiene promoters. School teachers and personnel in the health clinics may also be trained by hygiene promoters so that they can promulgate messages on hygiene promotion in their work settings.

Several respondents indicated that it is often difficult to identify people in the camp setting with adequate skills and prior experience related to even basic community based communication approaches to fill the position of hygiene promoter. One respondent raised questions about how hygiene promoters are selected, suggesting that the hiring process in camps where jobs are scarce can be corrupt. Positions can be indefinite, with some respondents indicating that the hygiene

promoters or CHWs can visit the same households and convey similar messages for several years straight, thus making their positions mundane and the work potentially ineffective. Specific hygiene promotion goals appear to be absent, and performance indicators are based on the number of visits conducted. There is little monitoring of the hygiene promoter performance and no formal evaluations on the use of hygiene promoters.

Strengthening Organizational Capacity

Multiple respondents indicated that the following are important to improve handwashing behavior: establishing strong partnerships between organizations and with the government sector, facilitating close collaboration between groups working on the software and hardware side of implementation of handwashing promotion, and ensuring the establishment of an enabling environment with essential facilities for handwashing available. One respondent highlighted the need to involve young, bright and dynamic health promotion officers, to build their skills and to give them the opportunity to participate in the development of the strategic design. Another respondent emphasized the importance of carrying out ongoing training and capacity building of NGO implementing partners.

Handwashing promotion strategies

Most respondents discussed the inclusion of both hardware and behavior change approaches in a handwashing promotion strategy. However, there was wide consensus that humanitarian agencies are limited in their ability to develop effective strategies which include both parts; this is mainly due to a lack of hygiene promotion experts and clarity of what works and what does not work in terms of improving behavior. Some explicitly stated the need for greater balance between hardware distribution and hygiene promotion in order to have a complete or robust strategy. However, several respondents expressed that access to handwashing hardware (soap and water) is critical and handwashing promotion without provision of soap is nonsensical.

Different types of toolkits are used to support field staff (the program staff working locally and hygiene promoters) to develop a handwashing promotion strategy. Kits may contain multiple information, education, and communication (IEC) materials such as pile sort cards, flip charts and training tools that have been developed by the global WASH cluster or humanitarian organizations and can be adapted to local situations. The F diagram, a visual aide that is widely used to explain how handwashing prevents fecal-oral transmission, we were told is often included in the kits. One respondent described a hygiene promotion toolkit (a meter by meter box) that contains all materials or guides to carry out hygiene promotion campaign for up to 5,000 people. A package of training tools developed by the WASH cluster include CDs on hygiene promotion and hygiene promotion in emergencies, training of trainers and community mobilizers and a WASH visual aids library. While these tools were developed to ensure a more consistent approach and were described as very useful, respondents perceived that they are not widely known or utilized. A few respondents indicated that even some senior people at regional and headquarters offices were not aware of such globally available materials, emphasizing that hygiene promotion staff on the ground are relying on the headquarters level staff for training tools and promotional materials.

Many respondents stressed that formal behavioral change strategies, with target objectives, audiences and time frames, are typically not defined. Rather, standard approaches are generally used, particularly at the outset of an emergency. Respondents indicated that there is no overriding consensus amongst humanitarian agencies regarding goals for handwashing within the camps, as indicated by one key informant (P1).

"It is starting out at a very micro-level and being able to experiment and seeing what works, trying to scale it up, but also realizing there are unique circumstances to each situation, and what works in one place cannot necessarily be packaged and taken to the next. So it's a different orientation of thinking in general, and I don't think that the community has a consensus as to what are actually our goals and aspirations for handwashing. We could go into each camp, do a household survey, do some behavioral observations, find out that handwashing in general is 17%? Then what would we be trying to raise it by?... What is our target?... That sort of conversation hasn't even taken place...."

Furthermore, several respondents emphasized that the limited set of skills possessed by humanitarian agency staff to design a strategy often relegates strategies to basic communication approaches as the only option. One respondent pointed out that, in general, WASH organizations place more emphasis on the availability and distribution of hardware, which is easier to implement, shows more tangible results, and is often the focus of government collaborators. Discussing challenges to including behavior change communication in a handwashing promotion strategy, a respondent (P1) said,

"I think behavior change interventions need to be improved in general. It's quite difficult to find people with the right sort of mix of qualitative skills and personality to interact with communities in a way that brings about change. It is a tough area of environmental health because it is not formulaic like a water plan or putting in pipes or disposal systems. I think everyone is well intended and realizes and appreciates the importance and value of it, but we are at a loss to know concretely how to go about it. It's quite difficult to wrestle with, you know, that A will not automatically produce B. It is not very rational in a linear sort of way.... The challenge is finding people with a qualitative skill set or the capacity to be trained, and then have them run with their own creativity. "

Many respondents emphasized a common failure to make behavioral change approaches contextually appropriate, thus undermining the overall strategy. A lack of understanding regarding preexisting knowledge of disease transmission, traditional hygiene practices and handwashing behavior prior to the emergency limits development of a comprehensive and locally relevant handwashing promotion strategy. Such a lack of understanding prevents programs from making important decisions regarding appropriate hardware to promote handwashing, including the choice

of the hand cleansing agent (e.g. ash versus soap) and water containers for washing. The capacity of the country office staff to adapt materials necessary for hygiene promotion to the local context was also identified as a limitation to developing contextually appropriate strategies. However, representatives of one organization indicated that, while in-depth assessments are not feasible during the onset of an emergency, they attempt to use informal approaches at the preliminary phases of a camp to assess literacy levels and make appropriate adaptations to existing IEC materials that have been previously used in the area. It was also mentioned that sometimes conflict in approaches between local and national level government structures, with the elite national representatives unwilling to recognize local ethnic and sociocultural differences, can lead to unsuccessful implementation of handwashing promotion.

Further, there appears to be little effort to later adapt handwashing promotion strategies by building on the changing knowledge and social structures (e.g. related to leadership, ethnicity, religious background) that evolve within the camp settings, nor are there attempts to make the approaches more participatory by involving beneficiaries in identifying solutions to health problems. A couple of respondents argued that approaches are generally top down, with implementers too rigid about what is or does not constitute behavioral change strategies. Respondents argued that strategies need to be flexible, taking into account local resources and human capacities, addressing issues around funding and sustainability, and adapting the approach according to changing practices, preferences and accessibility to hardware.

Handwashing hardware

Hygiene kits for beneficiaries typically contain soap and variably contain other hygiene materials (e.g. hair brush, tooth paste, toothbrush, shampoo, towels, sanitary wear, etc.). Hygiene kits are distributed alongside food distribution programs or through individual organizations that produce or supply them. The contents of the hygiene kit vary according to the emergency, the organization, available funding, and supply chains of necessary items. The extent to which the needs of the beneficiaries in each emergency are first assessed was not clear. Decision-making about the contents of the hygiene kit involves cross-sectoral input by staff working in logistics, WASH, and child protection. Although it was agreed that the discussion about what to include in kits should include beneficiaries, according to respondents, they rarely do so. In general, respondents indicated that, particularly in the acute phase of the response, it would be more appropriate to use materials that are consistent with those already familiar to the population.

All respondents mentioned that soap is routinely distributed in response to a humanitarian emergency, as outlined in SPHERE standards (<http://www.spherehandbook.org/>). However, several respondents pointed out that the SPHERE standards do not indicate the recommended quantities of soap (grams per person per day) designated specifically for handwashing (Note: the 2011 SPHERE standards do recommend 250 grams of soap for bathing, and 200 grams of soap for laundry per person per month). Even if it is distributed for handwashing purposes, respondents indicated that soap is commonly used for laundry, bathing and washing dishes or may be resold in the markets, making it difficult to understand soap consumption and needs for handwashing purposes. Regular availability of basic materials such as soap or access to water can vary, making some camp situations more challenging than others. Even if soap is distributed, people may trade it for a commodity they prefer or value more, such as a food item.

Liquid soap, powdered soap, soapy water mixture, antiseptic bar soap, multipurpose bar soap and luxury bar soap were mentioned as types of soap encountered by respondents in the field. One respondent expressed interest in liquid soap as a more attractive option since it is less likely to be soiled compared to bar soap and may be perceived as more luxurious, suggesting it may work better to motivate handwashing with soap. While availability, acceptability and logistics are not clear, this respondent mentioned it would be feasible to refill liquid soap alongside water replenishment. One respondent indicated that when baseline assessments have indicated that other cleansing agents such as ash or mud are habitually used by the population, her organization provided storage containers for those agents. However, it is not clear whether ash or mud have ever been promoted as a part of a handwashing strategy.

