The Institute of Medicine’s 2009 report *The U.S. Commitment to Global Health* recognizes the sea change of shifting from a medical to a public health model for humanitarian assistance: “Meeting fundamental human needs lack the glamour of high-technology medicine or rescue, but their value is the significant potential for impact on health because they deal with the major causes of common disease and disabilities across the globe.”

This chapter outlines the assessment and response of the humanitarian community to the challenges of meeting Gostin’s *basic survival needs* of water, sanitation, hygiene, and shelter. In the context of stability, security, transition, and reconstruction operations (SSTRO), or humanitarian assistance and disaster relief (HA/DR), precarious access to safe drinking water and sanitary living conditions may become jeopardized because of security concerns, or can be overtaxed by population displacement. Shelter might be inadequate because it is either unavailable or inappropriate for the climate and terrain of a new locale. In the chaotic and crowded living circumstances that displaced persons face, the stage is set for preventable outbreaks of water-borne or vector-borne diseases that might otherwise—by access to adequate water, sanitation, and shelter—be prevented.

### Water, Sanitation, Hygiene, and the Burden of Disease

The terms *WatSan* or *WASH* refer to integrated, cluster approaches by the global health community to ensure essential services—including access to safe drinking water, provision of basic sanitation, and hygiene education and training—not only in crises but also as a form of sustainable development.

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through capacity-building. Water systems are a perennial natural security concern, and UN Secretary General Kofi Annan asserts that “access to safe water is a fundamental human need and therefore a basic human right. Contaminated water jeopardizes both the physical and social health of all people.” Whether approached as an issue of security or of rights, access to WASH is indisputably an issue of health:

- one in six people (884 million worldwide) lack access to safe water for basic needs from a protected well or spring within walking distance of their homes;
- 2.5 billion people—including 1 billion children—live without access to basic sanitation or private hygiene;
- a child dies every 20 seconds as a result of poor sanitation, resulting in 1.5 million preventable deaths yearly;
- 88 percent of diarrheal deaths worldwide can be attributed to WatSan problems; and
- hand washing with soap can reduce the risk of diarrheal diseases by 47 percent.

The health benefits of improved water and sanitation can be translated into increased productivity due to decreased adult and child morbidity, health-care savings, time savings due to more convenient access, and increased school attendance days.

Almost one-tenth of the global disease burden—in disability-adjusted life years (DALYs), as a weighted measure or 6.3 percent of all deaths—could be prevented by improving water supply, sanitation, hygiene and management of water resources. Avoidable health-related costs are estimated at $7.3 billion globally. The following significant global health concerns are directly related to the adequacy of WASH efforts:

- diarrhea spread by fecal-oral transmission, including cholera, typhoid, and dysentery;
- malnutrition contributing to death, developmental challenges, and increased susceptibility to infectious diseases;
- intestinal nematode infections from fecally contaminated soil afflicting up to one in three people worldwide; and
- trachoma (a cause of preventable blindness), lymphatic filariasis, schistosomiasis, and malaria.

WASH may also impact physical health through respiratory infections related to hygiene, drowning, toxic exposures, micronutrient intake, and the extremes of drought, flood, and climate change.

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Additionally, WASH influences social health and gender equity issues surrounding school attendance for adolescent girls and lost productivity of women procuring water.\textsuperscript{155} Adequate shelter is closely tied to the provision for water, sanitation, drainage, or the collection of household waste. Lack of shelter leaves people vulnerable to insect exposure, extremes of heat or cold, and environmental hazards, and can adversely impact mental health and community resilience.

### Standards for Emergency Shelter and Water, Sanitation, and Hygiene (WASH)

SSTRO or HA/DR interventions should ensure that basic survival needs of water, sanitation, hygiene, and shelter for affected or displaced populations are met in a manner consistent with international standards for humanitarian assistance and conducive to interagency sustainable development. The following summaries reference USAID, UNHCR, and SPHERE guidelines for emergency provision of shelter and water, sanitation, and hygiene (WASH).

