Preventing Medical Errors

A Self-Study CBL Program

2.0 Contact Hours Awarded to:
Nursing - Florida Nursing Provider Number #FBN 2114
Clinical Social Work – BAP#834
Laboratory – Clinical Laboratory Continuing Education #JP545
Radiology – Bureau of Radiation Control # 3201069
Respiratory – Respiratory Care Continuing Education # RCE48

Initiated: 2003
Reviewed/Revised: 2005, 2006, 2007, 10/08, 8/09, 8/10, 3/11, 1/12, 5/13
Welcome to the Net Learning CBL on Preventing Medical Errors. This module contains information on topics such as the Epidemic, Types and Causes of Medical Errors, Error Models, Prevention and Analysis, General Process Changes, Special Population Needs, Medication and Surgery/Procedure Errors, Department Specific Errors, Patient Safety, Risk Management/Reporting, and Education.

Preventing Medical Errors
Objectives

- Identify the scope of the problem of medical errors.
- Define medical error, adverse event, and sentinel event.
- List factors that impact the occurrence of medical errors.
- Discuss Swiss Cheese and Blunt End/Sharp End Error models.
Objectives

- Compare Failure Mode Effect Analysis and Root Cause Analysis and their role in error reduction and prevention.
- List general process changes that reduce errors and improve patient safety.
- Identify safety needs of special populations.
- State processes to improve patient outcomes, particularly in areas of medication administration and surgical procedures.
Objectives

- Delineate the error-prone situations for several disciplines and departments.
- Discuss measures to be taken to improve patient safety in the areas of falls prevention, restraint use, bed rail entrapment, and infection control.
- Identify internal and external reporting responsibilities.
- List methods of public education to minimize medical errors.
Epidemic of Medical Errors

• Institute of Medicine (IOM) commissioned the Quality of Health Care in America Committee to look at medical errors.

• In November, 1999, the Committee issued its first report: *To Err is Human: Building a Safer Health System.*

• Report focused significant attention on problem of medical errors and patient safety.
Epidemic of Medical Errors

- Follow-up report
  - *Five Years After To Err is Human: What Have We Learned?* (May 2005).
  - Progress slow.
  - All hospitals have implemented some new practices to improve safety.
  - No comprehensive nationwide monitoring system exists for patient safety.
Epidemic of Medical Errors

- Up to 195,000 people die in hospitals annually as a result of preventable medical errors.
- Using lower estimate, 8th leading cause of death in U.S.
- Exceeds deaths by car accidents, breast cancer and AIDS.
Epidemic of Medical Errors

- Medical errors responsible for injury in as many as 1 out of 25 hospital patients.

- Estimated 7,000 people die per year from medication errors alone.
Epidemic of Medical Errors

• Cost of medical errors/poor quality
  • Up to $19.5 billion/year (30% of all health care spending)
• Human lives
• Loss of trust in health-care system
• Decreased satisfaction - patients and healthcare providers
• Physical and psychological discomfort of patients
Epidemic of Medical Errors

- Cost of medical errors
  - Low morale in healthcare providers
  - Lost worker productivity
  - Absence from school
  - Lower levels of population health status

- Research indicates - 70% of medical errors are preventable.
Epidemic of Medical Errors

- Where errors occur:
  - Hospitals
  - Physicians’ offices
  - Nursing homes
  - Pharmacies
  - Urgent care centers
  - Home health care
- Little data exists on extent of problem outside hospital setting.
Definitions

• Medical error
  • “Failure of a planned action to be completed as intended or the use of a wrong plan to achieve an aim.” (IOM)

• Adverse event
  • Injury caused by medical management, not by patient condition or disease.

• Sentinel event
  • An unexpected occurrence involving death or serious physical or psychological injury or the risk thereof. Includes loss of limb or function, suicide, infant abduction or discharge to wrong family, rape, hemolytic transfusion reaction and surgery on wrong patient or part. Requires immediate investigation and response.
Types of Medical Errors

- **Active**
  - Occurs at point of human interface with complex system

- **Latent**
  - Failure in system design
  - Consequences of decisions of upper level management
    - Planning & scheduling
    - Training & selection
    - Allocation of resources
Types of Errors

- Diagnostic
- Treatment
- Preventive
- Other
Diagnostic Errors

- Delay or error in diagnosis
- Failure to obtain tests as indicated
- Use of outmoded tests or therapy
- Failure to treat results of monitoring or testing
Treatment Errors

- Error in performing test, procedure or operation
- Error in treatment administration
- Medication error
- Delay in treatment
- Delay in responding to abnormal test
- Giving inappropriate care
Preventive Errors

- Failure to provide preventive treatment as indicated
- Inadequate monitoring or follow-up of treatment
Other Types of Errors

- Communication failure
- Equipment failure
- Other system failure
To Err is Human

• IOM committee’s main conclusion
  • “The majority of medical errors do not result from individual recklessness or the actions of a particular group – this is not a ‘bad apple’ problem. More commonly, errors are caused by faulty systems, processes, and conditions that lead people to make mistakes or fail to prevent them.”
  • Occasionally, human error does occur.
Causes of Human Error

- Physiological factors
  - Fatigue
  - Sleep loss
  - Alcohol/drugs
  - Illness
Causes of Human Error

• Psychological factors
  • Boredom
  • Anger
  • Fear
  • Anxiety
  • Interpersonal relations
  • Other forms of stress
Causes of Human Error

• Illegibility
  • Handwritten notes or orders may contribute to “guessing” what something says.
  • Although this problem has mostly been eliminated with CPOE.
The 80/20 rule simply reminds us that 80% of errors are the result of SYSTEM problems.
System Causes of Error