There was little information from our respondents about access to water as part of handwashing programming, perhaps because ensuring water access is a significant part of the larger humanitarian response. However, respondents understood the importance of having access to water for handwashing programs.

As with soap, the distribution of other handwashing hardware such as water containers (e.g. water tanks, jerry cans, buckets with or without a lid or a tap, basins) depends on the availability of local materials, costs, funding, and logistical constraints related to importing items that are not locally available. There are no specific guidelines or standards for water containers, dispensers or devices. Water containers for handwashing vary widely in size from 15 liters to 50 or 100 liters. If the water container does not have a tap or another way for water to flow, households often use a small jug, mug, cup or an *ibrik* (small kettle) to get the water from the water storage container. Water containers can be repurposed or used for multiple purposes other than handwashing, and like soap, when used for reasons other than handwashing may become less of a priority and less convenient.

Devices dedicated to handwashing, such as a tippy-tap or a handwashing station at the household or communal level that contains water and soap, and devices that draw or dispense water from a source specifically for handwashing, are variably promoted or distributed. New devices included water receptacles, dispensing taps and water tanks with foot pedals designed to ease handwashing and conserve use of water or soap or to provide cleaner water, with one respondent describing use of Watermaker™ (http://www.watermakersachets.com/watermaker_faq.html), which flocculates and chlorinates the water. Some devices were more appropriate for the household level, while others were designed to dispense large quantities of water for communal use. Some respondents indicated that tippy-taps are not acceptable everywhere, particularly in middle income or urban populations, and do not last long. One respondent mentioned a low flow water dispenser for personal handwashing use that is being tested. Another respondent discussed efforts to develop a pre-fabricated handwashing device, which is similar to a plastic bag or bladder with a sports drink nozzle, to be used at the household or personal level. Wash pots or wash tanks made by one private sector manufacturer (a foot pedal or pump that draws water from a container and puts it through a shower nozzle to provide flowing water for washing) have been tested but had several problems including they were difficult to maintain, costly to adapt, and had metal parts that were targets of theft. One respondent mentioned that drainage of water is not addressed well.

The consensus among respondents was that there is no one-size-fits-all solution for handwashing hardware. When organizations are choosing hardware, there is a debate about the balance between materials that are locally available, low cost, quick, cheap and easy to obtain and distribute versus materials that are improved and more costly, and that beneficiaries might aspire to have. The former approach is more practical, less costly and possibly more sustainable, while some respondents suggested that using improved hardware may serve to motivate people to follow good practices. Considerations when introducing a new device included cost, the durability of the device, the extent to which it can be adapted to different environments, shipment to the camp setting, the extent to which the device can be locally manufactured, replicated and distributed on the local market, whether it is a short-term or long-term solution, and the possibilities for scaling up. Some respondents emphasized that introducing a new approach or device requires tremendous time and effort to ensure that personnel at all levels of the organization are comfortable with the technology and understand how it works. It is also critical to convince target populations why a new or modified approach is better and to ensure that they are comfortable with and able to appropriately use the technology. As part of this process, a behavioral change plan has to be developed and implemented.

Location of handwashing stations/hardware

Frequently, communal handwashing stations situated next to communal latrines are built quickly during the acute phase of an emergency. The principal problems with a communal handwashing set-up are lack of ownership and maintenance and a failure to replenish materials. Theft of materials was also a concern. The physical arrangement within the camps can also vary. For instance, handwashing stations are not always set up in camps, making it physically inconvenient to gather the necessary hardware and to find a suitable location to wash hands. Also, because hygiene behaviors can vary within the population living in a single camp, use of communal facilities may be variable. One strategy is to pay individuals to maintain the facilities, but this approach is not considered sustainable over the long-term, particularly when funding recedes. Some respondents felt that having a handwashing station near a communal latrine encourages handwashing due to public pressure or influence, with one respondent indicating this was a particularly successful strategy. However, another respondent reported limited success with communal handwashing stations. According to another respondent, it is important that NGO workers are available around the clock to resolve ongoing problems and respond to needs and requests from the community related to the communal latrines and handwashing stations.

With time, handwashing hardware is distributed at the household level even if latrines remain communal. Making handwashing hardware available next to latrines, as well as in the home setting, was deemed important for behavior change by one respondent. We were told that some people choose to wash their hands at home because they are wary of sharing a communal handwashing station with people from different ethnic groups and backgrounds, they are concerned about safety, and it is more convenient. Some respondents reported that household level handwashing stations may give a greater sense of control and ownership over resources needed to perform the behavior. Certain camp grounds can flood and force residents to move; in such cases, household level hardware may facilitate greater control and flexibility. However, one respondent mentioned that it was rare to see a designated place for handwashing in homes; instead materials used for handwashing are carried to the location where individuals desire to wash their hands.

Several respondents suggested integrating handwashing hardware with other activities, such as building handwashing stations at the same time latrines or temporary housing are being built or adapting approaches such as Community Led Total Sanitation (CLTS) and Community Activated Total Sanitation (CATS) to include construction of a handwashing station alongside latrine construction. One respondent (P5) told us:

"...putting in handwashing hardware next to latrines I think is key even in non-refugee contexts. The concept of making handwashing hardware an integral part of any latrine construction program is key. There's been far too much isolation of different approaches...where they're integrated I've seen good success."

A few respondents recommended that visual cues of water containers dedicated to handwashing or handwashing devices be used to serve as reminders to wash hands.

Ensuring access to handwashing hardware

The main challenge to hardware distribution is physically getting kits or parts of kits to the location. Small quantities of supplies can be flown in rapidly early on, but the bulk of supplies arrive at least six weeks after the onset of the emergency. Local markets can be utilized to obtain materials, but the needs of the beneficiaries or the program can outstretch the market supply quickly. In general, the possibility of working with the private sector depends upon the location of the emergency and the camps. For instance, in Haiti the disaster occurred in an urban setting where it was easy to work with the private sector. In a remote area like South Sudan, possibilities to work with the private sector are limited.

Although it is common in the acute phase of the response, the consistency and frequency of soap distribution thereafter is highly variable and depends on various factors, including the funding for and prioritization of follow-up soap distribution of responding organizations, availability of local markets, availability of soap in contingency stocks, transport networks, weather and seasonal environmental changes. One respondent (P6) described variation across sites in regard to logistical challenges:

"There are often huge logistical constraints...just the sheer bulk of the stuff [soap], and getting it there in a timely way, and then organizing the distribution. It's quite challenging...if you don't have local markets that are functioning, or even if you do, sometimes the soap will be bought up quite quickly. So depending on your context it might be quite challenging accessing soap and getting it to where you want it to be. You've got extremes, like southern Sudan where it becomes incredibly expensive to move anything because of the transport and lack of infrastructure in the country.... Then you add the rainy season; sometimes road networks are only open some of the time... At the other end, there is the Philippines where you've got peri-urban areas with lots of suppliers... generally markets aren't that badly affected about an hour and an hour and a half away from the main focus of the floods, so it is possible to mobilize those suppliers quite quickly and make soap available."

During an emergency, soap distribution in vast quantities may disrupt the endeavors of local retailers and distributors of soap, according to our respondents. We were told that, in recent years, relief agencies are increasingly involved in market analysis and are concerned about the impact of camp activities on the local commercial sector during and post emergency. Vouchers to obtain both food and non-food items were described as a means to encourage the use of the local private sector, and in cases where a disaster has disrupted business, to allow traders to reestablish their livelihoods. As part of the approach, relief agencies may put money into the accounts of small businesses, thus allowing traders to purchase small stocks of items such as soap. Through the use of vouchers, relief agencies can be assured that people are procuring the appropriate item, whereas providing cash involves less control. Rather than queuing up for standard items such as hygiene kits, vouchers may also allow people to be more selective and choose a preferred item or brand and thus be more empowering.

The voucher approach was described as relatively new in the emergency environments and only appropriate where commercial infrastructures exist. Overall, when used, the voucher system was described as a win-win approach, assuring that camp residents obtain appropriate items, assisting the local economy and establishing partnerships between the humanitarian organizations and local retailers. One respondent described using a voucher system in Ethiopia where water was being trucked into camps. In this case, the voucher system allowed more vulnerable populations, identified as in greater need, to have increased access to water. Women receiving the vouchers claimed that cash would be a less optimal approach due to concerns that their husbands would use the cash to purchase *khat*, a local leaf that is addictive and commonly chewed by Ethiopian men. Some respondents emphasized that instituting a voucher system is relatively time consuming and requires extensive organization.

