

# Software in WASH in Healthcare Facilities

## Key Points:

- Essential “software” components in WASH in HCF programs include supporting government leadership, training of all levels of staff, and embedding sustainability elements from the beginning.
- Sustainability of WASH programming is largely dependent on leadership and ownership of government and healthcare facility directors.
- Effective programming for WASH in HCF flows from comprehensive assessments of WASH conditions, infrastructure, and resources.
- Nearly all WASH hardware or technology interventions will require staff with the appropriate technical expertise to maintain and repair the system.
- An alarming number of clinicians do not receive effective infection prevention and control (IPC) training and do not appreciate the link between WASH and IPC.
- Because WASH in HCF is only a recent focus for many institutions, raising awareness of the presence of improved WASH infrastructure and services is required among patients and other beneficiaries.

## Background

In addressing water, sanitation and hygiene (WASH) in healthcare facilities (HCF), emphasis is often placed on the physical environment, infrastructure upgrades and the allocation of supplies, like soap and chlorine. Although such tangible “hardware” is critical to the provision of WASH services in HCF, it is only part of the solution. Lessons learned from the work of The Center for Global Safe WASH at Emory University (CGSW) with GE Foundation provides a cautionary tale for those interested in taking a single-pronged (hardware) approach to safe WASH in HCF.

For over a decade, CGSW and GE Foundation (GEF) have worked together to transform the GEF Safe Water for Hospitals program from a philanthropic donation model of installing water treatment technology to a comprehensive WASH program highlighting sustainability and capacity building. Essential “software” components such as supporting government leadership, sustainability evaluations of hardware solutions, the training of HCF staff and maintenance workers, and awareness raising amongst patients and staff were added to the program to increase sustainability and achieve greater program success. The GEF programs in Cambodia and Uganda provide case studies on how software and hardware interventions together provide a successful approach to improving safe water provision in HCF.

## Supporting Government Leadership: Working the Top Down

*Ministry of Health:* The sustainability of WASH services is largely dependent on the leadership and ownership of the government and HCF director. Factors such as budgeting for WASH activities, allocating dedicated personnel, and using WASH monitoring tools play a critical role in the HCF’s ability to maintain adequate WASH services. The Ministry of Health (MOH) can support these factors and drive ownership by making WASH in HCF a priority of their own. They can integrate WASH into their national strategies, policies and standards, develop guidelines for infrastructure, and monitor proper behaviors such as hand hygiene. In Cambodia, the MOH National Institute of Public Health (NIPH) conducted a situational analysis that revealed a lack of policies, standards, indicators and measurement tools related to WASH in HCF. To address these issues, a special WASH in HCF working group suggested that the government complete a national baseline assessment. The working group also encouraged the government to include WASH in the revised national infection prevention and control (IPC) strategy and to develop training on WASH behaviors for healthcare workers. The Cambodia MOH

then requested support for the development of their own national WASH in HCF guidelines, which were published in February 2018. In Uganda, the MOH is integrating WASH into their Health Management Information System (HMIS) while drafting their set of national guidelines.

Supporting government leadership can also produce ownership from HCF leadership and staff. For example, national health financing mechanisms may be leveraged to support recurring costs of the WASH program. Cambodia's Health Equity and Quality Improvement Project (H-EQIP) allows facilities to improve WASH services within the financing plan. Thus, engaging with the government early on and encouraging their leadership and coordination of WASH in HCF activities can have positive long-term consequences for WASH in HCF programs.

***Healthcare Facility Leadership:*** The initial success and subsequent sustainability of any WASH intervention in HCF relies heavily on the HCF leadership. HCF tend to be hierarchical institutions. Personnel at the top of the hierarchy have the ability to set the tone and direction for the rest of the staff while ensuring the execution of key healthcare activities and protocols. For example, the HCF director may assign staff to maintain a new water treatment system, require weekly monitoring of hand hygiene compliance, or allocate funds towards the upkeep of WASH infrastructure. His or her ability to manage the staff and resources effectively are critical. In Cambodia, hospitals where the staff did not respect the leadership were found to score poorly on WASH assessments of behavior and knowledge after receiving training. In Uganda, a sustainability assessment of hospitals that received a water treatment system revealed that hospitals with effective leadership used best practices to ensure sustainability of the water system.

A management system, known as 5S, has been applied in HCF worldwide to “organize and standardize the workplace.” A review of the 5S system found that it could be used to “improve safety, efficiency, or patient-centeredness aspects particularly in low- and middle-income countries.” Such management systems could benefit hospital leadership by providing a structure to ensure the sustained provision of WASH services.

