Title of Course: Preventing Medical Errors & Improving Patient Safety

CE Credit: 2 Hours (0.2 CEUs)

Learning Level: Intermediate

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Abstract: This course addresses the impact of medical errors on today’s healthcare with a focus on root cause analysis, error reduction and prevention, and patient safety. It is intended to satisfy the requirements imposed by the 2001 Florida State Legislature mandating a 2-hour course relating to the prevention of medical errors as part of the licensure and renewal process for health professionals.

Learner Objectives:

1. Name at least 6 examples of medical errors from various health care arenas
2. Distinguish between human error and system failures
3. List The Joint Commission’s national patient safety goals (NPSGs)
4. Identify 10 strategies healthcare professionals can use to prevent medical errors
5. Identify 10 strategies patients can use to improve their own safety in medical care

Post-test questions are located at the end of this course document.
Preventing Medical Errors & Improving Patient Safety

Introduction

A quick scan of your local paper will likely reveal some shocking headlines:

*Woman goes to hospital to give birth and becomes quadruple amputee*

*Surgical instruments mistakenly washed in hydraulic fluid.*

*Hospital patient is given roommate’s heart medication*

*Surgeon removes patient’s wrong leg*

*Appendix mistakenly removed instead of gallbladder*

*Routine hip replacement results in death*

And, how about these sobering statistics from the National Academies’ Institute of Medicine (IOM) Report To Err Is Human: Building a Safer Health System (1999):

- Approximately 50-100,000 Americans die each year from medical errors.
- Preventable medical errors cause an additional one million injuries to Americans.
- Medical errors cause more deaths than breast cancer, AIDS or even car accidents.
- 7,000 people die from medication errors alone.
- Repeat tests, disability, and death due to error cost the US $17-38 billion each year.

Then in 2004, the HealthGrades ‘Patient Safety in American Hospitals’ study of 37 million patient records found that an average of 195,000 people in the US died due to potentially preventable, in-hospital medical errors in each of the years 2000, 2001 and 2002.

The mortality and economic impact models developed by Drs. Zhan and Miller (JAMA, 2003) were utilized in the study which supported the Institute of Medicine’s (IOM) 1999 report conclusion that medical errors caused up to 98,000 deaths annually.

The HealthGrades study found nearly double the number of deaths from medical errors reported by the IOM report with an associated cost of more than $6 billion per year. According to Dr. Samantha Collier, HealthGrades’ vice president of medical affairs, “The equivalent of 390 jumbo jets full of people are dying each year due to likely preventable, in-hospital medical errors, making this one of the leading killers in the U.S.”

How is “medical error” defined?

Merriam-Webster’s Collegiate Dictionary defines error as: “An act involving an unintentional deviation from truth or accuracy”
The Institute of Medicine (IOM) defines a medical error as: "The failure to complete a planned action as intended or the use of a wrong plan to achieve an aim".

A medical error occurs in either the planning stage or the execution stage.

**What about an adverse event?**

An adverse event is defined as "an injury caused by medical management rather than by the underlying disease or condition of the patient." Adverse events resulting from medical errors are considered preventable adverse events.

**Landmark Research and Current Studies**

Medical errors were largely unnoticed but not anymore.

The issue of medical errors is not new. Lucian Leape, M.D. and David Bates, M.D. conducted initial landmark research in the early 1990s. Their findings were supported by the Agency for Health Care Policy and Research, now the Agency for Healthcare Research and Quality (AHRQ). In 1998, the President's Advisory Commission on Consumer Protection and Quality in the Health Care Industry issued a report identifying medical errors as one of the top four challenges the United States must overcome to improve the quality of health care. Because medical errors typically affect only one person at a time, they are viewed more as isolated events that receive little public attention as compared with a train wreck or a plane crash.

But that mentality is quickly changing. In 2005, Pennsylvania became the first state to publicly report hospital infection rates and the cost of such infections. Several other states including Florida, Virginia, Missouri, and Illinois have such laws. Reporting data from 2004 hospitalizations, 11,600 patients in Pennsylvania got an infection while in the hospital leading to 1500 additional deaths and $2 billion in hospital charges. According to the Pennsylvania Health Care Cost Containment Council, the average hospital cost for a patient without an infection was about $8,000 compared to over $60,000 for the patient with one. These results have led hospitals in Pennsylvania to address ways in which to eliminate infections acquired during a hospital stay.