- Environmental factors may divert attention and lead to error:
  - Noise
  - Heat
  - Motion
  - Visual stimuli
  - Poor working conditions
  - Poor lighting
- These are *SYSTEM* problems!
System Causes of Error

- Unfamiliar/new situations or problems
  - Lack of training may lead to trial and error solutions.
- Using past solutions
  - Attempting to solve new problem with old solution or old technology that no longer applies.
System Causes of Error

• Mislabeling/Instructions
  • May be misleading or not completely describe correct usage

• Communication gaps
  • Lack of communication
  • Misinterpretation
  • Using words that have several meanings
The Blame Game

- Blaming individuals has virtually no remedial value.
- Blame focuses attention on least remedial link in chain of error – stifles discovery of cause of error.
- Leads to ineffective countermeasures
  - Disciplinary action
  - Retraining
  - Writing new procedures
The Blame Game

• Health care providers are some of the most careful people in the world!

• Must move from blaming the individual to focusing on the processes and factors surrounding an error.
Process/System Failure

- Causes of process failure include:
  - Variable input
  - Complexity
  - Inconsistency
  - Human intervention
  - Tight coupling
  - Tight time constraints
  - Hierarchical culture
Variable Input

- Changing and unpredictable input
- Prone to malfunction because modifications must be made to accommodate the differences in input
- In health care, patient is the input.
  - Different conditions
  - Different preferences
  - Different tolerance levels
Complexity

• Each additional step in the process adds chance for error.

• KISS
  • Keep It Simple, Sweetie!
Inconsistency

- Standardization reduces the risk of error or failure.
  - Processes
  - Procedures
  - Equipment
  - Tasks
Human Intervention

• Any process that depends on people is more prone to failure than a process that does not.

• Automated functions often proceed smoothly and without interruption.
Tight Coupling

- Coupling – relationship between steps in a process.
  - May be loose or tight
  - Tight coupling – steps follow closely and problems in one step cannot be recognized or corrected before next step made.
    - Example – Code Blue
Time Constraints

- Often goes hand-in-hand with tight coupling
- Applies extra stress and pressure to participants
- Allows less opportunity to identify, analyze, and respond appropriately
Hierarchical Culture

• The boss is always right!

• Difficult to raise questions due to fear of being embarrassed or wrong
Professional Autonomy

- Challenge to medical profession’s autonomy
- May be threat to licensed professional’s authority
Culture of Safety

- Culture where people are able to report both adverse events and close calls or “near misses” without fear of punishment
- Creating a culture of safety supported by multiple organizations such as the National Quality Forum
- Recognized as key to patient safety
Special Concerns Form

• FHMMC has “Special Concerns Form” for anonymous reporting of “near misses.” For example:
  • Wrong medication or dosage sent but not administered
  • Lab work/treatment almost done on wrong patient
• Review of processes maximizes safety.
How Errors Occur

• Creating culture of safety involves evaluation of ability to do things in a better, safer, more efficient manner.
• Look at why the error occurred.
• The following models illustrate how errors occur.
  • Blunt End/Sharp End Model
  • Swiss Cheese Model
Blunt End/Sharp End Model

- **Blunt End**
  - Policies, procedures, resource allocation systems

- **Sharp End**
  - Direct caregiver

- **Monitored Process**

- **Results**
Blunt End/Sharp End Model

- Hospital policies, procedures and systems are in the broad end of large object pointed at patient.
- Healthcare providers are at the sharp end affected by resources and constraints.
Blunt End/Sharp End Model

- Healing or good results occur when healthcare providers use knowledge, training, attention and skill to interact with the patient who benefits from correct diagnoses, tests, treatment decisions and skilled surgeries.

- Human error occurs at sharp end.

- System errors occur at blunt end.
Blunt End/Sharp End Model

- Blunt end may be either barrier or enabler for caregiver.
- Blunt ends contribute to potential errors but may only be noticed when error or near miss occurs at sharp end.
Blunt End/Sharp End Model

• Example: medication administration error
  • Easy to blame nurse (sharp end)
  • Blunt end factors that may have contributed to error include:
    • Late medication delivery
    • Med delivered to wrong unit
    • Look alike medications
Swiss Cheese Model

- Developed by James Reason
- Considers chance combinations of latent errors, human errors, and hazards
- Illustrates error is not a result of one single failure
Swiss Cheese Model

Defenses

Opportunity for failure

ACCIDENT
Swiss Cheese Model

Error is a result of a series of failures aligning in order to allow the error to reach the patient.
Swiss Cheese Model

- Organizations have defenses to detect failures and prevent them from reaching patient.
- Systematically evaluate how failures move past defenses that are in place.
Swiss Cheese Model

• Example – one piece of cheese is a piece of equipment like an infusion pump.
  • If unavailable, staff may time IV infusion and monitor without equipment.
  • If difficult to obtain, staff may hide equipment on unit to have available for patients.
• The scenario involves staff working around systems or barriers to do what is right for patient.
Culture of Safety

- Try to find and close holes in the Swiss Cheese Model by strengthening system defenses.

- Goals
  - Design system without latent errors.
  - Make management decisions with understanding of where failure is likely.

