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. In this issue, we focus on hazards one through five.

All the topics selected for the list must, to some degree, be preventable. But any one of the other criteria can, on its own, warrant including a topic on the list. ECRI Institute encourages TechNation readers to examine these same factors when judging the criticality of these and other hazards at their own facilities.

Spread the word about ECRI Institute’s “2016 Top 10 Health Technology Hazards” – and let it help your facility focus its patient safety efforts. A free version of the report can be downloaded at www.ecri.org/2016hazards.

Flexible endoscopes in general, and duodenoscopes in particular, are of specific concern because their complex design and long, narrow channels can make effective cleaning difficult. A series of fatal carbapenem-resistant Enterobacteriaceae (CRE) infections that attracted a lot of attention in 2014 and 2015 illustrates this concern. The deaths were associated with the use of duodenoscopes that had not been successfully disinfected between uses. Facilities need to emphasize to their reprocessing staff that inattention to the cleaning steps within the reprocessing protocol can lead to deadly infections.

Missed Alarms Can Have Fatal Consequences
Failure to recognize and respond to an actionable clinical alarm condition in a timely manner can result in serious patient injury or death.

Patients are put at risk:
- When an alarm condition is not detected by a medical device
- When the condition is detected, but not successfully communicated to a staff member who can respond
- Or when the condition is communicated to clinical staff, but not appropriately addressed – whether because staff fail to notice the alarm, choose to ignore an alarm that warrants a response, or otherwise respond incorrectly.

Addressing clinical alarm hazards in all their forms requires a comprehensive alarm management program that includes stakeholders from throughout the organization.

Failure to Effectively Monitor Postoperative Patients for Opioid-Induced Respiratory Depression Can Lead to Brain Injury or Death
Hospitalized patients receiving postoperative opioids – such as morphine, hydromorphone, or fentanyl – are at risk for drug-induced respiratory depression, which can lead to anoxic brain injury or death. Even if they are otherwise healthy, such patients can be at risk if, for example:
- They are receiving another drug that also has a sedating effect.
- They have diagnosed or undiagnosed comorbidities that predispose them to respiratory compromise, such as morbid obesity or sleep apnea.
• A medication error results in delivery of more medication than intended – for example, an error is made when programming the dose or concentration on the infusion pump, or a bag or syringe of the wrong concentration or wrong medication is used.

Intermittent spot checks of oxygenation and ventilation every few hours are inadequate for reliably detecting opioid-induced respiratory depression.

To address this problem, a health care facility’s medical leadership should implement the relevant recommendations from the Anesthesia Patient Safety Foundation (APSF) and The Joint Commission.

Inadequate Surveillance of Monitored Patients in a Telemetry Setting May Put Patients at Risk

Inadequate surveillance of monitored patients in telemetry settings can lead to unrecognized critical events and subsequent patient harm. Factors that can contribute to this problem include:

• The incorrect assumption that monitoring systems can reliably detect all potentially lethal arrhythmias
• The trend toward using telemetry monitoring with sicker patients than in the past and in care areas where patients are not as closely supervised
• The display of patient monitoring information solely at the central station, where events may be missed if staff are not present to observe the patient waveforms and data or if they are distracted with other tasks.

Consequences include serious patient injury or death.

Alleviating this problem entails educating appropriate personnel about the limitations of monitoring technology and the factors that could lead to missed events, as well as implementing measures to improve patient surveillance.

Insufficient Training of Clinicians on Operating Room Technologies Puts Patients at Increased Risk of Harm

Insufficient training of clinicians on operating room (OR) technologies can result in use errors that lead to prolonged surgery, complications that require additional treatment, and even serious patient injury or death.

ECRI Institute estimates that approximately 70 percent of accidents involving a medical device can be attributed to user error or the technique of use.

Errors can result if training:

• Is not provided or is insufficient or ineffective (e.g., if it does not provide an assurance of competency)
• Does not include all relevant team members, including physicians, per diem staff, and new hires, as well as regular staff
• Is not completed by all relevant team members before they use a device in clinical practice

ECRI Institute estimates that approximately 70 percent of accidents involving a medical device can be attributed to user error or the technique of use. Many of these incidents could have been avoided if users had a better understanding of the instructions for use and device operation.

Facilities should make training a key part of the acquisition process for new OR technologies, as well as an ongoing consideration for existing technologies.

Stay tuned for the next issue of TechNation where hazards six through 10 from the list are covered.

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.