### **Comprehensive Assessment: Working the Bottom Up**

To address WASH in HCF effectively, a comprehensive baseline assessment is needed. From this assessment, targeted interventions can be designed that address known gaps, from infrastructure upgrades to delivering trainings to designing policy. The CGSW has developed a tool, known as WASHCon, that assesses WASH conditions in HCF and provides scores in five domains: water, sanitation, handwashing, environmental cleanliness and healthcare waste management. The mobile tool includes water quality testing to ensure that the HCF has access to water that is safe for consumption and for medical uses. In Cambodia, the NIPH has developed its own WASH in HCF assessment tool which was used to assess 117 HCF in five provinces. From this data, decisions are being made related to resource allocation and policy guidance. In Uganda, the WASHCon tool has been used in more than 200 HCF and the results are being used to prioritize interventions and advocate for action.

In addition to WASH conditions, understanding the knowledge, attitudes and practices of the staff is critical in order to change WASH-related behaviors, such as handwashing. CGSW developed a training needs assessment for clinicians and cleaners to identify critical gaps. The assessment focused on the four topics where WASH and IPC intersect: *hand hygiene, equipment processing, environmental cleaning, and healthcare waste management*. The findings shaped the development of the training by determining content matter and targeting common unfavorable attitudes.



## **Capacity Building: Strengthening Service Providers**

***Building Technological Expertise:*** Whether training doctors and nurses on sterile equipment processing or developing the cleaning skills of maintenance staff, capacity strengthening is an important aspect of WASH in HCF programming. Nearly any WASH hardware or technology intervention will require staff (or local technicians) with the appropriate technical expertise to maintain and repair the system. Otherwise, as noted in the GEF Rwanda safe water program, high-capacity hardware that is improperly maintained or repaired can remain offline for days to weeks, not providing safe water. In Cambodia, HCF staff were provided on-site and classroom training on the water treatment systems and the directors were instructed on the monitoring process to ensure the system functioned properly.



Recording staff training in manuals, pictures or videos is also important due to high staff turnover and employee absences. These instructional materials need to be in the local language and appropriate to the staff's level of education. The lack of personnel capable of operating or managing the WASH technology or service can have a disastrous impact on safe water provision. CGSW's implementation partner in Cambodia, Assist International, developed protocols for routine maintenance of the water treatment systems. Sets of instructional cards were attached to the systems with step-by-step guidance through activities like daily backwash of the filters. System manuals have also been handed over to the maintenance staff and hospital director.

***Strengthening WASH-Related Behaviors and Cleaning Activities:*** In Cambodia, an alarming number of clinicians have received suboptimal IPC training, while cleaners are often excluded from training altogether. CGSW partnered with MOH to provide WASH training to clinicians and cleaners in 10 hospitals in Cambodia. After the training needs assessment identified gaps in the knowledge, attitudes, and practices of staff, the training was developed based on the existing IPC curriculum. The training reached staff members who had not previously received training on IPC or WASH. During the needs assessment, hand hygiene compliance was found to be 35%. Six months after the training, the average compliance had increased to 49%. By addressing such gaps, the WASH training has made strides in educating staff on WASH and IPC, which has translated into improved hygiene practices.

### **Awareness Raising: Educating the Patients**

Improved WASH should increase the quality of care offered to patients in HCF. However, because WASH in HCF is only a recent focus for many institutions, raising awareness among patients of the presence of improved WASH infrastructure and services is often overlooked. Raising awareness is necessary to draw users' attention to the new improvements, but also to ensure that WASH infrastructure and services are utilized properly. In Cambodia, many people in rural areas do not have access to piped water and patients are unaccustomed to drinking chlorinated water. Therefore, we noted that many safe drinking fountains were not used by patients. We concluded that more effort was needed to build user trust in the safety of the treated water despite the unfamiliar source and taste of chlorine. Notably, due to active awareness raising of the new water treatment system in Uganda hospitals, staff who were accustomed to drinking bottled water changed their attitude about the piped water (often perceived as unclean) and started drinking the treated water.



In HCF, there are three major audiences: facility staff, patients, and caregivers (who are often family members). How poor WASH conditions impact each group must be noted and addressed. In order for hardware interventions to have the desired impact, awareness raising is needed for each audience while considering their educational level and the mode of message delivery that will stimulate a response.

**About the Center:** The Center for Global Safe Water, Sanitation, and Hygiene (CGSW) focuses on increasing access to safe drinking water, adequate sanitation, and appropriate hygiene as part of a global strategy to break the cycle of poverty and disease in developing countries. For more information, please visit [www.washconhcf.org](http://www.washconhcf.org) or email [WinHCFaction@emory.edu](mailto:WinHCFaction@emory.edu)  
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