The USAID Field Operations Guide for Disaster Assessment and Response offers the following insights into priorities and considerations for meeting the needs of shelter and WASH, with an emphasis on involvement of those receiving assistance in the process:

- **The provision of water** demands immediate attention from the start of an emergency. The objective is to ensure the availability of enough safe drinking water to meet at least minimal health and hygiene needs, including drinking, cooking, washing, and bathing. Sources of fresh water may be identified by local government, local population, displaced persons, UN/NGOs, terrain inspection, maps, or hydrologists. If the locally available water supply is not enough to meet the minimum needs of the population, consider relocation, because water must be brought in by truck. Water distribution is an important consideration in camp layouts to ensure easy, safe, and controlled access to water for displaced persons. (Water storage and treatment are also discussed in detail.)

- **Disruption and overcrowding of people impacted by disaster or conflict** make sanitation a critical issue. Sanitation facilities to which individuals were accustomed may no longer be available, leading to indiscriminate disposal of human excreta and other waste products and posing a serious health threat. A comprehensive environmental health program must address provision of safe water; disposal of human excreta, wastewater, and garbage; insect and rodent control; safe food-handling practices; and site drainage. An acceptable and practical system for disposal of human waste developed in cooperation with the affected population is vital, even if circumstances necessitate a departure from culturally traditional practices. Providing special public health or hygiene education may be required to ensure that the system is used.

- **Settlements** are concentrations of people in physical space, and key features include shelter and related support services. A key objective of any shelter sector intervention should be the timely provision of safe, secure, private, and habitable shelter that provides protection from the elements. Community participation and needs are critical to determining the kind of housing needed, the materials and design, who constructs the housing, and how long it will need to last in a given situation. The intervention should feature covered living space of at

\textsuperscript{155} Ibid.
least 3.5 m² per person, cognizant that expansion is probable as part of a future, incremental construction process. Lack of adequate shelter and clothing can have a major adverse effect on the health and nutritional status of displaced people.\textsuperscript{156}

*The Sphere Project* is a handbook of minimum standards in disaster response, a collaborative humanitarian charter between IFRC and NGOs, and “an expression of commitment to quality and accountability.” Sphere emphasizes “the alleviation of human suffering arising out of calamity and conflict,” the right to life with dignity, equitable access to services for vulnerable subpopulations, and the processes of needs assessment and key indicators of effectiveness. The following compilation of minimum standards, key indicators, and guidance notes from the Sphere handbook pertain to WASH (chapter 2) and shelter (chapter 4).

- Providing a minimum survival level of safe drinking *water* on a regular basis is critical. Average water use for basic needs is 15 liters per person per day, and survival needs may be as low as 3 liters depending on climate and individual physiology. Maximum distance to the nearest water point is 500 meters, with a wait time of 15 minutes or fewer. Distribution of clean and appropriate collection and storage containers (two per household) or treatment with residual disinfectants such as chlorine can minimize the health risks of recontamination of freshwater sources and ensure that there is always water in the household. Turbidity and palatability are additional concerns.

- The standards for *sanitation* ensure that people have “rapid, safe, and acceptable access at all times” for excreta disposal. Before construction of toilets, it may be necessary to create trench latrines or a defecation field, with 30m from groundwater sources and 1.5m above the water table. Each communal toilet may serve up to 50 people, decreasing to a maximum of 20 people as soon as feasible. Toilets should be located no more than 50m from dwellings, and be arranged by household (up to five families) or segregated by gender. Urinals should be provided for men, and the ratio of women's cubicles to men's should be about 3:1. Shared responsibility is vital for cleaning and maintaining shared or public toilets and immediate disposal of children’s feces. Toilets should be designed with input from the population regarding privacy and security concerns to ensure continued use and cleaning, and to minimize fly and mosquito breeding.