- Systems and processes should make it difficult for staff to make mistakes and easy to execute job correctly.
Culture of Safety

- Caregivers must understand they are not the problems but part of the solution.
- Must avoid blame and focus on system and process failures.
- Culture of accountability without blame.
- FHMMC has a Patient Safety Committee designed to look at potential system failures.
Error Prevention and Analysis

- Failure Mode and Effects Analysis (FMEA)
  - Proactive, aimed at prevention of errors
  - Examines processes to determine likely failure points and risks

- Root Cause Analysis (RCA)
  - Retrospective – seeks to determine cause of error
  - Avoids counterproductive culture of blame by looking at the “why,” not the “who”
Failure Modes and Effects Analysis (FMEA)

• The Joint Commission (TJC) requires facilities to select at least one high-risk process for proactive risk assessment annually.
  • TJC identifies most frequently occurring sentinel events which may guide selection of process.
  • National Center for Patient Safety also identifies high risk processes and patient safety events that may assist in selection.

• Involves systematic analysis of a procedure before an error occurs
Steps in FMEA

- **Step 1:** Define the Topic.
  - Define process to be studied.
  - Identify what could go wrong and the significance of the error.
Steps in FMEA

• Step 2: Assemble the team.
  • Multidisciplinary
  • Include content experts (knowledge of theory).
  • Include process experts (knowledge of how it’s done).
Steps in FMEA

• Step 3: Graphically describe the process.
  • Develop and verify flow chart of process.
  • If process complex, identify area of focus (manageable bites).
Steps in FMEA

• Step 4A: Conduct a hazard analysis.
  • Brainstorm potential failures at each step (failure mode).
  • Use cause and effect diagrams to identify possible failures.
  • Expertise and experience of team critical in this step.
Steps in FMEA

• Step 4B: Determine the severity of each failure mode.
  • Assign a Severity Rating
    • Catastrophic: Can cause death or injury
      Traditional FMEA rating = 10
    • Major: Can cause high degree of customer dissatisfaction
      Traditional FMEA score = 7
    • Moderate: Failure can be overcome with modifications to the process or product with only minor performance loss
      Traditional FMEA score = 4
    • Minor: Failure not noticeable to customer and would not affect delivery of service
      Traditional FMEA score = 1
Steps in FMEA

• Step 4C: Determine the probability of each failure mode.
  • Assign a Probability Rating based on how likely the error is to occur.
    • Frequent: May happen several times in one year.
    • Occasional: May happen several times in 1-2 years.
    • Uncommon: May happen sometime in 2-5 years.
    • Remote: May happen sometime in 5-30 years.
Steps in FMEA

• Step 4D: Determine the criticality of each failure mode based on a hazard scoring matrix.

<table>
<thead>
<tr>
<th>Probability</th>
<th>Severity of Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Catastrophic</td>
</tr>
<tr>
<td>Frequent</td>
<td>16</td>
</tr>
<tr>
<td>Occasional</td>
<td>12</td>
</tr>
<tr>
<td>Uncommon</td>
<td>8</td>
</tr>
<tr>
<td>Remote</td>
<td>4</td>
</tr>
</tbody>
</table>
Steps in FMEA

- **Step 5: Take Action.**
  - Redesign process to minimize risk of failure.
  - Eliminate chance for failure.
    - Make it easier for people to do the right thing before error reaches patient.
  - Pilot/test the process design.
  - Implement the process.
  - Evaluate
    - Identify outcome measures that will be used.
    - Identify individual(s) responsible for action/evaluation.
Root Cause Analysis (RCA)

- Retrospective approach to error analysis
- Tool for identifying prevention strategies
- Widely used to investigate major industrial accidents
- Mandated by TJC in 1997 for investigation of sentinel events in accredited hospitals
- Subject to hindsight bias
Hindsight Bias

- Phenomenon where it seems obvious how an error occurred after the fact
- Primary obstacle to error analysis and understanding
- Jeopardizes an organization’s ability to uncover other areas for potential error
- Narrows focus on cause of error without considering the whole picture such as environmental, emotional, political and system issues
- Limits a complete and thorough investigation
- Focuses on blaming individual's involved
Root Cause Analysis (RCA)

- Goals are to find out
  - What happened?
  - Why did it happen?
  - How do you prevent it from happening again?
- Part of process to build culture of safety and move beyond culture of blame
Steps in RCA

• Step 1: Identify sentinel event for analysis.
  • Wrong site surgery
  • Major chemotherapy dosing error
  • Major ABO incompatible transfusion reaction
  • Etc.
Steps in RCA

- **Step 2: Assemble the team.**
  - Multidisciplinary
  - Trained in techniques and goals of RCA
Steps in RCA

• Step 3: Accident analysis
  • Data collection to determine sequence of events preceding and following the error
  • Data analysis to determine underlying factors (root causes)
    • Establish how event happened by identification of active errors in the sequence.
    • Establish why the event happened through identification of latent errors in the sequence.
Steps in RCA

- Categories of root causes may include:
  - Institutional
  - Regulatory
  - Organizational
  - Management
  - Work environment
  - Team factors
  - Staff factors
  - Task factors
  - Patient characteristics

- Categories vary by setting.
Steps in RCA

- **Step 4:** Develop corrective action and follow-up plan.
  - Identify system problems that may need redesign.
  - Assign accountability for implementation and evaluation of corrective action plan.
Building a Culture of Safety

- Goal of patient safety program is to create a non-punitive, blame-free culture.
- Investigation of factors surrounding errors is involved.
- It requires establishing environment of trust where error and near miss reporting is the norm.
  - Reporting of errors/near misses are essential to analyze what is wrong with a process or procedure.
General Process Changes

- **Simplify** – decrease the number of steps and hand-offs.
- **Standardize** – limit unnecessary variety in drugs, equipment, supplies, policies and procedures.
General Process Changes

- Minimize reliance on memory:
  - Design processes with automatic prompts.
  - Use checklists to ensure complete accurate actions.
- Eliminate look-alikes and sound-alikes.
  - Eliminate similar labels that can increase risk of choosing wrong item.
General Process Changes

