CheapNursingCEUs.com

Preventing Medical Errors

Introduction

Medical errors are one of the leading causes of death in the United States. Thus, health care professionals should understand how to prevent medical errors from occurring. With that in mind, this course reviews recommendations that were developed to help health care professionals prevent medical errors, increase patient safety, and, ultimately, optimize patient care.

Section 1: The Joint Commission's Recommendations for Medical Error Prevention

The term medical error may refer to a preventable adverse effect of care that may or may not be evident or causes harm to a patient.[1] In an ideal health care climate, medical errors would not occur - however, the simple truth of the matter is, that they do. Because medical errors do occur, organizations such as the Joint Commission have developed national patient safety goals and recommendations to help health care professionals prevent medical errors from occurring. Due to the importance of the Joint Commission's recommendations, this section of the course will focus on the Joint Commission's national patient safety goals and their related recommendations. Each of the Joint Commission's national patient safety goals will be presented below followed by related recommendations. The information found in this section was derived from materials provided by the Joint Commission.[1]

Patient Identification Goal: Improve the Accuracy of Patient Identification

The rationale behind the goal - patient errors occur in virtually all stages of diagnosis and treatment. The intent for this goal is two-fold: first, to reliably identify the individual as the person for whom the service or treatment is intended; second, to match the service or treatment to that individual. Acceptable identifiers may be the individual's name, an assigned identification number, telephone number, or other person-specific identifier.

Newborns are at higher risk of misidentification due to their inability to speak and lack of distinguishable features. In addition to well-known misidentification errors such as wrong patient/wrong procedure, misidentification has also resulted in feeding a mother's expressed breast milk to the wrong newborn, which poses a risk of passing bodily fluids and potential pathogens to the newborn. A reliable identification system

among all providers is necessary to prevent error. Essentially, the reason the aforementioned goal was established was to make sure the right patient receives the right treatment/health care.

Related recommendations - to ensure the right patient receives the right treatment/ health care, health care professionals should follow the following recommendations.

• Use at least two patient identifiers when providing care, treatment, or services.

• Use at least two patient identifiers when administering medications, blood, or blood components; when collecting blood samples and other specimens for clinical testing; and when providing treatments or procedures. The patient's room number or physical location is not used as an identifier.

• Label containers used for blood and other specimens in the presence of the patient.

• Use distinct methods of identification for newborn patients. Examples of methods to prevent misidentification may include the following:

- Distinct naming systems could include using the mother's first and last names and the newborn's gender (for example, "Smith, Judy Girl" or "Smith, Judy Girl A" and "Smith, Judy Girl B" for multiples).

- Standardized practices for identification banding (for example, using two body sites and/or bar coding for identification).

- Establish communication tools among staff (for example, visually alerting staff with signage noting newborns with similar names).

• Eliminate transfusion errors related to patient misidentification by:

- Before initiating a blood or blood component transfusion; match the blood or blood component to the order; match the patient to the blood or blood component; use a two-person verification process or a one-person verification process accompanied by automated identification technology, such as bar coding.

- When using a two-person verification process, one individual conducting the identification verification is the qualified transfusionist who will administer the blood or blood component to the patient.

- When using a two-person verification process, the second individual conducting the identification verification is qualified to participate in the process, as determined by the hospital.

Communication Goal: Improve the Effectiveness of Communication Among Caregivers

The rationale behind the goal - critical results of tests and diagnostic procedures fall significantly outside the normal range and may indicate a life-threatening situation. The objective is to provide the responsible licensed caregiver these results within an established time frame so that the patient can be promptly treated. In essence, this goal was established to ensure health care professionals receive vital patient information in a timely manner.

Related recommendations - to ensure health care professionals receive vital patient information in a timely manner, health care professionals/health care organizations should adhere to the following recommendations.

• Develop written procedures for managing the critical results of tests and diagnostic procedures that address the following:

- The definition of critical results of tests and diagnostic procedures.

- By whom and to whom critical results of tests and diagnostic procedures are reported.

- The acceptable length of time between the availability and reporting of critical results of tests and diagnostic procedures.

• Implement the procedures for managing the critical results of tests and diagnostic procedures.

• Evaluate the timeliness of reporting the critical results of tests and diagnostic procedures.

Medication Goal: Improve the Safety of Using Medications

The rationale behind the goal - medications or other solutions in unlabeled containers are unidentifiable. Errors, sometimes tragic, have resulted from medications and other solutions removed from their original containers and placed into unlabeled containers. This unsafe practice neglects basic principles of safe medication management, yet it is routine in many organizations. The labeling of all medications, medication containers, and other solutions is a risk-reduction activity consistent with safe medication management. This practice addresses a recognized risk point in the administration of medications in perioperative and other procedural settings (note: medication containers include syringes, medicine cups, and basins). In

other words, this goal was established to ensure the right patient receives the right medication.

Related recommendations - to ensure the right patient receives the right medication, health care professionals should follow the following recommendations.

• Label all medications, medication containers, and other solutions on and off the sterile field in perioperative and other procedural settings.

• In perioperative and other procedural settings both on and off the sterile field, label medications and solutions that are not immediately administered. This applies even if there is only one medication being used (note: an immediately administered medication is one that an authorized staff member prepares or obtains, takes directly to a patient, and administers to that patient without any break in the process).

• In perioperative and other procedural settings both on and off the sterile field, labeling occurs when any medication or solution is transferred from the original packaging to another container.

• In perioperative and other procedural settings both on and off the sterile field, medication or solution labels include the following:

- Medication or solution name

- Strength

- Amount of medication or solution containing medication (if not apparent from the container)

- Diluent name and volume (if not apparent from the container)

- Expiration date when not used within 24 hours

- Expiration time when expiration occurs in less than 24 hours (note: the date and time are not necessary for short procedures, as defined by the hospital)

• Verify all medication or solution labels both verbally and visually. Verification is done by two individuals qualified to participate in the procedure whenever the person preparing the medication or solution is not the person who will be administering it.

• Label each medication or solution as soon as it is prepared, unless it is immediately administered. (note: an immediately administered medication is one that an authorized staff member prepares or obtains, takes directly to a patient, and administers to that patient without any break in the process).

• Immediately discard any medication or solution found unlabeled.

• Remove all labeled containers on the sterile field and discard their contents at the conclusion of the procedure (note: this does not apply to multiuse vials that are handled according to infection control practices).

• All medications and solutions both on and off the sterile field and their labels are reviewed by entering and exiting staff responsible for the management of medications.

Anticoagulant Therapy Goal: Reduce the Likelihood of Patient Harm Associated with the Use of Anticoagulant Therapy

The rationale behind the goal - anticoagulation therapy can be used as therapeutic treatment for a number of conditions, the most common of which are atrial fibrillation, deep vein thrombosis, pulmonary embolism, and mechanical heart valve implant. However, it is important to note that anticoagulation medications are more likely than others to cause harm due to complex dosing, insufficient monitoring, and inconsistent patient compliance. This National Patient Safety Goal has great potential to positively impact the safety of patients on this class of medications and result in better outcomes.

To achieve better patient outcomes, patient education is a vital component of an anticoagulation therapy program. Effective anticoagulation patient education includes face-to-face interaction with a trained professional who works closely with patients to be sure that they understand the risks involved with anticoagulation therapy, the precautions they need to take, and the need for regular International Normalized Ratio (INR) monitoring. The use of standardized practices for anticoagulation therapy that include patient involvement can reduce the risk of adverse drug events associated with heparin (unfractionated), low molecular weight heparin, and warfarin. Essentially, the aforementioned goal was developed to help patients receiving anticoagulation therapy avoid adverse events related to their anticoagulation therapy (note: this requirement applies only to hospitals that provide anticoagulant therapy and/or long-term anticoagulation prophylaxis (for example, atrial fibrillation) where the clinical expectation is that the patient's laboratory values for coagulation will remain outside normal values. This requirement does not apply to routine situations in which short term prophylactic anticoagulation is used for venous thrombo-embolism prevention (for example, related to procedures or hospitalization) and the clinical expectation is that the patient's laboratory values for coagulation will remain within, or close to, normal values).

