

Global Scaling Up Handwashing Project

Introducing FOAM:
A Framework to Analyze
Handwashing Behaviors
to Design Effective
Handwashing Programs

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Global Scaling Up Handwashing is a WSP project focused on learning how to apply innovative promotional approaches to behavior change to generate widespread and sustained improvements in handwashing with soap at scale among women of reproductive age (ages 15–49) and primary school-aged children (ages 5–9). The project is being implemented by local and national governments with technical support from WSP. For more information, please visit www.wsp.org/scalinguphandwashing.

This Working Paper is one in a series of knowledge products designed to showcase project findings, assessments, and lessons learned in the Global Scaling Up Handwashing Project. This paper is conceived as a work in progress to encourage the exchange of ideas about development issues. For more information please email Yolande Coombes and Jacqueline Devine at wsp@worldbank.org or visit www.wsp.org.

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I. Overview

Introduction

FOAM (Focus on Opportunity, Ability, and Motivation) is a framework designed to help in the development, monitoring, and evaluation of handwashing behavior change programs. FOAM was developed for use in resource-poor settings, but it can also be adapted for other socioeconomic environments.

This working paper is intended for use by program managers implementing handwashing behavior change initiatives, as well as multilateral and bilateral agencies, academic institutions, and government and nongovernmental organizations (NGOs) working in water and sanitation.

Objectives

The objectives of the paper are to:

- Increase awareness among program managers on the value of using the FOAM framework in handwashing behavior change programs.
- Understand how FOAM can be applied at all stages of program design and implementation.
- Discuss other behavior change frameworks and approaches that have been incorporated into FOAM.

In addition to this working paper, more detailed guidance and case studies from the field are planned to illustrate how FOAM can be applied.

The Burden of Diarrheal Disease and Acute Respiratory Infections

Acute respiratory infections (ARIs) are the leading cause of death in children under age five in developing countries, closely followed by diarrhea. Diarrheal disease and acute respiratory infections account for one-third of the global burden of disease, with children accounting for most of the mortality from these causes.¹ It is estimated that more than four billion cases of diarrhea occur annually and that more than half of these are experienced by children under age five.² In developing countries, diarrhea accounts for the deaths of about 1.5 million children under age five every year, or 16 percent of all deaths for this cohort of the population, while ARIs account for 17 percent of all deaths in the same cohort. On a global basis, approximately two million children under five die from ARI each year, accounting for nearly one in five child deaths worldwide.³

More than 150 million episodes of pneumonia are estimated to occur every year among children under five in developing countries, accounting for more than 95 percent of all new cases worldwide. Between 11 and 20 million children with pneumonia will require hospitalization. South Asia and Sub-Saharan Africa have

¹ UNICEF 2009.

² UNICEF 2009.

³ UNICEF 2010.

FOAM is a framework designed to help in the development, monitoring, and evaluation of handwashing behavior change programs.

The simple act of washing hands with soap can cut the risk of diarrhea by almost half and respiratory tract infection by a third. This makes handwashing a better option for disease prevention than any single vaccine.⁵

the highest incidence of pneumonia cases among children under five. These two regions combined bear the burden of more than half the total number of pneumonia episodes worldwide.⁴

Both diarrheal disease and acute respiratory infections are considered preventable via effective interventions such as access to and use of adequate sanitation, improved access to clean water, and frequent handwashing with soap.

Why the Rates for Handwashing with Soap Are Low

Handwashing may seem to be a relatively simple task, but it is one that many people fail to carry out, particularly handwashing with soap. Some people wash their hands with soap after defecating, but some do not. Likewise, some people wash their hands before preparing food, but others do not.

Table 1 shows handwashing rates among mothers and caretakers in various countries at key times: after using the toilet, after cleaning a child's stools, and before feeding a child. For example, rates for handwashing with soap after using the toilet range from 3 percent to 42 percent, indicating that handwashing with soap is far from a universal practice.

Handwashing and other hygiene-related behaviors require time and resources, which must be diverted from other daily activities such as preparation of meals, farming, tending to livestock, and taking care of family members. Socioeconomic, cultural, gender, and environmental factors exert considerable influence over whether and to what degree individuals perform hygiene-related behaviors.

A recent study undertaken in Kenya found that 71 percent of respondents understood the importance of washing their hands after defecation but only 31 percent did so.⁶ This finding is illustrative of the knowledge-behavior gap⁷ encountered by antismoking and condom-use initiatives, among others, and reflects the complexity of human behavior.

Handwashing and Human Behavior

There are many variables that influence an individual's choices. Theoretical models and frameworks allow researchers to hypothesize about the factors or determinants of a particular behavior. Health-related behavior change models have been developed primarily in the fields of psychology and the social sciences. The FOAM framework draws on a range of models, including the Health Belief Model,⁸ the Theory of Reasoned Action/Planned Behavior,⁹ Health Locus of

⁴ UNICEF 2009.

⁵ Water and Sanitation Program 2007.

⁶ Steadman Group (Kenya) 2007.

⁷ The "knowledge-behavior gap" refers to the finding from many studies and programs that people may know what to do to improve their health or other living conditions but for various reasons may not act on that knowledge.

⁸ Rosenstock 1974.

⁹ Ajzen and Fishbein 1980.

TABLE 1: RATES OF HANDWASHING BY MOTHER OR CAREGIVER AT KEY TIMES

Country	Base of Respondents	Washes Hands with Soap after Using the Toilet (%)	Washes Hands with Soap after Cleaning Child (%)	Washes Hands with Soap after Cleaning Child's Stools (%)	Washes Hands with Soap before Feeding Child (%)	Washes Hands with Soap before Handling Food (%)	Washes Hands only with Water after Using the Toilet (%)
China (Sichuan)	78	13	—	16	6	—	87
China (Shaanxi)	64	12	—	—	16	—	14
Ghana	500	3	2	—	1	—	39
India (Kerala)	350	42	—	25	—	—	—
Kyrgyzstan	65	18	0	—	—	—	49
Madagascar	40	4	—	—	12	—	10
Peru	500	14	—	—	6	—	—
Senegal	450	23	18	—	—	18	—
Tanzania	30	13	13	13	4	—	33
Uganda	500	14	19	11	6	8	44
Vietnam	720	—	14	23	5	—	51
Average (weighted)		17%	13%	19%	5%	13%	45%

Notes: The figures given for Tanzania are the same because observation was based on whether the caregiver washed their hands after wiping a child's bottom or cleaning a child's feces. For Peru, figures for handwashing with all types of soap product have been aggregated.

