BEHAVIORAL OBJECTIVES

UPON COMPLETION OF THE READING MATERIAL, THE PRACTITIONER WILL BE ABLE TO:

1. Explain the underlying causative factors of most medical errors.
2. Cite some significant medical error statistics.
3. Explain the term “sentinel event”.
4. Describe “system failure” as pertaining to medical errors.
5. List the two most frequently occurring types of medical errors.
6. Identify some common causes of medication errors.
7. Describe some typical documentation errors.
8. Summarize the main reasons for missed treatments.
9. Explain the benefits of “Root Cause Analysis”.
10. Describe the process of “Failure Mode, Effect, and Criticality Analysis”.
11. List key components of staff education in the error reduction processes.
12. Detail basic patient safety methods which are effective in reducing errors and improving patient outcomes.
13. Identify procedures for reducing communication errors.
14. Describe techniques for reducing equipment errors.
15. List methods for reducing medication errors.
16. Identify procedures used to reduce errors relating to people/cultural factors.
17. List procedures for reducing medical errors during surgery.
18. Explain effective methods of preventing falls.
19. Detail key components of patient and family education in the process of promoting patient safety.
20. Summarize patient rights in the healthcare system.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTRODUCTION</td>
<td>6</td>
</tr>
<tr>
<td>MEDICAL ERROR STATISTICS</td>
<td>6</td>
</tr>
<tr>
<td>REPORTABLE EVENTS AND SENTINEL EVENTS</td>
<td>7</td>
</tr>
<tr>
<td>CAUSES OF MEDICAL ERRORS</td>
<td>10</td>
</tr>
<tr>
<td>PEOPLE AND CULTURAL FACTORS</td>
<td>10</td>
</tr>
<tr>
<td>COMMUNICATION ERRORS</td>
<td>13</td>
</tr>
<tr>
<td>DOCUMENTATION ERRORS</td>
<td>13</td>
</tr>
<tr>
<td>EQUIPMENT ERRORS</td>
<td>13</td>
</tr>
<tr>
<td>PATIENT ERRORS</td>
<td>14</td>
</tr>
<tr>
<td>MEDICATION ERRORS</td>
<td>14</td>
</tr>
<tr>
<td>MISSED TREATMENTS</td>
<td>14</td>
</tr>
<tr>
<td>ANALYZING CAUSES OF MEDICAL ERRORS</td>
<td>16</td>
</tr>
<tr>
<td>ROOT CAUSE ANALYSIS (RCA)</td>
<td>16</td>
</tr>
<tr>
<td>FAILURE MODE, EFFECT, CRITICALITY ANALYSIS (FMECA)</td>
<td>17</td>
</tr>
<tr>
<td>ERROR REDUCTION AND PREVENTION</td>
<td>18</td>
</tr>
<tr>
<td>COMPREHENSIVE PATIENT SAFETY PROGRAMS</td>
<td>18</td>
</tr>
<tr>
<td>STAFF EDUCATION AND TRAINING</td>
<td>19</td>
</tr>
<tr>
<td>PATIENT AND FAMILY EDUCATION</td>
<td>21</td>
</tr>
<tr>
<td>PROCEDURAL AND SURGICAL SAFETY</td>
<td>23</td>
</tr>
<tr>
<td>MEDICATION SAFETY</td>
<td>24</td>
</tr>
<tr>
<td>PREVENTING FALLS</td>
<td>25</td>
</tr>
<tr>
<td>PATIENT RIGHTS</td>
<td>26</td>
</tr>
</tbody>
</table>
INTRODUCTION

Medical error prevention and patient safety are two primary issues at the forefront of medicine. It is essential that all healthcare providers are educated and trained in identified risk factors and remedies to prevent medical errors and improve patient safety to the highest level attainable. Medical error prevention is a major issue, and media attention is increasingly focused on this problem, which increases public attention. Among physicians surveyed, the majority stated that reducing medical errors should be a national priority.¹

Collaborative alliances have emerged, including health care agencies and government agencies. The alliances have formed to research and analyze the problems, and to find solutions. Activities include identifying medical errors, suggesting corrective action initiatives, and promoting patient safety standards. A few of the many organizations involved include: The Institute of Medicine (IOM), the Joint Commission, the United States Congress, and many state hospital associations. The goals are universal: to reduce medical errors, and promote patient safety.

This course is an introduction to the common patient safety concerns that face many health care organizations. This includes an analysis of various medical errors and patient safety hazards, followed by processes designed to reduce these medical errors and improve patient safety.

MEDICAL ERROR STATISTICS

The number of medical errors continues to increase and is now cited as a major health care concern by the public, the media, and government regulatory agencies. Improving patient safety is now a top priority among these agencies.

The Institute of Medicine (IOM) acts as an advisor to the federal government to identify problematic issues related to the field of medicine. The IOM also conducts research, makes suggestions for corrective action plans and promotes the education of medical personnel. The IOM defines adverse events as injuries caused by medical management. Most adverse events are caused by medical errors, however, these medical errors are not usually a simple case of one mistake, medical errors most often result from multiple underlying causes. Finding these underlying causative factors and initiating corrective action plans to reduce or eliminate recurrence is the focus of patient safety programs.

IOM reports reveal that adverse events in hospitalized patients are the 8th leading cause of death in the United States. The number of casualties per year due to medical errors exceeds the number of casualties due to AIDS, or motor vehicle accidents. The IOM reports reveal that an average 3% of hospital admissions have adverse events, and 1% of these are due to negligence. Of these adverse events, 0.9% are fatal. The IOM estimates there is 1 preventable death for every 1000 admissions.¹

Approximately 50% of all adverse events are related to a surgical procedure. Medication errors account for 25% of all adverse events, with an estimated 7,000 patient deaths per year.
attributable to medication errors. A proactive approach to this problem includes an alliance between every healthcare institution, and every healthcare worker, along with governmental and private agencies to improve patient safety and reduce medical errors.