Related recommendations - to reduce the likelihood of patient harm associated with the use of anticoagulant therapy, health care professionals should follow the following recommendations.

• Use only oral unit-dose products, prefilled syringes, or premixed infusion bags when these types of products are available (note: for pediatric patients, prefilled syringe products should be used only if specifically designed for children).

• Use approved protocols for the initiation and maintenance of anticoagulant therapy.

• Before starting a patient on warfarin, assess the patient's baseline coagulation status; for all patients receiving warfarin therapy, use a current International Normalized Ratio (INR) to adjust this therapy. The baseline status and current INR are documented in the medical record (note: the patient's baseline coagulation status can be assessed in a number of ways, including through a laboratory test or by identifying risk factors such as age, weight, bleeding tendency, and genetic factors).

• Use authoritative resources to manage potential food and drug interactions for patients receiving warfarin.

• When heparin is administered intravenously and continuously, use programmable pumps in order to provide consistent and accurate dosing.

• A written policy addresses baseline and ongoing laboratory tests that are required for anticoagulants.

• Provide education regarding anticoagulant therapy to prescribers, staff, patients, and families. Patient/family education includes the following:

- The importance of follow-up monitoring

- Compliance

- Drug-food interactions

- The potential for adverse drug reactions and interactions

• Evaluate anticoagulation safety practices, take action to improve practices, and measure the effectiveness of those actions in a time frame determined by the organization.

Medication Information Goal: Maintain and Communicate Accurate Patient Medication Information

The rationale behind the goal - there is evidence that medication discrepancies can affect patient outcomes. Medication reconciliation is intended to identify and resolve discrepancies - it is a process of comparing the medications a patient is taking (and should be taking) with newly ordered medications. The comparison addresses duplications, omissions, and interactions, and the need to continue current medications. The types of information that clinicians use to reconcile medications include (among others) medication name, dose, frequency, route, and purpose. Organizations should identify the information that needs to be collected to reconcile current and newly ordered medications and to safely prescribe medications in the future.

Related recommendations - to achieve the medication information goal, health care professionals should follow the following recommendations.

• Obtain information on the medications the patient is currently taking when he or she is admitted to the hospital or is seen in an outpatient setting. This information is documented in a list or other format that is useful to those who manage medications (notes: current medications include those taken at scheduled times and those taken on an as-needed basis; a good faith effort to obtain this information from the patient and/or other sources will be considered as meeting the intent of the goal.

• Define the types of medication information to be collected in non-24-hour settings and different patient circumstances; examples of non-24-hour settings include the emergency department, primary care, outpatient radiology, ambulatory surgery, and diagnostic settings; examples of medication information that may be collected include name, dose, route, frequency, and purpose.

• Compare the medication information the patient brought to the hospital with the medications ordered for the patient by the hospital in order to identify and resolve discrepancies (note: discrepancies include omissions, duplications, contraindications, unclear information, and changes. A qualified individual, identified by the hospital, does the comparison).

• Provide the patient (or family as needed) with written information on the medications the patient should be taking when he or she is discharged from the hospital or at the end of an outpatient encounter (for example, name, dose, route, frequency, purpose); when the only additional medications prescribed are for a short duration, the medication information the hospital provides may include only those medications.

• Explain the importance of managing medication information to the patient when he or she is discharged from the hospital or at the end of an outpatient encounter (note: examples include instructing the patient to give a list to his or her primary care physician; to update the information when medications are discontinued, doses are changed, or new medications (including over-the-counter products) are added; and to carry medication information at all times in the event of emergency situations).

Alarm Systems Goal: Reduce the Harm Associated with Clinical Alarm Systems

The rationale behind the goal - clinical alarm systems are intended to alert caregivers of potential patient problems, but if they are not properly managed, they can compromise patient safety. This is a multifaceted problem. In some situations, individual alarm signals are difficult to detect. At the same time, many patient care areas have numerous alarm signals and the resulting noise and displayed information tends to desensitize staff and cause them to miss or ignore alarm signals or even disable them. Other issues associated with effective clinical alarm system management include too many devices with alarms, default settings that are not at an actionable level, and alarm limits that are too narrow. These issues vary greatly among hospitals and even within different units in a single hospital.

There is general agreement that this is an important safety issue. Universal solutions have yet to be identified, but it is important for a hospital to understand its own situation and to develop a systematic, coordinated approach to clinical alarm system management. Standardization contributes to safe alarm system management, but it is recognized that solutions may have to be customized for specific clinical units, groups of patients, or individual patients.

Related recommendations - to help achieve this goal, health care professionals and health care organizations should follow the following recommendations.

• Improve the safety of clinical alarm systems.

• Leaders establish alarm system safety as a hospital priority.

• Identify the most important alarm signals to manage based on the following:

- Input from the medical staff and clinical departments

- Risk to patients if the alarm signal is not attended to or if it malfunctions

- Whether specific alarm signals are needed or unnecessarily contribute to alarm noise and alarm fatigue

- Potential for patient harm based on internal incident history

- Published best practices and guidelines

• Establish policies and procedures for managing alarms, at a minimum, address the following:

- Clinically appropriate settings for alarm signals

- When alarm signals can be disabled

- When alarm parameters can be changed

- Who in the organization has the authority to set alarm parameters

- Who in the organization has the authority to change alarm parameters

- Who in the organization has the authority to set alarm parameters to “off”

- Monitoring and responding to alarm signals

- Checking individual alarm signals for accurate settings, proper operation, and detectability

• Educate staff and licensed independent practitioners about the purpose and proper operation of alarm systems for which they are responsible.

Health Care-Associated Infections Goal: Reduce the Risk of Health Care-Associated Infections

The rationale behind the goal - according to the Centers for Disease Control and Prevention, each year, millions of people acquire an infection while receiving care, treatment, and services in a health care organization. Consequently, health care-associated infections (HAIs) are a patient safety issue affecting all types of health care organizations. One of the most important ways to address HAIs is by improving the hand hygiene of health care staff. Compliance with the World Health Organization (WHO) or Centers for Disease Control and Prevention (CDC) hand hygiene guidelines will reduce the transmission of infectious agents by staff to patients, thereby decreasing the incidence of HAIs. To ensure compliance with this National Patient Safety Goal, an organization should assess its compliance with the CDC and/or WHO guidelines through a comprehensive program that provides a hand hygiene policy, fosters a culture of hand hygiene, and monitors compliance and provides feedback. Essentially, this goal was established to increase hand hygiene effectiveness and decrease the incidence of HAIs.

Related recommendations - to help achieve this goal, health care professionals and health care organizations should follow the following recommendations.

• Implement a program that follows categories IA, IB, and IC of either the current Centers for Disease Control and Prevention (CDC) or the current World Health Organization (WHO) hand hygiene guidelines.

• Set goals for improving compliance with hand hygiene guidelines.

• Improve compliance with hand hygiene guidelines based on established goals.

Central Line Goal: Prevent Central Line-Associated Bloodstream Infections

The rationale behind the goal - as previously mentioned, according to the CDC, each year, millions of people acquire an infection while receiving care, treatment, and services in a health care organization. Consequently, HAIs are a patient safety issue affecting all types of health care organizations. One of the most important ways to address HAIs is by preventing central line-associated bloodstream infections.

