ECRI UPDATE

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What Technology Hazards are Lurking in Your Hospital? Part 2

Every year hospitals are blindsided and patients are harmed by unexpected health technology hazards. Medical technology is intended to improve patient care, but even the best of technology – if configured, used, or maintained improperly – can lead to problems.

To help hospitals prioritize technology safety efforts that warrant their attention and to reduce risks to patients, ECRI Institute publishes an annual list of top 10 health technology hazards. The 2016 Top 10 Health Technology Hazards list includes both high-profile and unexpected issues, as well as ones that are emerging, such as hazards related to electronic health records.

How are the topics selected? ECRI Institute engineers, scientists, clinicians, and other patient safety analysts nominate topics for consideration based on their own expertise and insight gained through investigating incidents, testing medical devices, observing operations and assessing hospital practices, reviewing the literature, and speaking with clinicians, clinical engineers, technology managers, purchasing staff, health system administrators, and device suppliers.

Hazards one through five were covered in the January issue of *TechNation* (1TechNation.com/ecri-update-hazards/). Read on to learn about the rest of the hazards on our list.

6. Errors Arise When HIT Configurations and Facility Workflow Do Not Support Each Other

Poor alignment between the configuration of a health IT (HIT) system and a facility's workflow increases the opportunity for medical errors, putting patients at risk. Problems can arise if the HIT system is not configured to support the processes and workflow used in a particular care area, or if the workflows and standard operating procedures are not adjusted to accommodate the capabilities of HIT systems.

This can lead to issues such as:

- Missed information or the inability to find needed information within the HIT system
- The mistaken application of default values – for dosing, time, or orders – instead of the desired values
- Input errors
- The use of workarounds

Any of the above problems can result in patient harm due to delayed, incorrect, or undelivered therapies. Facilities should consider configuration issues during the HIT system selection phase and should modify and validate workflows to confirm that they align with the system's capabilities.

7. Unsafe Injection Practices Expose Patients to Infectious Agents

Unsafe injection practices are an ongoing patient safety concern, both in hospitals and in outpatient settings. Far too often, incidents occur leading to the transmission of bloodborne viruses, the spread of bacterial infections, and potential exposures that require notifying large numbers of patients about the threat to their health.

Some practices that put patients at risk are:

- Reusing a needle or syringe that had been used to administer medication
- Sharing an insulin pen among patients (even if a new needle is used)
- Using a single-dose medication vial for multiple patients
- Failing to use aseptic technique when preparing, handling, and injecting medications

Cross-contamination resulting from unsafe injection practices has led to:

- Disease transmission causing patient illness or death
- Damage to the health care facility's reputation, its financial health or its accreditation status
- Criminal prosecution resulting in penalties and, in some cases, imprisonment for the responsible health care professionals

Solutions involve action by frontline health care workers, by the leadership of hospitals, outpatient clinics, and skilled nursing facilities, and by patients.

Uncontrolled access to medical device USB ports could also lead to a security breach, putting the patient's data and the health care facility's systems at risk.

8. Gamma Camera Mechanical Failures Can Lead to Serious Injury or Death

Gamma cameras incorporate heavy, moving components that can cause significant harm if they rotate into or fall onto a patient or staff member. ECRI Institute and FDA have received multiple reports of mechanical failures involving gamma cameras that had caused serious – and in one case fatal – injuries.

- Such failures can occur when gamma camera systems are not maintained properly.
- A notable concern is the fact that safety-related recalls are not always addressed in a timely manner, which can allow a hazardous situation to develop.

With more than 40 gamma camera safety recalls having been filed with FDA in a recent two-year period, incidents could occur at any health care facility that lacks an effective process for handling gamma camera recalls.

Facilities should advise staff not to leave patients unattended in the gamma camera scan room. They should also maintain, service and inspect gamma cameras in accordance with the manufacturer's guidance, and verify that all current recalls and safety notices have been acted on.

9. Failure to Appropriately Operate Intensive Care Ventilators Can Result in Preventable Ventilator-Induced Lung Injuries

Inappropriate patient ventilation can cause ventilator-induced lung injury (VILI), particularly in intensive care patients, and may lead to patient death. Lung-protective strategies (e.g., using lower tidal volumes) have been developed, and advanced ventilator modes and features are available to aid clinicians in providing safer and more effective ventilation.

Too often, however:

- These existing techniques and tools are not used to their full advantage.
- Best practices and device capabilities are not assessed and adopted, when warranted.

Factors that contribute to the inadequate implementation of safer and more effective ventilation strategies include:

- A lack of continuing education on the best practices for patient ventilation
- Insufficient understanding of complex ventilator functionality
- Inconsistent terminology among ventilator manufacturers, leading to potential confusion among clinical practitioners

Facilities can alleviate these issues by confirming that all staff involved with mechanical ventilation have a sound understanding of the devices and their use.

10. Misuse of USB Ports Can Cause Medical Devices to Malfunction

Plugging unauthorized devices or accessories into USB ports on medical devices can cause the medical devices to malfunction. Direct effects on medical device operation – for example, causing a physiologic monitor to reboot – have been observed in clinical practice.

Possible problems include instances in which:

- The device shuts down, and the patient does not receive therapy.
- The device settings are changed or performance is compromised.
- A patient monitor ceases to monitor the patient or fails to alarm for problems that require attention.

Uncontrolled access to medical device USB ports could also lead to a security breach, putting the patient's data and the health care facility's systems at risk.

Facilities need to develop and implement a policy on the appropriate use of USB ports on medical devices.

THIS ARTICLE IS EXCERPTED FROM ECRI Institute's Top 10 Health Technology Hazards for 2016 Executive Brief that was posted on ECRI Institute's website. For questions about the technology hazards or to purchase the comprehensive 2016 Top 10 Health Technology Hazards Solutions Kit, visit www.ecri.org/hazardsolutions, or contact ECRI Institute by telephone at 610-825-6000, ext. 5891, or by email at clientservices@ecri.org.