The potential for waterless sanitizer

An important objective of the original key informant study design was to assess the acceptability and feasibility of introducing waterless sanitizer to camp residents. Of the 11 key informants who were asked questions about waterless hand sanitizer, the majority were skeptical about the value of introducing waterless sanitizer, stating it could potentially undermine efforts to instill the need for handwashing with soap and water, with four key informants adamantly opposed to using hand sanitizer in a camp setting. Concerns raised about waterless hand sanitizer were related to cost-effectiveness, difficulties in transporting a liquid product, particularly to remote areas, difficulties in obtaining government import authorization, challenges regarding distributing and maintaining the product in the camp setting, and sustainability in relation to maintaining ongoing supplies and supporting the cost of hand sanitizer. Respondents also raised questions about the acceptability of hand sanitizer in regard to the smell, whether it makes the hands feel clean, the fact that an alcohol-based product may be unacceptable to Muslim populations, and the challenges in promoting a new product. Several respondents stipulated that populations with no or limited prior exposure to sanitizer would be less likely to accept it, and concerns were also raised about misuse, particularly by young children. One respondent pointed out that there would also be the risk of disrupting cultural and often positive handwashing rituals, such as the ablutions carried out by Muslims prior to prayer.

Many respondents expressed concerns that messages regarding handwashing with soap and water, which is viewed as the overarching desired behavior for both camp residents and populations in non-camp settings and considered to be the optimal behavior to instill before displaced persons return to their community settings, might well be weakened by introducing waterless hand sanitizer. Transmitting different messages, with one promoting a waterless product and the second encouraging water with soap, could cause confusion. Another risk mentioned by one respondent is that people may view sanitizer as a “fancier” or more sophisticated technology, and when the sanitizer is no longer available, consider handwashing with soap and water inferior. This same respondent claimed that lack of sustainability in providing sanitizer could negatively impact on the relationship between relief organizations and the population, thus creating distrust. Another respondent mentioned that people may be tempted to steal hand sanitizer. One respondent questioned whether there is adequate evidence that waterless sanitizer reduces hand contamination to the same level as soap. Another concern related to how introduction of waterless hand sanitizer would affect the local soap market. Comparatively, the challenges involved in providing and promoting soap and water were viewed as far fewer.

A few respondents indicated that if evaluations examining the introduction of waterless hand sanitizer in camp settings showed positive results, they would consider introducing the product in certain settings for specific reasons, such as in locations where water or soap is scarce and waterless sanitizer may make handwashing more accessible, during an emergency disease outbreak, or in a context (generally a middle income country or in an urban setting) where residents are familiar with and value hand sanitizer such as Syria or more populated parts of the Philippines or Kenya. Even in these cases, waterless hand sanitizer was viewed as a more short-term, small scale solution. A couple of respondents mentioned that sanitizer is presently being used in the health clinics of some refugee camps, highlighting that it is appropriate in this setting, allowing health professionals and patients to clean their hands at the entrance to a health center or in medical offices. The only informant really keen on introducing waterless sanitizer suggested that it could be made available at communal latrines, arguing that a newer strategy may actually encourage better handwashing practices.

Relationship with the private sector

A couple of respondents talked about the value of contracting work to hygiene experts in the private sector who can develop more innovative and less costly approaches, with one key informant suggesting that humanitarian agencies rarely consider cost-effectiveness. At the same time, there is an apparent mistrust felt by the humanitarian community, as indicated by our respondents, towards the corporate private sector. Respondents described a lack of transparency and questionable motivations on the part of the private sector for getting involved in humanitarian aid. There was concern that corporations might use these partnerships to manipulate their image by overstating their involvement in philanthropic, humanitarian work.

Behavior change approaches

Target audience for handwashing promotion

Due to their role as principal caregivers of young children, the sick and elderly, and overseers of household management and food preparation, the primary target audience in camps is generally

women. Women in camps are typically at home during the day, and therefore household visits can be carried out at any time. Children are also targeted, generally in the school setting during the post-acute emergency phase. One respondent explained that it is common to have children in the camps unaccompanied by their parents. In these cases, the children are assigned an adult supervisor who may be targeted through communication strategies, or their teachers may assume a comparable role. Some emphasized that, as hygiene affects all family members, it is important to reach a range of audiences, particularly influential male household heads who often use a prescriptive approach in supervising household activities. One respondent insisted that the selection of target audiences should be adaptive and guided by opportunities within the camp context.

Communication channels

Information collected on behavioral change strategies suggests that approaches typically involve the use of existing educational materials developed by the WASH community such as flip charts, pile sort cards, t-shirts, and posters and focusing on face-to-face communication often using a more didactic approach. Education campaigns involving hygiene promoters disseminating messages to larger audiences and accompanied by demonstrations on how to wash hands properly with soap were mentioned as another common strategy. In more literate settings, distribution of printed material such as flyers and pamphlets may accompany interpersonal or group communication. Another frequently used strategy is to convey messages to children in club or school settings. Global or national handwashing days or events involving prominent community members to promote hygiene and handwashing are also common.

Some respondents suggested that the background of the target population and the skill level of workers available to work on communication strategies determine the extent to which innovative or sophisticated approaches are used. For instance, one respondent contrasted communication approaches in Somalia, where personnel implementing the strategy were unfamiliar with basic concepts related to fecal contamination (such as the transmission of enteric pathogens from feces to fingers, fluids, and food, and finally to the susceptible host, as depicted by the F diagram) and had limited skills, to Haiti where the staff had extensive prior communication experience and were thus able to implement more sophisticated approaches, including theater groups and puppet shows, and the use of a range of visual aides to convey information. In places with personnel skilled in communication, mass communication using drama skits, jingles or songs broadcast on the radio are also employed as ways to reach mass audiences. In these cases, local artists may be contracted to ensure that the approach is rooted in the local context and culturally relevant to the target audience. An interesting example came from Bangladesh, involving something called a *pot ploy*, whereby a huge cloth with pictures related to good hygiene and handwashing promotion was presented; directly in front of the cloth, local musicians disseminated messages through songs about hygiene and hand cleansing.

Multiple respondents recommended engaging children through child health and hygiene clubs, or as schools are established, in the school setting. Respondents highlighted the benefit of involving children who can be given written material and subsequently share hygiene-related information with their parents. A couple of respondents in favor of this approach argued that children, particularly adolescents, may be more responsive to peer influence or pressure in group settings and can thus act as effective change agents.

Some respondents suggested that using cartoon characters such as SOPO (http://www.unicef.org/wash/malawi_45225.html) and Meena



(http://www.unicef.org/rosa/media_2479.htm) (characters developed by UNICEF), particularly in settings where residents are already familiar with these characters, may be effective ways to engage children and encourage them to emulate the handwashing behaviors these icons promote.



Sending messages through short message service (SMS) has been employed in camp settings and was viewed as effective; respondents who talked about SMS messaging appreciated the flexibility in targeting specific audiences and fine-tuning messages. These respondents were enthusiastic about the potential of text messaging, with some highlighting that recipients can review the text messages repeatedly and thus be reminded about an appropriate behavior. Obviously, text messaging is only feasible in literate populations with phones. One respondent indicated that a clever, motivational approach to text messaging is to ask recipients health-related questions and to attach a prize (such as a bar of soap) to the correct answer. A respondent (Pg) said,

"We see SMS texting as the next frontier. When you're in a rural environment you have volunteers who can visit the population, but when you're in a city or a very big area it's logistically impossible to carry out enough household visits to have an impact. There are other ways to do this and SMS is one of them."

Participatory, interactive approaches that included the perspectives of the beneficiaries were deemed successful. For example, in the Philippines, camp residents developed pictures to promote good handwashing behaviors. Another example came from Ethiopia where "mini media" was used; songs and drama skits involving local children and poems developed by children relating to good hygiene were recorded and subsequently shown to captive audiences. One respondent talked about peer counseling groups devoted to handwashing. To ensure the inclusion of women in gender-hostile environments, respondents recommended the set-up of community health clubs specifically for women.

Participatory Hygiene and Sanitation Transformation¹ (PHAST)¹³ was mentioned by a few respondents as one strategy used to promote handwashing and other hygiene behaviors in prior responses. While PHAST has drawbacks, and, as one respondent told us, is criticized by the academic sector, the same respondent felt that it was the only framework that was available and could be scaled up for WASH programming across projects globally. One respondent described PHAST as a common approach in protracted situations where the organization might be working for

¹ PHAST is an approach or framework for behavior change based on community participation. It is a seven step process that aims to help communities improve hygiene behaviors, prevent diarrheal disease and encourage community management of facilities for sanitation and water. This is done through demonstrating the relationship between sanitation and health, increasing self-esteem of community members and empowering the community to plan environmental improvements and to own/maintain water and sanitation facilities.

a number of years. However, in the initial phase, PHAST may have too many messages, and it was recommended that a few selected behaviors must be prioritized.