Source: Curtis, Danquah, and Aunger 2007.

Control,¹⁰ Stages of Change Model,¹¹ and Social Learning Theory.¹²

Developing a Behavior Change Framework

In November 2006, the Water and Sanitation Program began implementing the Global Scaling Up Handwashing Project to test whether innovative promotional approaches can generate widespread and sustainable increases in rates of handwashing with soap at critical times among the poor and vulnerable in Peru, Senegal, Tanzania, and Vietnam.

It soon became apparent that the project teams needed a common conceptual framework to guide and monitor handwashing behavior change across the participating countries.

In response to this need, participants from the Global Scaling Up Handwashing Project met in Hanoi, Vietnam, in March 2007 to develop the FOAM framework (Box 1) to inform the design and implementation of the project and strengthen formative research, monitoring and evaluation, and develop a shared technical vocabulary among project team members. The framework, based on the PERForM framework of population Services International,¹³ was developed through a systematic process that relied on group conceptual exercises building on theory and findings from research.

The key categories of determinants are based on behavior change, or social cognition, models.¹⁴ Social cognition models have long been used to guide and predict behavior change. However, health-related models have tended to

¹⁰ Conner and Norman 1996.

¹¹ Prochaska and DiClemente 1984.

¹² Bandura 1986.

¹³ Chapman 2010.

¹⁴ Conner and Norman 1996.

Behavioral determinants are internal or external factors that influence whether a person engages or not in a given behavior.

focus on changing behavior related to such risk factors as alcohol use, smoking, lack of exercise, poor diet, and sexually transmitted infections. In developing the FOAM framework, workshop participants reviewed the most commonly used social cognition models.

Participants found that no single model or framework captured all the determinants pertinent to handwashing behavior. Therefore, they decided to identify the behavioral determinants by consensus and assign each one to the following categories: Opportunity, Ability, and Motivation. This system of classification is often used in consumer behavior¹⁵ and social marketing¹⁶ contexts.

Behavioral Determinants

Behavioral determinants can be internal (factors which take place within a person's mind, e.g., an individual's knowledge or a belief) or external (factors which are beyond the control of an individual, factors that happen to them, e.g., availability of a product or social pressure from peers).

Some examples of behavioral determinants are as follows:

- Ready access to toothpaste is an external determinant of brushing one's teeth.
- Knowledge of the risks posed by measles to a baby is an internal determinant of one's choice to vaccinate a child.
- Fear of contracting HIV/AIDS is an internal determinant of condom use.

¹⁵ MacInns, Moorman, and Jaworski 1991.

¹⁶ Chapman 2010.

II. The FOAM Framework

KEY POINT

In the acronym FOAM, the letters stand for:

- Focus
- Opportunity
- Ability
- Motivation

Focus: Who Is the Target Audience and What Is the Desired Behavior?

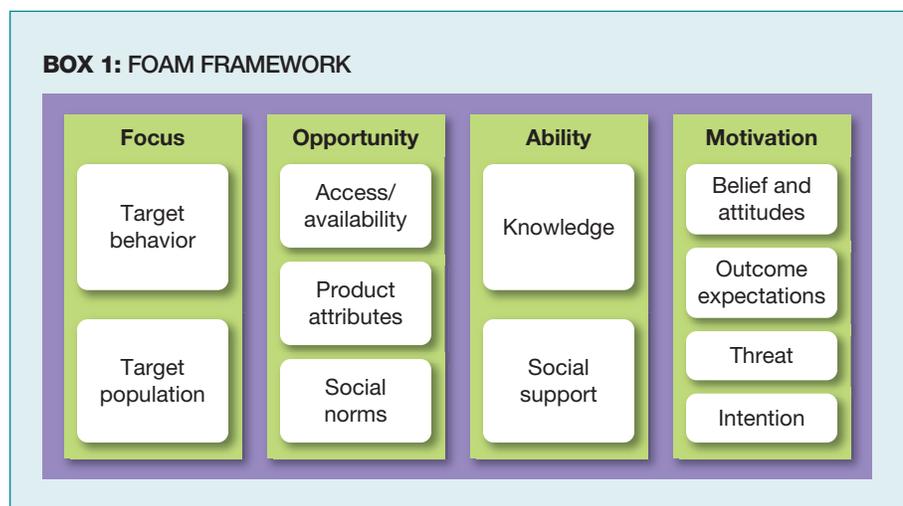
Clearly defining the target audience and the desired behavior are the critical elements of any intervention. Examples of audiences for handwashing behavior change include school children, primary caregivers of children under age five, and street vendors involved in food preparation. Handwashing with soap is the desired behavior, but implementers must also decide whether interventions will be aimed at promoting frequent and regular handwashing, or handwashing only at key moments, such as after defecation or before handling food. An intervention may also describe how handwashing should be performed (for example, the duration of handwashing, performance with or without running water, drying, and so forth).

Opportunity: Does an Individual Have the Resources to Perform a Behavior?

Derived from Diffusion of Innovation theory, health promotion, and quality-of-care research,¹⁷ opportunity determinants influence the chance of the behavior being performed. They include but are not limited to social norms, product attributes, and access to or availability of products or services.¹⁸ Opportunity determinants are often the most external factors affecting a person's behavior, over which they may have less control.

Handwashing with soap is the desired behavior, but implementers must also decide whether interventions will be aimed at promoting frequent and regular handwashing or handwashing only at key moments.

Opportunity determinants influence the chance of the behavior being performed.



¹⁷ Ibid.

¹⁸ Ibid.

Ability determinants reflect an individual's perceived or actual capacity to perform a given behavior (contingent on opportunity and motivation).

Motivation determines whether, given opportunity and ability, performing the behavior is in an individual's self-interest.

Soap and water must be readily accessible in the right places and at the right times to enable household members to wash their hands.

Ability: Is the Individual Capable of Performing the Particular Behavior?