Related recommendations - to help achieve the aforementioned goal, health care professionals and health care organizations should follow the following recommendations.

• Educate staff and licensed independent practitioners who are involved in managing central lines about central line-associated bloodstream infections and the importance of prevention. Education occurs upon hire or granting of initial privileges and periodically thereafter as determined by the organization.

• Prior to insertion of a central venous catheter, educate patients and, as needed, their families about central line-associated bloodstream infection prevention.

• Implement policies and practices aimed at reducing the risk of central line-associated bloodstream infections.

• Conduct periodic risk assessments for central line-associated bloodstream infections, monitor compliance with evidence-based practices, and evaluate the effectiveness of prevention efforts. The risk assessments are conducted in time frames defined by the hospital, and this infection surveillance activity is hospital wide, not targeted.

• Provide central line-associated bloodstream infection rate data and prevention outcome measures to key stakeholders, including leaders, licensed independent practitioners, nursing staff, and other clinicians.

• Use a catheter checklist and a standardized protocol for central venous catheter insertion.

• Use a standardized supply cart or kit that contains all necessary components for the insertion of central venous catheters.

• Perform hand hygiene prior to catheter insertion or manipulation.

• Use maximum sterile barrier precautions during central venous catheter insertion.

• For adult patients, do not insert catheters into the femoral vein unless other sites are unavailable.

• Use an alcoholic chlorhexidine antiseptic for skin preparation during central venous catheter insertion unless contraindicated.

• Use a standardized protocol to disinfect catheter hubs and injection ports before accessing the ports.

• Evaluate all central venous catheters routinely and remove nonessential catheters.

Surgical Site Infection Goal: Prevent Surgical Site Infections

The rationale behind the goal - surgical site infections can lead to increased patient morbidity and mortality rates - thus, health care professionals and health care organizations should make attempts to prevent surgical site infections whenever possible.

Related recommendations - to help achieve the aforementioned goal, health care professionals and health care organizations should follow the following recommendations.

• Educate staff and licensed independent practitioners involved in surgical procedures about surgical site infections and the importance of prevention. Education occurs upon hire, annually thereafter, and when involvement in surgical procedures is added to an individual's job responsibilities.

• Educate patients, and their families as needed, who are undergoing a surgical procedure about surgical site infection prevention.

• Implement policies and practices aimed at reducing the risk of surgical site infections. These policies and practices meet regulatory requirements and are aligned with evidence-based guidelines (for example, the CDC and/or professional organization guidelines).

• As part of the effort to reduce surgical site infections:

- Conduct periodic risk assessments for surgical site infections in a time frame determined by the hospital.

- Select surgical site infection measures using best practices or evidence-based guidelines.

- Monitor compliance with best practices or evidence-based guidelines.

- Evaluate the effectiveness of prevention efforts (note: surveillance may be targeted to certain procedures based on the hospital's risk assessment).

• Measure surgical site infection rates for the first 30 or 90 days following surgical procedures based on National Healthcare Safety Network (NHSN) procedural codes.

• Provide process and outcome (for example, surgical site infection rate) measure results to key stakeholders.

• Administer antimicrobial agents for prophylaxis for a particular procedure or disease according to methods cited in scientific literature or endorsed by professional organizations.

• When hair removal is necessary, use a method that is cited in scientific literature or endorsed by professional organizations.

Urinary Tract Infection Goal: Prevent Indwelling Catheter-Associated Urinary Tract Infections

The rationale behind the goal - urinary tract infections may impact a patient's health and overall well-being. That being said, indwelling catheters may lead to urinary tract infections. Thus, health care professionals should attempt to prevent indwelling catheter-associated urinary tract infections (CAUTI).

Related recommendations - to help achieve the aforementioned goal, health care professionals and health care organizations should follow the following recommendations.

• Educate staff and licensed independent practitioners involved in the use of indwelling urinary catheters about CAUTI and the importance of infection prevention. Education occurs upon hire or granting of initial privileges and when involvement in indwelling catheter care is added to an individual's job responsibilities. Ongoing education and competence assessment occur at intervals established by the organization.

• Educate patients who will have an indwelling catheter, and their families as needed, on CAUTI prevention and the symptoms of a urinary tract infection.

• Develop written criteria, using established evidence-based guidelines, for placement of an indwelling urinary catheter. Written criteria are revised as scientific evidence changes.

Examples of criteria for placement of an indwelling urinary catheter include the following:

- Critically ill patients who need accurate urinary output measurements.

- Patients with acute urinary retention or bladder outlet obstruction.

- Patients who require prolonged immobilization (for example, a potentially unstable thoracic or lumbar spine or multiple traumatic injuries such as pelvic fractures).

- Incontinent patients with an open sacral wound or perineal wounds.

- Perioperative use for selected surgical procedures, such as patients undergoing urologic surgery or other surgery on contiguous structures of the genitourinary tract; patients who will have a prolonged duration of surgery (catheters inserted for this reason should be removed in a post-anesthesia care unit); patients anticipated to receive large-volume infusions or diuretics during surgery; patients needing intraoperative monitoring of urinary output.

- End-of-life care.

- Neurogenic bladder.

• Follow written procedures based on established evidence-based guidelines for inserting and maintaining an indwelling urinary catheter. The procedures address the following:

- Limiting use and duration.

- Performing hand hygiene prior to catheter insertion or maintenance care.

- Using aseptic techniques for site preparation, equipment, and supplies.

- Securing catheters for unobstructed urine flow and drainage.

- Maintaining the sterility of the urine collection system.

- Replacing the urine collection system when required.

- Collecting urine samples (note: there are medical conditions that require a prolonged use of an indwelling urinary catheter in order to avoid adverse events and promote patient safety; examples can include, but are not limited to, patients with a spinal cord injury, multiple sclerosis, Parkinson's disease, and spina bifida).

• Measure and monitor catheter-associated urinary tract infection prevention processes and outcomes in high-volume areas by doing the following:

- Selecting measures using evidence-based guidelines or best practices.

- Having a consistent method for medical record documentation of indwelling urinary catheter use, insertion, and maintenance.

- Monitoring compliance with evidence-based guidelines or best practices.

- Evaluating the effectiveness of prevention efforts (note: surveillance may be targeted to areas with a high volume of patients using in-dwelling catheters).

Safety Risk Goal: The Health Care Organization Identifies Safety Risks Inherent in its Patient Population

The rationale behind the goal - the suicide of a patient while in a staffed, round-the-clock care setting is a frequently reported type of sentinel event (sentinel event may refer to an unanticipated event in a health care setting that results in death or serious physical or psychological injury to a patient(s), not related to the natural course of the patient's illness). Identification of individuals at risk for suicide while under the care of or following discharge from a health care organization is an important step in protecting these at-risk individuals.

Related recommendations - to help achieve this goal, health care professionals and health care organizations should follow the following recommendations.

• Identify patients at risk for suicide.

• Conduct a risk assessment that identifies specific patient characteristics and environmental features that may increase or decrease the risk for suicide.

• Address the patient's immediate safety needs and most appropriate setting for treatment.

• When a patient at risk for suicide leaves the care of the hospital, provide suicide prevention information (such as a crisis hotline) to the patient and his or her family.

Procedure Verification Goal: Procedure Verification

The rationale behind the goal - hospitals should always make sure that any procedure is what the patient needs and is performed on the right person. The frequency and scope of the verification process will depend on the type and complexity of the procedure.

The preprocedure verification is an ongoing process of information gathering and confirmation. The purpose of the preprocedure verification process is to make sure that all relevant documents and related information or equipment are:

- Available prior to the start of the procedure.