Multiple respondents recommended using a combination of communication channels involving, for example, mass media and house to house visits, as well as health clinics and schools to reach broad-based audiences with targeted messaging. Respondents also highlighted the importance of employing visual aides to accompany verbal messages. When using multiple channels, respondents stressed the need to ensure that messages are consistent and that there is a high frequency of message dissemination.

Respondents also described handwashing campaigns like Global Handwashing Day (<http://globalhandwashing.org/ghw-day>) and other mass media campaigns (example: using loud speakers and public demonstrations on how to wash hands, and using various channels of communication such as radio, TV, university students, boy scouts, religious leaders or programs, child health clubs, SMS messaging) for behavior change communication. Creating demand for handwashing stations through social marketing was suggested as a strategy to increase their ownership and maintenance.



Motivators employed to promote handwashing behavior change

Several respondents indicated that, in the first phase of an emergency, agencies generally make assumptions about which motivators to use to encourage behavioral change related to handwashing. Over time, little is done to understand changing knowledge and practices and relevant motivators and barriers in a camp population, which was seen to undermine promotional strategies.

Handwashing promotion approaches in the humanitarian setting have traditionally focused on the health benefits of handwashing as a key motivator of handwashing behavior change. Several respondents suggested that, compared to the development context, the health emphasis is likely more effective in the refugee camp setting where, given that the camp population has been displaced and is living in a densely populated environment, there may be a higher sense of vulnerability to disease. A few respondents suggested that when the risk perception is high, such as during a disease outbreak, messaging regarding health and disease transmission is particularly appropriate. However, two respondents suggested that it would be interesting to understand the extent to which this is actually true, and if it is effective, how long health can serve as a motivator of improved handwashing. Again, respondents mentioned that contextual factors, including prior knowledge and norms related to health and hygiene and exposure to hygiene promotion, should determine the extent to which health benefits or other motivators should be emphasized. One respondent added that, in settings where people have a good concept of health risks and value handwashing, health as a motivator must be delivered in a positive way that acknowledges and reinforces existing knowledge.

Overall, respondents acknowledged that research carried out in resource poor contexts has shown that the relationship between good hygiene and health risks does not necessarily motivate changed

behavior, and it is therefore important to explore other non-health motivators that coincide with the local culture in humanitarian emergency settings. There was general agreement that motivators successfully used prior to the emergency are likely relevant once the population is displaced. Many respondents stressed the importance of exploring the use of more socially driven motivators increasingly being employed outside the emergency context. Examples cited included the following: dignity; disgust; the value of being clean or having a clean appearance; feeling good because your hands are clean; being clean gives a sense of well-being, being at peace with the world, or feeling more secure; attractiveness or aesthetics; nurture; good for child welfare; or having hands which smell good.

A few respondents suggested that references to religious tenets and norms can be used as a motivator. Some respondents indicated that it may be effective to involve local religious or other leaders in hygiene promotion campaigns. For example, the Clean Friday program used in Indonesia was mentioned as a strategy that had a long-term impact on the population; as part of the approach, Imams promoted good hygiene and handwashing practices every Friday during Jumu'ah prayer, referring to religious practices mentioned in the Koran to encourage improved hygiene and handwashing behaviors.

Although not yet systematically evaluated, several respondents highlighted the potential value of using peer pressure, social norms or possibility of stigma to encourage handwashing. An example came from the Shimelba camp, where one respondent explained that women were motivated through messages suggesting that being clean garners respect from other women. Another respondent claimed that good hygiene can be promoted as a means to connect with other community members and normalize lives in the camps. Another interesting example came from Bangladesh where, after floods, a drama focusing on status and aspiration was used to motivate improved hygiene and handwashing. This respondent (P6) explained,

"This group came up with a skit where there was a bride and a bridegroom. Dowry was being exchanged, which involved visits to each other's homes. During these visits, there was the revelation that one family's hygiene practices were far from ideal. That was the wealthy family, not the poor family, so suddenly, after what looked like a good catch to the poor family because the daughter was going to marry a wealthier man, the bride's father was no longer that interested because he wasn't very impressed with the way the family behaved. So there was a health implication there, but it was also about status and aspiration."

Once again, several respondents stated that systematic assessments to understand appropriate motivators and intervention approaches in emergency settings have not been carried out, thus limiting their ability to identify effective motivators or other behavior change approaches. Multiple respondents recommended using a combination of operational and formative research to monitor intervention approaches and identify appropriate modifications on an ongoing basis. When talking about behavioral change approaches, one respondent (P9) said,

"Radio programs, mobile cinemas, all of these things people have talked about as interesting ideas; we're trying to figure out how to standardize those things... I've heard about mobile cinemas for a long time during trainings, but I am not aware of our organization actually doing it. These are the approaches that I call 'boutique programs.' One time we do one thing in one place and it becomes an interesting story to tell at a training or an interesting power point presentation at a conference, but actually instituting that into a huge network of people is quite difficult."

Another respondent (P11) said,

"And then there have been radio messages which I think were thought to be fairly effective, but again it depends on how you're measuring effective and what sort of evaluation was done. I think a lot of these things that are said to be effective are based on fairly anecdotal evidence. It's not really measured in a scientific way as much as it is just people saying they felt that it was effective."

Disease outbreak: a unique opportunity for handwashing promotion

During outbreaks, several respondents indicated that populations tend to respond positively to messages that use health risk as a motivator to improve hygiene and handwashing behaviors. When describing the difficulties typically faced in changing hygiene behavior, this respondent (P2) said,

"Unless there is a clear justification in people's minds, a clear trigger, I mean you put people into a cholera type situation. The cholera word tends to have a huge wow factor with people. In some populations, that may trigger them to do things that they wouldn't do before. It certainly does amongst the relief workers..... How many of them (relief workers) actually wash their hands as they're supposed to do and as they preach? And then if you put them in a cholera type of response or a gastroenteritis type of response or an Avian Flu type of response, boy I can tell you they're going to be washing their hands every two minutes."

Another respondent (P9) said,

"So actually an emergency (outbreak) in theory is an opportunity to play up the health side. I go back to the example of the military camp when you see your buddy drop with dysentery and put on an IV, you are a lot more motivated. It is the exact same thing with a cholera outbreak. I've talked to hygiene promoters and asked, 'How did it go? How did the hygiene promotion go?' and they say, 'Actually, it was the easiest hygiene promotion I have ever done.' When somebody you know is dropping dead over your shoulder, the person you are talking to is going to pay rapt attention to whatever health message you have to share. I think that we saw that very clearly in the Haiti cholera response. When people are dropping dead, and if people believe you when you tell them that this is due to poor hygiene behavior, you see a pretty instant change. "

While there was general agreement that the threat of disease motivates improved handwashing practices, a few respondents pointed out that once the risk dissipates, the population often reverts back to their habitual hygiene practices. This respondent (P7) explained,

"In Zimbabwe we used a lot of messaging during a cholera outbreak. There was a major outbreak in 2009, 2010 and people were afraid they would get cholera if they didn't wash their hands. But when cholera disappeared, I think that people reverted to their old habits. I think that it was a missed opportunity; we failed to capture the audience when they were in fear and continue with them up to and after the cholera outbreak. I suggest that organizations don't stop promoting handwashing practices and that it continues until it becomes a lifestyle.... Even in the schools they were saying, 'Oh don't tell us any more about handwashing, there is no more cholera. I don't think it will affect us again.'"

These respondents highlighted the importance of capitalizing on the changed beliefs and behaviors inspired by the perceived health threat during an outbreak situation and lamented the failure of relief organizations to ensure sustainability of improved hygiene practices. A few respondents also suggested that the standard approaches used during outbreak situations are inadequate and need improvement.

Coordination of emergency activities

Coordination approach

According to our respondents, coordination of a response to a humanitarian emergency typically involves the government of that country and a UN agency. If a government is in place, the government is responsible for supporting its citizens and leading the response. International organizations typically support government efforts and often lead coordination. If a country has no formal government or is in conflict with its own people, UN agencies take the leading role in coordination. In situations involving refugees, a coordination forum is led by UNHCR for the broader response (inclusive of WASH); otherwise UNICEF has the global WASH cluster lead. In situations of internal displacement, several clusters are formed to coordinate a broader response, including a WASH cluster.