- Staff training on patient safety, error analysis, and process improvement
- Increased feedback to modify error-prone behaviors
General Process Changes

• Teamwork
  • Provide multiple perspectives in problem identification and solution.
  • Include content experts.
  • Include process experts.
General Process Changes

- Modify or correct environmental factors that may contribute to errors.
- Identify and correct factors in schedules that may contribute to errors.
Special Patient Populations

• Certain patient populations may have special safety needs.
  • Age specific: especially very young and very old
  • Culturally diverse groups
  • Chronically ill
Age-Specific Safety Needs

• Consider emotional development and ability to cooperate with care.
• Medication dosage adjustment necessary for neonates, children, elderly. Special equipment needed for med administration for neonates and children.
• Determine ability to care for self.
• Determine ability to follow directions related to safety and requesting assistance.
Age-Specific Safety Needs

- Falls are a major cause of injury and death among the elderly.
- The older the individual, the more likely death may be a result of the fall or its complications.
- Falls prevention addressed later in module.
Age-Specific Safety Needs

- Children:
  - Medication errors may have serious consequences.
  - Obtaining incorrect weight or recording weight incorrectly may be responsible for 10% of all errors in children.
Age-Specific Safety Needs

- Mechanisms to prevent medication errors in children:
  - Weigh and record weight in kilograms.
  - Obtain a good history.
  - If parent questions dose, double check it.
  - Double check dosages with another licensed professional.
  - Document medications in a timely manner.
  - Evaluate medication room for potential sources of error.
Culturally Diverse Groups

• Cultural assessment should evaluate feelings about:
  • Expressing health concerns to others
  • Exposing body to others
  • Asking for help
  • Use and reporting of alternative medicine
Culturally Diverse Groups

• Language barriers may present a safety issue.
• FHMMC maintains a list of interpreters in the House-wide Policy and Procedure Manual and on the hospital intranet
• Interpreter services also available by phone using Language Line Services.
  • Access through nursing supervisor
Chronically Ill Patients

• Safety concerns include:
  • Patients with multiple conditions
    • Numerous medications
    • Limited tolerance
    • Increased chance for drug interaction
  • Renal/liver impairment may require medication dosage adjustment.
Chronically Ill Patients

- Immune system impairment (Oncology, AIDS, transplant)
  - May require special drug monitoring
  - May require extra precautions against infection such as neutropenic precautions
Medication Safety

- IOM reports 7,000 patients die annually due to medication errors.
- Additional hospital cost for each preventable medication error estimated to be $4700.
- Medication errors cause emotional and physical effects.
- Medication error is the most common nursing error and second most common error in physician offices.
Medication Safety

• TJC reports (January 1995-June 30, 2005)
  • Medication errors 4th most frequent sentinel event reported.
  • Accounts for approximately 10.8% of sentinel events.
Medication Safety

• Medication Error

• “Any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in the control of the health care professional, patient, or consumer. Such events may be related to professional practice, health care products, procedures, and systems, including prescribing; order communication; product labeling, packaging and nomenclature; compounding; dispensing; distribution; administration; education; monitoring; and use.” The National Coordinating Council for Medication Error Reporting and Prevention
Common Causes of Medication Errors

- Incomplete patient information – not knowing about:
  - Allergies
  - Other medications
  - Previous diagnoses
  - Lab results
  - Correct weight in children
Common Causes of Medication Errors

- Unavailable drug information such as up-to-date warnings
- Lack of appropriate labeling as drug prepared and repackaged into smaller units
Common Causes of Medication Errors

- Miscommunication of drug orders
  - Illegible order
  - Confusion between drugs with similar names
  - Misuse of zeroes and decimal points
  - Confusion of metric and other dosing units
  - Inappropriate abbreviations
Common Causes of Medication Errors

- Environmental factors that distract health professionals from medical tasks:
  - Lighting
  - Heat
  - Noise
  - Interruptions
Categories of Medication Errors

- Ordering/Prescribing – 39% of all errors
- Administration – 38% of all errors
- Dispensing – 12% of all errors
- Transcribing – 11% of all errors
Medication Safety: Ordering/Prescribing

- Essential information
  - Diagnosis
  - Allergies/sensitivities
  - Age
  - Weight
  - Other medications
  - Lab values
Medication Safety: Ordering/Prescribing

- **Reference Materials**
  - PDR
  - Current drug handbook
  - MicroMedex
  - Pharmacists

- **Formulary Review**
  - Collaborate with medical staff
  - Limit number of equivalent products
  - Reduce potential for errors by limiting choices by physician
Medication Safety: Ordering/Prescribing

- Standardize processes
- FHMMC actions:
  - Medication administration times standardized
  - IV drip concentrations standardized
  - Prohibit use of unapproved abbreviations
  - Call to clarify illegible writing
Medication Safety: Ordering/Prescribing

- Develop protocols for high risk medications.

- FHMMC actions:
  - Heparin Protocol
  - Insulin Sliding Scale Protocol
  - Potassium Protocol
  - Magnesium Protocol
Medication Safety: Ordering/Prescribing

- TJC National Patient Safety Goals for 2003 - 2007 require that institutions improve the safety of using high-alert medications by removing concentrated electrolytes (such as KCL) from patient units and standardizing and limiting the number of drug concentrations available.
- FHMMC has complied with these requirements.
Medication Safety: Ordering/Prescribing

- Prohibit potentially confusing orders.