Ability determinants reflect an individual's perceived or actual capacity to perform a given behavior (contingent on opportunity and motivation). Some ability determinants are knowledge, self-efficacy (an individual's belief in his capacity to carry out a specific behavior), and social support. The concept of ability was developed from social cognition models and theories from social psychology and other disciplines that examine interpersonal determinants of behavior change.¹⁹ Cognitive processes are the mental processes of perception, memory, and information processing, by which individuals acquire information, make plans, and solve problems.

Motivation: Does the Individual Want to Perform the Behavior?

Motivation determines whether, given opportunity and ability, performing the behavior is in an individual's self-interest. Some motivation determinants are personal risk assessment (e.g., Am I at risk for HIV/AIDS?) and outcome expectations (e.g., What will happen if I get tested for HIV/AIDS?). FOAM's motivation determinants are drawn mostly from social cognition models of behavior change.

Within the framework, motivation is thought to have a direct influence on behavior, though it is moderated by both ability and opportunity. For example, a minibus passenger may want to use a seatbelt because she fears the risk of an accident (motivation), but if there are no seatbelts installed (opportunity) or she does not know how to fasten a seatbelt (ability), then she cannot carry out this behavior. The reverse is equally feasible. A man may be near a kiosk that sells condoms (opportunity) and know how to use them (ability), but not perceive he is at risk of HIV/AIDS with his current partner (motivation).

Opportunity Determinants

In the context of handwashing, there are three opportunity determinants:

Access/Availability

Access/Availability refers to access to soap and water for handwashing. A recent review by the London School of Hygiene and Tropical Medicine of formative research in 11 countries found that some type of soap was available in almost every household, as was water.²⁰ However, it is not sufficient for soap and water to be present in the home; both must be readily accessible in the right places and at the right times to enable household members to wash their hands. A comparison of Senegalese women who wash their hands with soap with those who do not use soap revealed that convenient access to soap and water at critical times may well be the most important determinant; having a designated place within the household to wash hands with soap may be key to ensuring consistent handwashing with soap.²¹ This finding is supported by other studies, such as the one in

¹⁹ Ibid.

²⁰ Curtis, Danquah, and Aunger 2009.

²¹ Analysis in progress, using data collected in December 2008.

rural Bangladesh households, which concluded, “Interventions that improve the presence of water and soap at the designated place to wash hands would be expected to improve handwashing behavior.”²²

There must also be equality of access, so that young children can wash their hands with soap and water as easily as adults.

Visual cues are also critical in encouraging the development of habitual behavior. If a handwashing station is next to a latrine, people are far more likely to wash their hands immediately after latrine use.

Soap and, increasingly, water are precious and even scarce resources; their provision may require forethought and innovation. If necessary, water should be kept in basins or buckets next to latrines or near food preparation areas. Where water is scarce, devices such as Tippy Taps can be installed. The Tippy Tap is a simple, hand-made device for handwashing with running water. Soap must also be protected from becoming too wet, being stolen, or being eaten by rodents. Combining soap and water, these stations must be readily accessible and kept functional for handwashing to take place (Box 2).²³

Product Attributes

Soap and water have certain attributes that may function as either a catalyst or an obstacle to handwashing, depending on when and where the soap is used (Box 3). Key attributes of soap include its smell, size, type (laundry, bathing, or dishwashing, for instance), and the ability to produce lather. This is especially true in resource-poor settings where soap is used for multiple purposes. For example, if a household uses laundry powder with a strong scent as the main soap product, a caregiver may wash her hands with it after a meal of fish but may not before she feeds her child.

For water, attributes such as clarity, color, and odor influence handwashing. The attributes of a handwashing facility, such as cleanliness and odor, may also influence its use and, therefore, handwashing behavior.

Key product attributes include soap’s smell, size, type, and the ability to produce lather; water’s clarity, color, and odor; and the cleanliness, and odor of the handwashing facility.

BOX 2: ACCESS TO SOAP IN KENYA

For handwashing with soap to occur, household access to water and soap is required. A study undertaken in Kenya revealed that mothers often wrapped soap carefully and stored it where children could not get it and waste it. As a consequence, the study found, household members used soap for bathing and washing clothes but not for washing hands throughout the day.

Source: Steadman Group (Kenya) 2007

²² Luby, et al. 2009.

²³ For more information on Tippy Taps and other enabling technologies for handwashing, visit WSP’s Enabling Technologies for Handwashing Database at <http://www.wsp.org/scalinguphandwashing/enablingtechnologies/>.

BOX 3: ATTRIBUTES OF SOAP IN UGANDA

In Uganda, many survey respondents found the smell of soap on their hands off-putting as they ate and therefore preferred not to use strong-smelling soap before they eat. Conversely, findings from Kenya show individuals in communities with a fish-rich diet prefer using perfumed soaps after they eat, as these counteract the smell of fish.

Source: Steadman Group (Uganda) 2007

These are the rules that govern how individuals in a group or society behave. Any behavior outside these norms is considered abnormal.

Social Norms

Social norms are the rules that govern how individuals in a group or society behave. Any behavior outside these norms is considered abnormal.²⁴ With respect to handwashing, norms may be objective or observable within the community. For example, an individual may learn that handwashing is the social norm by seeing others wash their hands in a public place. There are also household norms. A child knows whether or not he is expected to wash his hands with soap before eating a meal with the family. Household norms are reinforced by parental sanction or reward and praise.

Realignment of social norms takes time and may require the intervention of a role model or figures of authority such as religious leaders or doctors who can persuade others, through public display or endorsement, to carry out a particular behavior. An example of this is provided by former Zambian president Kenneth Kaunda who publicly took an HIV test in 2002 and urged “all Zambians, without exception,” to be tested for HIV.²⁵

Ability Determinants

There are two ability determinants in FOAM:

Knowledge is acquired through learning and may pertain to objects or products, behaviors, and even outcomes.

Knowledge

Knowledge is acquired through learning and may pertain to objects or products, behaviors, and even outcomes. It is important to emphasize that knowledge, while critical, is not adequate to spur behavior change. The knowledge-behavior gap explains in part why individuals engage in certain behaviors even when they are aware of the associated risks.