Respondents described the WASH cluster organized during an emergency as one in which the group of organizations responding to emergencies involving internally displaced populations develop a strategy according to the phase of the emergency and the type of behavior targeted in each phase (this may involve sanitation, water and other hygiene practices). Depending on their financial and human resources, each organization participating in the cluster contributes an activity (ex. distribute soap or water containers, train and dispatch hygiene promoters, etc.) that supports the strategy. Participating in the cluster strategy is optional; organizations also operate outside of the cluster strategy.

Respondents explained that the cluster approach aims to provide a clear and predictable lead, to minimize gaps, to minimize overlap, and to provide a platform to gather and discuss approaches, activities, and insights, emphasizing that minimizing gaps reduces loss of life while minimizing overlap reduces spending and conflict between organizations. They clarified that the WASH cluster has a strategic advisory group made of representatives of key organizations with experience in WASH in emergency settings; a select group of advisory members lead the technical support to cluster organizations. UNICEF was reported to be the cluster coordinating body for WASH clusters. To meet technical needs for different facets of WASH, like hygiene promotion at the ground level, technical working groups or hygiene sub-clusters are established and usually led by a member or an organization that has the most expertise in that particular area. Each cluster or sub-cluster is headed by a cluster coordinator, who is expected to have training in cluster coordination.

We were told that in the beginning stages of the emergency, WASH clusters usually meet weekly in person or by phone and, later in the emergency, meetings can vary in frequency (bi-weekly or monthly). The cluster focuses on developing a strategy for WASH and/or specifically for hygiene promotion, coordinating how individual organizations contribute to the strategy and maintaining who does what. One respondent felt that shifting more attention to identifying and resolving problems may add to the quality and cohesion of the approach taken by a cluster. There is no formal agreement by individual organizations to participate in the cluster. In addition, the capacity and capabilities of partner organizations varies widely from country to country and between different disasters or emergencies. While the general consensus among respondents was that coordination is

important for a more effective, timely and predictable response, a few respondents mentioned that participation or contribution of a given organization largely depends on the individual mandate of that organization and/or their donors. One respondent (P2) described the cluster approach as follows:

"... independent agencies each with their own mandates, approaches, and accountability trails back to donors, back to boards, whatever it may be. And so it's a bunch of independents coming together. And it remains a bunch of independents coming together."

We were told that the varying mandates of organizations pose significant challenges to coordination, making the relationship between individual organizations and the cluster often delicate and hard to manage. The capabilities of the WASH cluster coordinator also add variability to participation of organizations and coordination efforts, with many respondents indicating that good coordination is tied to the personality of the cluster coordinator. One respondent felt it was important that the activities put forth by the cluster are separate from the agenda of the cluster coordinator's organization. Another respondent viewed the cluster system as a means to overcome the problem of lack of capacity among national stakeholders. Outside of the cluster system, coordination occurs bilaterally between organizations and can, as we were told by one respondent, lead to the provision of valuable services to emergency affected communities. Some respondents felt the cluster provides a good platform for collaboration, explaining that there is good transparency and cooperation between organizations in the cluster. While one respondent indicated that competition for funds is low for camp settings, another respondent claimed that organizations are competing for funds and that the competition continues despite the cluster system.

Respondents described the global WASH cluster and the technical working groups for WASH in the Inter-agency Standing Committee (IASC) as forums working at the global level to bring together different perspectives and expertise on WASH in humanitarian emergencies. Respondents explained that the global WASH cluster focuses on coordination, information management and information sharing, while the IASC technical group concentrates on technical issues related to WASH. The global WASH cluster has a rapid response team program, which has six cluster coordinators and three information managers housed within a NGO in a particular region to support emergency response provided by national clusters.

Information sharing

Respondents described the sharing of information at the emergency level, as well as the national, regional and global levels. Overall, respondents felt that information flow was good but identified several areas that needed improvement on all levels.

For individual emergencies, when available, cluster members usually share their monitoring data; respondents indicated that sharing information is beneficial to the larger community. We were also told that one aspect of the cluster coordinator's role is to encourage sharing of information between organizations. While most respondents generally felt that there is a mechanism for information sharing, the actual transfer of information was unclear. One respondent explained that there was little room to share experiences, best practices, or what influenced a program to be more effective or

successful both within and between organizations. Another respondent suggested using the global WASH cluster coordinator who has access to an extensive mailing list if an organization has something to share widely.

The key informants indicated that the information shared typically focuses on positive results, with respondents suggesting that negative results or descriptions of unsuccessful approaches are often not shared. One respondent felt that the reporting forms for the cluster, which are required to complete on a daily basis, are cumbersome and the overall reporting system inefficient. This respondent suggested that the cluster provide a person to collect monitoring data from individual organizations or that organizations budget for an information manager responsible for ensuring they submit ongoing progress reports in a timely fashion. In addition, organizations involved in the cluster may share resources, such as hygiene promoters and educational materials intended for hygiene promotion. Two respondents mentioned a lack of communication between sectors, within organizations and between clusters (e.g. the WASH and health or nutrition clusters), indicating that if the sectors or clusters worked together, they may be able to pool resources, convey complementary messages and strengthen the overall response.

At the global level, there was an effort to start a formal hygiene promotion sub-cluster; however, according to our respondents, this group remains informal in order to avoid oversight by the WASH cluster. This group shares information related to hygiene promotion via conference call and written materials such as hygiene promotion guidelines and a newsletter. While global forums were described as helpful for networking and sharing operational research, it is not clear how much information distills down to ground level programming. Some respondents mentioned that the mechanism for information flow between the higher level stakeholders and on-ground staff needs improvement. At the regional level there appears to be fewer opportunities for information sharing; those platforms that do exist were described as informal or “loose” (for example, sharing information by email to a specific group).

Specific global or regional level conferences mentioned were the Water, Engineering and Development Centre (WEDC) international conferences, World Water Week, AfricaSan meetings, SuSanA (Sustainable Sanitation Alliance) meetings, and the Emergency Environmental Health Forum. Such conferences provide a forum for sharing programmatic findings, developments, and networking. We were told that personnel at the organization’s headquarters or regional level generally attend such meetings; national level participation in global meetings was reported to be lacking. However, respondents suggested that there have been some recent modifications in the structure of these meetings, such as changing the location from European countries to African or Asian countries where most emergencies occur, thus making participation more conducive for national level staff. One respondent suggested increasing the frequency of such meetings; for example, it was recommended that the Emergency Environmental Health Forum, which is presently held every two years, be convened yearly in an effort to improve information flow to the country level.

Monitoring and Evaluation

What is monitoring and evaluation?

To organize the content of this section, we defined monitoring as the routine assessment of the program's inputs, activities and outputs and evaluation as the systematic assessment of program outcomes and impacts. We considered inputs, activities and processes, and outputs to be program-level components (describe the program) and outputs and impacts as population-level components (describe effects of the program on the target population). We did not share these definitions of monitoring and evaluation with the key informants before or during the interviews.

Description of monitoring and evaluation of WASH programs in emergency settings

We were told that program *monitoring* is common in emergency settings. Typically, individual organizations, regardless of their participation in the cluster or other coordination efforts, have their own monitoring systems. Where UNHCR is the main coordinating body for refugees, UNHCR uses monthly score cards with simple indicators about access to soap (based on distribution). UNHCR is working on a Lot Quality Assurance Sampling (LQAS) approach to monitor several household level access indicators, such as access to potable water, toilets and handwashing facilities on a monthly basis. They are using a traffic light system (green, yellow and red to indicate good to low or no progress) to monitor progress. They recognize the system used in the past lacked consistency and left gaps in determining access to WASH services. The goal is to have a standardized monitoring approach and to make the information available for any organization that responds to a humanitarian emergency.

In situations involving internally displaced persons, whereby the WASH cluster leads coordination in conjunction with information managers, the cluster coordinator guides the effort to set up information management systems and decides what information is going to be collected from cluster organizations. Usually the cluster collects basic information from each organization working on WASH activities; such information may include what they are doing and where and when the activities will take place. The cluster also tries to collect data from knowledge, attitude and practice (KAP) surveys that were carried out by NGOs working in camps. We were told that there was no consistent reporting on behaviors and that information on behavior is typically collected through proxy indicators. Overall, which organizations participate and the extent of participation in the cluster, how often monitoring is carried out, and the degree to which information is shared, is variable. The cluster coordinator also attempts to collect information from organizations not participating in the cluster.