- Correctly identified, labeled, and matched to the patient's identifiers.

- Reviewed and are consistent with the patient's expectations and with the team's understanding of the intended patient, procedure, and site.

Preprocedure verification may occur at more than one time and place before the procedure. It is up to the hospital to decide when this information is collected and by which team member, but it is best to do it when the patient can be involved. Possibilities include the following:

- When the procedure is scheduled.

- At the time of preadmission testing and assessment.

- At the time of admission or entry into the facility for a procedure.

- Before the patient leaves the preprocedure area or enters the procedure room.

Missing information or discrepancies are addressed before starting the procedure.

Related recommendations - to help achieve the aforementioned goal, health care professionals and health care organizations should follow the following recommendations:

• Conduct a preprocedure verification process.

• Implement a preprocedure process to verify the correct procedure, for the correct patient, at the correct site (note: the patient is involved in the verification process when possible).

• Identify the items that must be available for the procedure and use a standardized list to verify their availability. At a minimum, these items include the following:

- Relevant documentation (for example, history and physical, signed procedure consent form, nursing assessment, and preanesthesia assessment).

- Labeled diagnostic and radiology test results (for example, radiology images and scans, or pathology and biopsy reports) that are properly displayed.

- Any required blood products, implants, devices, and/or special equipment for the procedure (note: the expectation of this element of performance is that the standardized list is available and is used consistently during the preprocedure verification; it is not necessary to document that the standardized list was used for each patient).

• Match the items that are to be available in the procedure area to the patient.

Surgery Goal: Wrong Site Surgery Should Never Happen

The rationale behind the goal - wrong site surgery should never happen - yet, it is an ongoing problem in health care that compromises patient safety. Marking the procedure site is one way to protect patients; patient safety is enhanced when a consistent marking process is used throughout the hospital. Site marking is done to prevent errors when there is more than one possible location for a procedure. Examples include different limbs, fingers and toes, lesions, level of the spine, and organs. In cases where bilateral structures are removed (such as tonsils or ovaries) the site does not need to be marked.

Related recommendations - to help achieve the aforementioned goal, health care professionals and health care organizations should follow the following recommendations:

• Mark the procedure site.

• Identify those procedures that require marking of the incision or insertion site. At a minimum, sites are marked when there is more than one possible location for the procedure and when performing the procedure in a different location would negatively affect quality or safety (note: for spinal procedures, in addition to preoperative skin marking of the general spinal region, special intraoperative imaging techniques may be used for locating and marking the exact vertebral level).

• The procedure site is marked by a licensed independent practitioner who is ultimately accountable for the procedure and will be present when the procedure is performed. In limited circumstances, the licensed independent practitioner may delegate site marking to an individual who is permitted by the organization to participate in the procedure and has the following qualifications:

- An individual in a medical postgraduate education program who is being supervised by the licensed independent practitioner performing the procedure, who is familiar with the patient, and who will be present when the procedure is performed.

- A licensed individual who performs duties requiring a collaborative agreement or supervisory agreement with the licensed independent practitioner performing the procedure (that is, an advanced practice registered nurse [APRN] or physician assistant [PA]), who is familiar with the patient, and who will be present when the procedure is performed (note: the hospital's leaders define the limited circumstances, if any, in which site marking may be delegated to an individual meeting these qualifications).

• The method of marking the site and the type of mark is unambiguous and is used consistently throughout the hospital (note: the mark is made at or near the procedure site and is sufficiently permanent to be visible after skin preparation and draping; adhesive markers are not the sole means of marking the site).

• A written, alternative process is in place for patients who refuse site marking or when it is technically or anatomically impossible or impractical to mark the site (for example, mucosal surfaces or perineum). Examples of other situations that involve alternative processes include:

- Minimal access procedures treating a lateralized internal organ, whether percutaneous or through a natural orifice

- Teeth

- Premature infants, for whom the mark may cause a permanent tattoo

Time Out Goal: A Time-Out is Performed Before the Procedure

The rationale behind the goal - The purpose of the time-out is to conduct a final assessment that the correct patient, site, and procedure are identified. This requirement focuses on those minimum features of the time-out. Some believe that it is important to conduct the time-out before anesthesia for several reasons, including involvement of the patient. A hospital may conduct the time-out before anesthesia or

may add another time-out at that time. During a time-out, activities are suspended to the extent possible so that team members can focus on active confirmation of the patient, site, and procedure.

A designated member of the team initiates the time-out and it includes active communication among all relevant members of the procedure team. The procedure is not started until all questions or concerns are resolved. The timeout is most effective when it is conducted consistently across the hospital. In essence, time-outs are necessary to help establish that the right patient is undergoing the right procedure.

Related recommendations - to help achieve the aforementioned goal, health care professionals and health care organizations should follow the following recommendations:

• Conduct a time-out immediately before starting the invasive procedure or making the incision.

• The time-out has the following characteristics:

- It is standardized, as defined by the hospital.

- It is initiated by a designated member of the team.

- It involves the immediate members of the procedure team, including the individual performing the procedure, the anesthesia providers, the circulating nurse, the operating room technician, and other active participants who will be participating in the procedure from the beginning.

Section 1: Summary

Medical errors can occur in any health care facility, at any time. Thus, health care professionals should be aware of how to prevent medical errors from occurring. With that in mind, the Joint Commission has developed national patient safety goal and recommendations to help health care professionals prevent medical errors. Health care professionals should follow the Joint Commission recommendations to help prevent medical errors, increase patient safety, and optimize care to those in need.

Section 1: Key Concepts

• In an ideal health care climate medical errors would not occur - however, the simple truth of the matter is, that they do.

• The Joint Commission has developed national patient safety goals and recommendations to help health care professionals prevent medical errors from occurring.

• Health care professionals should follow the Joint Commission's recommendations to reduce medical errors, increase patient safety, and optimize care to those in need.

Section 1: Key Terms

Medical error - a preventable adverse effect of care, whether it is evident or causes harm to a patient

Medication reconciliation - a process of comparing the medications a patient is taking (and should be taking) with newly ordered medications

Sentinel event - an unanticipated event in a health care setting that results in death or serious physical or psychological injury to a patient(s), not related to the natural course of the patient's illness

Section 1: Personal Reflection Question

How can the Joint Commission's national patient safety goals and related recommendations optimize patient care?

Section 2: Additional Recommendations for Medical Error Prevention

As previously mentioned, medical errors can occur in any health care facility, at any time. Therefore, the Joint Commission has developed recommendations to help health care professionals prevent medical errors. Along with the Joint Commission other organizations such as the United Sates Food and Drug Administration (FDA), the United States Department of Health & Human Services, the CDC, and the WHO have also developed recommendations to help health care professionals prevent medical errors. This section of the course will focus on the FDA, the United States Department of Health & Human Services, CDC, and WHO recommendations for medical error prevention. The information found below will be broken down and presented in informational segments. The information found in this section was derived from materials provided by the FDA, the United States Department of Health & Human Services, the CDC, and the WHO.[2,3,4,5] Health care professionals should note that some of the following recommendations may appear to overlap with the Joint Commission's recommendations. That being said, the following recommendations are meant to

parallel and supplement the Joint Commission's recommendations regarding medical error prevention.

Limit Shift Durations for Health Care Professionals

Evidence shows that acute and chronically fatigued health care professionals are more likely to make mistakes. Health care professionals and health care organizations should ensure that individuals get ample sleep and adhere to 80-hour workweek limits. Additionally, residents and other health care professionals who work 30-hour shifts should only administer care to patients for up to 16 hours and should have a 5-hour protected sleep period between 10 p.m. and 8 a.m.

