

Be Aware of Health Technology Hazards

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PATIENT SAFETY IS PARAMOUNT in health care. Various agencies provide guidance to providers on alerts for patient safety hazards in the health care arena. One of those groups is the ECRI Institute, whose mission is to protect patients from unsafe and ineffective medical technologies and practices. The ECRI Institute makes recommendations based on patient safety events. To advise health care facilities, the ECRI Institute provided a top 10 list of 2019 health technology hazards that include important safety issues. These topics were derived after nominations from ECRI Institute engineers, scientists, clinicians, and other patient safety analysts based on their own expertise and insight gained through investigating patient safety events, testing medical devices, watching hospital practices, reviewing the literature, and discussing with people working in the health care systems and with the actual devices.¹ The team at the ECRI Institute also considered the following factors when determining the top 10 topics:

- Severity: What is the likelihood that the hazard could cause serious injury or death?
- Frequency: How likely is the hazard? Does it occur often?
- Breadth: If the hazard occurs, are the consequences likely to spread to affect a great number of people, either within one facility or across many facilities?
- Insidiousness: Is the problem difficult to recognize? Could the problem lead to a cascade of downstream errors before it is identified or corrected?
- Profile: Is the hazard likely to receive significant publicity? Has it been reported in the

media, and is an affected hospital likely to receive negative attention? Has the hazard become a focus of regulatory bodies or accrediting agencies?

- Preventability: Can actions be taken now to prevent the problem or at least minimize the risks? Would raising awareness of the hazard help reduce future occurrences?¹

The number one concern is cybersecurity and accessing the system through remote access. Cybersecurity attacks are a serious concern for health care facilities because of the threat of exposing data, causing the system to become inoperable or slowing the system down. As clinicians, nurses understand the need to have access to the electronic medical record. The installation of malware, viruses, or ransomware on to the health care facility's system is a concern for everyone. Careful protection and monitoring of access points is essential, as is having strong passwords and sound education on cybersecurity.¹

“Clean” mattresses can ooze body fluids onto patients. Reports have shown that even after cleaning, blood and other fluids remain and patients are exposed to potential infection. It is important that mattresses and covers are inspected to ensure there is no damage or contamination. The ECRI Institute noted that not all mattress companies include recommendations on cleaning their mattresses and this deficiency needs to be remedied.¹

Retained surgical sponges despite a correct manual count remain a problem. The ECRI Institute shared that annually thousands of individuals have a retained surgical item and that a surgical sponge is listed as the most common item retained. The ECRI Institute recommends the adoption of technologies to complement the manual count, which has been shown to decrease the incidence of retained surgical items.¹

Improperly set ventilator alarms can put patients at risk for hypoxic brain injury or death. The ECRI Institute had two reports in 2018 where the alarms were not set properly and did not detect

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inadequate ventilation (minute-volume and low-pressure alarms). The need to confirm alarms are set correctly and that there are no leaks or disconnections in the circuit is essential.¹

Mishandling flexible endoscopes after disinfection can lead to patient infection. The process of disinfecting and cleaning flexible endoscopes between uses can be challenging, especially because health care providers understand failure to adequately disinfect can lead to a serious, possibly deadly, infection. Health care providers can also recontaminate scopes through improper handling and storage practices. Endoscopes should be completely dry handled with clean gloves, and carried in a clean enclosed container.¹

Confusing the dose rate with the flow rate is a medication error. Medication errors have occurred when health care professionals have made the mistake of confusing the dose rate with the flow rate and placed the dose rate rather than the flow rate into the infusion pump. This error results in the patient receiving either too much or too little of the medication. The ERCI Institute recommends the implementation of autoprogramming of infusion pumps. In addition, configuring the medication administration record to match the sequence in which infusion parameters will be entered into the pump and instituting appropriate double-checks to verify pump programming would assist in decreasing chances for error.¹

Improper customization of physiological monitor alarm settings may result in missed alarms. It is important that the health care provider develops an alarm custom balance, because having too many alarms can cause alarm fatigue and too few alarms could potentially lead to poor outcomes. The ERCI Institute suggests education for the staff on optimal alarm-customization practices and developing thoughtful policies to help decrease the risks on missed alarms.¹

Injuries from overhead patient lift systems are listed as another 2019 health technology hazard. As this list considered various factors, preventability was one of them. This hazard's safety challenges come from the installation requirements and their reliance on weight-bearing and moving parts to function correctly. The ERCI Institute advises that health care facilities have qualified personnel

install the system, then test the system after installation, assess the condition of the lift before and during each use, and perform regular preventive maintenance. If facilities perform these measures then the risk of patient injuries should be decreased.¹

Cleaning fluid seeping into electrical components can lead to equipment damage and fire. The ERCI Institute had several reports in 2018 where cleaning fluid seeped into electrical equipment leading to damage or fire. The devices included operating room tables, infant warmers, infusion pumps, and power supplies. It is important not to spray cleaning solution directly onto equipment and to use the correct wipes and sponges.¹

