Medical Error Prevention and Safety 2.0 CE Hours

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Course Objectives

1. Discuss the "30 Safe Practices for Improving Patient Safety" recommendations.
2. Explore the prevalence of medical errors.
3. Review the root causes of medical errors.
4. Discuss the various types of medical errors.
5. Indicate how hospitals and other health care organizations are working to reduce medication errors.

Overview

A shocking statistic is that one in seven hospitalized Medicare patients will experience a medical error. Patient safety is one of the nation's most pressing health care challenges. A 1999 report by the Institute of Medicine, "To Err is Human," estimates that as many as 44,000 to 98,000 people die in U.S. hospitals each year as the result of lapses in patient safety. Since that groundbreaking report, the situation has worsened dramatically. In 2013, an article in the Journal of Patient Safety claims that between 210,00 and 440,000 deaths each year are preventable deaths that occur in hospitals due to poor hospital care, up from the 180,00 Medicare patients reported in 2010 by the Office of Inspector General for the Department of Health and Human Services.

Most medical errors result from problems created by today's complex health care system and a lack of good communication between doctors and patients. Medical errors can occur anywhere in the health care system: hospitals, clinics, surgery centers, nursing homes, pharmacies, and in the patients' home. The most common areas involve: diagnosing,

medications, operating, diagnosing, equipment, and lab reports. A medical error can happen during even the most routine tasks, such as when a hospital patient on a sodium-free diet is given a high-salt meal.

Types of Errors

Most people believe that medical errors usually involve medication, such as a patient getting the wrong drug or dosage, or a mishandled surgery, such as amputating the wrong limb. However, there are many types of medical errors.

The FDA evaluated reports of fatal medication errors from 1993 to 1998 and found that the most common types of errors involved:

- Administering an improper dose (41 percent)
- Giving the wrong drug (16 percent)
- Using the wrong route of administration (16 percent)
- Performance and knowledge deficits (44 percent)
- Communication errors (16 percent).

The following are the seven categories where medical errors can occur and an example of each:

- **Medication Error** – A medication error occurs when a patient receives the wrong drug, wrong dose, wrong route, wrong time, or does not receive their medication.
- **Surgical Error** – A surgical error is a mistake that happens in pre-op, surgery, or post-op/recovery. An example would be amputating the wrong limb.
- **Diagnostic error** – A diagnostic error occurs when a patient is incorrectly diagnosed, there is a failure to use an indicated diagnostic test, the test results are misinterpreted, incorrect therapy is ordered, or there is a failure to act on abnormal results.
- **Equipment failure** – Equipment failure involves a piece of equipment that either quits working or is working incorrectly. An example would be an intravenous pump not

infusing the amount of fluids that were set on the machine.

- **Infections** – Hospital acquired infections (known as "nosocomial") and post-surgical wound infections are examples of infections.
- **Blood transfusion related injuries**– An example of a blood transfusion-related injury would be a person receiving the incorrect blood type.
- **Misinterpretation of other medical orders** – An example of this would be if a physician has ordered the patient to be NPO (stands for Nil per so, an instruction to withhold oral food and fluids from a person) and the patient is served a meal.

Preventing Medical Errors

The Institute of Medicine (IOM) reported in "Preventing Medication Errors" (July 2006), that it has been found that medication errors are surprisingly common as well as costly to the nation. The report estimates that between 380,000 and 450,000 adverse drug reactions occur in the United States each year in hospitals alone while those numbers more than double in long term care facilities.

The report outlined a comprehensive approach to decreasing the prevalence of these errors. The approach required changes from: doctors, nurses, pharmacists, others in the health care industry, the Food and Drug Administration (FDA) and other government agencies, hospitals and other health-care organizations, and from patients.

According to a variety of sources, the root cause of medical errors is due to the complexity of today's healthcare system. The IOM emphasized that most medical errors are systems-related and not attributable to individual negligence or misconduct. The key to reducing medical errors is to focus on improving the systems of delivering care and not to blame individuals. Health care professionals are simply human and,

like everyone else, they make mistakes. The FDA reports that many patient deaths and injuries are associated with the use of FDA-regulated medical products within a complex and time-pressured health care system.

However in 2010, the American Journal of Geriatric Pharmacotherapy published a report that indicated that 1/3 of the approximately 15,000 medication errors logged by the study were what is known as *repeat errors*, in which the conditions under which the same error is made contains aspects that are indistinguishable from the original error with regard to everything including the medication administration methods including the employees involved. So awareness on the part of the employees responsible for administering medication is crucial.

Donald M. Berwick, president of the Institute for Health Care Improvement (IHI), has also identified the leading cause of medical mistakes as being caused from the increasing complexity of health care. His general recommendations were for more simplification and greater standardization, such as the use of bar codes to ensure that the right patient receives the right dose of the right medication. In 2013, the IHI developed the "Global Trigger Tool" to identify and measure *adverse events* (AEs), which are situations in which the patient is damaged because of something that occurred in the course of his or her medical care.