Rigorous *evaluation* of programs is rare in emergency settings. While respondents agreed that evaluations would be valuable, resources, expertise, and time are often not available. Initial situation or needs-type assessments (typically between 1-4 weeks after onset of an emergency) are a common way that implementing organizations attempt to understand the situation, the needs and where or how they need to intervene on all fronts, including water, sanitation and hygiene. However, these assessments typically do not assess baseline knowledge or practice regarding handwashing. When

carried out, evaluations most often involve cross-sectional (one-time) surveys after the program is in place or, if baseline data are available, a pre- and post-comparison. Most respondents stated that follow-up assessments are deployed variably making it difficult to determine whether a strategy was effective. When asked to describe a successful strategy, many respondents said they could not because an evaluation had not been carried out and only anecdotal information was available. One respondent said (P2):

"...what they actually achieved on the ground is very difficult to determine because there weren't KAP surveys... we didn't put that effort into it... So I think there's a lot of blind faith, that if we do enough of something we're bound to have a positive effect and a positive effect is better than not doing anything... But actually targeting it and knowing that we're actually having a definite impact and change on behavior. I don't know how often we're able to do that..."

Evaluating whether hardware worked well or was acceptable is also rarely done despite the fact that respondents viewed this type of data as useful. While one respondent explained that post-distribution monitoring is carried out to understand how recipients viewed different hardware, the data is not used to improve hygiene kits for future emergencies. When the acceptability of hardware is assessed by individual organizations, one respondent reported that the data is variable and generally not shared in any organized way.

Representatives from one organization indicated that their agency typically does evaluate their own programs. They first use a standardized approach to carry out an initial assessment within 72 hours after the onset of the emergency in order to understand whether and the extent to which an intervention is necessary. The organization has a humanitarian handbook which includes standardized tools designed to assess WASH and make appropriate adaptations for each phase of the emergency. Subsequently, the organization conducts a review of its own programs typically six weeks after the onset of the emergency. However, an impact assessment at the end of a program is not always done, with one of our respondent indicating that, if the program is small, an evaluation may not be necessary. In the case of large scale programs, which may involve a lot of money, evaluations are more likely.

What is being measured?

Donors typically require that funded organizations report on specific indicators identified by the donor agency. However, the quality of the data reported to donors was described as "quite dubious" by one respondent, especially on handwashing behavior. One respondent mentioned that donors rarely ask for evaluation-type data, suggesting that such a request would encourage implementing organizations to include evaluations in their proposal and thus strengthen programs. One respondent indicated that a specific donor organization provides a menu of indicators that the grantees choose to report against; these typically include program outputs such as the number of people targeted, the number of household or sites visited or the number of people interviewed, and the number of households that could report three or five critical times for handwashing and are gathered on a quarterly basis. This donor is working on an improved system whereby the grantees

would be required to explain their sampling methods and provide a 95% confidence interval. The change in monitoring stems from a lack of rigor in data collected through the previous system and the need to improve the quality of information generated by grantees through their monitoring and evaluation efforts.

Generally, respondents felt monitoring of WASH programs needs improvement, with some underlining the importance of consistency and ultimately standardization. Most data that are collected reflect program-level achievements, such as input, activity, and output indicators (e.g., number of soap distributed, number of hygiene promoters trained, number of community visits made, etc.), rather than program-level outcomes and impacts resulting from the program (e.g. improvement in handwashing behavior). Collection of these data varies in frequency, consistency, and quality across emergencies and organizations. The frequency of data collection is determined by the budget and the human resources and expertise available.

Even when evaluated, the indicators used to show program effectiveness are not standard, and there is substantial debate among the humanitarian sector about these indicators. One respondent (P5) offered a broader explanation of the dynamics of the sector and how individual mandates affect why or why not program effectiveness is monitored and evaluated:

"It depends on your aims. To be completely blunt, how the system works, almost all government departments have budgets for how they want to spend the money, this is not just AID, this is across the board, and they want to deliver successful projects. So, what generally happens is people want to dish up to the donors a successful project, so they'll go out and do their KAP survey that shows that 98% of the population now knows about the five times they should wash their hands, and the donor says, oh that's great, that justifies our expenditure, job done. And no one really wants to go in and ask the extra questions about, why we spent all this money and behavior change still hasn't been achieved... it's just a function of how the world operates... People who are budget holders, their whole focus in life is to spend the money... people who are implementers, their whole focus is to deliver whatever the donor wants them to deliver... it's the way all systems work, It's not just relief and development."

The consensus among respondents was that handwashing behavior and behavioral change is not typically measured within emergency affected populations. When describing behavioral change strategies, one respondent (P11) told us,

"There isn't often very representative information that is available. It's often a lot of anecdotal stories that people come to the meetings and say 'I saw somebody do this, I saw somebody do that'... in general the use of representative information is not very good in the current responses."

Health impacts of WASH or hygiene programs are also not typically measured. In outbreaks, disease incidence and/or deaths are monitored usually by clinical staff or organizations that are intervening medically. Most respondents felt measuring health impacts outside of an outbreak would be tough to achieve because health outcomes are hard to measure and require expertise, large sample sizes, and extra human and financial resources. Several respondents felt it is too difficult or impossible to determine whether program activities can be attributed to improvements in handwashing behavior and to health outcomes or to tease out a specific component of a program, like hygiene promotion, as the reason health improved. Appreciating the challenges of measuring health impacts, one respondent felt documenting health benefits as opposed to just showing behavior change is still key to understanding the benefit of a program on its target community. This respondent felt coordination between the health and hygiene promotion sectors could help strengthen the evaluation of health and hygiene indicators and facilitate a greater understanding of how hygiene is affecting health. UNHCR has a health information system (<http://www.unhcr.org/pages/49c3646ceo.html>) that reports different health statistics monthly from almost 20 countries. This respondent was not clear whether this information is widely accessed; the respondent was doubtful that these data can be used to determine the success of a program.

Several respondents mentioned using formative research to understand how to improve their hygiene promotion programs. Some reported the use of qualitative methods, generally involving focus group discussions, to examine certain facets of their program and to assess how conditions and behaviors change over time as the emergency evolves. However, several respondents said that these data are often not used to improve existing programs or programs implemented in other emergency settings.

How is monitoring and evaluation data collected?

Organization- or program-level data (data collected from within an organization, for example, the number of hygiene promoters trained by the organization, number of bars of soap distributed by the organization) are typically collected through reporting between staff where the person providing the data (the “respondent”) is someone within the organization. Population-level data (data collected from the beneficiaries) are typically collected using questionnaires, observations, or focus group discussions where the community members are the sources of the data. When handwashing behavior is measured, the key informants indicated that these population-level data are often self-reported behavior collected through KAP surveys. KAP surveys usually ask about knowledge related to critical times for handwashing and whether handwashing is practiced at those times. Data collectors may request respondents to show or describe the handwashing materials they have, and, in some instances, request to demonstrate handwashing. One respondent said KAP surveys are increasingly common; but because of the resources needed to carry out a KAP survey, they are usually conducted on an annual basis. Most respondents understood that self-reported handwashing behavior overestimates true handwashing behavior and felt it was not a reliable measure. In this regard, one respondent felt that KAP surveys are a better advocacy tool than an evaluation tool because the data collection process increases the amount of attention brought to handwashing.

Observation of handwashing facilities and the materials present at those stations are common in emergency settings, but like other monitoring indicators, were reported to vary in frequency,

consistency and quality of data collection. While the presence of soap and water at a handwashing station is a validated proxy indicator of handwashing behavior in development settings, it is not clear whether this holds true in emergencies. However, this indicator can be collected efficiently and at a larger scale compared to other methods, according to respondents.

Most respondents suggested that to evaluate programs it is critical to understand actual behavior as opposed to the knowledge of the behavior. While respondents acknowledged that direct (structured) observation of handwashing behavior is currently considered the best method of measuring handwashing behavior, they also emphasized that observations have notable limitations, highlighting that observations are resource intensive and require time, skilled data collectors, and skilled statisticians to analyze and interpret the data. A couple of respondents said that, while they have used this method, structured observations are rarely used in the emergency context. Especially during the acute emergency phase, when people are trying to meet basic needs, these respondents indicated that direct observations may not be appropriate or feasible. This suggests it would be more appropriate to wait until resources are mobilized within the camp to carry out observations. Others felt that, if sufficient human resources were available, it would be possible to carry out direct observations without hindering deployment of the program itself.