Another important partner in patient safety is the Joint Commission (JC). Since 2003 the JC has released annual National Patient Safety Goals (NPSGs) and in 2019 the NPSGs were released again. These NPSGs were developed to assist JC accredited organizations concentrate on existing patient safety issues. NPSG goals for the hospital setting (*indicates for ambulatory setting) and some information to accompany each are given subsequently. Further information can be located on the JC Web site (www.jointcommission.org).²⁻⁴

*Using medications safely**: Before a procedure, identify medicines that are not labeled. Complete this in the area where medicines and supplies are set up. Any medicine that will not be given immediately needs a label, even if this is the only medication being used for the procedure. Labeling is a risk-reduction action that can be easily completed for safe medication management.²⁻⁴ In perianesthesia settings, nurses want to be vigilant with medications that are diluted and are clearly marked with medication, strength, dose, time mixed. If using solutions for a procedure, the same criteria would apply with the labeling of the syringes containing the solution with strength, solution, time, and date drawn by the nurse or other provider, expiration date. In addition, when drawing up any medication, do this task in a distraction-free zone. Use two people to verbally and visually verify solution or medication labels.³ Take extra care with patients who take medicines, such as heparin (unfractionated), low-molecular-weight heparin, and warfarin, to thin their blood.^{2,3} This JC goal is centering on

patients on long-term anticoagulation rather than on short-term prophylactic anticoagulation used for venous thromboembolism prevention.⁴ Education on anticoagulants is important to staff, prescribers, patients, and family. In providing education to patients and family it is essential to include information on compliance, importance of follow-up, drug and food interactions, and potential for drug interactions.⁴ Record and pass along correct information about a patient's medicines. Find out what medications the patient is taking. Compare those medicines to new medicines given to the patient. Make sure the patient knows which medicines to take when they are at home. Tell the patient it is important to bring their up-to-date list of medicines every time they visit a doctor.^{3,4}

*Identify patients correctly**: Newborns are considered high risk because they cannot speak for themselves and they often lack distinguishable features.⁴ Use at least two ways to identify patients. For example, use the patient's name and date of birth. This is done to make sure that each patient gets the correct medicine and treatment.²⁻⁴ Make sure that the correct patient gets the correct blood when they get a blood transfusion.²⁻⁴

Improve staff communication: Report critical results of tests and diagnostic procedures on a timely basis. The health care facility needs to have written policies and procedures in place regarding the management of critical test and diagnostic procedure results including what defines "critical," by whom and to whom the results are reported, and the length of time to report. Evaluation of the policy and procedure needs to be completed as well.^{3,4}

Use alarms safely: What is understood with this goal is that each facility and unit needs to understand its own situation and needs, and then develop its own clinical alarm management

system. Leaders at the facility need to make alarm system safety a priority. Identify the most important alarm signals to manage, and establish policies and procedures around these. Educate the staff about the purpose and operation of the alarm systems.^{3,4}

*Prevent mistakes in surgery**: Errors still occur in surgery. Make sure that the correct surgery is done on the correct patient and at the correct place on the patient's body. Mark the correct place on the patient's body where the surgery is to be done. Pause before the surgery to make sure that a mistake is not being made.²⁻⁴

*Prevent infection**: Good handwashing is essential and increase compliance needs to be monitored. Educate staff involved in surgical procedures about surgical site infections and importance of prevention. Educate patients, and their families as needed, undergoing a surgical procedure about surgical site infection prevention. Use proven guidelines to prevent infections that are difficult to treat. Use proven guidelines to prevent infection of the blood from central lines. Use proven guidelines to prevent infections of the urinary tract that are caused by catheters.²⁻⁴

Identify patient safety risks: Determine which patients are at risk for suicide.^{3,4}

The ERCI Institute and the JC are examples of organizations that offer patient safety guidance to health care facilities. However, the implementation of advice is up to the practitioners in the field. This column highlighted various technology risks from cybersecurity to ineffective disinfection of endoscopes to improperly set alarms. The column ended with the JC NPSGs focusing on wrong site surgery, communicating better, decreasing infection, and medication safety among other goals. Patient safety is a critical component of every day practice. Becoming more aware of potential problems makes you a better clinician.

References

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Calendar of Events

October 5, 2019. The Pennsylvania Association of PeriAnesthesia Nurses (PAPAN) invites you join them for the annual PRIDE Conference in King of Prussia, Pennsylvania at the Crowne Plaza, 260 Mall Boulevard. Save the Date for Saturday, October 5th, 7:30 a.m. to 5:00 p.m. and Sunday, October 6th, 7:30 a.m. to 12:45 p.m.! Topics include Medical Marijuana (featuring a nationally recognized speaker), Ethical Dilemmas in the PACU, Postop Urinary Retention, and many more. The Saturday evening fun event is Painting With A Twist. For more information contact the Nurse Planner, Susan Erwine, RN, BSN at serwine@verizon.net.

October 19, 2019. The Illinois Society of PeriAnesthesia Nurses (ILSPAN) invites you to join them for the 2019 ILSPAN Fall Conference in Peoria, Illinois at the Parliament room, at Methodist College of UnityPoint Health, 7600 N. Academic Drive, Peoria, IL 61615. The conference objective is to discuss clinical priorities for the perianesthesia nurse. More information is coming soon. For more conference information contact Liz White, BSN, RN, CAPA at elizabeth.white@unitypoint.org or 309-208-6932.