Factors that can Increase the Prevalence of Medical Errors

Here are some specific factors that can increase the prevalence of medical errors:

- Incomplete patient information such as not knowing about the patient's allergies, other medicines they are taking, previous diagnoses, or lab results
- Unavailable drug information
- Miscommunication of drug orders, which can involve poor

handwriting, confusion between drugs with similar names, misuse of zeroes and decimal points, confusion of metric and other dosing units, and inappropriate abbreviations
- Lack of appropriate labeling as a drug is prepared and repackaged into smaller units
- Environmental factors such as lighting, heat, noise, and interruptions that can distract health professionals from their medical tasks

30 Safe Practices for Improving Patient Safety

Creating a Culture of Safety

There is a need to promote a culture that overtly encourages and supports the reporting of any situation or circumstance that threatens, or potentially threatens, the safety of patients or caregivers and that views the occurrence of errors and adverse events as opportunities to make the healthcare system better.

Matching Health Care Needs with Service Delivery Capability

- Match health care needs with service delivery capability:
  For designated high-risk, elective surgical procedures or other specified care, patients should be clearly informed of the likely reduced risk of an adverse outcome at treatment facilities that have demonstrated superior outcomes and should be referred to such facilities in accordance with the patient’s stated preference.
- Adequate nursing staff:
  Specify an explicit protocol to be used to ensure an adequate level of nursing based on the institution’s usual patient mix and the experience and training of its nursing staff.
- Critical care certified physicians:

All patients in general intensive care units (both adult and pediatric) should be managed by physicians having specific training and certification in critical care medicine (“critical care certified”).

- Pharmacist involvement:
  Pharmacists should actively participate in the medication-use process, including, at a minimum, being available for consultation with prescribers on medication ordering, interpretation and review of medication orders, preparation of medications, dispensing of medications, and administration and monitoring of medications.

Facilitating Information Transfer and Clear Communication

- Facilitate information transfer and clear communication:
  Verbal orders should be recorded whenever possible and immediately read back to the prescriber; that is, a health care provider receiving a verbal order should read or repeat back the information that the prescriber conveys in order to verify the accuracy of what was heard.
- Use only standardized abbreviations and dose designations
- Patient care summaries or other similar records should not be prepared from memory
- Transmit care information in a clear and timely manner:
  Ensure that patient care information, especially changes in orders and new diagnostic information, is transmitted in a timely and clearly understandable form to all of the patient’s current health care providers who need that information to provide care.
- Clear informed consent:
  Ask each patient or legal surrogate to recount what he or she has been told during the informed consent discussion.
- Clear written documentation:

Ensure that written documentation of the patient's preference for life-sustaining treatments and advance directives are prominently displayed in his or her chart.

- Implement a computerized prescriber-order entry system.
- Implement a standardized protocol to prevent the mislabeling of radiographs.
- Implement standardized protocols to prevent the occurrence of wrong-site or wrong-patient procedures.

In Specific Settings or Processes of Care

- Evaluate each Patient undergoing Elective Surgery:
  Evaluate each patient undergoing elective surgery for risk of an acute ischemic cardiac event during surgery and provide prophylactic treatment for high-risk patients with beta blockers.
- Evaluate and Prevent Pressure Ulcers:
  Evaluate each patient upon admission, and regularly thereafter, for the risk of developing pressure ulcers (also known as decubitus ulcers or bed sores). This evaluation should be repeated at regular intervals during care. Clinically appropriate preventive methods should be implemented consequent to the evaluation.
- Evaluate and Prevent Deep Vein Thrombosis:
  Evaluate each patient upon admission, and regularly thereafter, for the risk of developing deep vein thrombosis/venous thromboembolism. Utilize clinically appropriate methods to prevent both.
- Utilize dedicated anti-thrombotic (anti-coagulation) services that facilitate coordinated care management.
- Upon admission, and regularly thereafter, evaluate each patient for the risk of aspiration.
- Adhere to effective methods of preventing central venous catheter-associated bloodstream infections.
- Evaluate each pre-operative patient in light of his or her planned surgical procedure for the risk of surgical

site infection, and implement appropriate antibiotic prophylaxis and other preventive measures based on that evaluation.

- Utilize validated protocols to evaluate patients who are at risk for contrast media-induced renal failure and utilize a clinically appropriate method for reducing risk of renal injury based on the patient's kidney function evaluation.
- Evaluate each patient upon admission, and regularly thereafter, for risk of malnutrition. Employ clinically appropriate strategies to prevent malnutrition.
- Whenever a pneumatic tourniquet is used, evaluate the patient for the risk of an ischemic and/or thrombotic complication, and utilize appropriate prophylactic measures.
- Decontaminate hands with either a hygienic hand rub or by washing with a disinfectant soap prior to, and after, direct contact with the patient or objects immediately around the patient.
- Ensure health care worker are vaccinated against influenza to protect both the worker and the patient.