Practice Effective Hand Hygiene

As previously mentioned, millions of people acquire an infection while receiving care, treatment, and services in a health care organization. Consequently, health care-associated infections are a patient safety issue affecting all types of health care organizations. One of the most important ways to address health care-associated infections is by practicing effective hand hygiene. Hand hygiene may refer to the process of cleaning hands in order to prevent contamination and/or infections. With that said, hand hygiene is most effective when dirt, soil, microorganisms and other contaminates are removed from the hands.

To carry out effective hand hygiene, health care professionals should follow the following steps when using soap and water (health care professionals should note that the duration of the entire hand washing procedure with soap and water should last between 40 - 60 seconds).

Hand Hygiene Procedure with Soap and Water

1) The health care professional should wet his or her hands with water.

2) The health care professional should apply enough soap to cover all hand surfaces.

3) The health care professional should rub his or her hands palm to palm.

4) The health care professional should rub the right palm over the left dorsum with interlaced fingers and vice versa.

5) The health care professional should rub his or her hands palm to palm with fingers interlaced.

6) The health care professional should rub the backs of fingers to opposing palms with fingers interlocked.

7) The health care professional should engage in rotational rubbing of the left thumb clasped in the right palm and vice versa.

8) The health care professional should engage in rotational rubbing, backwards and forwards with clasped fingers of the right hand in the left palm and vice versa.

9) The health care professional should then rinse his or her hands with water.

10) The health care professional should then dry his or her hands thoroughly with a single use towel.

11) Finally, the health care professional should use a towel to turn off the faucet.

Health care professionals may also use an alcohol-based formulation when practicing effective hand hygiene. Health care professionals should follow the steps in the following procedure when using an alcohol-based formulation to optimize hand hygiene results. The duration of the entire procedure should last between 20 - 30 seconds. When using an alcohol-based formulation health care professionals should note the following: alcohol-based handrubs with optimal antimicrobial efficacy usually contain 75% to 85% ethanol, isopropanol, or n-propanol, or a combination of the aforementioned products. Health care professionals should also note that when engaging in hand hygiene, soap and an alcohol-based handrub should not be used concomitantly.

Hand Hygiene Procedure with an Alcohol-based Formulation

1) The health care professional should first apply a palmful of alcohol-based product in a cupped hand, making sure to cover all surfaces.

2) The health care professional should then rub his or her hands palm to palm.

3) The health care professional should rub the right palm over the left dorsum with interlaced fingers and vice versa.

4) The health care professional should rub his or her hands palm to palm with fingers interlaced.

5) The health care professional should rub the backs of his or her fingers to opposing palms with fingers interlocked.

6) The health care professional should engage in the rotational rubbing of the left thumb clasped in the right palm and vice versa.

7) The health care professional should engage in rotational rubbing, backwards and forwards with clasped fingers of the right hand in the left palm and vice versa.

8) Finally, health care professionals should note that their hands are safe once they are dry.

Don Personal Protective Equipment When Applicable

Another way health care professionals can help limit health care-associated infections is by donning personal protective equipment (PPE). PPE can refer to equipment designed to protect, shield and minimize exposure to hazards that may cause serious injury, illness and/or disease. Essentially, donning PPE can prevent the spread of infections materials and agents to patients. PPE can include a variety of different types of equipment such as: gowns, masks, goggles, face shields, respirators and, of course, gloves. Specific information regarding individual pieces of PPE may be found below.

Gown

Background information - The gown may be one of the most recognizable pieces of PPE. The purpose of a gown is to protect an individual's torso and arms from potential contamination. Gowns are typically clean or sterile and often resistant to fluids.

Donning PPE - When putting on a gown, a health care professional should make sure the gown completely covers his or her torso from the neck to the knees. The gown should also completely cover a health care professional's arms and wrists. Additionally, a gown should be wrapped around the back and fastened at the back of the neck and waist.

Removing PPE - To effectively remove a gown, a health care professional should unfasten the gown's ties and pull the gown away from the neck and shoulders. When the gown is removed from the body, it should be rolled or folded and placed in the appropriate waste container. Health care professionals should wash their hands or use an alcohol-based hand sanitizer after removing all PPE.

Mask

Background information - The mask is another very recognizable piece of PPE. The purpose of a mask is to protect a health care professional's face from potentially infectious materials.

Donning PPE - When putting on a mask, a health care professional should make sure the mask completely covers his or her mouth and nose. A health care professional should also ensure a mask fits snugly to the face and below the chin. Often masks can be secured to the head and neck via separate ties.

Removing PPE - To effectively remove a mask, a health care professional should untie the bottom ties, if applicable, followed by the upper ties. The mask should then be pulled off and discarded in the appropriate waste container. A health care professional should not touch a contaminated mask. Health care professionals should wash their hands or use an alcohol-based hand sanitizer after removing all PPE.

Goggles

Background information - Goggles are typically worn with a mask. The purpose of goggles is to protect the eyes from potentially infectious materials.

Donning PPE - When putting on goggles, a health care professional should make sure the goggles fit snugly around the eyes. If a health care professional wears personal prescription lenses, the goggles should fit snugly around his or her personal prescription lenses. Furthermore, goggles should be properly adjusted on the face to maximize vision and protection.

Removing PPE - To effectively remove goggles from the face, a health care professional should take off the goggles from the back by lifting the goggle's band and pulling them forward. If the goggles are not reusable they should be placed in the appropriate waste container. A health care professional should not touch contaminated goggles. Health care professionals should wash their hands or use an alcohol-based hand sanitizer after removing all PPE.

Face Shields

Background information - A face shield can be worn in place of goggles. The purpose of a face shield is to protect the eyes, nose, and mouth from potentially infectious materials.

Donning PPE - When putting on a face shield, health care professionals should make sure the face shield covers the forehead, extends below the chin, and wraps around the side of the face.

Removing PPE - To effectively remove a face shield, a health care professional should take off the face shield from the back by lifting the face shield's band and pulling it forward. If the face shield is not reusable, it should be placed in the appropriate waste container. A health care professional should not touch a contaminated face shield. Health care professionals should wash their hands or use an alcohol-based hand sanitizer after removing all PPE.

Respirator

Background information - The purpose of a respirator is to protect a health care professional from hazardous and/or infectious aerosols. There are many types of respirators available to health care professionals including: particulate respirators, half-face elastomeric respirators, full-face elastomeric respirators, and powered air purifying respirators. The most common type of respirators used by health care professionals are particulate respirators. When selecting a specific type of respirator, health care professionals should consider the type of exposure risk associated with patient care. A "fit test" may be required to determine the appropriate size respirator needed for each individual health care professional. Health care professionals may also require training regarding how and when to use a respirator.

Donning PPE - When putting on a respirator, a health care professional should make sure the respirator completely covers his or her mouth and nose. Health care professionals should also ensure the respirator fits snug to the face and below the chin. Additionally, a health care professional should be sure the respirator is properly sealed.

Removing PPE - To effectively remove a respirator, a health care professional should untie the bottom ties, if applicable, followed by the upper ties. The respirator should then be pulled off and discarded in the appropriate waste container. A health care professional should not touch a contaminated respirator. Health care professionals should wash their hands or use an alcohol-based hand sanitizer after removing all PPE.

Gloves

Background information - Gloves are often the most common piece of PPE used by health care professionals. The two main reasons why health care professionals should wear gloves include the following - to reduce the risk of contamination of health care professionals' hands with blood and other body fluids and to reduce the risk of germ dissemination to the environment and/or transmission from the health care worker to the patient and vice versa, as well as from one patient to another. When wearing gloves, health care professionals should avoid touch contamination. Touch contamination may refer to touching one's self and/or other surfaces such as tables, light switches, and doors while wearing gloves. Touch contamination may lead to contamination and/or the passing of potentially infectious materials. Health care professionals should also remember to change their gloves as they administer care to different patients, i.e., a new patient means a new pair of gloves.