Social support is the physical and emotional comfort given individuals by family, peers, friends, co-workers, and others.

Social Support

Social support is the physical and emotional comfort given individuals by family, peers, friends, co-workers, and others. Social support takes several forms: physical (a mother helps her child to work up lather from soap); emotional (a health worker praises a mother for washing her hands before feeding her infant); or

²⁴ Kelly 1955.

²⁵ Shacinda 2002.

informational (a teacher tells children why they should wash their hands with soap before eating). Support may also take the form of practical advice (a woman helps her neighbor build a handwashing station).

Motivation Determinants

Four determinants provide motivation for handwashing with soap:

Attitudes and Beliefs

Attitudes and beliefs represent an individual's understanding and perceptions about handwashing with soap. Beliefs may not be correct and may actually impede adoption of positive behavior practices. Individuals are often unaware of their beliefs and attitudes.

Attitudes and beliefs represent an individual's understanding and perceptions about handwashing with soap. Individuals are often unaware of their beliefs and attitudes.

One key aspect of attitude or belief is an individual's perceptions about the main causes of events in his or her life: this is usually referred to as *locus of control*. Individuals with an internal locus of control have a strong sense of authority over their own lives. For example: "The more I study, the better grades I get."²⁶ By contrast, to possess an external locus of control is to believe that God, fate, poverty, or some extrinsic force exerts control over one's circumstances or behavior. Individuals with an external locus of control are less likely to engage in healthy behavior and may display high levels of resignation and apathy about the future. These individuals are also more prone to believe illness and suffering are an inevitable part of life (Box 4 and Box 5).

Expectations

Expectations are perceptions of the consequences of handwashing with soap. If perceived outcomes are positive or beneficial, the behavior is more likely. The converse applies as well. For example, a mother may not wash her hands with

Expectations are perceptions of the consequences of handwashing with soap. If perceived outcomes are positive or beneficial, the behavior is more likely.

BOX 4: RESEARCH FINDINGS FROM VIETNAM

In a formative research study conducted in 2006, half of the mothers surveyed said they did not use any kind of soap when washing their hands. Sixty percent of these women said they did not believe soap was necessary. The overwhelming majority of mothers interviewed (85 percent) cited weather or climate change as the major cause of diseases found in their community (such as respiratory infections or diarrhea)—reflecting an external locus of control. Based on these findings, the Vietnam Handwashing Initiative designed a behavior change campaign aimed at changing these beliefs and other motivational barriers to handwashing with soap.

Source: Indochina Research Ltd 2007

²⁶ Gershaw 1989.

BOX 5: RESEARCH FINDINGS FROM TANZANIA

Research undertaken in Tanzania found that subjects believed individuals who washed their hands were of higher social status, better educated, generally “nicer,” and more trustworthy. People who did not regularly wash their hands were characterized as the opposite. Given these perceptions, an individual might consider herself of insufficiently high status to wash her hands frequently.

Source: LMS International/Steadman International 2006

a strong-smelling soap before she feeds her child if she expects this will cause the child to fuss.

Expectations can also be longer term (mothers may perceive that handwashing will lead to decreased immunity). Although expectations are themselves a form of belief or attitude, they are classified separately because of their potential importance in assessing why individuals wash their hands.

Another type of expectation is the subjective norm, the anticipated opinion or approval of an important or influential person relative. For example a woman may perceive that she is expected by her mother-in-law to wash her hands before feeding an infant.

Threat can be defined as perceived dangers or negative outcomes linked to handwashing with soap.

Threat

Threat can be defined as perceived dangers or negative outcomes linked to handwashing with soap. Threats has two dimensions: *perceived susceptibility*, which is an individual’s assessment of the risk posed by a particular condition or illness, and *perceived severity*, an individual’s assessment of the seriousness of the condition and its potential consequences.²⁷ Perceived severity is influenced by other considerations and factors. For example, a mother will worry more about a cold in a two-week-old baby than in a three-year-old child, particularly if she is aware babies are more susceptible to pneumonia. The threat of epidemics such as cholera may provide immediate motivation to wash hands with soap.

Intention is a person’s plan on how to handwash with soap. An individual who intends to is more likely to wash their hands than someone who does not.

Intention

Intention is a person’s plan on how to handwash with soap. This might entail buying soap, fetching water, or ensuring a handwashing station is functional. Intention is thought to be a powerful motivator of behavior and, according to the Theory of Reasoned Action,²⁸ is a predictor of behavior change. An

²⁷ Rosenstock 1974.

²⁸ Ajzen and Fishbein 1980.

individual who intends to is more likely to wash their hands than someone who does not.

Habits are routines of behavior that are repeated regularly and without direct or conscious thought about those behaviors. Frequent performance of a particular activity in stable circumstances leads to habit formation. Habits can be an obstacle to an individual’s intentions. An individual who intends to begin handwashing after using the latrine must override the habit of not handwashing and requires changes in the supporting circumstances.

Evolution of the FOAM Framework

After its initial conceptualization and development at the Vietnam workshop, the framework was shared with hygiene and behavioral science specialists for review, feedback, and assessment. Currently, FOAM is being implemented in handwashing programs in Peru, Senegal, Tanzania, and Vietnam. The FOAM framework is not static; it builds on other hygiene behavior change approaches and programs (Table 2). Users have an important role to play in refining and adapting it for country- or population-specific contexts, which means the FOAM framework is continually evolving to reflect current best practice. It is