Increasing Safe Medication Use

- Keep workspaces where medications are prepared clean, orderly, well lit, and free of clutter, distraction, and noise.
- Standardize the methods for labeling, packaging, and storing medications.
- Identify all "high alert" drugs.
- Identify all "high alert" drugs such as intravenous adrenergic agonists and antagonists, chemotherapy agents, anticoagulants and anti-thrombotics, concentrated parenteral electrolytes, general anesthetics, neuromuscular blockers, insulin and oral hypoglycemics, narcotics, and opiates.
- Dispense medications in unit-dose or, when appropriate,

unit-of-use form, whenever possible.

What Consumers Can Do?

- Almost half of the fatal medication errors occurred in people over 60. Older people are especially at risk for errors because they often take multiple medications. Children are also a vulnerable population because drugs are often dosed based on their weight, and accurate calculations are critical.
- Find out what drug you are taking and what it is for. Rather than simply letting the doctor write a prescription for you and send you on your way, be sure to ask the name of the drug and ask the doctor to put the purpose of the prescription on the order. This serves as a check in case there is some confusion about the drug name. If you are in the hospital, ask (or have a friend or family member ask) what drugs you are being given and why.
- Find out how to take the drug and make sure you understand the directions. If you are told to take a medicine three times a day you should know if that mean eight hours apart exactly or at mealtimes.
  Know if the medicine should be stored at room temperature or in the refrigerator. Are there any medications, beverages, or foods you should avoid? Also, ask about what medication side effects you might expect and what you should do about them.
- Read the bottle’s label every time you take a drug to avoid mistakes. In the middle of the night, you could mistake eardrops for eye drops, or accidentally give your older child’s medication to the baby if you’re not careful. Use the measuring device that comes with the medicine, not spoons from the kitchen drawer. If you take multiple medications and have trouble keeping them straight, ask your doctor or pharmacist about compliance aids, such as containers with sections for daily doses.

Family members can help by reminding you to take your medicine.

- Keep a list of all medications, including OTC drugs, as well as dietary supplements, medicinal herbs, and other substances you take for health reasons, and report it to your health care providers. The often-forgotten things you should always tell your doctor if you are taking includes: vitamins, herbal supplements, laxatives, sleeping aids, and birth control pills. There can be an interaction between an herbal supplement and a pharmaceutical your doctor wants to prescribe. For instance, one National Institutes of Health study showed a significant drug interaction between the herbal product St. John's Wort, an herbal supplements often taken to treat symptoms of depression, and Indinavir, a protease inhibitor used to treat HIV infection. Some antibiotics can lower the effectiveness of birth control pills. These are two examples of why it is imperative to share this type of information with your doctor.
- If you see different doctors, it is important that they all know what you are taking.
- If possible, get all your prescriptions filled at the same pharmacy so that all of your records are in one place.
- Make sure your doctors and pharmacy know about your medication allergies or other unpleasant drug reactions you may have experienced.
- If in doubt, ask. Be on the lookout for clues of a problem, such as if your pills look different than normal or if you notice a different drug name or different directions than what you thought.

Hospital Strategies

Hospitals and other health care organizations work to reduce medication errors by using technology, improving processes, zeroing in on errors that cause harm, and building a culture

of safety. Some specific examples include:

- Steven Meisel, Pharm.D, director of medication safety, at Fairview Health Services noted, “It was a challenge for health care providers, especially surgeons, at Fairview Southdale Hospital (in Edina, MN) to ensure that patients continued taking their regularly prescribed medicines when they entered the hospital. Surgeons are not typically the original prescribers.” The solution was to have pharmacy technicians record complete medication histories on a form. In a pilot program, the technicians called most patients on the phone a couple of days before surgery. A pharmacist reviewed the information, and then the surgeon decided which medications should be continued. After three months, the number of order errors per patient dropped by 84 percent, and the pilot program became permanent.
- Studies have shown that Computerized Physician Order Entry (CPOE) is effective in reducing medication errors. CPOE involves entering medication orders directly into a computer system rather than on paper or verbally. The Institute for Safe Medication Practices conducted a survey of 1,500 hospitals in 2001 and found that about 3 percent of hospitals were using CPOE, and the number is rising. Eugene Wiener, M.D., medical director at the Children’s Hospital of Pittsburgh, says, “There is no misinterpretation of handwriting, decimal points, or abbreviations. This puts everything in a digital world.”

The Pittsburgh hospital unveiled its CPOE system in October 2002. Developed by the hospital and the Cerner Corporation in Kansas City, Mo., “Children’sNet” has replaced most paper forms and prescription pads. Wiener said, “Unlike adults, most drug orders for children are generally based on weight. The computer won’t let you put an order in if the child’s weight isn’t in the system and if the weight changes, the computer notices.” The system also provides all kinds of information

about potential drug complications the doctor might not have thought about. “Doctors always have a choice in dealing with the alerts,” Wiener says. “They can choose to move past an alert, but the alert makes them stop and think based on the specific patient indications.”

A Leapfrog Group report issued in 2010 showed that 214 hospitals tested their CPOE systems using a web-simulation tool. They found that approximately one half of the standard medication order and about one third of the possibly fatal errors were missed using CPOE. However, it was concluded that almost all of the hospitals had bettered their execution of accurate medication delivery after the errors were caught by CPOE and they had the opportunity to modify their processes and protocols in a second simulation.

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