REPORTABLE EVENTS AND SENTINEL EVENTS

Health care organizations are required to have systems for reporting medical errors, both internally and externally. These organizations have an obligation to report any adverse event in which the health care provider had control. The adverse events are then reported, to the Agency for Health Care Administration (AHCA).²

The agency for health care administration (AHCA) classifies the following as reportable events:

- Death of a patient.
- Brain or spinal damage.
- Surgical error involving the wrong patient, wrong site, or wrong procedure.
- Surgery that was unnecessary or unwise.
- Surgery to remove foreign objects from a previous surgical procedure.
- Surgery that results in damage that is not a recognized potential risk of the procedure, and not included as a risk factor in the informed consent signed by the patient.
- Any unanticipated injury that is not consistent with the normal routine course of the illness, or pre-existing physical condition.
- Any unexpected condition requiring surgical intervention to correct or control.
- Fracture or dislocation of bones or joints.
- Any unexpected condition that extends the length of stay.
- Any unexpected condition that limits the neurological, physical or sensory function of a patient, and will continue after discharge.
- Permanent disfigurement.
- Any condition that requires transfer of a patient to a facility that delivers a higher level of care.

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The “sentinel event” reporting system was developed by The Joint Commission in 1996. A sentinel event includes unexpected occurrence involving death, serious physical or psychological injury, or the risk of a serious adverse outcome, unrelated to the natural course of the patient’s illness or underlying condition. Sentinel events also include major damage, or permanent loss of a bodily function, such as: Sensory, motor, psychological or intellectual impairment. These events can be very serious, life-altering, or deadly, and must be prevented.

The adverse events are called “sentinel” because they signal a need for an immediate investigation and response. Reporting these adverse events to The Joint Commission is an important factor in identifying serious medical errors, risk factors, and patient safety hazards. Root Cause Analysis (explained later) follows all sentinel events, which assists in identifying the processes that failed, and errors that lead to and caused the sentinel event. The “Sentinel Events Alert” is a regularly published newsletter, which is distributed to health care organizations, to raise awareness of the issues, identify high-risk procedures, and describe methods for prevention of medical errors.

The Joint Commission classifies the following as “Reportable Sentinel Events”:

Types of Sentinel Events, and the occurrence ratio: 15

- Surgical error: Wrong-site or wrong patient surgery  13.2%
- Suicide  12.4%
- Operative/post-operative complication  11.2%
- Medication error  8.7%
- Delay in treatment  7.8%
- Patient fall  6.1%
- Assault/rape/homicide  3.9%
- Unintended retention of foreign body  3.8%
- Patient death/injury in restraints  3.4%
- Perinatal death/loss of function  3.1%
- Blood Transfusion error resulting in loss of a function or death  2.3%
- Infection-related event  2.0%
Medical Error Prevention and Patient Safety

- Medical equipment-related event 1.9%
- Patient elopement 1.5%
- Anesthesia-related event 1.5%
- Fire 1.5%
- Maternal death 1.3%
- Ventilator death/injury 1.0%
- Infant Abduction 0.6%
- Infant discharged to wrong family 0.1%

Sentinel events: Reported by The Joint Commission, as of 12-31-2008.

The AHCA requires a system of reporting incidents in a confidential and timely manner. Incident reports should be completed and sent to the Risk Management department within three business days of the incident occurring. Incidents are described as any occurrence that is not anticipated, and has the potential to cause injury, or has already caused injury. Incident reporting includes actual errors, and “near misses” (those incidents that were caught before reaching and harming the patient). The incident reports identify problem areas and trends. Analyzing this data helps in formulating new processes and changes, which reduce or eliminate errors and promote patient safety.

The American Medical Association (AMA), the ASHRM (American Society for Healthcare Risk Management), The National Patient Safety Foundation (NPSF), and other organizations have made statements of principles in ethics, and the disclosure of medical errors and injuries. These principles state that the patient and their family are entitled to a truthful, compassionate and prompt explanation of any adverse incident. This includes an explanation of how the incident occurred, intervention to remedy the problem, and possible short-term and long-term consequences of the error.

The staff must be educated on the proper procedures for completing incident reports in an accurate and timely manner. Some barriers to reporting and disclosure have been identified, including:

- Fear of punishment
- Embarrassment over the error
- Lack of time
MEDICAL ERROR PREVENTION AND PATIENT SAFETY

- Lack of quality incident reporting protocols
- Poor record of follow-up and improvement
- Forgetting to complete the incident report.

Each barrier must be addressed and protocols set in place to assure incident reports are completed as required. Education in medical error reduction and patient safety processes can help achieve many goals, and overcome some reporting obstacles. The knowledge that errors are most often related to multi-causal and complex factors, and not the result of one single person’s errors, helps to promote a culture of reporting among the staff, instead of embarrassment, and fear of blame and punishment.

CAUSES OF MEDICAL ERRORS

Most medical errors are caused by multiple factors, and not attributable to one single person’s error. Studies indicate that only 1% of medical errors are caused by incompetence, neglect, carelessness, or misconduct. The other 99% are good and competent people, sincerely attempting to perform a good job, but are caught up in system process failures.

Medical errors are also referred to as system process “failures”, since most errors are attributable to a breakdown in the processes involved in delivering safe patient care. Studies show that several failures must occur and “line up” for an accident or error to occur. In-depth analysis is required to discover the roots of the problem, the underlying causative factors, and system process failures. Only then, can policies be put in place, and changes made in the organization’s systems, which help prevent recurrence of the error and improve patient safety.

Many factors must be considered when attempting to analyze medical errors and establish patient safety/error reduction programs. The following sections categorize and summarize the important factors.

People and Cultural Factors

The fact is, people are human and make mistakes. However, a great deal of trust and good faith is placed in healthcare providers by the patients they serve. This trust must be deeply respected, and returned by taking extraordinary care to prevent harm while promoting good health.