Donning PPE - When putting on a pair of gloves, a health care professional should make sure the gloves extend to cover the wrists of isolation gowns, if applicable. Gloves are often the last piece of PPE donned when putting on required PPE. When donning gloves, health care professionals should adhere to the following steps:

1) Health care professionals should note the following - when an indication for hand hygiene precedes contact that also requires glove usage, hand rubbing with an alcohol-based handrub or hand washing with soap and water should be performed before donning gloves.

2) Take out a glove from its original box.

3) Health care professionals should be sure to touch only a restricted surface of a glove corresponding to the wrist (at the top edge of the cuff).

4) Don the first glove.

5) Take the second glove with the bare hand and be sure to touch only a restricted surface of a glove corresponding to the wrist (at the top edge of the cuff).

6) Health care professionals should note the following - to avoid touching the skin of the forearm with the gloved hand, turn the external surface of the glove to be donned on the folded fingers of the gloved hand, thus permitting to glove the second hand (don the second glove).

7) Health care professionals should note the following - once both hands are gloved, hands should not touch anything else that is not defined by indications and conditions for gloved use.

Removing PPE - To effectively remove a pair of gloves, a health care professional should use one gloved hand to grasp the palm area of the other gloved hand. Once the health care professional has a firm grip on the palm of one gloved hand, the health care professional should then peel off the first glove. After removing the first glove, the health care professional should then hold that glove in one hand. Using his or her fingers, the health care professional should slide the fingers off his or her ungloved hand under the remaining glove at the wrist and peel off the second glove right over the first glove. Both gloves should then be placed in the appropriate waste container.

If heath care professionals are wearing a gown with gloves, they may also remove their gloves when they are removing their gowns. To do so, health care professionals should peel off each glove as they roll or fold their gowns before disposal. Both the gloves and the gown should then be discarded in the appropriate waste container. When removing a pair of gloves with a gown, health care professionals should ensure they do not touch the gloves or the gown with their bare hands. Health care professionals should wash their hands or use an alcohol-based hand sanitizer after removing all PPE.

Insert Chest Tubes Safely

A chest tube may refer to a tube that is used to drain fluid, or remove air, from the lungs. At times, chest tubes can be vital to patients' survival. Thus, it is imperative that health care professionals adequately and safely insert chest tubes into patients. To adequately insert chest tubes into patients, health care professionals should remember and follow the following recommendations: practice effective hand hygiene, don PPE when applicable, prep the patient's skin, and use extensive draping.

Possess Insight into Anticoagulation Therapy

As previously highlighted, anticoagulation therapy can be used as a therapeutic treatment option for a number of conditions such as: atrial fibrillation, deep vein thrombosis, pulmonary embolism, and mechanical heart valve implant. That being the case, it is important to note that anticoagulation medications are more likely than others to cause serious harm due to complex dosing, insufficient monitoring, and inconsistent patient compliance. Thus, health care professionals should possess insight into anticoagulation therapy/medications to help prevent any harm to patients on such therapy. Information regarding commonly prescribed anticoagulation therapies/ medications may be found below.

Heparin sodium

Medication notes - Heparin sodium is an anticoagulant indicated for: prophylaxis and treatment of venous thromboembolism and pulmonary embolism, atrial fibrillation with embolization, treatment of acute and chronic consumptive coagulopathies (disseminated intravascular coagulation), prevention of clotting in arterial and cardiac surgery, prophylaxis and treatment of peripheral arterial embolism, and anticoagulant use in blood transfusions, extracorporeal circulation, and dialysis procedures. The most common adverse reactions associated with heparin sodium include the following: hemorrhage, thrombocytopenia, heparin-induced thrombocytopenia (HIT) and heparin-induced thrombocytopenia and thrombosis (HITT), hypersensitivity reactions, and elevations of aminotransferase levels.

Safety notes - Warnings and precautions associated with heparin sodium include the following: confirm choice of correct strength prior to administration, use caution in conditions with increased risk of hemorrhage, monitor for signs and symptoms and discontinue if indicative of HIT and HITT. Contraindications associated with heparin sodium include: history of HIT and HITT, known hypersensitivity to heparin or pork products, in whom suitable blood coagulation tests cannot be performed at appropriate intervals. Health care professionals should note the following heparin

sodium monitoring recommendation: blood coagulation tests guide therapy for full-dose heparin; monitor platelet count and hematocrit in all patients receiving heparin.

Considerations for special patient populations - Health care professionals should note that a higher incidence of bleeding has been reported in patients over 60 years of age.

Enoxaparin sodium injection (Lovenox)

Medication notes - Lovenox is a low molecular weight heparin (LMWH) indicated for: prophylaxis of deep vein thrombosis (DVT) in abdominal surgery, hip replacement surgery, knee replacement surgery, or medical patients with severely restricted mobility during acute illness, inpatient treatment of acute DVT with or without pulmonary embolism, outpatient treatment of acute DVT without pulmonary embolism, prophylaxis of ischemic complications of unstable angina and non-Qwave myocardial infarction [MI], and treatment of acute ST-segment elevation myocardial infarction [STEMI] managed medically or with subsequent percutaneous coronary intervention [PCI]. The most common adverse reactions associated with Lovenox include the following: bleeding, anemia, thrombocytopenia, elevation of serum aminotransferase, diarrhea, and nausea.

Safety notes - Lovenox carries the following warnings: epidural or spinal hematomas may occur in patients who are anticoagulated with LMWH or heparinoids and are receiving neuraxial anesthesia or undergoing spinal puncture; these hematomas may result in long-term or permanent paralysis; consider these risks when scheduling patients for spinal procedures; factors that can increase the risk of developing epidural or spinal hematomas in these patients include: the use of indwelling epidural catheters, concomitant use of other drugs that affect hemostasis, such as non-steroidal anti-inflammatory drugs (NSAIDs), platelet inhibitors, other anticoagulants, a history of traumatic or repeated epidural or spinal punctures, a history of spinal deformity or spinal surgery. Monitor patients frequently for signs and symptoms of neurological impairment. If neurological compromise is noted, urgent treatment is necessary; consider the benefits and risks before neuraxial intervention in patients anticoagulated or to be anticoagulated for thromboprophylaxis. Additional warnings and precautions associated with Lovenox include: use with caution in patients at risk for bleeding, obtain hemostasis at the puncture site before sheath removal, use with caution in patients with bleeding diathesis, uncontrolled arterial hypertension or history of recent gastrointestinal ulceration, diabetic retinopathy, renal dysfunction, or hemorrhage, use with caution in patients with a history of HIT, monitor thrombocytopenia closely, do not exchange with heparin or other LMWHs, and pregnant women with mechanical prosthetic heart valves and their fetuses, may be at

increased risk and may need more frequent monitoring and dosage adjustment. Contraindications associated with Lovenox include: active major bleeding, thrombocytopenia with a positive in vitro test for anti-platelet antibody in the presence of enoxaparin sodium, hypersensitivity to enoxaparin sodium, hypersensitivity to heparin or pork products, hypersensitivity to benzyl alcohol (for multi-dose formulation only).

Considerations for special patient populations - Health care professionals should note the following: doses of Lovenox should be adjusted for patients with creatinine clearance <30mL/min.