**Concern for the elderly**

With the baby boomers aging quickly, the soon-to-be-elderly are particularly vulnerable to medical errors partly due to the complexity of care. Drug interactions and side effects are major issues. The leading class of drugs that produce adverse reactions is cardiovascular followed by central nervous system drugs and nonsteroidal anti-inflammatory drugs (NSAIDs). Polypharmacy often results in hospital admissions for gastrointestinal bleeds, low blood sugars, and dehydration.

According to a survey reported in the Joint Commission Journal on Quality and Patient Safety (2005), 4.3 million Americans went to the doctor in 2001 for adverse drug reactions. In their findings, seven of every 500 people saw a doctor for an adverse drug reaction in one year with 74% being seen in the doctor's office, 20% in the ER and 6% in hospital outpatient departments.
Medical errors happen daily

Since 1998, medical journals have published numerous studies on errors and prevention of these errors. For example, a study in the 2002 *Archives of Internal Medicine* reviewed 36 non-accredited and the Joint Commission (Joint Commission on the Accreditation of Healthcare Organizations) accredited hospitals, as well as skilled nursing facilities in Colorado and Georgia. The study found that more than 40 potentially harmful medication errors happened daily. Giving patients drugs at the wrong time or not at all were the most common errors. These errors occurred in almost one of five doses. Researchers found the problem to be a specific issue referred to as “administering errors”, where the drug was properly ordered by the physician but the error occurred in getting the drug to the patient.

Change in prescription procedures

In past years, getting a prescription filled at your local pharmacy was also much more foolproof. You took your written prescription from your physician to your pharmacist and if he or she could read it, you were given the medication. Now the following scenario is much more likely:

Your health maintenance organization (HMO) or the prescription benefit management company (PBM) working with the HMO intercepts the physician prescription, possibly denies coverage and sends it back to the physician for change. Then the prescription could go to a central filling facility where no one knows your name or history. Due to these multiple steps, the possibility for error has greatly increased.

Illegible prescriptions are also a cause of medical errors. A number of states are passing laws termed ‘safe script’ that deal with illegible handwriting on prescriptions. Idaho, Montana, Tennessee, Washington, Maryland and Florida all have passed such laws. For example, Florida passed this statute:

**456.42 Written prescriptions for medicinal drugs.**--A written prescription for a medicinal drug issued by a health care practitioner licensed by law to prescribe such drug must be legibly printed or typed so as to be capable of being understood by the pharmacist filling the prescription; must contain the name of the prescribing practitioner, the name and strength of the drug prescribed, the quantity of the drug prescribed in both textual and numerical formats, and the directions for use of the drug; must be dated with the month written out in textual letters; and must be signed by the prescribing practitioner on the day when issued.

Cost of medical errors

A retrospective analysis of malpractice insurance claims from a New England company reported in the *Archives of Internal Medicine* (2002) looked at frequency, cost, nature, and human factor failures associated with adverse drug events (ADEs). Adverse drug events accounted for 6.3% of claims and 46% of these ADEs were fatal or life-threatening. Seventy-three percent of these events were judged preventable through practices such as error proofing and process standardization. The mean costs for defending these claims were $64,700-$74,200 while costs for preventable inpatient ADEs were much greater at a mean of $376,500.
Medical errors in schools

Even among school children, medication errors are a problem. The Journal of School Health reported that a random sample of 1,000 members from the National Association of School Nurses with 649 completing a survey indicated that on any given day about six percent of children receive medication at school. Approximately 76% of the nurses delegate the administration of these medications to unlicensed personnel, with secretaries making up 66% of the persons most likely to dispense. Forty-nine percent of the nurses reported errors in administering the medications with the most common error being a missed dose. The use of unlicensed personnel and the large number of students receiving medications were pinpointed as the contributing factors in the errors.

Medical errors in the primary care setting

A study reported in Quality and Safety in Health Care (2002) found that the errors made in primary care settings might be different from those in hospitals but no less significant. Forty-two members of the American Academy of Family Physicians (AAFP) who practice throughout the United States volunteered to be a part of this trial looking at computer and paper reporting methods.

Of the 330 error reports, eighty-six percent of the errors included “process errors” such as failures in the lab or diagnostic imaging process, miscommunication or administrative mistakes, while 14% were “knowledge and skills errors” including misdiagnosis, wrong treatment decisions and mistakes carrying out clinical tasks.