Healthcare workers are bound by professional codes of conduct and have many ethical responsibilities including:

- Beneficence - Actively promoting and contributing to the health and well-being of the patient.
- Nonmaleficence – Actively participate in preventing and avoiding harm to the patient.
Every possible effort must be made to prevent harm and assure patients will be treated efficiently and effectively, with care and compassion, resulting in the best possible patient outcomes.

Human factors engineering (HFE) is a discipline involved in analyzing how people think and behave in systems. Once the reasons for the mistakes are determined, processes can be put in place to improve systems, and make patient care safer. Some primary reasons people make mistakes includes:

- **Time Constraints** - Attempting to rush while performing tasks, procedures, or giving medications. This includes the process of “tight coupling”, meaning many tasks must be performed in quick succession. Additional stress and pressure to perform quickly can cause error-prone situations. Also, an excessive workload causes people to hurry in order to complete all their tasks. Maintaining adequate staffing levels reduces the need to hurry, and reduces errors. Also, staff education and experience with a certain situation, process, or procedure, can improve proficiency and speed without degrading performance.

- **Inattention and distraction** - Especially when performing multiple tasks simultaneously. Healthcare workers must be able to concentrate on the procedure in progress, and avoid distractions. Maintaining adequate staffing levels and improving staff efficiency can help promote patient safety.

- **Fatigue and exhaustion** - People make more mistakes when they are tired. People are expected to come to work and perform their duties at peak performance levels. However, many factors influence a person’s energy levels. These problems must be addressed individually. The problem may be illness, excessive work hours, or factors outside the job.

- **Work environment issues** - Noise, poor lighting, and slippery surfaces can contribute to errors and injuries. Environmental issues need to be addressed individually in error reduction programs.

- **Human intervention** - Any process dependent on people is more prone to errors than a process that is not. High technology is a partial solution. Computers, automatic alerts, automatic reminders, automated machines, pumps, and calculators can promote error reduction and improve patient safety. However, care must be taken to assure proper information is inputted into information systems for the proper output to occur.

- **Hierarchical culture** - Certain people are assumed or designated “in charge” during certain situations. This cultural relationship can make it difficult to interject comments or questions for fear of being wrong or embarrassed. Teamwork, with respect for all involved in these situations is helpful.

- **Encountering a new situation** - or a new piece of equipment, or a new medication, which the person has never experienced, and has not had sufficient training. This can lead to the “trial and error” solution, or using past solutions, which often breeds errors. Continuing staff
education on all new equipment and procedures with competency evaluations can help reduce these types of errors.

Assuring competence is an important issue. Key strategies have been identified that increase excellence in a profession and reduce medical errors. The key strategies are:

- Improve assessment skills.
- Become credentialed at the highest level.
- Link protocols to a reduction of costs, decreased medical errors and increased quality.

The challenge of assuring continued competence is multifaceted. Ever-changing job functions and new technologies require more performance-based evidence of competence. Hands-on, practical tests in actual patient care settings, written and computerized tests, physical models, and job simulations are all tools utilized to demonstrate competence. Maintaining a high level of competency within one’s field is a lifelong challenge.

Every department and discipline in healthcare has the potential to commit medical errors. Each of these disciplines must identify high-risk procedures, and have policies in place to target and reduce error-prone situations. A team effort among all departments and disciplines is needed to reduce errors and promote patient safety. Some potential high-risk, and error-prone situations that may occur in different departments follows:

<table>
<thead>
<tr>
<th>Department</th>
<th>Potential Errors:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admitting</td>
<td>Incorrect patient name, or other incorrect information on chart or on wristband.</td>
</tr>
<tr>
<td>Patient transport</td>
<td>Patient taken to wrong room, or forgetting essential transport supplies.</td>
</tr>
<tr>
<td>Radiology</td>
<td>Inadequate shielding, or wrong side exam.</td>
</tr>
<tr>
<td>Physical therapy</td>
<td>Potential for falls while ambulating.</td>
</tr>
<tr>
<td>Nursing</td>
<td>Medication errors, and inadequate monitoring after blood transfusions.</td>
</tr>
<tr>
<td>Respiratory therapy</td>
<td>Inadequate training on new high-tech equipment, (e.g. mechanical ventilators). Medication errors.</td>
</tr>
<tr>
<td>Laboratory</td>
<td>Mislabeled specimens, reporting incorrect results.</td>
</tr>
<tr>
<td>Pharmacy</td>
<td>Improper storage of medication, delays in delivery of medication.</td>
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Communication Errors

- Lack of communication.
- Gaps in communication.
- Misinterpretation.
- Using words with more than one meaning.
- Using abbreviations that are not standard or not approved.
- Language barriers that inhibit understanding one another.
- Patients who are unable to communicate their feelings and needs, such as children, patients on ventilators, and patients with any mental or physical communication barrier.
- Cultural differences with communication gaps such as: Culturally diversified patients who are not accustomed to asking for help, not used to expressing health concerns, or those patients who are using alternative medicine and not reporting it.

Documentation Errors

- Illegible documentation, which often leads to guessing and errors.
- Documenting progress notes in the wrong chart.
- Placing progress notes or reading progress notes in the wrong chart.
- Making assessments and performing procedures based on this “wrong” information.
- Charting on patients from memory, instead of charting at the point-of-care. When this occurs after caring for multiple patients, it can result in inaccuracies.

Equipment Errors

- People not properly trained on the equipment operation and safety.
- Equipment design flaws.
- Equipment malfunctions.
Patient Errors

- Not correctly identifying the patient.
- Performing procedures on the wrong patient.
- Two or more patients with the same last name on the same wing or unit.

Medication Errors

Medication errors account for 25% of all medical errors. They rank first amid nursing errors, and second among The Joint Commission sentinel events. The National Coordinating Council for Medication Error Reporting and Prevention (NCCMERP) is an organization involved in accumulating medication error data and promoting error-prevention programs.