TABLE 2: FOAM LINKS WITH EXISTING HYGIENE AND BEHAVIOR CHANGE APPROACHES AND PROGRAMS

<i>Existing Approach</i>	<i>Description</i>	<i>Elements Integrated into or Sourced for FOAM</i>
The Hygiene Improvement Framework (HIF)	HIF is based on three core components: access to water and sanitation hardware, hygiene promotion, and a strengthened enabling environment.	An emphasis is placed on access and the enabling environment.
Behavior-Centered Programming (BCP)	BCP informs inquiry into the determinants of pre-intervention behaviors then tests “enhanced” behaviors to produce a spectrum of strategies intended to motivate adoption of the latter.	FOAM identifies both enabling factors and obstacles to desirable behavior in the context of the Opportunity, Ability and Motivation framework.
Public Private Partnership (PPP)	The PPP approach to hygiene is based on the premise that both private commercial firms and public entities (principally, national or regional ministries of health) would benefit from collaborating to promote handwashing for public health.	FOAM may inform PPP interventions. For instance, the Global Scaling Up Handwashing Project has partnered with Unilever in Tanzania to integrate FOAM into behavior change communications.
Participatory Hygiene and Sanitation Transformation (PHAST)	PHAST involves participatory methods and tools to assist communities to change hygiene practices and improve and manage water supply and sanitation facilities.	Subsequent to the identification of behavioral determinants, a PHAST approach can be used to operationalize FOAM.
Happy, Healthy, and Hygienic/Saniya Hygiene Project (Burkina Faso)	This is a social marketing approach to hygiene promotion emphasizing simple, attractive promotional messages that are delivered to specific audiences through appropriate communication channels.	FOAM is underpinned by an approach that relies on identification of key behavioral determinants to focus social marketing interventions.

likely that new handwashing behavior change determinants, particularly for different target populations such as school children (Box 6), will be identified and subsequently incorporated into FOAM.

BOX 6: ADAPTING THE FOAM FRAMEWORK IN VIETNAM

The Global Scaling Up Handwashing Project has developed a variation of the FOAM framework for primary school children. This variation, called FOAM-EM (Focus on Ability, Opportunity, and Motivation—Ecological Model), builds on findings from an innovative research study conducted in Vietnam with technical support by the London School of Hygiene and Tropical Medicine. In Vietnamese, “EM” means “little brother or sister,” so FOAM-EM is a memorable acronym.

FOAM-EM identifies key factors influencing primary school children’s handwashing behavior as well as their relationships with family, school, and community. FOAM-EM and insights from this study will be used to improve the design of the primary school program in Vietnam. The program was launched in the first half of 2009 with support from implementing agencies and stakeholders.

For more information on the social ecological approach to health promotion, see Stokols 1996 and Stokols et al 1996.

III. Applying the FOAM Framework

KEY POINTS

- Formative research can assist program managers to research and understand target audiences, plan interventions, and allocate resources efficiently.
- Doer/non-doer analysis often reveals factors important in promoting behavior change.
- Research can include quantitative and qualitative studies.

Formative Research

Formative research into handwashing behavior change can assist program managers in determining the focus (target audience and desirable behavior) of an intervention (Box 7). Just as important, it enables program planners to gauge whether members of a target audience possess the opportunity, ability, and motivation to wash their hands and which determinants need to be prioritized in the intervention.

Typically, formative research is carried out through focus group discussions with members of the target audience, in-depth interviews, and the gathering of baseline data. At the formative research stage, FOAM provides a useful checklist as well as a framework for organizing the findings. FOAM can also inform the design of questionnaires and observation tools.

Prior to the launch of a handwashing initiative, program managers may also wish to undertake quantitative research to ascertain the current (baseline) rates of handwashing with soap in the target community. Knowledge of these rates will in turn enable program goals and targets to be established. Quantitative studies (Box 8) also establish

BOX 8: QUANTITATIVE RESEARCH

Quantitative research involves the measurement and analysis of data in a numerical way. Knowledge, attitudes, beliefs, and practices (KABP) is a common type of quantitative study that has been implemented in several fields, such as HIV/AIDS and reproductive health.

In qualitative studies, the data collected from interviews and observations is not measured or analyzed in numerical ways. Focus group discussions are a commonly used qualitative tool.

whether handwashing rates are uniform across the entire community and provide critical demographic (gender, age, physical location) and socioeconomic data.

Ideally, handwashing rates are measured through direct observation. In interviews, respondents tend to over-report the frequency with which they wash their hands. However, direct observation is not always feasible because of time and resource constraints. When being observed, people may also wash their hands more often. Questions should be asked in a variety of ways to validate the accuracy of self-reporting. The Global Scaling Up Handwashing Project and other projects, such as those under the Child Survival and Health Grants Program of USAID,²⁹ use the presence of soap and water next to the latrine as a proxy measurement for handwashing behavior.³⁰

Formative research also enhances more efficient allocation of resources. For example, research conducted through WSP's Global Scaling Up Handwashing Project has confirmed the existence of a knowledge-behavior gap with respect to handwashing with soap. Thus, an intervention to

BOX 7: MAIN RESEARCH QUESTIONS ADDRESSED THROUGH FORMATIVE RESEARCH ON HANDWASHING

- Pre-intervention handwashing rates and behaviors
- Demographic and social characteristics of the target population
- Behavioral determinants for handwashing
- Media consumption and communications habits of the target population

²⁹ See www.childsurvival.com.

³⁰ For more guidance on measuring handwashing behavior, see *Practical Guidance for Measuring Handwashing Behavior (2010)*, available under "Publications and Tools" at www.wsp.org/scalinguphandwashing.

change behavior by a traditional information, education, and communication campaign will be insufficient.

In addition to conducting formative research on the target population, an enabling environment assessment should also be considered. The enabling environment refers to conditions such as policies and organizational capacity that may either facilitate or hamper the scaling up and sustainability of a handwashing program. Key enabling environment questions include the following:

- What resources are available for a handwashing program?
- Which partners are involved or interested in implementing a handwashing program and what is their capacity?
- What structures exist to facilitate a handwashing program?³¹

Doer/Non-doer Studies

Doer/non-doer analysis is a quantitative research methodology that compares segments of an at-risk population (e.g., for diarrhea or ARI) and who carry out a particular behavior and those who do not. Doer/non-doer analysis often reveals factors important in promoting behavior change and can be used during the formative research stage as well as to monitor ongoing behavior change interventions.³²

The data required for a handwashing doer/non-doer study is essentially identical to that needed for quantitative formative research:

- Demographic data (age, gender, religion, educational attainment, geographic location)
- Media habits (at which times members of the audience listen to the radio or watch television, and which stations; and which newspapers are read)
- Behavioral determinants
- Handwashing behavior

In the data analysis stage, a FOAM doer/non-doer study first identifies those members of a community who are at risk of diarrhea or at risk of ARI. Secondly, it defines those people who consistently wash their hands with soap (doers). The remainder of the community are non-doers. The researchers look at the behavioral determinants, media consumption habits, and demographic characteristics of the two samples and the differences between doers and non-doers. Table 3 provides an illustrative example of handwashing behavior in mothers of children under age five broken down by O, A, and M determinants and demographic characteristics.