Several respondents were concerned about reactivity to the presence of an observer and thus a deviation from normal behavior, which has been noted in studies in the development context¹⁴. Overall, respondents had varying opinions on whether direct observation of behavior is a useful or feasible tool to measure behavior. One respondent felt it was the only approach that has worked to understand actual behavior; another respondent agreed that observational techniques produce data closer to typical behavior compared to other methods. However, several respondents felt this method was not a feasible approach or sustainable in emergency settings. Several respondents mentioned that reactivity to the presence of an observer compromises how well observational data reflect true behavior, with one respondent skeptical of any data on handwashing produced by structured observations. An important concern related to the safety of data collectors in such settings; as one respondent told us, many camps are dangerous places. However, the key barrier cited to measuring handwashing behavior using direct observation was the lack of basic capacity to carry out observations.

When asked about alternatives to direct observations, one respondent suggested use of cameras instead of human observers as a potential way to minimize reactivity. However, the same respondent highlighted that there may be ethical issues associated with filming behavior. Another suggestion was use of direct observation in public places like schools, communal latrines or eating areas, where the presence of an observer or an observation device is potentially less obtrusive.

Respondents once again indicated that an important limitation of measuring change is the lack of baseline data. As previously mentioned, collecting baseline data is difficult in emergency settings. Many respondents stressed that a better method of measuring program effects on handwashing behavior is needed.

Challenges to conducting monitoring and evaluation

Our respondents indicated that field staff are typically overworked, under-resourced and have a tremendous amount of responsibility. As a result, they are often unable to use data adequately in their decision making. We were told that monitoring and/or evaluation is typically done by regional level staff who are generally responsible for monitoring available data, conducting trend analysis, applying strategic thinking and modifying the direction of programs. Some organizations have people dedicated to monitoring, including establishing databases, and reporting activities (typically output level data such as liters of water per person per day, number of hygiene promoters, etc.). Although many respondents indicated that monitoring is not prioritized, they emphasized the importance of tracking information. A few respondents indicated that data that has been collected is often not analyzed or interpreted.

The lack of capacity to carry out monitoring and evaluation or research presents a major challenge. One respondent (P2) suggested holding workshops for WASH practitioners aimed to introduce basic approaches to monitoring and evaluation in an emergency setting and to explain how to use data findings.

"What does work and what is representative?... If you've got a camp of 12,000 people or 15,000 people, how much time do you need to put into observation? At what time of day? At what points in the camp? To get a clear picture, I think if people understood that and it was within reason in terms of the manpower or the eyes on the ground ...but also in terms of acceptability by the population... that might be quite a useful advocacy tool to be able to say to people, look, we are able to lift our game here, these are the sort of things that you can do in order to check the impact through your handwashing input."

Respondents explained that data collectors come from local communities or are in-country office staff and have varying skill levels. For quantitative work, questions regarding quality were raised. For instance, one respondent questioned whether KAP data collectors are adequately trained or if sampling is done correctly. For qualitative work, respondents indicated it is often difficult to find people with enough skill. Due to the unpredictability of emergencies, it is difficult to get third party evaluators who can be mobilized quickly after the onset of the emergency. One respondent described that it typically takes two months for monitoring and evaluation personnel to arrive at the site of an emergency, which eliminates the opportunity for baseline data collection. Overall, availability of qualified persons to carry out data collection and resources to hire and train good data collectors are key barriers to setting up monitoring and evaluation systems for individual programs or aspects of programs (like hygiene promotion).

Respondents had different views on how to incorporate monitoring and evaluation into their work. One respondent specified that resources should be focused on implementing programs that have been successful in other contexts in the first two months of an emergency and that later funds should be used to assess and improve programs through KAP surveys and/or formative research. The

same respondent recommended designating an individual on the ground for monitoring and evaluation as a way to ensure that monitoring occurs alongside of implementation. Another respondent considered monitoring and evaluation as critical to justifying the tremendous investments required to implement programs. One respondent (P2) described current investment in monitoring and evaluation as proportionate to the investment made in WASH activities.

"... I think handwashing, we all agree the evidence shows, is something worth investing in. How much effort we put into monitoring the outcome, the impact of that investment is going to be I guess commensurate to a certain extent to the investment that we make. And the investment that we make in handwashing is relatively cheap. Soap is a cheap input. So, it's one of those sort of blanket and hope type approaches. I mean that's how it has been currently done."

More intensive evaluation of handwashing promotion was mentioned as especially important in outbreak situations. It was also noted that during outbreaks more funding is available for evaluation purposes.

Competition from other sectors collecting information on other topics from beneficiaries is another challenge to gathering information on handwashing in emergency settings. One respondent expressed a reluctance to repeatedly gather information from people affected by a crisis. Another respondent (Pg) was supportive of requesting greater involvement of those affected by emergencies, offering the following:

"...this was a few years ago, the Sri Lanka civil war had just ended, and they were herding people into these IDP camps, and I said, 'are you telling me that we should be taking a group of women who have just been pretty severely traumatized, and start asking them about their toilets?'. And the message I got from the hygiene promoters, which I found fascinating, was, 'well, I think we definitely should because this person has just been under artillery bombardment, couldn't leave wherever they were and has now been put in a government camp where they have no decision making power over their life. You're actually asking them something, what their preferences are, what do they want in a toilet? Isn't that a good thing?' And that's always stuck with me because I think there's a fear of doing that kind of development research through a focus group to understand what is the problem. I think there's a fear that you're going to offend people...their house is falling down and you start asking them about handwashing. There are risks to that but I don't think it's completely taboo."

Our respondents generally confirmed that people affected by emergencies want to be active participants in decisions that shape their environment, but that many on the ground staff are nervous about eliciting their involvement. Including beneficiaries in order to understand their needs, practices, and cultural beliefs was viewed as an important strategy to better inform the program. However, several respondents said this type of bottom-up approach is rarely done. One respondent explained that the lack of inclusion of beneficiaries stems from the perception that it is too difficult and takes too much time. Other respondents suggested that the failure to include community members is due to a lack of expertise on the part of organizations to communicate with community residents.

Data gaps and research needs

Respondents identified a number of data gaps and research needs necessary to strengthen their organizational capacity to improve handwashing among displaced populations. One respondent also argued that humanitarian agencies working in humanitarian emergencies fail to capitalize on lessons learned from approaches used in the development context. Data gaps and research needs are listed below:

Motivators and barriers to handwashing with soap

- Identifying barriers to handwashing with soap
- Understanding motivators, including triggers and ways to sustain behavior
 - Determine how motivators vary between different communities
 - Understand how perceived risk motivates people to change handwashing behavior
 - Understand how much the context matters when developing effective motivators
 - Establish the role of faith or religion as a behavior change motivator, particularly when populations follow religions such as Buddhism, Islam and Christianity that have fundamental tenets regarding cleanliness
 - Decide whether approaches that evoke shame or disgust are appropriate to use in contexts where people have been traumatized

Strategies to promote handwashing with soap

- Setting goals and targets for handwashing promotion programming
 - Establish reasonable and feasible targets for prevalence of handwashing or goals to increase handwashing behavior through behavior change programs.
- Understanding the pre-emergency and immediate post-emergency context in order to design a tailored handwashing promotion strategy
 - Gain an understanding of knowledge, cultural perceptions, and attitudes about water-related disease risk from poor personal hygiene
 - Determine practices and materials used by communities before they are affected by the emergency
 - Understand to what extent that people try to continue practices used before the onset of the emergency
 - Understand whether urban-rural differences should be taken into account affect when determining approaches for hygiene promotion
 - Determine social norms before the onset of an emergency in relation to handwashing behavior

- Understand to what extent social norms change after the onset of an emergency
 - Understand the content of handwashing related campaigns people were exposed to prior to the emergency and to what extent these can be successfully used in emergency settings
 - Determine whether communities that are affected by emergencies are more receptive to new ideas
 - Understand whether there is a sense of community in emergency settings
- Designing behavioral change approaches
 - Understand which components of a behavior change framework are most important
 - Determine the most effective sequence for implementation of a behavioral change strategy
 - Determine whether social and commercial marketing approaches can be effectively used in the humanitarian setting to change behavior
 - Assessing sustainability/financing of approaches
 - Determine when populations affected by an emergency are able to start operating in a cash economy to obtain basic items like soap
 - Determine to what extent humanitarian programming is driven by the availability of funding rather than good practice