Medication errors can be classified in four main categories:

1. Ordering/Prescribing
2. Dispensing
3. Administering
4. Monitoring

The ordering/prescribing category accounts for approximately 40% of the medication errors. The administration category accounts for approximately 38% of the errors. Dispensing and monitoring each comprise approximately 12% of medication errors.

The most common medication errors include:

- Wrong patient, wrong medication, wrong dose, wrong time, wrong route, or wrong dosage form.
- Mistakes caused by drugs that look alike.
- Poor labeling on drugs. (e.g. Unit dose nebulizer vials containing different medications, which look almost identical. The “labels” on some nebulizers consist of raised transparent lettering on clear nebule containers, making the lettering difficult to read.)

Missed Treatments

Missed medication treatments have become a concern in this time of increased awareness of medical errors. Any missed treatment or therapy has the potential to result in harm to the patient. Missed medication treatments can cause a worsening of their present condition, or may bring on
new problems. Missed medication treatments can also attribute to other medical errors, if there is a downward spiraling of the patient’s condition. Extensive reviews of the reasons behind missed treatments and therapies continue at many facilities, and are also conducted externally. The studies are examining whether medical errors, or other reasons, are the main cause of the missed treatments, so programs can be designed to improve efficient medication delivery.

In the following example, the causes of missed respiratory therapy bronchodilator treatments are examined. This study was performed at the Cleveland Clinic Hospital for a one-year period, between August 2000 and August 2001. There were a total of 113,554 bronchodilator treatments ordered during that time period.

Total Missed Treatments: 4,012 (3.5%)

Reasons for Missed Treatments:

- Patient was not in room 31.6%
- Patient refused treatment 24.6%
- Patient not accessible 20.5%
- Clear breath sounds 11.5%
- Patient discharged 4.2%
- Patient unable to tolerate 4.0%
- Advised not to give 2.2%
- Therapist called to Emergency 1.4%

It must be noted that at the Cleveland Clinic, Respiratory Therapy Protocols are an established practice. Ideally, these protocols help to individualize appropriate therapy, and optimally allocate resources. This often results in a decreased overall treatment load by eliminating unnecessary treatments. Hospitals without established protocols sometimes have an increased incidence of missed treatments due to the task of keeping up with the greater number of treatments, sometimes compounded by staff shortages.

In the Cleveland Clinic study, there were no missed treatments that were directly attributable to medical errors. However, medical errors can be an underlying cause of missed treatments. In other studies, a very small percentage of omitted medications were attributable to medical errors, or “Other reasons”. These other reasons include: Insufficient staff, excessive workload, lack of time, orders misplaced or lost, orders overlooked, or unable to locate patient. In a separate
nursing study, procedural complexity of administering the medications was one of the main reasons medications were omitted.

These studies suggest there is room for improvement in assuring safe and efficient delivery of all prescribed medication. The clinical consequences of omitted medications are quite variable, due to the complexity of each patient’s medical condition. Procedures can be established to study the trend of clinical consequences and the reasons for omitted treatments. Then policies can be established to reduce or eliminate missed treatments and improve patient outcomes.

ANALYZING CAUSES OF MEDICAL ERRORS

All of the above factors must be analyzed when formulating processes to improve patient safety, and reduce medical errors. High-risk processes and error-prone situations must be identified and analyzed. The following are key characteristics of high-risk processes:

- Complexity - Complex processes promote errors, with each additional step being an avenue for failure. Simplicity reduces the chances for errors.

- Inconsistency - Inconsistent approaches/procedures increase errors. Standardization of processes, procedures, equipment, and tasks reduces the incidence of errors.

- Variable input - A process consisting of variable, changing, unpredictable input is prone to failure. However, in healthcare, the patients are considered the variable input. Each patient is variable with unique characteristics in personalities, tolerance levels, and complexity of their medical condition. One method of error reduction is grouping patients with similar conditions, and consistently assigning healthcare workers who are experienced in that particular area of medicine, thus eliminating a few variables.

Root Cause Analysis (RCA)

Root Cause Analysis is a model designed to analyze the causes of adverse events, and make suggestions for corrective actions to prevent recurrence in the future. This model is applicable after the adverse event. The process is also referred to as “hindsight bias”. The RCA process identifies the basic and causative factors that underlie the occurrence of the error. The steps in RCA analysis include:

- Define the problem and gather all relevant facts
- Assemble an interdisciplinary team
- List the sequence of events
- Determine contributing factors
- Identify root causes
MEDICAL ERROR PREVENTION AND PATIENT SAFETY

- Develop a corrective action plan
- Develop a follow-up plan.

Once a corrective action plan is in effect, the effectiveness is evaluated periodically. Modifications are made as necessary. Further adverse events/medical errors are continuously reported, analyzed, and new or modified corrective action plans put in place.

**Failure Mode, Effect, Criticality Analysis (FMECA)**

The FMECA (also called FMEA for Failure Mode and Effects Analysis) is the most common model used in the scientific process of medical error reduction and prevention. The Joint Commission has identified the FMEA model as an effective tool in error prevention and patient safety processes. This model is applied before an error occurs and is designed to prevent errors by examining processes to identify failure points and risks.