- FHMMC actions:
  - Blanket orders such as “Resume pre-op medications” prohibited.
  - Nurse required to call to clarify confusing order.
Medication Safety: Ordering/Prescribing

- Minimize possibility of illegible or confusing orders by:
  - Computer generated order entry
  - List of unacceptable abbreviations
  - Never use trailing zeros e.g. 5.0 mg
  - Always use zero before decimal point, e.g. 0.5 mg.
  - Order medication by total dosage not number of tablets, amps, etc.
Medication Safety: Ordering/Prescribing

• TJC National Patient Safety Goals for 2003 - 2010 require that organizations improve the effectiveness of communication among caregivers including:
  • Implementing a process for taking verbal or telephone orders that require a verification “read-back” of the complete order by the person receiving the order
  • Standardizing the abbreviations, acronyms, and symbols used throughout the organization including a list of abbreviations, acronyms, and symbols not to use
Medication Safety: Ordering/Prescribing

- Implement a standardized approach to “hand off” communications, including an opportunity to ask and respond to questions.
Medication Safety: Ordering/Prescribing

- FHMMC actions to minimize illegible or confusing orders:
  - Computerized prescription system in E.D.
  - List of abbreviations not to use
  - Nurse/therapist required to call to clarify confusing or illegible order or order containing unapproved abbreviation.
  - Nurse/therapist required to “read-back” telephone order.
  - Verbal orders discouraged
Medication Safety: Transcription

- FHMMC actions to minimize illegible or confusing orders:
  - Nurse verifies orders transcribed by secretary.
  - Nurse acknowledges pharmacist medication order entry.
  - Change of shift order review
  - 24 hour order review
Medication Safety: Dispensing

- Pharmacy access to patient information
- Appropriate, current references including texts and/or on-line resources
- Proper environment for dispensing:
  - Minimal distractions and interruptions
  - Appropriate lighting
  - Safe noise levels
  - Air conditioning/air flow
  - Appropriate equipment, fixtures, and technology
Medication Safety: Dispensing

- Use of Technology
  - Pyxis
  - Pre-filled syringes
  - Pre-mixed IV solutions
- Education when products change
- Double checking math calculations
Medication Safety: Dispensing

- FHMMC actions to prevent dispensing errors:
  - Pyxis
  - Appropriate reference materials available for pharmacists
  - Patient information in the electronic medical record
Medication Safety: Administration

- Knowledge required by nurse prior to drug administration:
  - Drug indications
  - Precautions
  - Contraindications
  - Side effects
  - Interactions
  - Proper methods of administration
Medication Safety: Administration

- Reference texts are available on the units at FHMMC.
- Micromedex/CareNotes available on computers on units at FHMMC.
- Nurses are to clarify questionable orders with MD.
- 24-hr Pharmacist support available.
Medication Safety: Administration

- Rights of Medication Administration
  - Right patient
  - Right drug
  - Right dose
  - Right dosage form
  - Right diagnosis
  - Right route
  - Right time
  - Right education
Medication Safety: Administration

• TJC standards require the use of at least two patient identifiers prior to medication administration (or any other treatment or procedure).

• At FHMMC, licensed professionals are required to check two patient identifiers prior to administering a drug.
  • Name
  • Date of birth
Medication Safety: Administration

• Only medications labeled with the following should be given:
  • Medication name
  • Dose to be administered
  • Dosage form
  • Route
  • Special storage requirements
  • Expiration date
  • Applicable warnings
Other actions to promote safe administration:

- Verification of dosage calculation with second nurse
- Double-checking infusion pump settings when critical, high risk drugs administered
- Proper orientation and education on use of infusion pumps
Medication Safety: Administration

- TJC National Patient Safety Goals for 2003, 2004 and 2005 required that institutions improve the safety of using infusion pumps by ensuring free-flow protection on all general-use and PCA pumps.

- All infusion pumps at FHMMC are free-flow protected.
Medication Safety: Administration

- High Alert Medications
  - FHMMC Clinical Policy #1000.519 delineates the procedure to be followed with high alert medications.
  - High alert medications are defined as those which present a high risk to patients.
Medication Safety: Administration

Policy #1000.519 states:

- High risk medication shall be verified by two licensed professionals prior to administration. This policy does not apply to licensed independent practitioners.
- Verification shall include independent visual confirmation of the physician’s order and the following:
  - Right patient using two identifiers (neither shall be the patient Room number)
  - Right medication(s)
  - Right route
  - Right dose/infusion rate/pump setting
  - Right time
  - Even though not in policy, don’t forget to include diagnosis and education
- For chemotherapy, total parenteral nutrition and dialysis solutions, each additive shall be verified.
- The licensed practitioner who administers the medication documents the name of the licensed practitioner who verified the medication in the comments section of the EMAR or, if a paper MAR is used, both practitioners sign the MAR.
Policy #1000.519 High Alert Medication Verification List

- Chemotherapy agents
- Peritoneal dialysis solutions with additives
- Any medication or infusion given by the epidural or intrathecal route
- Concentrated morphine solution (Roxanol®)
- PCA narcotic syringes AND PCA pump settings
- Intravenous thrombolytics/fibrinolytics (Retavase®, Alteplase®)
- Total parenteral nutrition solutions (TPN/PPN)
- Insulin products, both subcutaneous and IV
- Sodium chloride injection, hypertonic, more than 0.9% concentrate
- Neonatal pain medications
- Neonatal antibiotics
- Neonatal IV fluids with additives
- Intravenous heparin, bolus and infusion
Medication Safety: Administration

- When look alike/sound alike drugs appear next to each other in the Pxysis list of medications, the pharmacy uses a different FONT to help visually alert the nurse. The use of different fonts is called **TALL MAN LETTERING**!

