HEADS UP...

TOPIC: Management of utility systems
***SETTING:* Critical Access Hospital Accreditation Program (CAH)**

Why is this important?

Heating, ventilation, and air-conditioning (HVAC) systems maintain the building environment within a desired range, providing year-round control of building temperatures, humidity, airflow (pressures) and filtration. HVAC systems are very important not only in preserving patient comfort and safety, but also in minimizing the spread of airborne contaminants, which is especially important in critical care areas. Despite the recognized importance of high-performing HVAC systems, surveyors continue to find issues with ventilation, temperature, humidity, as well as non-compliance with inspection, testing, and maintenance of HVAC systems on survey.

Scope of the Problem:

Time period: **January 1, 2019 - December 31, 2019**
Number of full surveys performed: **95**
Number of high and moderate risk findings related to management of risks associated with utility systems (EC.02.05.01 EP 15): **22 (23%)**

Observations identified within a specific topic area may reveal systemic areas of improvement across the organization which might be reflected in additional standards/EPs within the Environment of Care or Life Safety Code chapter management chapter and/or other chapters/standards/EPs. See also EP.02.05.05 EP 4, EP.02.05.05 EP 5, §485.623(b)(1), §485.623(b)(5), §482.42.

Sample survey observations [from surveyor notes] and contributing factors

- The hospital's policy is to maintain humidity levels between 30% and 60% and in [redacted] 2019 the documentation verified that humidity levels were on multiple days below 30% in all 3 OR rooms and there was no documentation of corrective actions taken.
- In 3 of 3 surgery rooms checked it was observed that the air pressure from the central processing decontamination room was positive to the corridor and is required to be negative.
- Hospital policy for temperature in the ORs is 68-72 degrees F. At time of survey temperature in both ORs 1 and 2 was 65 degrees. The electronic temperature monitor in OR 2 showed temperature consistently below 68 degrees over the past 30 days. There was no documented corrective action for temperature in the OR below 68 degrees.
- The hospital relied on staff manually reading temperature and humidity and recording these readings on a log to verify that these parameters were within acceptable limits. Staff did not, however, use the max/min function of the gauges to determine whether temperature or humidity had gone out of range on nights or on weekends between readings. When the surveyor accessed the max/min readings of one gauge in an operating room, the maximum humidity was out of range. It was not possible to tell when this had occurred.

Potential contributing factors:

- Improperly functioning temperature monitoring systems and/or no alert notifications when temperature or humidity levels fall out of range.
- Manual manipulation of individual thermostats by a variety of clinical staff members created HVAC inefficiencies and non-compliance.
- Inadequate staff training and education re: logging, correlation of HVAC systems to safety, role and plan of action if readings out of compliance.
- Lack of communication between departments on identified humidity issues and required actions expected to be taken, lack of oversight to risks of humidity variances, and complacency by leadership.

How to identify potential problems in your organization

Review your policies and procedures

☐ Does the organization have a process to ensure that the HVAC system provide appropriate pressure relationships, air-exchange rates, filtration efficiencies and temperature and humidity?

☐ Has the organization established a minimal relative humidity range for equipment, products, sterile supplies, and minimizing infections?

☐ Does the organization inspect, test and maintain the utility systems (or use an external service to do so)?

Interview staff (engineering, etc.)

☐ Can staff demonstrate an understanding of the following regarding HVAC and utility systems:

- The requirements for pressure relationships, temperature and humidity readings and documentation thereof?
- How are temperature and humidity levels maintained? Are they at the required levels in accordance with the hospital policy and evidence-based guidelines?
- How do you test and monitor negative/positive pressure relationship between the sterile storage, medication rooms, and other sterile areas and the adjacent areas (and in critical areas such as the operating room and oncology)?
- Familiarity with the technology utilized to eliminate/minimize and to assist with responding to an incident (alarms, humidity, pressure or temperatures out of range, settings for min/max).
- Knowledge of tracking and/or documentation logs.
- Knowledge of how technology is maintained, who is responsible for maintaining the technology, and what to do if the technology fails.
- Knowledge of how to respond when an incident occurs (improper air pressure relationships, temperatures or humidity out of range) and process to report an incident.

☐ Have clinical staff received training and education on the above?

☐ Are staff knowledgeable about IFU requirements regarding humidity levels for existing inventory of supplies and equipment used in the OR?

Assess your environment

☐ Is the utility system appropriately maintained?

☐ Are required frequencies for maintaining, inspecting, and testing of utility system components completed in accordance with manufacturer recs?

☐ If using a CMS category waiver (which allows for humidity levels to be between 20% and 60%), has the organization completed the required risk assessment to ensure that supplies and equipment can be used and stored at these humidity levels?

Evaluate implementation

☐ Review documentation logs of temp and humidity readings, including on weekends; ensure scheduled maintenance activities have a 100% completion rate.

☐ Test air-exchange rates, temperature and humidity readings in both critical and non-critical areas.

What are some resources that can assist in mitigating risks in these areas?

- The Joint Commission, physical environment resources: https://www.jointcommission.org/en/resources/patient-safety-topics/the-physical-environment/utility-systems/
- Guidelines for Design and Construction of Health Care Facilities: https://fgiguidelines.org/guidelines/2018-fgi-guidelines/
- Environment of Care News, August 2014. *The role of HVAC systems in preserving patient safety*.