FMEA examines a design systematically for possible ways in which failures and errors may occur. FMEA is a proactive approach emphasizing prevention of medical errors by examining procedures before errors occur. Processes are planned and designed to prevent failure. FMEA assumes that errors can occur no matter how competent or careful people are. The steps in FMEA include:

- Identify high-risk processes. Determine what can possibly go wrong, significance of the errors, and what can be done to prevent failure.
- Assemble an interdisciplinary team of experts in the process.
- Develop a flow-chart of the current process.
- Identify potential errors at each step in the process.
- Determine the criticality of each error/failure. (The criticality is the frequency of the failure multiplied by the severity of the failure multiplied by the detectability of the failure).
- Identify the cause(s) of each failure/error, and the effects.
- Design a new process that reduces or eliminates the chance for failures/errors.
- Test the new process.
- Implement the new process.
- Perform follow-up studies on the new process to evaluate effectiveness.
Medical errors represent a complex problem with many variable factors. As previously stated, one individual’s single error is usually not the cause. The cause is most often the result of failed processes. This “system failure”, and not blame of individuals must be the focus in error reduction programs. Simply reminding medical workers to “be more careful” cannot solve the problem. The processes must be analyzed, and policies changed, in order to promote patient safety and reduce errors.

In the scientific process for medical error reduction and prevention RCA and FMECA play a key role. The goals are to implement programs that improve patient safety, and reduce or eliminate medical errors. An environment of trust must be established where error reporting is done consistently, without placing blame on the individual(s) involved. Employees must be educated on the facts regarding medical error causes. Once it is clear that most errors are multi-causal, error reporting can occur more readily without fear or embarrassment.

The front line healthcare worker, with direct patient contact, is the last line of defense against an error. They can contribute to patient safety by being cautious, alert and proactive in the process of identifying and reporting errors before they reach the patient. The processes that failed must be explored, along with an analysis of surrounding and contributing factors. The necessary changes can then be implemented. By designing and implementing programs that identify risks, analyze errors, and promote the positive language of “patient safety first”, the language and attitudes are changed from blame to system failure. Through these changes, the staff is empowered to report system failures. In conjunction with the management, risk manager, and legal counsel, patient safety programs can be implemented and reduce the risk of adverse incidents occurring in the future.

Not every error harms the patient. There are “near miss” situations, where the error is caught before harm occurs to the patient. Also, minor errors such as administering two ibuprofen instead of the prescribed one ibuprofen, will not likely harm the patient, but must still be reported. Human error, no matter how minor, must be explored for the cause and remedied to uphold the highest level of patient safety. There are many medical errors that do result in harm to the patient, and must be prevented, with a proactive plan to implement changes and prevent a repeat occurrence. Every employee must do their part in performing their duties accurately, and do their part in creating changes that improve patient safety, and improve patient outcomes.

Comprehensive Patient Safety Programs

Comprehensive patient safety programs include all factors identified which can contribute to medical errors, and processes for reducing or eliminating these errors. Major components include staff training and education, people/cultural factors, structural factors, and work environment factors.
Staff Education and Training

- This is a major component. Comprehensive training, education, and competency check-offs for employees is necessary. Also, continuous training in specialty areas, in new procedures, new medications, and new equipment, along with, policies and procedures for promoting patient safety and error reduction methods. Provide good leadership, and personnel management. Support a proactive approach to patient safety and error reduction, and a culture of reporting. Promote teamwork, open communication channels, and feedback.

- People/cultural factors: Attitude, motivation, physical and emotional health of employees, and proper staffing. Adjust work schedules if factors are identified in the schedule, which promote errors. Assess patients for special needs, and identify the emotional and psychological needs of different age groups, and different cultures. Special patient populations may require additional safety considerations.

- Structural factors: Standardize policies, procedures, equipment, medication, and supplies. Simplify processes. Whenever possible, reduce the number of steps in procedures.


The IOM is an advisor to the Federal Government, and is a key player in establishing, recommending, and promoting policies that reduced errors and promote patient safety. The following are some of the major initiatives recommended in the IOM report:

- Establish a Center for Patient Safety within the Agency for Healthcare Research and Quality. This Center will establish national goals for patient safety, track progress, and issue an annual report to the President and Congress on patient safety. Also develop a research agenda, identify and evaluate errors, and promote training and education in medical error reduction methods.

- Establish a nationwide mandatory reporting system that provides for the collection of all data concerning adverse events by state governments. All healthcare organizations should report standardized information based on a clearly defined list of adverse events. The Center for Patient Safety or its designees will accumulate and research the data, while tracking trends, and identify problematic high-risk and error-prone situations. New standards of patient care and new polices will be put in place to reduce or eliminate future occurrences of the adverse incidents.

- Professional healthcare societies should develop guidelines that promote a proactive approach to patient safety and error reduction, along with their professional and ethical behavior codes of conduct.
• Integrate a curriculum on patient safety and error reduction into policies and procedures, with periodic reviews to assure the knowledge is retained. Education on patient safety and error reduction techniques should be mandatory whenever initiating new equipment, medications, therapies, or procedures.

• The Food and Drug Administration should increase education in the safe use of drugs. The public should have access to easily understandable information about drugs prescribed to them. This can include a consultation with a healthcare provider, visual demonstration, drug information pamphlets, and/or videos. Standards should be established and enforced which require product design and labeling which is clearly readable, and maximizes the safe use of the drugs.

• Congressional and Presidential involvement in medical error reduction should be increasingly proactive in promoting new safety standards. Our government has identified six key dimensions of healthcare with focuses for improvement. These are:

  1. Safe healthcare. Avoid injuries to patients in a healthcare system designed to help them.
  2. Patient centered care. Respectful and responsive to individual patients needs, preferences, and values. Treat all patients equally, and avoid discrimination based on age, sex, race, religion, or socioeconomic status.
  3. Efficient healthcare. Optimize efficiency in all areas, and avoid waste of resources, equipment, and supplies. Ensure staff proficiency in their area of expertise.
  4. Effective care. Providing healthcare services based on proven scientific knowledge to all patients who can benefit, and refrain from providing services to those not likely to benefit.
  5. Timely. Optimize use of time to provide quality care, and avoid delays that may cause harm to the patient. Educate the staff on time-management techniques.

All of The Joint Commission accredited health care organizations must now meet new standards, which promote patient safety and reduce medical errors. All of The Joint Commission accredited health care organizations are surveyed for implementation of the following recommendations (or acceptable alternatives), as appropriate to the services provided by the organization. Alternatives must be at least as effective as the following recommendations in achieving the goals.