Causes, consequences of, and solutions for medical errors

The Harvard School of Public Health and the Kaiser Family Foundation conducted parallel national surveys that included 1207 members of the public and 831 practicing physicians. They survey asked about causes, solutions and consequences of medical errors. Reported in the New England Journal of Medicine (2002), the survey found some interesting results:

- 35% of physicians and 42% of the public reported medical errors in their own care or that of a family member.
- 18% of physicians and 24% of the public said these errors entailed serious consequences.
- The public (72%) cited insufficient time spent by doctors with patients as the leading cause of medical errors while the majority of doctors listed a shortage of nurses, overwork, stress and fatigue among health care workers as very possible causes.
- Even though the survey found a high rate of perceived substandard care, medical errors did not rank in the top four problems facing medicine. The top four issues included the large number of uninsured people, the influence of insurance companies, the cost of care and drugs and the cost of malpractice coverage.

The fear is real

According to a national poll conducted by the National Patient Safety Foundation, Americans have a fear of medical mistakes:
Forty-two percent of people responding were either personally affected by a medical error or have a friend or relative who was.

Thirty-two percent reported that the error had a permanent negative effect on the person’s health.

In another survey conducted by the American Society of Health-System Pharmacists, responses indicated that Americans are “very concerned” about:

- Receiving the wrong medicine (61 percent)
- Complications from a medical procedure (56 percent)

Real Life Stories

Here are several accounts of real life medical errors and potential errors. These errors occurred in Florida and were caught by patients and reported to the nurses on duty:

First Story: Improper administration of blood

A post-surgical patient had orders to receive two units of blood. The nurse with the first unit failed to set up the blood properly and had to receive instructions from the patient herself, who was also an RN at this same hospital.

Another RN then brought the second unit of blood for the infusion into the room. She checked the blood type and twice called out a different blood type than the patient’s. This same RN patient had to say, “No, that’s not my blood type. I am an O negative not O positive.”

To make matters worse, there was failure to monitor the blood infusion for adverse reactions. The patient RN had to call attention to the fact that she was feeling warm. There were vital sign changes including an increased temperature and pulse rate, potential indicators of an adverse reaction.

Second Story: Inadequate information about patient’s surgery

An RN came into the room of a post-surgical patient and requested to see the dressing on the chest incision. The nurse not only asked to see the wrong site but did not know what surgery was performed nor where the surgical site was located. This patient had a nephrectomy (surgical removal of kidney)!

Third Story: Spread of infection

An ALPN (Advanced LPN) dug in a patient’s trashcan for a discarded unused band-aid to apply to a patient’s IV infiltration site. The patient questioned what the nurse was doing and said “no” to her actions.

Fourth Story: Omission of critical patient education

In an outpatient nutrition consult for a person with newly diagnosed Type 1 diabetes, the dietitian did not provide instruction for how to manage insulin on sick days. The patient experiences food poisoning, stops
eating due to nausea and vomiting, but takes his usual dose of insulin. The patient is admitted to the hospital with dangerously low blood sugar.

Fifth Story: Lack of patient assessment and improper administration of IV

A patient (who happened to be an RN and diabetes educator) went into the hospital for surgery. After being transferred from recovery to a floor, no assessment was made of the patient’s status, incision site, or drainage of the site for two full days.

Upon arrival to the floor, the attending nurse started an IV and hung the bag. The bag did not have a name on it nor a date as to when it was hung. The patient made the nurses aware but the nurse did not address the situation.

This same IV bag was left hanging for three days even though the patient made the nurses aware after 24 hours. The patient developed an infection at the IV site causing her hand to swell to twice its normal size. The swelling remained for one month after discharge from the hospital.

