

## Utility Systems

### Standard FMS.08.00

The hospital implements a program for the management of utility systems throughout the organization.

#### Intent of FMS.08.00

*Utilities* can be defined as the systems and equipment that support essential services that provide safe health care. Such systems include electrical distribution; power; plumbing; boiler/steam; heating, ventilating, and air-conditioning (HVAC); medical gas; medical/surgical vacuum; waste management; and communication and data systems. The safe, effective, and efficient operation of utility and other key systems in the hospital is necessary for patient, staff, and visitor safety and for meeting patient care needs. Patient care, both routine and urgent, is provided on a 24-hour basis, every day of the week in a hospital. Thus, an uninterrupted source of essential utilities is critical to meeting patient care needs.

The hospital develops and implements a written program for the management of utility systems throughout the hospital. The utility systems program includes inspection, testing, and maintenance to ensure that utilities operate effectively and efficiently to meet the needs of patients, staff, and visitors.

A good utilities management program ensures the reliability of the utility systems and minimizes the potential risks. For example, water contamination, ineffective ventilation in critical care areas, oxygen cylinders that are not secured when stored, leaking oxygen lines, and frayed electrical lines all pose hazards. To avoid these and other risks, the hospital has a process for regularly inspecting such systems and performing preventive and routine maintenance. During testing, attention is paid to the critical components (for example, switches and relays) of systems.

Hospitals should have a complete inventory of all utility systems components and identify which components have the greatest impact on life support, infection prevention and control, environmental support, and communication. The utilities management program includes strategies for utility maintenance that ensure that these key systems components, such as electricity, water, waste, ventilation, and medical gas, are regularly inspected, evaluated, maintained, and, when necessary, improved, to reduce and eliminate risks.

#### Measurable Elements of FMS.08.00

1. ☉ The hospital develops and implements a written program for the management of utility systems throughout the hospital. (*See also* HCT.01.04, ME 1)
2. ☉ The hospital identifies goals, implements improvements, and monitors data to ensure that the utility systems risks are reduced or eliminated.
3. ☉ The hospital inventories its utility systems components and maps their current distribution.
4. ☉ The hospital identifies, in writing, the activities and intervals for inspecting, evaluating, and conducting preventive and routine maintenance on all operating components of the utility systems on the inventory, based on criteria such as manufacturers' recommendations, risk levels, and hospital experience.
5. The hospital labels utility system controls to facilitate partial or complete emergency shutdowns.

### Standard FMS.08.01

The hospital utility systems program ensures that essential utilities, including power, water, and medical gases, are available at all times, and alternative sources for essential utilities are tested and evaluated.

**Intent of FMS.08.01**

Patient care, both routine and urgent, is provided on a 24-hour basis, every day of the week in a hospital. Hospitals have different utility system needs based on their mission, patient needs, and resources. However, an uninterrupted source of essential utilities, including water, power, and medical gas, is critical for meeting patient care needs.

An emergency power system is required for all hospitals that intend to provide continuous service under emergency conditions. Such a system provides sufficient power to maintain essential functions during power failures. It also reduces the risks associated with such failures. Emergency and backup power sources are tested under planned circumstances that simulate actual load requirements. For example, for quarterly testing, requirements are that the test run for 30 minutes and should achieve 30% of the nameplate load. The 30-minute time frame does not include the time it takes for the warm-up or cool-down period. Hospitals may choose other methods for testing that meet industry standards.

Water quality can change suddenly from many causes, some of which occur outside of the hospital, such as a break in the supply line to the hospital. When there is a disruption in the usual source of water supplied to the organization, emergency potable water supplies must be immediately available.

Regardless of the type of system and level of its resources, a hospital needs to protect patients and staff in emergencies, such as when essential utilities fail, are interrupted, or become contaminated. To prepare for such emergencies, the hospital does the following:

- Identifies its essential utilities based on the systems, equipment, and locations that pose the highest risks to patients and staff if the utilities were interrupted, failed, or otherwise became unavailable (for example, key systems, equipment, and locations that require illumination, refrigeration, life support, water for cleaning and sterilization of supplies).
- Assesses and minimizes the risks of utility system failures in these areas.
- Plans emergency power and clean water sources for these areas and needs.
- Tests the availability and reliability of emergency sources of power and water.
- Documents the results of tests.
- Ensures that the testing and evaluation of alternative sources of water occurs at least annually or more frequently if required by local laws, regulations, or conditions of the sources for water (examples of conditions of the sources for water that may increase the frequency of testing include repeated repair of the water system and frequent contamination of the water source).
- Ensures that the testing and evaluation of power occurs at least quarterly or more frequently if required by local laws, regulations, manufacturers' recommendations, or conditions of the sources for power (examples of conditions of the sources for power that may increase the frequency of testing include unreliable electrical grids and recurrent, unpredictable power outages).

When the emergency power system requires a fuel source, determining how much fuel to store on-site should include consideration of past outages and any anticipated delivery problems caused by shortages, weather, and geographic conditions and locations. The hospital may determine the amount of fuel stored unless laws and regulations/local authority specifies the amount.

**Measurable Elements of FMS.08.01**

1. The hospital ensures backup availability/continuity of essential utilities (including power, water, and medical gas) 24 hours a day, 7 days a week. (*See also* FMS.09.00, ME 1)
2. ☉ The hospital tests and evaluates the availability and quality of the alternative source(s) of water at least annually or more frequently if required by local laws and regulations or conditions of the source of water. The hospital documents the results of the tests.
3. ☉ The hospital tests and evaluates alternative sources of power at least quarterly or more frequently if required by local laws and regulations, manufacturers' recommendations, or conditions of the source of power. The hospital documents the results of the tests.