1. **Improve the accuracy of patient identification.**

   a. Use at least two types of patient identification (except do not use the patient’s room number) whenever taking blood samples, or administering medications or blood products.
b. Before starting any surgical or invasive procedure, conduct a final verification process, such as a “time out,” to confirm the correct patient, procedure and site. Use active (not passive) communication techniques.

2. **Improve the effectiveness of communication among caregivers.**
   
a. Implement a process for taking verbal or telephone orders that require a verification “read-back” of the entire order by the person receiving the order.

b. Standardize the abbreviations, acronyms and symbols utilized by the organization.

3. **Improve the safety of using high-alert medications.**
   
a. Remove concentrated electrolytes (including, but not limited to: potassium phosphate, potassium chloride, and sodium chloride >0.9%) from patient care units.

b. Limit and standardize the number of drug concentrations available in the organization.

4. **Eliminate wrong-site, wrong-patient, wrong-procedure surgery.**
   
a. Implement a preoperative verification process, such as a checklist, to confirm that appropriate documents (e.g., medical records, x-rays, lab values) are available.

b. Implement a procedure to mark the surgical site and involve the patient in the marking process.

5. **Improve the safety of utilizing infusion pumps.**
   
a. Ensure free-flow protection on all general-use and PCA (patient controlled analgesia) intravenous infusion pumps.

6. **Improve the effectiveness of clinical alarm systems.**
   
a. Implement regular scheduled preventive maintenance and testing of all alarm systems.

b. Assure that alarms are activated appropriately by using proper parameters, and assure alarms are sufficiently audible with respect to distances and competing noises.

**Patient and Family Education**

Including the patient and family in the healthcare plans and goals through open communication and education, can aid in improving patient safety and patient outcomes. The patient and family
must understand the importance of providing all pertinent information on the patients’ condition(s), allergies, all medications and/or herbs currently using, and personal preferences, in order to effectively treat the patient. Family members and patients who are aware of the treatment plans and medication will be more aware of inconsistencies. They should feel comfortable in asking questions on anything they feel is unclear or problematic.

Educational techniques that promote patient safety include:

- Provide the patient and family with oral information, written information, and/or videos with comprehensive education on the illness and treatment plans, procedures, and medications.

- Inform the patient/family to provide complete information regarding the patient’s allergies, medications, herbs, symptoms, changes in subjective symptoms, treatment tolerance, cultural differences, special needs, and personal preferences.

- Promote a team effort with active participation of the patient and family in the treatment plans and goals. Most people feel comfortable with a ‘help us help you’ approach.

- Encourage the patient and family to discuss with their healthcare provider anything they find unclear or questionable.

Patients expect to be treated for their illness with accuracy, efficiency, and effectiveness. Patients and families also expect quality health care, safe from accidental injury. The patient and family can be assured that the healthcare system will do everything in its power to meet those expectations, and every effort will be made to avoid adverse events.

There are many situations where the patient must acknowledge certain side effects that may not be desirable, while the reasons for the drug or therapy are to promote good health. For instance, radiation therapy used to treat the cancer patient will probably have many negative side-effects, but the overall goal of the therapy is good. Patients taking nebulizer treatments may experience adverse effects, such as nervousness or nausea, but the goal of therapy is good. The goals include bronchodilation, improvement of respiratory status, and easier breathing for the patient.

If negative side-effects of any therapy or medication occur, an assessment must be performed. A team approach with the patient, caregiver, clinician, and doctor, is necessary to evaluate the situation for appropriateness and tolerability of the therapy. At times, a lower dosage, or a different medication in the same class of drugs may aid in reducing or eliminating adverse side effects. At other times, the negative side effects are a known factor, and patient tolerance is an issue to be addressed by all concerned. The best interests of the patient and the patient’s wishes are evaluated to achieve the best outcome.

The goal of therapies and medications are to promote good health in the best interest of the patient. Goals are to improve the patient’s condition, and sometimes, to help maintain a certain level of health, without further decline in health.
Prior to certain procedures and surgery, the patient must sign a consent form to the procedure acknowledging the hazards and the possibility of a negative outcome based on previous statistics of the procedure. These are examples where the patient is forewarned of the possible negative effects, and adverse reactions, but still accepts the treatment, knowing the intent is good. In these situations, the intent of the healthcare workers are good, and any adverse effects are unintentional, but usually not a result of medical errors.

Procedural and Surgical Safety

Procedural errors include the many potential errors the patient may encounter while navigating through the health care system. Every procedure performed can be evaluated for potential failure points, and policies established to reduce or eliminate these errors.

An estimated 50% of all medical errors are related to surgical errors. This makes surgery a high-risk area for medical errors, and special attention must be given to surgical patients to improve their safety. Error reduction policies for surgical patients include:

- For every procedure performed on the patient, the staff should be highly competent on performing the procedure, and highly competent on any equipment used during the procedure. Staff education and experience are key factors in reducing errors.
- For surgery, a comprehensive patient safety program must be in place with emphasis placed on assurance of the following: The correct patient, the correct surgical site, and the correct surgical procedure. These three important factors must be verified several times prior to the surgical procedure to prevent extremely serious or deadly consequences. Extraordinary care must be taken before, during, and after surgical procedures to promote patient safety, and eliminate errors that cause tragic events.
- A surgical consent must be signed by the patient and placed in the chart.
- The patient’s chart must be immediately on hand for emergency reference during surgery.
- The surgical staff must be well informed on the patients’ diagnosis, medical condition, medications, allergies, and all other pertinent patient information.
- The correct surgical site and procedure must be clearly documented. The surgical site can be clearly marked with either a “YES” on the correct side, or a “NO” on the incorrect side. Using an “X” is misleading, since one may assume “X” marks the spot for surgery, while another assumes “X” means not on this side.
- A verbal consensus should occur between all members of the surgical team prior to the procedure. The correct surgical site should be re-verified prior to surgery, with documentation in the patient’s chart.
Medication Safety

- Always verify the Right patient, Right drug, Right dose, Right time, Right route, Right dosage form, and Right education.