To illustrate, Table 3 shows that a large proportion of both doers and non-doers are aware that handwashing with soap can prevent diarrhea. Based on this information, a message

TABLE 3: ILLUSTRATIVE EXAMPLE OF A DOER/NON-DOER STUDY

	Doers (Mothers Who Wash Their Hands with Soap Each Time They Defecate)	Non-doers (Mothers Who Do Not Wash Their Hands with Soap Each Time They Defecate)
1 Know that handwashing with soap can prevent diarrhea	78%	74%
2 Have a handwash station next to latrine	58%*	23%*
3 Believe acute respiratory infections (ARIs) are nonpreventable in children	25%*	15%*
4 Are of high socioeconomic status, i.e., likely to own such goods as bicycles, radios, mobile phones	75%*	38%*

Note: *p = 0.05 statistically significant

³¹ WSP has developed a methodology for assessing the enabling environments for handwashing behavior change programs. See www.wsp.org/scalinguphandwashing for further information.

³² There are various approaches and variations to doer/non-doer studies. Barrier analysis for example, is a rapid assessment tool that can be used to identify relevant behavioral determinants. See <http://barrieranalysis.fhi.net> for more information. Population Services International carry out segmentation to assess behaviors and non-behaviors. See <http://www.psi.org/resources/research-metrics/publications/toolkits/dashboard-analysis-series-three-segmentation-analys>.

about the benefits of handwashing would probably not be an effective use of resources.

By contrast, there is a significant difference between doers and non-doers with access to a handwashing station. Doers are twice as likely to have one next to the latrine as non-doers. This suggests that a key component of an intervention may be to promote installation of handwashing stations or strengthen the skills of caregivers to ensure soap and water are always available and accessible for handwashing in the household.

Although there is a significant difference between doers and non-doers in terms of their perceptions about the preventability of ARIs, both groups have low recognition. A program to educate the entire community about ARI prevention might be an effective use of resources.

There are considerably more doers of high socioeconomic status than non-doers. A program manager should assess whether the cost of setting up a handwashing station is prohibitively high.

FOAM Operational Matrix

The FOAM Operational Matrix (Table 4) was developed to help put the framework in action using a social marketing approach. It enables the integration of FOAM's determinants with formative research findings as well as potential solutions and strategies. The marketing mix (Column 6 of Table 4) refers to the "Four Ps": getting the right *product*, at the right *price* in the right *place* and with appropriate *promotion* (Box 9). In the example, the target audience is mothers with children under five years of age; the desired behavior is consistent handwashing with soap after defecation and before feeding children under age five. The FOAM

Operational Matrix details the behavior change program plan from the conceptual stage through formative research to implementation of the plan of action.

BOX 9: THE FOUR Ps

Product: The product can be a commodity or item (soap), a concept (hygiene), or a behavior (handwashing with soap).³³

Price: Whatever is needed to acquire the product. For handwashing, there is the financial cost of buying soap as well as the time and/or money required to obtain water. The opportunity costs are also important and include the loss of income from going to market to buy soap. There is also the social cost of going against community norms and risking ostracism and stigma.

Place: The distribution channel used to get the commodity to the consumer at a specific location. For soap, this might be a shop, kiosk, or school. For handwashing, the place is the site where handwashing takes place such as near the latrine or in the kitchen.

Promotion: This includes which and how key messages are communicated to the consumer through mass media such as radio and television, posters, newspapers, t-shirts, leaflets, point-of-sale merchandising, road shows, and direct interaction with community or health workers, to list but a few.

³³ For practical purposes, in this document, behavior can be considered a product.

TABLE 4: FOAM OPERATIONAL MATRIX

4. Possible Research Topics (to Be Expanded into Research Tools)						
1. Category	2. Determinant	3. Examples	5. Research Findings	6. Marketing Mix		
Opportunity	Access/Availability	<ul style="list-style-type: none"> Distribution of products, e.g., water, soap, handwashing stations. Convenient access to soap at home at critical locations/times. Convenience, i.e. cost, distance, and time factors in procuring products. 	<ul style="list-style-type: none"> In this community soap is not available at critical times because many mothers do not want children to waste it in handwashing. 	<ul style="list-style-type: none"> Smaller bars of soap. Promotion of handwashing stations. Social marketing of Tippy Taps. 	<ul style="list-style-type: none"> Fix sales points for Tippy Taps. Set price for Tippy Taps. 	<ul style="list-style-type: none"> Encourage mothers to cut laundry or bar soap and place at handwashing stations. Build skills through interpersonal communication aimed at convincing soap and making it available to all household members. Encourage setup of more than one handwashing station per household.
Product Attributes	<ul style="list-style-type: none"> Soap type, scent, color, shape, brand, and effect on skin. Water cleanliness, color, and perceived quality. 	<ul style="list-style-type: none"> Do individuals like the smell and color of the soap? Is the soap antibacterial? Do individuals perceive the water to be clean? 	<ul style="list-style-type: none"> Mothers perceive only antibacterial soap to be truly effective for handwashing. Mothers consider soap too expensive and too quickly consumed for use in handwashing 	<ul style="list-style-type: none"> More affordable soap 	<ul style="list-style-type: none"> Rural outlets and salespeople via bicycle 	<ul style="list-style-type: none"> Convince mothers that all soap is effective for handwashing. Promote the use of more durable soap specifically for handwashing.

TABLE 4: (Continued)

1. Category	2. Determinant	3. Examples	4. Possible Research Topics (to Be Expanded into Research Tools)	5. Research Findings	6. Marketing Mix		
				Product	Price	Place	Promotion
Social Norms	The rules that govern how individuals within a group or society behave.	<ul style="list-style-type: none"> Do community members wash their hands with soap? Are children taught in school to hand wash with soap? If community members wash their hands only at certain times, which are these? 	<ul style="list-style-type: none"> Few community members wash their hands with soap unless dirt is visible. Children are not taught in school to wash their hands with soap. 			<ul style="list-style-type: none"> Provide communications on the “invisibility” of dirt and germs. Encourage schoolteachers to teach about the importance of handwashing with soap. 	