Warfarin (Coumadin)

Medication notes - Coumadin is a vitamin K antagonist indicated for the following: prophylaxis and treatment of venous thrombosis and its extension, pulmonary embolism; prophylaxis and treatment of thromboembolic complications associated with atrial fibrillation and/or cardiac valve replacement; reduction in the risk of death, recurrent myocardial infarction, and thromboembolic events such as stroke or systemic embolization after myocardial infarction. The most common adverse reactions associated with Coumadin are fatal and nonfatal hemorrhage from any tissue or organ.

Safety notes - Warnings associated with Coumadin include the following: Coumadin can cause major or fatal bleeding; perform regular monitoring of INR in all treated patients; drugs, dietary changes, and other factors affect INR levels achieved with Coumadin therapy; instruct patients about prevention measures to minimize risk of bleeding and to report signs and symptoms of bleeding. Contraindications associated with Coumadin include the following: pregnancy, except in women with mechanical heart valves; hemorrhagic tendencies or blood dyscrasias. Health care professionals should note the following Coumadin monitoring recommendation: obtain daily INR determinations upon initiation until stable in the therapeutic range; obtain subsequent INR determinations every 1 to 4 weeks.

Considerations for special patient populations - Use with caution in a nursing woman; monitor breast-feeding infants for bruising or bleeding.

Apixaban (Eliquis)

Medication notes - Eliquis is a factor Xa inhibitor anticoagulant indicated to reduce the risk of stroke and systemic embolism in patients with nonvalvular atrial fibrillation. The most common adverse reactions associated with Eliquis are related to bleeding.

Safety notes - Warnings associated with Eliquis include the following: discontinuing Eliquis places patients at an increased risk of thrombotic events; an increased rate of stroke was observed following discontinuation of Eliquis in clinical trials in patients with nonvalvular atrial fibrillation; if anticoagulation with Eliquis must be discontinued for a reason other than pathological bleeding, coverage with another anticoagulant should be strongly considered. Contraindications associated with Eliquis include active pathological bleeding and severe hypersensitivity to Eliquis.

Considerations for special patient populations - Health care professionals should note the following recommendations: the use of Eliquis is not recommended in pregnant patients or in patients with severe hepatic impairment; discontinue Eliquis or discontinue nursing.

Apply Fall Precautions to All Patients

Falls can be very dangerous to patient care and possess the potential to dramatically impact patients' health and overall well-being. With that said, all patients may be at risk for falls. Thus, it is essential that health care professionals apply fall precautions to all patients, independent of age, diagnosis, or treatment. In other words, fall precautions constitute the basics of patient safety and should be applied in all health care facilities to all patients. Specific fall precautions may be found below.

Fall Precautions

- Familiarize the patient with the environment

- Have the patient demonstrate call light use

- Maintain call light within reach

- Keep the patient's personal possessions within patient safe reach

- Have sturdy handrails in patient bathrooms, room, and hallway

- Place the hospital bed in low position when a patient is resting in bed; raise bed to a comfortable height when the patient is transferring out of bed

- Keep hospital bed brakes locked

- Keep wheelchair wheel locks in - locked position when stationary

- Keep nonslip, comfortable, well-fitting footwear on the patient

- Use night lights or supplemental lighting

- Keep floor surfaces clean and dry

- Clean up all spills promptly

- Keep patient care areas uncluttered

- Follow safe patient handling practices

Use Evidence-Based Hospital Design Principles

Health care organizations should follow evidence-based principles for hospital design to improve patient safety and quality. Examples of evidence-based principles for hospital design include the following: provide well-designed patient rooms and bathrooms, offer single bed rooms to patients, create decentralized nurses' stations that allow easy access to patients, improve air filtration systems within health care facilities, provide multiple convenient locations for hand washing, and offer well-lit, quiet, private spaces to health care professionals so they may complete vital tasks undisturbed.

Consider Working with a Patient Safety Organization

Health care professionals should consider reporting and sharing patient safety information with Patient Safety Organizations (PSOs) to help others avoid preventable errors. By providing both privilege and confidentiality, PSOs create a secure environment where clinicians and health care organizations can use common formats to collect, aggregate, and analyze data that can improve quality by identifying and reducing the risks and hazards associated with patient care.

Section 2: Summary

Organizations such as the FDA, the United States Department of Health & Human Services, the CDC, and the WHO have developed recommendations to help health care professionals prevent medical errors. The aforementioned organization's medical error-related recommendations include the following: limit shift durations for health care professionals, practice effective hand hygiene, don personal protective equipment when applicable, insert chest tubes safely, possess insight into anticoagulation therapy, apply fall precautions to all patients, use evidence-based hospital design principles, and consider working with a patient safety organization. Much like with the Joint Commission's recommendations, health care professionals should follow the FDA, the United States Department of Health & Human Services, the CDC, and the WHO recommendations to prevent medical errors, increase patient safety, and optimize care to those in need.

Section 2: Key Concepts

• Evidence shows that acute and chronically fatigued health care professionals are more likely to make mistakes. Health care professionals and health care organizations should ensure that individuals get ample sleep and adhere to 80-hour workweek limits.

• Effective hand hygiene and PPE can help prevent health care-associated infections.

• Health care professionals should adequately and safely insert chest tubes into patients.

• Anticoagulation medications are more likely than others to cause serious harm due to complex dosing, insufficient monitoring, and inconsistent patient compliance. Thus, health care professionals should posses insight into anticoagulation therapy/ medications to help prevent any harm to patients on such therapy.

• Health care professionals should apply fall precautions to all patients.

• Health care organizations should follow evidence-based principles for hospital design to improve patient safety and quality.

• Health care professionals should consider reporting and sharing patient safety information with PSOs to help others avoid preventable errors.

Section 2: Key Terms

Hand hygiene - the process of cleaning hands in order to prevent contamination and/ or infections

Personal Protective Equipment (PPE) - equipment designed to protect, shield, and minimize exposure to hazards that may cause serious injury, illness, and/or disease

Touch contamination - touching one's self and/or other surfaces such as tables, light switches, and doors while wearing gloves

Chest tube - a tube that is used to drain fluid, or remove air, from the lungs

Section 2: Personal Reflection Question

How can health care professionals apply the above recommendations to patient care?

Case Study: Medical Errors

A medical error-related case study is presented below to review the concepts found in this course. A case study review will follow the case study. The case study review

includes the types of questions health care professionals should ask themselves when attempting to prevent medical errors from occurring. Additionally, reflection questions will be posed to encourage further internal debate and consideration regarding the presented case study and medical errors.

Case Study

A 72-year-old, lucid female patient, with no known drug allergies, enters a health care facility. Upon admission, the patient is brought to her room. The patient is helped into bed and a health care professional answers a few of the patient's questions. However, the health care professional does not take the time to orient the patient to her room or make sure the patient understands how to use the call light. Additionally, the patient's personal effects are kept out of the reach of the patient. Furthermore, no efforts are made to ensure the patient's comfort.

48 hours after the patient is admitted into the health care facility, the patient is initiated on Coumadin therapy. A baseline INR is taken, however subsequent INR levels are not ordered for the patient. Also, a medication reconciliation is never completed to determine what medications the patient was on prior to admission.

72 hours after the initiation of Coumadin therapy, the patient attempts to get out of bed. The patient is able to make it out of bed - however, after taking a few steps forward towards her personal effects, the patient falls. Eventually, health care professionals enter the patient's room and help her up. Unfortunately, the patient sustains several physical injuries as well as uncontrolled bleeding and subsequent bruising as a result of her fall.

A few days pass and attempts are made to help the patient physically recover from her fall. As the patient recovers, health care professionals observe that her overall demeanor has changed. Essentially, the patient has become more anxious and agitated since her fall. Additionally, the patient begins to voice her discontent for the health care facility and the health care professionals taking care of her. As time passes, the patient's discontent grows and the patient begins to refuse therapy. Attempts are made to encourage the patient to engage in therapy, but the patient refuses to adhere to the advice and recommendations of the health care professionals around her.