- Tall Man Lettering is designed to help prevent mistaking look alike/sound alike medications and prevent medication errors.
Medication Safety: Administration

- Examples of Tall Man Lettering
  - DOBUTamine and DOPamine
  - niCARDipine and niFEDipine
  - predniSONE and prednisoLONE
Medication Safety: Patient Education

- Patient Education
  - Purpose of medication
  - Potential side effects of medication
  - Necessity of providing complete, accurate information about other medications being taken (ideal to keep list)
  - Patient’s role in taking medication
Monitoring Medication Errors

• Non-punitive reporting of medication errors, near misses, and adverse drug reactions is key to a culture of safety.
• Medication errors are reviewed by Pharmacy and Therapeutics Committee.
• Focus must be on changes that will improve systems and processes.
Surgery/Procedure Errors

- Two major studies showed half of the adverse events occurring in hospitalized patients were related to surgery.
- Wrong-site surgery accounts for approximately 12.3% of the sentinel events reported to TJC.
Surgery/Procedure Errors

• TJC requires attention to improving the accuracy of patient identification and eliminating wrong-site, wrong-patient, wrong-procedure surgery.
• Includes:
  • Creating and using a pre-operative verification process, such as a checklist, to confirm that appropriate documents (medical records, imaging studies, etc.) are available
  • Implementing a process to mark the surgical site and involving the patient in the marking process
  • Conducting final verification process such as a “time out” prior to the start of any surgical or invasive procedure to confirm the correct patient, procedure and site, using active and not passive communication techniques
Surgery/Procedure Errors

- FHMMC actions to promote patient safety during surgery or invasive procedures:
  - The surgical site is labeled by the surgeon in collaboration with the patient with indelible marker as “YES.”
  - A time-out is required prior to invasive procedures or surgery to verify correct patient, procedure and site – including procedures performed at bedside.
- Pre-procedural checklists are used.
- Side/Site Verification documented prior to procedures.
Medical Errors Span All Disciplines and Departments

• All disciplines and departments are at risk for involvement in medical errors including:
  • Diagnostic errors
  • Therapeutic errors

• All disciplines/departments must examine their own processes and implement patient safety measures.
Nursing

- Medication administration
- Patient monitoring
- Treatment
- Use of equipment
- Blood transfusions
- Falls prevention
- Restraint use
- Surgery or procedure preparation
Laboratory

- Venipuncture
  - Vessel damage/bleeding
  - Wrong site – such as arm with shunt

- Specimens
  - Mislabeled
  - Contamination
  - Improper preparation
Laboratory

- Performing tests
  - Incorrect interpretation of results
  - Equipment calibration and control problems
- Reporting results
  - Incorrect results reported
  - Results reported on wrong patient
  - Delay in reporting
Laboratory

- TJC National Patient Safety Goals for 2004-2010 require that organizations improve the effectiveness of communication among caregivers including implementing a process for taking verbal or telephone critical test results that require a verification “read-back” of the test result by the person receiving the test result.
Respiratory Therapy

- Medication errors
  - Mixing medications
  - Missed treatments
  - Patient education
  - Medical gas errors of connection and/or administration
Respiratory Therapy

- CPR
  - Intubation of esophagus
  - Esophageal trauma
  - Damage to mouth/teeth
- Ventilator management
  - Volume
  - Pressure
  - Rate
  - Alarms
  - Equipment management
Physical Therapy/ Occupational Therapy

- Assistive devices
  - Improper use
  - Potential for falls
- Splints/orthotic devices
  - Potential for skin problems
- Heat/cold application
  - Potential for skin irritation/burns
Radiology

- Monitoring during procedures
  - Allergies/reactions to contrast media
  - Moderate sedation
  - Falls
  - Inadequate shielding
  - Wrong side exam

- MRI
  - Protection from metal objects
Pharmacy

- Storing medications
- Dispensing medications
- Food/drug interaction monitoring
- Drug/drug interaction monitoring
- High risk drug and lab monitoring
Nutritional Services

- Food temperatures
  - Potential for burns
- Nutritional supplements
  - Calculations of caloric needs/TPN
  - Enteral feedings
  - Missed snacks
Social Services

• Patient discharge
  • Patient education
  • Appointments
  • Access to accurate information
  • Ordering proper equipment and/or services for discharge
• Assistance with medications
Social Services

- Unpredictable patient/family
  - Lack of follow-up care
  - Incorrect use of equipment
  - Incorrect administration of meds
- Domestic violence
Patient Safety: Falls and Restraints

- According to TJC
  - 5% sentinel events related to patient falls.
  - 4% sentinel events related to patient death or injury in restraints.

- Risk of falls highest during first week of hospital stay.
2006 -2010 National Patient Safety Goals require that hospitals reduce the risk of patient harm resulting from falls.

- Requires that hospital have a fall reduction program and evaluate the effectiveness of the program.
- FHMMC is compliant with this goal.
Patient Safety: Causes of Falls

- Environmental
  - Clutter
  - Wet floors
  - Rugs
  - Inadequate lighting

- Physiological
  - Vertigo
  - CNS impairment
  - Muscle weakness
  - Visual disturbances
  - Medications
Patient Safety: Causes of Falls

- Communication issues
  - Non-compliance
  - Incomplete history
  - Failure to identify patient as high risk for falls
- Transportation issues
Patient Safety: Prevention of Falls

- Assess patient risk of falling
  - FHMMC has an assessment tool (Modified Morse Scale) for high risk for falls as part of admission assessment for all patients.
Patient Safety: Prevention of Falls

- Provide safe environment
  - Adequate lighting.
  - Use locks on bed, stretcher and wheelchair wheels.
  - Keep call bell and other objects within patient’s reach.
  - Remove physical hazards/clutter.
  - Keep bed at lowest level.
Patient Safety: Prevention of Falls

• Provide adequate assistance when helping patient on/off procedure table.