Note: For illustrative purposes, only the Opportunity Determinants of FOAM have been included.

IV. Conclusion

KEY POINT

FOAM can be applied to do the following:

- Focus interventions
 - Analyze results of available formative studies
 - Inform the design of new research
 - Inform the development of the program
 - Monitor appropriate indicators
-

It is expected that FOAM will evolve as additional research findings are incorporated and new studies are conducted.

The FOAM framework was designed to help improve our understanding of why people sometimes wash their hands with soap and why sometimes they don't. The FOAM framework can help program managers analyze and explain hand-washing behaviors of various target populations.

Conceptual frameworks such as FOAM serve to strengthen formative research, planning, implementation, and monitoring and evaluation of the behavior change interventions. They also provide common concepts and a shared language for program managers. More specifically, FOAM can be applied to do the following:

- **Focus the interventions:** Prioritize the target populations and behaviors to change.
- **Analyze the results of available formative studies:** Findings are mapped into each of the determinants. This may lead to the identification of gaps to be investigated through additional spot research.
- **Inform the design of new research:** A series of questions can be developed to explore all or a subset of the determinants.
- **Inform the development of the program:** Once relevant determinants have been identified, the appropriate interventions can be developed.
- **Monitor the appropriate indicators:** Indicators aimed at measuring changes in the determinants can be formulated and tracked (as outcomes or intermediary results) over time.

It is expected that FOAM will evolve as additional research findings are incorporated and new studies are conducted. FOAM was developed primarily to assist with handwashing interventions in low-resource settings, which is the context used in this document. However, the framework can be adapted to many different target populations and behaviors, and we find the emergence of potential determinants of particular interest.

This paper introduces FOAM and describes how it was developed. Sharing lessons learned from the field, publications planned for later release will provide more detailed guidance on how to apply FOAM. These publications are intended for use by program managers responsible for the implementation of handwashing and/or hygiene promotion interventions, as well as members of multilateral and bilateral agencies, academic institutions, and government and nongovernmental organizations (NGOs) that work in the water and sanitation sector.

Appendix A: FOAM Glossary

A Behavior Change Framework: a diagram that represents all the various determinants (factors) of a behavior that is desirable in order for a public health outcome to occur.

Access/Availability³⁴: Ease of obtaining water and soap needed for the behavior. Main dimensions are as follows:

- Availability of soap at a convenient point-of-sale
- Access to water
- Access to resources/gender equity
- Convenient access to HW station at juncture promoted (e.g., near latrine or kitchen)
- Cost of access (economic, time)

Attitudes and Beliefs: Beliefs are perceptions about an object, behavior or person which may or not be true. Attitudes are an evaluation or assessment of an object (Eagly and Chaiken 1993). Research has shown that health beliefs are not the most important ones. Main dimensions which may influence HW are as follows:

- Perceived benefits of using/adding soap when HW
- Attitudes toward soap
- Perceived affordability (in both time and money for soap and water)
- Self-image
- Image of those who wash their hands (e.g., good mothers, responsible, etc.)
- Beliefs about diarrhea, acute respiratory illnesses, and other childhood illnesses
- Locus of control (internal vs external/fatalistic): an individual's perceptions about the main causes of the events in his or her life (Rotter 1966)

Determinants: Internal or external factors that influence whether a person is likely to engage in a behavior.

Expectations: What an individual thinks will happen as a result of performing the behavior. Expectations include:

- Subjective Norms: The belief that people important to one feel the behavior should or should not be performed (Fishbein and Ajzen 1975)
- Outcome expectations (positive: comfort, protection, relief from disgust; negative: irritate skin—particularly in children, diminish immunity, etc.)

FOAM: A conceptual framework of handwashing behavior that can be used to guide or inform design, implementation, monitoring, and evaluation of handwashing promotion programs.³⁵

Focus: Reminds the program managers to define the target audience and desired behavior.

Opportunity: Institutional or structural factors that influence an individual's chance to perform a behavior. Determinants within Opportunity include: access/availability, product attributes, and social norms.

Ability: An individual's skills and proficiency to perform a behavior. Determinants within Ability include: knowledge and social support.

Motivation: The drives, wishes, urges, or desires that influence an individual to perform a behavior. Determinants within Motivation include: attitudes and beliefs, expectations, threat, and intention.

Intention: An individual's plan to perform or facilitate the behavior (Fishbein and Ajzen 1975). Dimensions that would influence behavior include:

- Habit (role of visual cues or sensory cues)
- Willingness to pay for soap and fetch/pay for water for HW
- Willingness to install HW station (e.g., net for soap for children's use)

³⁴ See for example, Conteh and Hanson 2003; Duncan, Jones and Moon 1996; Kearns and Moon 2002; Weir, Pailman, Mahlalela, Coetzee, Meidany and Boerma 2003.

³⁵ Opportunity, ability, and motivation are concepts derived from marketing and advertising, public health, social psychology, economics, consumer behavior (see, for example, MacInnis, Moorman, and Jaworski 1991; Andreasen 1995).

Knowledge: Facts accumulated through learning about objects, actions, and events (Clarke 1992). It should be noted that this determinant may be necessary, but it is not sufficient for behavior change to occur. In the case of HW, knowing why HW is important including notions of germ theory would form part of this determinant.

Product Attributes: Perceived or actual characteristics of water and soap. Main dimensions that can influence behavior are as follows:

- Type of soap agent or purpose (laundry, beauty, dishwashing)
- Type of soap format (powder, liquid, bar)
- Soap characteristics (e.g., scent, color, brand, etc.)
- Water characteristics (e.g., clarity, smell, etc.)