- *Avoidance of risky hygiene* behaviors requires community mobilization (2 promoters per 1000 members of the population), provision of essential materials and facilities, avoidance of overburdening, and sharing of information and knowledge between the affected population and donors of humanitarian assistance in order to identify key hygiene risks and behaviors and to ensure optimal use of facilities. At least 250g of soap should be made available per person per month. Communal bathing facilities should provide separate cubicles for males and females. One laundry wash basin per 100 people is recommended, along with private laundering areas for women. Facilities should be strategically located to facilitate hand washing after defecation and before eating or food preparation. Adequate vector control mechanisms are essential to prevent disease.

• The Shelter and Settlement section discusses strategic and physical planning, design, construction, and environmental impact. Additionally, the recommendations for covered living space include provision of dignified accommodation, permitting essential household and livelihood activities, and separation of by family, age, or sex as needed. At least \(3.5\text{m}^2\) per person of living space—with the notable exception of short-term provision of shelter in the aftermath of disaster, to save lives, or shelter the greatest number of people in need. Existing cultural practices should be preserved whenever possible in consideration of design and materials.\textsuperscript{157}

### UN Cluster Approach: WASH and Emergency Shelter

The UN Cluster Approach was first implemented in the aftermath in the Pakistan earthquake of October 8, 2006, and emphasizes accountability, predictability, and reliability to close identified gaps in humanitarian response provided by the Interagency Standing Committee—UN agencies, the Red Cross and Red Crescent Movement, and NGOs.\textsuperscript{158}

Recognizing the direct causal link between child mortality and WatSan, UNICEF (UN Children’s Fund) serves as lead for the cluster on Water, Sanitation, and Hygiene (WASH). “All UNICEF WASH programmes are designed to contribute to the Millennium Development Goal for water and sanitation: to halve, by 2015, the proportion of people without sustainable access to safe water and basic sanitation.”\textsuperscript{159} Active working group participants include Action Against Hunger (ACF), CARE International, CDC, Concern, Catholic Relief Services (CRS), InterAction, International Centre for Health and Migration (ICHM), IFRC, International Rescue Committee (IRC), Mercy Corps, Norwegian Church Aid, Oxford Committee for Famine Relief (Oxfam), Register of Engineers for Disaster Relief—International Health Exchange (RedR-IHE), UNHCR, UN Relief and Works Agency (UNRWA), WHO, and World Vision International (WVI).\textsuperscript{160}

The Global WASH Cluster Strategic Framework outlines coordination with country-level teams, standardization, capacity for humanitarian response, preparedness, and best practices.\textsuperscript{161} Additional guidance in the UNHCR Water Manual for Refugee Situations describes “the technical characteristics and functioning of components, structures or equipment that may form part of a refugee water supply system,” while urging use of the highest possible standards and consideration of political, social, and funding circumstances.\textsuperscript{162}

\textsuperscript{157} The Sphere Project, [www.sphereproject.org](http://www.sphereproject.org) (accessed June 5, 2009).
With mandates to protect the world’s most at-risk populations, the Office of the UN High Commissioner for Refugees and the International Federation of the Red Cross and Red Crescent Societies co-chair the Emergency Shelter Cluster. UNHCR takes the lead in the area of IDPs affected by armed conflict, and IFRC leads in disaster situations. Additional partners include the UN Human Settlements Programme (UN-HABITAT), OCHA, the Norwegian Refugee Council (NRC), Oxfam International, CARE International, the Cooperative Housing Foundation (CHF), Shelter Centre, the International Organization for Migration), UNICEF, UNDP, WFP, and the Danish Refugee Council (DRC). The Emergency Shelter Cluster Toolkit includes lessons learned, reference materials, coordination documents, and technical guidelines for construction and placement.

**Summary**

People cannot live long without water, and they cannot stay healthy for long without sanitation or shelter. “Far more people endure the largely preventable effects of poor sanitation and water supply than are affected by war, terrorism, and weapons of mass destruction combined,” resulting in about one tenth of the global health burden. When HA/DR and SSTRO are conducted in a baseline context of limited or inadequate access of local or displaced populations to basic survival needs for shelter and water, sanitation, and hygiene (WatSan or WASH), USAID, UNICEF, UNHCR, and SPHERE provide evidence-based standards for intervention.

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