In time, the patient begins to take some of her medications, but continues to refuse much of her therapy. Also, the patient begins to eat less and less and appears to be having trouble sleeping. Ultimately, the patient's health begins to deteriorate and she starts making comments such as the following: "I want to go to sleep and never wake up," "I wish this was my last day," "I want to end it all." Health care professionals note

the patient's aforementioned comments. However, a risk assessment is not conducted to determine the patient's state.

Over the next few days, the patient remains stable. However, due to the patient's overall declining health, health care professionals begin to consider how long the patient's stable condition may last.

Case Study Review

What potential medical errors may be present in the above case study?

Several medical errors may be present in the above case study, including the ones found below:

Fall precautions were not applied to the patient - fall precautions should be applied to all patients. However, it does not appear fall precautions were applied to the patient in the above case study, e.g., the patient was not oriented to her room, the patient was not shown how to use the call light, and the patient's personal effects were kept out of the reach of the patient.

Anticoagulation therapy recommendations were not followed - the patient was initiated on Coumadin therapy. However, it appears Coumadin-related recommendations were not followed, e.g., after the baseline INR was obtained no subsequent INR levels were ordered for the patient. In other words, it appears the patient's Coumadin therapy was not effectively monitored.

A medication reconciliation was not completed - a medication reconciliation was never completed to determine if the patient was on any specific medications prior to admission, which may mean if the patient was on any specific medications prior to admission, she was not receiving them during her stay in the health care facility.

The patient was never formally identified as an individual at risk for suicide - the patient began to show signs of depression such as changes in eating patterns and difficulties sleeping. The patient also made the following comments which may be an indication of suicidal thoughts: "I want to go to sleep and never wake up," "I wish this was my last day," "I want to end it all."

Are there any other potential medical errors present in the above case study; if so what are they?

How may have the potential medical errors impacted the patient in the above case study?

It does appear the potential medical errors impacted the patient in the above case study. Examples of how each potential medical error may have impacted the patient can be found below.

Fall precautions were not applied to the patient - it appears fall precautions were not applied to the patient. Potentially as a result of the lack of fall precautions, the patient experienced a fall, which lead to physical injuries. Additionally, after the patient's fall the patient's overall demeanor seemed to change, e.g., the patient became increasingly anxious and agitated, which may indicate the fall led to some psychological effects, in addition to the physical injuries sustained by the patient. Furthermore, after the fall, and potentially because of the fall, it appears the patient began to lose confidence in the health care facility she was in and the health care professionals responsible for her care, evident by her obvious discontent for her surroundings and those health care professionals in her surroundings as well as her refusal of therapy and care. Moreover, the patient's overall health began to deteriorate shortly after the fall and she began making comments indicating possible suicidal thoughts, both of which may be traced back to the fall. Essentially, it appears the patient's fall may have dramatically impacted her health, overall well-being, quality of life, and may, ultimately, lead to further complications, which may cause increased morbidly and mortality potential for the patient.

Anticoagulation therapy recommendations were not followed - as previously alluded to, Coumadin therapy requires consistent INR monitoring, especially when therapy is initiated. A baseline INR, as well as subsequent INRs, are required to determine if the patient's INR levels are within a therapeutic range. The typical INR therapeutic range for Coumadin therapy in between 2 - 3. When INR levels are below the 2 - 3 range, it often means the therapy is sub-therapeutic. When INR levels are above the 2 - 3 range, it may mean the patient is at risk for Coumadin associated adverse events such as uncontrolled bleeding and bruising.

When the patient fell she experienced uncontrolled bleeding and subsequent bruising, both of which may have, at least in part, resulted from Coumadin-related INR levels above the 2 - 3 range. In other words, some of the complications the patient experienced after her fall may been caused by her Coumadin therapy and, more specifically, a lack of effective Coumadin therapy monitoring.

A medication reconciliation was not completed - the impact of a lack of medication reconciliation for the patient may not be overtly obvious in the case study. However, the omission of a medication reconciliation could have played a role in the patient's declining health. When patients are admitted into a health care facility, medication reconciliations can be used to determine essential patient medications, i.e.,

medications that need to be continued while the patient is in a health care facility. Without medication reconciliations, medication discrepancies may occur and essential patient medications might be missed/discontinued, ultimately leading to health care-related complications for patients. When the patient from the case study was admitted into the health care facility, a medication reconciliation was not conducted. Therefore, there is potential that medication discrepancies may have occurred and essential medications were not continued - possibly contributing, at least in part, to the patients declining health.

The patient was never formally identified as an individual at risk for suicide - as the patient's health declined in the case study, she began to show signs of depression and make comments which potentially indicated the presence of suicidal thoughts - however, the patient was never formally identified as an individual at risk for suicide. Similar to the omission of medication reconciliation for the patient, the impact of the lack of suicide risk identification for the patient may not be immediately evident. With that said, the lack of suicide risk identification could lead to several negative health-related outcomes for the patient. An example of a possible outcome that may occur because the patient was not identified as a suicide risk is as follows: the patient was not identified as a suicide risk; the patient began to self-harm; consequently the patient was put in restraints; wounds developed as a result of the restraints; due to the patient's weakened state and declining health, the wounds became worse and eventually infected; the patient's infection intensifies; the patient's health continues to decline.

In addition to the possible outcome highlighted above, the lack of suicide risk identification could lead to a sentinel event. A sentinel event may refer to an unanticipated event in a health care setting that results in death or serious physical or psychological injury to a patient(s), not related to the natural course of the patient's illness. Health care professionals should work to prevent sentinel events whenever possible.

Are there any other ways the potential medical errors impacted the patient in the above case study; if so what are they?

<u>Is it possible that the potential medical errors found in the case study above could have been prevented or avoided; if so how?</u>

It does appear the potential medical errors could have been prevented/avoided. Examples of how each potential medical error may have been prevented/avoided can be found below.

Fall precautions were not applied to the patient - the patient's fall may have been prevented if fall precautions where applied to the patient.

Anticoagulation therapy recommendations were not followed - the potential complications of the patient's Coumadin therapy may have been avoided if the following Coumadin monitoring recommendation was effectively carried out: obtain daily INR determinations upon Coumadin initiation until stable in the therapeutic range; obtain subsequent INR determinations every 1 to 4 weeks.

A medication reconciliation was not completed - any potential complications that may have resulted from a lack of medication reconciliation could have been avoided if a medication reconciliation was carried out upon patient admission.

The patient was never formally identified as an individual at risk for suicide - any potential complications that may result from a lack of suicide risk identification may be avoided if the following Joint Commission recommendations are effectively carried out:

• Identify patients at risk for suicide.

• Conduct a risk assessment that identifies specific patient characteristics and environmental features that may increase or decrease the risk for suicide.

• Address the patient’s immediate safety needs and most appropriate setting for treatment.

• When a patient at risk for suicide leaves the care of the hospital, provide suicide prevention information (such as a crisis hotline) to the patient and his or her family.

Are there any other ways the potential medical errors found in the case study above could have been prevented or avoided?

Conclusion

Medical errors are one of the leading causes of death in the United States. Thus, health care professionals should understand how to prevent medical errors from occurring. To help prevent medical errors from occurring, health care professionals should follow recommendations made by organizations such as the following: the Joint Commission, the FDA, the United States Department of Health & Human Services, the CDC, and the WHO.

References

1. www.jointcommission.org
2. www.fda.gov
3. https://www.ahrq.gov/
4. www.cdc.gov
5. "WHO Guidelines on Hand Hygiene in Health Care: a Summary," www.who.int