Social Norms: Standards that exist in the community or within the family for an individual to follow (Andreasen 1995). Main dimensions are as follows:

- Objective (observable) norms (e.g., presence of HW stations in public toilet facilities or schools)

- Household norms/behavioral modeling from other family members
- Social influence: within community (neighbors, opinion leaders, etc) and within household (e.g., in-laws, grandmother)

Social Support: The physical, emotional, or informational assistance an individual gives or receives for a behavior within the community (Seeman and Berkman 1988) or household. Main dimensions are as follows:

- Advice from health or community worker, relatives, friends, opinion leaders, neighbor, media
- Assistance in getting water or buying soap (e.g., male head of household)
- Physical assistance for children or elderly

Threat: The perceived danger or harm associated with performing or not performing the behavior (Witte 1992). It can be health and non-health related (e.g., social shunning). Threat includes two dimensions: susceptibility (how likely is the threat) and severity (how serious are the consequences).

References

- Ajzen, I. and M. Fishbein. 1980. *Understanding attitudes and predicting social behavior*. Englewood Cliffs, NJ: Prentice-Hall.
- Andreasen, A. R. 1995. *Marketing social change: Changing behavior to promote health, social development, and the environment*. San Francisco: Jossey-Bass.
- Bandura, A. 1986. *Social foundations of thought and action: a social cognitive theory*. Englewood Cliffs, NJ: Prentice Hall.
- Chapman, S. 2010. "Evaluating social marketing interventions," in *Evaluating health promotion: Practice and methods*, 3rd ed. Eds. Margaret Thorogood and Yolande Coombes, 105–120. Oxford: Oxford University Press.
- Chapman, S. and H. Astatke. 2003. The social marketing evidence base. Social marketing research series. Washington, D.C.: Population Services International.
- Clarke, R. 1992. Knowledge. Australian National University. <http://www.rogerclarke.com/SOS/Know.html> (accessed April 20, 2010).
- Conteh, L. and K. Hanson. 2003. "Methods for studying private sector supply of public health products in developing countries: A conceptual framework and review." *Social Science & Medicine* 57 (7): 1147–1161.
- Conner, M. and P. Norman, eds. 1996. *Predicting health behaviour. Research and practice with social cognition models*. Buckingham, UK: Open University Press.
- Curtis, V., L. Danquah, and R. Aunger. 2007. What do we know about hand washing practices? A review of the results of the formative research studies from the Global Public-Private Partnership for Handwashing with Soap and other sources. London: LSHTM/Hygiene Centre (for Unilever).
- Curtis, V., L. Danquah, and R. Aunger. 2009. "Planned, motivated and habitual hygiene behavior: An eleven country review." *Health Education Research* 24 (4): 655–673.
- Duncan, C., K. Jones, and G. Moon. 1996. "Health-related behaviour in context: A multilevel modelling approach." *Social Science & Medicine* 42 (6): 817–30.
- Eagly, A. and S. Chaiken. 1993. *The psychology of attitudes*. Fort Worth, TX: Harcourt Brace Jovanovich.
- Fishbein, M., and I. Ajzen. 1975. *Belief, attitude, intention and behaviour: An introduction to theory and research*. Reading, MA: Addison-Wesley.
- Gershaw, D. A. 1989. "Locus of control, line on life." *Simons, Irwin and Drinnin's psychology: The search for understanding*, 493–95. Eagan, MN: West.
- Indochina Research Ltd. 2007. Vietnam national hand-washing initiative consumer research. Baseline survey final report. Vietnam: Indochina Research, Ltd.
- Kearn, R., and G. Moon. 2002. "From medical to health geography: novelty, place and theory after a decade of change." *Progress in Human Geography* 26 (5): 605–625.
- Luby, et al. 2009. "Household characteristics associated with handwashing with soap in rural Bangladesh." *Am J Trop Med Hyg*, 81 (5): 882–887.
- LMS International/Steadman International. 2006. Understanding the Tanzania consumer in respect to hand-washing with soap. Dar es Salaam: LMS/Steadman International.
- Kelly, G. A. 1955. *The psychology of personal constructs*. New York: Norton. Reprint, London: Routledge, 1991.
- MacInns, D. J., C. Moorman, and B. J. Jaworski. 1991. "Enhancing and measuring consumer's motivation, opportunity and ability to process brand information from advertisements." *Journal of Marketing* 55: 32–53.
- Prochaska, J. and C. DiClemente. 1984. *The transtheoretical approach: Crossing traditional boundaries of therapy*. Homewood, IL: Dow Jones-Irwin.
- Rosenstock, I. M. 1974. "Historical origins of the health belief model." *Health Education Monographs* 2: 1–8.
- Rotter, J. B. 1966. "Generalized expectancies for internal versus external control of reinforcement." *Psychological Monographs* 80 (1): 1–28.
- Seeman, T. E., and L. F. Berkman. 1988. "Structural characteristics of social networks and their relationship with social support in the elderly: Who provides support." *Social Science & Medicine* 26 (7): 737–749.

- Shacinda, S. "Kaunda takes HIV test, urges Zambians to do same." Lusaka: Reuters NewsMedia. 26 March 2002. <http://www.aegis.com/news/re/2002/RE020335.html> (accessed April 20, 2010).
- Steadman Group (Uganda). 2007. Formative research and baseline study on handwashing with soap. Final report prepared for WSP/World Bank. Kampala: Steadman International.
- Steadman Group (Kenya). 2007. Formative and baseline study on handwashing with soap. Nairobi: Steadman International.
- Stokols, D. 1996. "Translating social ecological theory into guidelines for community health promotion." *American Journal of Health Promotion* 5 (10): 282-298.
- Stokols, D., J. Allen, and R. L. Bellingham. 1996. "The social ecology of health promotion: Implications for research and practice." *American Journal of Health Promotion* 5 (10): 247-251.
- UNICEF. 2009. Child information statistics. http://www.childinfo.org/survival_health.html (accessed September 30, 2009).
- UNICEF. 2010. Child survival fact sheet: Water and sanitation. http://www.unicef.org/media/media_21423.html (accessed August 4, 2010).
- Water and Sanitation Program. 2007. The handbook: A guide for developing a hygiene promotion program to increase handwashing with soap. Washington, DC: WSP
- Weir, S., C. Pailman, X. Mahlalela, N. Coetzee, F. Meidany, and J.T. Boerma. 2003. "From people to places: focusing AIDS prevention efforts where it matters most." *AIDS* 17 (6): 895-903.
- Witte, K. 1992. "Putting the fear back into fear appeals: The extended parallel process model." *Communication Monographs* 59 (4): 329-349.