• Secure patient during procedures as indicated.
Patient Safety: Prevention of Falls

- Patient/family education
  - Provide information on safety concerns and risks.
    - “Prevent a Fall Tip Card” given to patients on admission to FHMMC.
  - Rise slowly to prevent dizziness.
  - Wear non-skid footwear provided to all patients on admission.
Observation

- Promptly respond to call lights.
- Check high risk patients at regular intervals.
- Three P’s hourly
  - Potty
  - Pain
  - Position
FHMMC High Risk for Falls Protocol

- **Level I interventions:**
  - Bed in low position and locked.
  - Top bed rails up and secured in position.
  - Call bell, telephone, frequently used items within reach.
  - Patient instructed to call for assistance when getting out of bed or chair or going to bathroom.
  - Offer toileting opportunities every 1-2 hours while patient awake and prior to transport.
  - Assess need for utilization of Bed-Check.
  - Non-skid footwear when out of bed.
Level II interventions:

- All interventions for Level I
- Assess need for additional safety measures.
- Encourage family to sit with patient.
- Communicate Level II status to accepting department/unit upon patient transport or transfer.
Patient Safety: Restraints

• Myth:
  • Restraints prevent falls.

• Facts:
  • 47% elderly patients die while in restraints.
  • Serious injuries from falls occur more frequently with restraints.
  • Restraints have never been proven to reduce falls.
Patient Safety: Restraints

• Myth:
  • Physical restraints prevent interference with treatment.

• Fact:
  • 68%-82% of patients who self-extubated did so despite restraints.
Patient Safety: Restraints

• **Myth:**
  • Restraints control disruptive behavior.

• **Fact:**
  • Restraint use often increases agitation.
Patient Safety: Restraints

- Dangers of restraint use include:
  - Complications of immobility such as skin breakdown, constipation
  - Psychological effects such as increased agitation, depression
  - Death from strangulation
Patient Safety: Restraints

- TJC requirements:
  - Health care providers must minimize use of restraints.
  - Restraints may only be used *after* other interventions have been unsuccessful.
  - Restraint devices must be removed as soon as possible.
  - Patients must be monitored closely while restrained.
Patient Safety: Restraints

- FHMMC policy
  - Alternatives to restraint must be attempted and documented. Least restrictive restraint is to be used.
  - Bed alarms are available for use.
  - Assessment of patients in restraints is required every 2 hours.
  - Patients in restraints must be offered food, fluid, toileting, and range of motion at least every two hours.
  - Patients in restraints must be assessed by a physician and restraint order renewed every calendar day. No PRN orders for restraints are allowed.
  - Restraints must be removed as soon as behavior necessitating use is resolved.
Patient Safety: Bed Rails and Entrapment

- Bed rails have been considered standard devices to protect patients.
- Bed rails have been shown to increase the risk of falls and entrapment.
- Elderly people may try to climb over bed rails as a perceived obstacle increasing the risk of injury.
- Appropriate use may be considered part of Falls Prevention Program.
Patient Safety: Bed Rails and Entrapment

  - Between 1985 and 1999, 371 incidents of patients caught, trapped, entangled or strangled in beds with rails reported to FDA.
  - 228 deaths
  - 87 non-fatal injuries
  - 56 without injury
FDA recommendations for Bed Rail use

- Lower one or more sections of bed rail, such as foot rail.
- Use proper size mattress to prevent patients from being trapped between the mattress and rail.
- Reduce the gaps between the mattress and side rails.
Patient Safety: Bed Rails and Entrapment

- Patients at risk for bed rail related accidents:
  - Mentally or behaviorally impaired
  - High risk for falls
  - Psychoactive or sedative medications
  - Size and/or weight too small for the bed size
Patient Safety: Bed Rails and Entrapment

• Preventative measures
  • Assess patients for risk of entrapment.
  • Observe at-risk patients often.
  • Consider the following for at-risk patients
    • Unplug bed to prevent patient from raising head or foot.
    • Pad bed rails.
    • Transfer patient to safer bed.
    • Move patient closer to nurses’ station.
  • Report gaps of 5 inches or more between edge of mattress and bed rail to your supervisor as soon as possible.
Patient Safety: Bed Rails and Entrapment

- FHMMC actions for bed safety:
  - Environmental Services monitors beds to ensure correct size mattress to minimize gaps.
Patient Safety: Hand Hygiene

- CDC produces guidelines for hand hygiene.
- Improved adherence to hand hygiene has been shown to:
  - Terminate outbreaks in healthcare facilities.
  - Reduce transmission of antibiotic resistant organisms.
  - Reduce overall infection rate.
Patient Safety: Hand Hygiene

- 2006-2010 National Patient Safety Goals require that hospitals comply with current Center for Disease Control and Prevention hand hygiene guidelines.
Patient Safety: Hand Hygiene

• Guidelines
  • When hands are visibly soiled, they should be washed with soap and water.
  • Alcohol-based hand rubs should be used before and after patient contact.
  • Use of gloves does not eliminate need for hand hygiene.
Patient Safety: Hand Hygiene

- Alcohol-based hand rubs
  - Save time
  - Reduce number of microorganisms on skin
  - Fast acting
  - Cause less skin irritation
- Proper use of alcohol-based hand rubs
  - Apply recommended amount (varies by product) to palm of one hand and rub hands together, covering all surfaces of hands and fingers, until hands are dry.
Role of Risk Management

- Assist institutions in designing systems to prevent and control adverse effects
- Concerned with prevention of patient injury and loss prevention
Role of Risk Management