- Ensure safe ordering/prescribing by having all essential information and drug references on hand. Be sure orders are legible, clear and concise. Verbal order should always be repeated for verification. Verbal orders should not be taken for chemotherapy. Check for drug interactions. “Know your drugs”. With the constant addition of new drugs, staff education is essential so the healthcare worker understands exactly what kind of drug it is, the indications, contraindications, and possible adverse reactions before administering any drug. Identify high-risk drugs and have procedures in place to reduce or eliminate errors. Avoid potentially confusing orders such as “resume previous medications”. Use leading zeros before a decimal point (e.g. 0.5 mg) and do not use trailing zeros (e.g. 5.0 mg). A drug handbook and/or computerized drug information database should be immediately available.

- Computerized ordering processes can help reduce errors by eliminating illegible handwriting, providing automated reminders, and instant identification of hazardous drug interactions.

- The pharmacy staff that dispenses the drugs should have on hand all relevant patient information. Allergies and drug interactions should be identified. Any errors in prescribing/ordering should be identified and corrected using established procedures.

- The staff administering the drug is the last line of defense against errors. Here again, comprehensive staff education on every drug administered is a key defense against errors. If the staff member is unfamiliar with a drug, or has any questions about the drug, these should be clarified prior to administration. Confirm all the “Rights” before administering a drug. If the drug is administered through any type of device such as a nebulizer, AeroEclipse®, EzPAP®, automated pump, or any other device, the staff must be competent on safe and proper use of the equipment.

- Replace look-alike drugs and poorly labeled drugs whenever possible.

- Identify patient populations with special needs such as dosage adjustments or additional monitoring. Infants, children, the elderly, and those with renal or liver impairment, may need a reduced dosage. Patients with immune system impairment may also need dosage adjustments. Patients with multiple illnesses may be taking numerous medications, and need additional monitoring for adverse reactions, and drug interaction problems.

- Monitoring protocols should be in place for reporting medication errors, near misses, and adverse drug reactions. Committees can then evaluate the data and implement necessary modifications to the process of safe medication delivery.
Preventing Falls

Falls are a major cause of injury and death among the elderly population. All caregivers must assist in preventing patient falls. Falls can be caused by many physiological problems including medical problems, mental problems, confusion, CNS impairment, vertigo, pain, and muscular weakness. Falls can also result from environmental factors including bed position, bed rail position, wet floors, and clutter in the room. Communication issues have also been identified as a cause including: Incomplete patient history, lack of identifying a patient at risk for falls, and lack of communication to other staff members that the patient is at high risk for falls. Patient non-compliance with safety procedures is also an issue.

Prevention is emphasized for patients at risk for falls. Prevention includes:

- Establish standardized “Fall Prevention” policies.
- Identify the patients at risk for falls.
- Provide education on falls prevention for the patient, family, and staff.
- Place appropriate signs and/or use other communication methods to notify all interdisciplinary staff with patient contact of the hazard for falls.
- Resolve any environmental issues. Keep the floors clean and dry. Correct any flaws in carpeting. Reduce clutter. Provide adequate lighting, a locking bed, and locking wheelchair wheels. Use bed siderails appropriately. Ensure the call bell, telephone, water, and other objects are within patient reach.
- Monitor the patient continuously.
- Restraints are sometimes used as part of the overall patient safety plan, and can also help prevent falls. Restraints pose many concerns for the healthcare provider, the patient, and the family. Patients who are confused and disoriented, and may cause harm to themselves, are candidates for evaluation for use of restraints. Most institutions have policies to frequently evaluate the patient and the need for restraints. A physician order is needed to initiate use of restraints, and the order is limited to 24 hours. The patient must then be reevaluated and the order renewed for every 24-hour period. There may be instances where other methods of patient protection are utilized, such as a sitter with the patient at all times, or even a family member to sit with the patient. Families sometimes have difficulty accepting the use of restraints, even with extensive discussion on the need and reasoning for utilization of restraints. These situations must be dealt with on an individual basis.
- Report “falls” incidents following established communication channels. These incidents must then be evaluated and appropriate changes made to the policies to prevent a repeat occurrence.
PATIENT RIGHTS

The patient has the right to expect quality healthcare, and to be safe from harm while navigating through the health care system. Furthermore, they should be assured their illness will be treated in a timely manner, efficiently and effectively, with a predictable outcome. The patient has a right to know the treatment plans, and the prognosis.

The patient also has a right to be informed of errors made, corrective action, and any possible short-term or long-term adverse effects. The patient also has legal rights as pertains to medical errors. Legal rights and issues related to professional malpractice, negligence, incompetence, and misconduct are a very lengthy matter beyond the scope of this course. However, legal issues are important to understand, and all healthcare workers should educate themselves on legal matters pertaining to their profession.

CONCLUSION

Reducing medical errors and promoting the highest degree of patient safety, is one of top priority. Most medical errors are complex multi-causal problems attributable to system failures and process failures. Comprehensive medical error reduction programs must focus on multiple avenues of analysis, and initiate processes aimed at eliminating errors, promoting patient safety, and improving patient outcomes.
SUGGESTED READING AND REFERENCES:


POST TEST

DIRECTIONS: Use the FasTrax answer sheet enclosed with your order to respond to all the test questions that follow. Leave the remaining answer circles on the FasTrax answer sheet blank. Be sure to fill in circles completely using blue or black ink. The FasTrax grading system will not read pencil. If you make an error, you may use correction fluid (such as White Out) to correct it. FasTrax answer sheets are preprinted with your name and address and the course title. If you are completing more than one course, be sure to record your answers on the correct corresponding answer sheet.