Effectiveness of handwashing promotion programs

- Developing an overall strategy
 - Establish how collective strategies (not individual components like just hygiene promotion) can work together to improve behavior
 - Understand whether more prescriptive (e.g. making people wash their hands before getting their food supply) approaches work
- Identifying handwashing hardware
 - Test how well different types of handwashing hardware work or are acceptable. (Some felt that such information would be very useful, while others suggested that the information is available but not shared well or used). Specific issues of particular interest to respondents were:
 - Determine what type of soap is most effective at the communal setting
 - Understand whether liquid soap is more attractive than bar soap and, if so, to what extent the use of liquid soap could increase uptake

- Assess how the use of more cost-effective, locally available materials versus the use of better quality hardware affects behavior
 - Determine whether it is feasible and sustainable to obtain handwashing hardware that is more standard and of better quality (instead of cost-effective, locally available materials)
 - Determine whether better quality hardware motivates better handwashing behavior.
- Assess whether soap can be manufactured locally and if the manufacturing of soap could be used as a livelihood activity for emergency affected communities
- Designing behavior change communication
 - Understand how people respond to new hygiene behaviors or to new handwashing hardware
 - Identify which hygiene promotion techniques actually increase handwashing behavior and why they work better
 - Determine to what extent emergency-affected populations who have experienced mental, emotional or physical hardship are receptive to WASH and hygiene programs shortly after a crises
 - Determine what are the best or most effective channels of communication or conduits to spread messages broadly
- Understand how to motivate people to maintain handwashing (or other WASH) facilities; build capacity for communal ownership of these facilities

DISCUSSION

Our qualitative data collected from WASH experts in organizations at the global and regional levels of implementing organizations, international organizations, and government and academia highlights a number of challenges to implementing handwashing promotion and several critical research needs in order to improve the effectiveness of programs promoting handwashing in humanitarian emergencies.

The WASH experts we interviewed clearly deemed handwashing to be a critical component of the WASH strategy but identified several gaps in ensuring that that priority is operationalized. Specifically, there is a lack of understanding or agreement between the relevant actors regarding the goals, objectives, and targets of handwashing promotion, thereby hampering the strategic development of programs. In addition, it appears that technical aspects of WASH and behavioral approaches need to be better balanced. While successful implementation of technical and technological aspects of WASH is certainly appropriate in emergency contexts, that achievement seems to come at the expense of ensuring strong behavior change communication. Respondents cited a lack of sufficient numbers of experts trained in behavior change, relevant to handwashing but also to other hygiene behaviors. There appears to be a need for behavior change experts at global level in many (not all) organizations, through to local levels. Indeed, there is a substantial need to develop the capacity to train up, supervise, and later strengthen a relatively unskilled hygiene promotion workforce quickly to deliver what can be complex, participatory methods to improve behavior.

The most significant needs identified regarding data were for data gathering, data sharing, and responsiveness to data. Currently, there is substantial reliance on anecdotal evidence, rather than on systematic data collection. Respondents indicated clearly that handwashing promotion programs are hampered by a lack of understanding of pre-existing behaviors and attitudes, but also by a lack of formative research during the emergency, and importantly, by a lack of rigorous evaluation of the effectiveness of the handwashing promotion strategies that are applied. Because many evaluations and “KAP surveys” do not use objective methods, instead relying on self-report, basic questions regarding how often refugees wash hands with soap have been largely unanswered, with the exception of one recent study in long-standing refugee camps⁹. Even when effectiveness data are collected, there is a limited extent to which findings are shared widely, particularly with implementers, and approaches are scaled up if successful. It appears that \ handwashing promotion in humanitarian emergencies would be substantively enhanced by increasingly applying rigorous formative and operations research, and by creating expectations of ongoing monitoring and evaluation, and responsiveness to findings from research and evaluation studies. Achieving such an improvement in systematic data collection may require increasing institutional capacity or development of partnerships with academic and research organizations to design and analyze operations research and qualitative research studies.

A core concern expressed by several of our respondents was that, largely, approaches to handwashing promotion in the humanitarian context rely on relatively uniform health-based messages. During outbreaks, the prevention of disease is a critical motivator of handwashing

behavior and widely employed by agencies. Whereas health-based messages may motivate better handwashing behavior when risk perception is high, for example during an ongoing outbreak, they may be less motivating of sustained improvements in handwashing behavior in the non-outbreak setting or as the outbreak wanes and risk perception declines. Indeed, in the non-emergency context, improved health has not been shown to be a key motivator of handwashing behavior in formative research conducted in numerous countries¹¹.

In the non-emergency setting, socially- and emotionally-driven factors have been shown to motivate individuals' handwashing behavior¹⁵. Little research has been done to date, both in our search of the published literature and according to the WASH experts we interviewed for this study, on the motivators and barriers to handwashing in populations affected by humanitarian emergencies. Respondents cited this as a core data gap and reflected on the importance of such data to develop effective behavior change communication in their handwashing promotion strategies. The lack of understanding of whether concepts such as nurture, disgust, comfort, and affiliation serve to motivate emergency-affected populations to improve handwashing behavior limits the use of potentially highly effective behavior change communications. Such emotive drivers of behavior are just now being tested in non-emergency settings in large-scale trials, the data for most of which are forthcoming.

Respondents cited a lack of adaptation of handwashing promotion strategies to the local context, which may be attributed to the lack of understanding of context-specific motivators and barriers. But, also, we detected a perceived rush to implementing activities quickly using a basic set of tools and materials, without a plan to tailor the behavior change communication subsequently, even as the emergency inevitably transitions from acute to chronic. Our data suggest a need for agencies to develop a standard set of tools to be applied early in the course of an emergency but then to collect the necessary formative data in order to adapt the overall handwashing promotion strategy (hardware and behavior change communication) to the local context. That formative data collection should gather information on pre-emergency behaviors, hardware preferences, social norms, and exposure to handwashing promotion programs. The emergency-affected population must be heard and their voices incorporated as the handwashing promotion strategy is adapted, since several of our respondents noted that input of emergency-affected populations is largely not solicited.

Core to the development of robust handwashing promotion programs is the distribution and promotion of acceptable, inexpensive hardware (i.e., soap and water dispensing devices) that is readily sourced and moved to the area where displaced persons are settled. Our data indicate that experts on WASH in emergencies are less concerned about development of new water dispensing devices than they are about identifying the devices most acceptable to the emergency-affected population and their pre-existing practices. Our respondents pointed out a notable gap in the widely respected SPHERE standards, which do not provide any recommendation regarding the volume of soap that should be provided for handwashing despite clearly indicating the need for soap and water for handwashing. This omission is glaring, particularly since SPHERE standards do include recommended volumes of soap for laundry and bathing purposes. The lack of a specific benchmark for soap provision for the purpose of handwashing may be due to the lack of data on the consumption of soap for the purpose of handwashing by emergency-affected populations. Data from studies done in non-emergency settings suggests that people use about 2 to 4 grams per person per day for handwashing^{7, 16}.

An important point of consensus regarding handwashing hardware was that waterless hand sanitizer is not a particularly viable option to promoting hand hygiene, except in certain select sites, such as in schools or health facilities. Although there is a need for water-conserving methods, the majority of respondents saw waterless hand sanitizer as too expensive, difficult to source and sustain, and without a clear path of transition from emergency to post-emergency context. Also, sourcing large volumes of waterless hand sanitizer would most likely require collaborations between public and private sectors. While such a public-private partnership does exist to promote handwashing (www.globalhandwashing.org) in the development context, it does not have a focus on emergencies and the agencies involved in delivering hygiene promotion in emergencies have not developed such relationships, to some extent because of a mistrust of the private sector. Hence, there may be missed opportunities in the emergencies context because of this lack of private sector involvement to enhance service delivery and to capitalize on marketing expertise so core to behavior change, especially in more middle-income countries.

Our research was limited to individuals at global and regional levels of engagement within the WASH sector in emergencies. The data from these experts do suggest that information sharing happens primarily among global level staff, with infrequent involvement of staff at country and local levels. While a lot of effort has been devoted to preparing some handwashing promotion materials, there has been limited awareness and sharing of these materials. To further elucidate the challenges to handwashing promotion among those working closest to the ground, the next phase of this research will focus on data collection among hygiene promotion program managers, hygiene promoters, and refugees themselves in an ongoing humanitarian emergency.

In conclusion, handwashing promotion is deemed important by experts in WASH in emergencies. However, there are a number of constraints to success of programs to promote handwashing among emergency-affected persons. These include a lack of targets for prevalence of handwashing practice among the target population, lack of attention to and capacity for developing and implementing effective behavior change communication approaches, lack of understanding of best practices and use or acceptability of different types of handwashing hardware, and limitations in improving programs based on existing knowledge derived from the development context.

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