- Identification of potential system errors
- Historically, has collected data from incident reports and lawsuits
- Analyze adverse events to determine cause of medical errors and recommend process changes
Sentinel Event Reporting

- **Sentinel event** reporting system initiated by The Joint Commission (TJC) in 1996.
- Voluntary reporting was implemented.
- Sentinel events must have root cause analysis to identify cause and make change in systems.
- TJC also evaluates Performance Improvement (PI) that are in place to reduce risk of sentinel events.
- TJC publishes *Sentinel Event Alerts* to promote awareness, identify specific events, describe common causes, and suggest methods of prevention.
External Reporting

- Florida Statute 395.0197 states hospitals have affirmative duty to report any adverse event or untoward incident over which the healthcare provider had control.
- These events require Code 15 report to the Agency for Health Care Administration (AHCA) within 15 days of occurrence.
Code 15 Incident

- An incident that results in:
  - Death, brain or spinal damage to a patient
  - Surgical procedure on the wrong patient or wrong surgical procedure
  - Unnecessary surgical procedure not related to the patient’s diagnosis or medical condition
  - Repair of damage from a planned surgical procedure where the damage is not a recognized specific risk disclosed to the patient and documented in the informed consent process
  - The performance of procedures to remove unplanned foreign objects remaining from a surgical procedure
AHCA requires that incident reports are received in the Risk Management Department within 3 business days of the incident.

FHMMC incidents are reported online through RiskMaster which immediately sends report to Risk Management.
Internal Reporting

• A [Code 15 Incident](#) or [Sentinel Event](#) must be telephoned to Risk Management immediately!
Goal of Reporting

- Analyze the information gathered.
- Identify ways to prevent future errors from occurring.
Goal of Reporting

“One thing is clear - errors that are not reported stand a greater chance of being repeated by others.”

- David Marx, JD

-Patient Safety and the “Just Culture”
Barriers to Reporting

- Lack of time
- Fear of disciplinary action
- Forgetting to complete incident report
- Unclear reporting protocols
American Medical Association (AMA) and National Patient Safety Foundation (NPSF) support disclosure of medical errors/injuries to patients and families. AMA ethically obligates physicians to openly and honestly inform patients. Patient/family should be provided information by the physician about how error occurred, remedies provided, and expected effects of error.
Public Education

- Public education is crucial to promote patient participation in hospital patient safety programs.
Public Education

- *Five Steps to Safer Health Care*
  - Fact sheet for consumers
  - Tells what consumer can do to “get safer health care”
  - Developed by U.S. Department of Health and Human Services in partnership with the American Hospital Association (AHA) and American Medical Association (AMA)
Five Steps to Safer Health Care

- Step 1: Ask questions if you have doubts or concerns.
  - Make sure you understand the answers.
  - Choose doctor you feel comfortable talking to.
  - Take friend or relative with you to help you.
Five Steps to Safer Health Care

• Step 2: Keep and bring a list of ALL the medicines you take.
  • Give to doctor and pharmacist.
  • Include non-prescription medications and supplements.
  • Tell them about any drug allergies.
  • Ask about side effects and what to avoid.
  • Ask about your medication if it looks different than you expected.
Five Steps to Safer Health Care

• Step 3: Get the results of any test or procedure.
  • Ask when you will get the results.
  • Don’t assume results are fine if you do not get them when expected.
  • Call your doctor and ask for your results.
  • Ask what the results mean for your care.
Five Steps to Safer Health Care

- **Step 4:** Talk to your doctor about which hospital is best for your health needs.
  - Which hospital has best care and results for your condition?
  - Be sure you understand instructions for follow-up care when you leave the hospital.
Five Steps to Safer Health Care

- **Step 5:** Make sure you understand what will happen if you need surgery.
  - Make sure you, your doctor, and your surgeon all agree what will be done during operation.
  - Ask your doctor who will manage your care while in the hospital.
  - Ask surgeon how long surgery will take, what will happen after surgery and how you can expect to feel during recovery.
Patient/Family Education

- Including patient and family as part of health care team can improve both safety and outcomes.
- Teach patient and family to observe, question, and assist in the proper manner to promote safe, effective care.
Patient/Family Education

- Key aspects of education
  - Encourage active involvement of patient/family.
  - Inform patient/family of all information.
  - Encourage patient to ask questions.
  - Involve patient in treatment plan.
  - Provide written information when possible.
  - Make patient/family knowledgeable.
  - Teach patient to follow instructions.
Patient/Family Education

• FHMMC provides safety information to patients and families.
  • Speak Up Brochure
  • Prevent a Fall Tip Card
Legislation

- Patient Safety and Quality Improvement Act of 2005
  - Establishment of federal database to collect and study information on medical errors.
  - Clinicians will be able to submit anonymous reports to patient safety organizations in each state.
  - These organizations will analyze errors and make recommendations to reduce errors and save lives.
Future

- Advances likely in next 5 years:
  - Electronic medical records
  - Wide diffusion of proven and safe practices
  - Increased training on teamwork and safety
  - Full disclosure to patients following injury
Summary

Each person can improve safety by:

- **Watching:** really look at situations and potentials for errors.
- **Listening:** to patients/families/coworkers.
- **Asking:** there are no stupid questions, only preventable errors.
- **Acting:** point out your observations.
- **Reporting:** continuous reporting of not only errors but of near misses will enable organizations to conduct FMEA and RCA to improve systems.
References

- Florida Hospital Memorial Medical Center Housewide Policy Manual.
References

References

References

We hope this Computer Based Learning course has been both informative and helpful.

Feel free to review this course until you are confident about your knowledge of the material presented.

Complete the test to finish this course.