RETURN TO: RCECS, P.O. Box 1930, Brockton, MA 02303-1930 or FAX TO: (508)-894-0172.

1. Which of the following best describes the underlying causative factors of most medical errors?

   a. Most are caused by negligence.
   b. Most are attributable to multiple causes and system process failures.
   c. Usually one single causative factor underlying process failures.
   d. None of the above.

2. What is the best description of a “system failure” as pertains to medical errors?

   a. System failures pertain to sentinel events only.
   b. System failures pertain to the breakdown of environmental resources in the hospital.
   c. A system failure describes the phenomenon of one person causing multiple medical errors, thus causing system breakdown.
   d. System failure describes a breakdown in the processes of delivering safe patient care, thus resulting in medical errors.

3. Which of the following are true of sentinel events?

   a. An unexpected incident involving death of a patient is the only reportable sentinel event.
   b. Sentinel events include an unexpected incident involving death, serious injury, or the risk of a serious adverse outcome.
   c. Only medication errors are classified as sentinel events.
   d. None of the above.

4. Sentinel events with the highest occurrence ratio reported by The Joint Commission include: Surgical errors, suicide, operative/post operative complications, and medication errors.

   a. True
   b. False
5. Which of the following reasons account for the majority of missed medication treatments?

   a. Patient unable to tolerate treatment.
   b. Patient refusing treatment, or patient out of the room.
   c. Excessive workload, and inadequate staffing.
   d. Staff called to away to an emergency.

6. Which of the following describes the most common causes of medication errors?

   a. Malpractice.
   b. Incompetence.
   c. Wrong patient, wrong medication, wrong time, or wrong dose.
   d. Negligence.

7. Typical documentation errors include:

   a. Illegible handwriting.
   b. Documenting progress notes in the wrong chart.
   c. Placing progress notes in the wrong chart.
   d. All of the above.

8. Which of the following areas in the healthcare system have reported the highest medical error rates?

   a. Surgical errors and medication errors
   b. Communication errors.
   c. Documentation errors.
   d. Cultural difference errors.

9. What are the benefits of Root Cause Analysis (RCA)?

   a. RCA identifies and analyzes causes of adverse events, and makes suggestions for corrective actions to prevent future occurrences.
   b. RCA is designed to identify the employees involved in the adverse event, and to assure disciplinary action.
   c. RCA describes the government involvement in the analytical phase of adverse events, with federal enforcement of corrective action.
   d. None of the above.
10. Describe the process of Failure Mode and Effects Analysis (FMEA).
   
   a. Examination of high-risk procedures after adverse incidents have occurred.
   b. Identify high-risk procedures before adverse events occur. Determine what can possibly go wrong, the significance of errors, and methods for prevention.
   c. Determine the single causative factor responsible for an adverse event, and zero in on eliminating the cause.
   d. Identify the after-effects of adverse events, and provide for staff, patient, and family counseling.

11. Which are important components for staff education in the patient safety/error reduction process?
   
   a. Empower the staff to participate in a proactive approach to patient safety and error reduction. Promote a reporting system focused on multi-causal factors and system failures instead of blame and possible embarrassment.
   b. Provide continuous training and education in patient safety/error reduction programs, new medications, new equipment, and new procedures.
   c. Encourage teamwork, open communication channels, and feedback.
   d. All of the above.

12. Which method would NOT help reduce equipment related errors?
   
   a. Provide continuous staff education in safe and effective operation of equipment.
   b. Perform regular maintenance on equipment.
   c. Purchase high-tech equipment with maximal complexity of operation.
   d. Standardize the type of equipment used.

13. Communication errors include misinterpretation, using nonstandard abbreviations, and language barriers.
   
   a. True
   b. False

14. Patient safety can be improved by addressing major issues such as:
   
   a. Structural factors
   b. People & cultural factors
   c. Environmental factors
   d. All of the above
15. Which method would NOT help reduce medication errors?

a. Computerized ordering processes with automated reminders.
b. Utilize drugs and labels that look alike.
c. Verify the right patient, right drug, right time and right dose.
d. Identify patient populations, which may need dosage modifications.

16. Identify people and cultural factors, which are important to include in patient safety/error reduction programs.

a. Proper levels of staffing to reduce tight time constraints, discourage the need to rush, and improve individualized attention to patients and details.
b. Leadership, which encourages good attitudes and motivation, and addresses factors which contribute to the physical and emotional health of employees.
c. Both a and b are important.
d. Management, which encourages tight coupling to increase productivity, and stable work schedules which are rarely adjusted.

17. Which of the following are true of including the patient and family in patient safety education programs?

a. Including the patient and family in the healthcare plans and goals through open communication and education, can aid in improving patient safety.
b. The family should not be included in the patient care plan because they become too intrusive, and ask too many questions.
c. The patient and family should provide complete information on medications, allergies, changes in symptoms, and personal preferences.
d. Both a and c are true.

18. Which factors increase the risk for patient “falls”?

a. Vertigo, muscular weakness, and utilizing restraints.
b. CNS impairment, confusion, vertigo, and a wet floor.
c. Confusion, vertigo, and family members acting as “sitters”.
d. None of the above.

19. Which of the following methods are helpful in reducing surgical errors?

a. Clearly identify the correct surgical site with a “YES”, and verifying the proper patient, surgical site, and surgical procedure several times.
b. Using an “X” on the wrong side to signify “Do not cut here”.
c. Keep the patient’s chart out of the operating room to avoid possible contamination.
d. All of the above.
20. While navigating through the healthcare system, patients have the right to expect:

a. Quality health care, safe from accidental injury. Their illness will be treated effectively and efficiently with a predictable outcome.
b. A guarantee that they will not suffer any adverse reactions from any medications or treatments.
c. They should expect the probability of medical errors and accidents due to the statistics.
d. They should expect a complete recovery, regardless of the illness.
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