Other examples of medical errors from various health care arenas include:

- Patient goes in for back surgery and contracts an infection which ends up affecting the brain resulting in a diminished quality of life.
- Incomplete patient information is obtained such as the omission of allergies and current medications
- Diagnostic error, such as misdiagnosis leading to an incorrect choice of therapy, or misinterpretation of test results
- Illegible handwriting
- Equipment failure such as an IV pump causing increased doses of medication over too short a period
- Post-surgical wound infections
- Rapidly changing technology and use of technology without training or validation of competency
- Failure to maintain competency through continuing professional education
- Misinterpretation of medical orders, such as failing to serve a diabetic patient or a renal patient the correct diet as ordered by a physician
- Prior to elective surgery, the anesthesiologist forgets to ask a patient about dietary supplement use that could affect anesthesia
- A diet order that reads 2 gm sodium is misread as a 4 gm sodium diet
- A patient with uncontrolled diabetes receives and consumes an extra starch on the dinner tray
- A cardiac rehab patient requests skim milk from his menu and receives whole milk
- A mental health therapist erroneously diagnoses a bipolar client as having Attention Deficit Hyperactivity Disorder, resulting in ineffective treatment and inappropriate medication
• A social worker fails to accurately assess a client's suicidal potential resulting in a suicide attempt and subsequent hospitalization

• During a swallowing evaluation of a former nurse a speech language pathologist offers mashed bananas before checking to see if a latex allergy exists

• A psychologist administers a battery of tests to a child, but then fails to provide a referral for treatment indicated by the test results

• A marriage and family therapist treating a couple for relationship difficulties fails to recognize that the husband is suffering from severe depression

• A mental health counselor fails to secure clinical record files resulting in a breach of patient confidentiality

• A speech language pathologist is evaluating the swallowing competency of an elderly patient after a stroke. Incomplete patient information is obtained regarding food allergies and the speech language pathologist offers a thickened milk-based beverage which produces an allergic reaction

• A physician prescribes anti-depressant and anti-anxiety meds without discussing the risk of use with alcohol or other drug interactions

• A nursing home patient enters the hospital for diabetes control and is diagnosed with dysphagia. The speech language pathologist fails to identify the large doses of the benzodiazepine (Ativan) and NSAIDS that the patient has been taking as a potential risk factor

• A therapist reveals confidential information about a patient to a family member

• An occupational therapist places a moist heat pack on a diabetic patient with sensory loss and a burn results

• An Alzheimer’s patient falls out of bed at night when bed rails are not used as ordered.

• A patient who had just recently received a hip replacement sustains injury to the hip because the therapy treatment order did not include “limited weight-bearing” activity

• An occupational therapist provides strengthening exercises to a patient with a wrist-hand fracture based on length of time post-op rather than getting the level of bone healing from the physician. The fracture site is re-injured.

• A patient is given a drink of water when the patient has orders for thickened liquids, resulting in aspiration

• The splint wear schedule for an at-risk nursing home patient is not properly documented, resulting in skin breakdown

• A patient receives whole meds when the order is for crushed
A patient receives food and/or liquids when the diet order is NPO

Who’s monitoring the situation?

Several national organizations such as the Joint Commission on Accreditation of Healthcare Organizations (The Joint Commission), the Leapfrog Group, and the President’s Advisory Commission on Consumer Protection and Quality in the Health Care Industry already monitor medical errors. You may think of medical errors occurring mainly in hospital settings. Although most of the data comes from hospitals, long-term care facilities, doctors’ offices, urgent care centers, pharmacies, home care, and community-based practitioners from every discipline face this issue.

It’s Time to Redefine the Culture

Begin with Mandatory Error Reporting

How can healthcare professionals and facilities make an impact on the problem of medical errors at the grassroots level? One of the most controversial recommendations by the IOM was to require mandatory error reporting. Many experts suggest that reducing medical errors is difficult unless the scope and severity of the errors is known. But mandatory reporting is frightening to many because the present system in the United States identifies and takes action against the person committing the error. Action may include anything from a reprimand to training, disciplinary action by a state licensing board, suspension or firing from work, and even litigation from a malpractice suit. These consequences encourage people to under report or hide and not report errors at all.

In addition, the media can affect the reputation of a facility or health professional’s practice when they report “near misses”. Unhappy people often tell everyone they know. Healthcare is then put on the defensive. The first response is typically to get rid of the “bad apple” resulting in a feeling of “losing no matter what you do”. All of these factors keep errors from being reported.

Human Error versus System Error

There are two ways to view the occurrence of a medical error. One is to blame the individual (name, shame, and blame) and another quite different view is to analyze the system and determine what caused the error to occur. Human error is often the result of system failure. According to the IOM, most errors are not due to individual negligence or misconduct but to system breakdown. Instead of blaming individuals, organizations need to look hard at improving the delivery of care, remembering that most health care professionals are competent but are vulnerable to mistakes just by being human.

Although it may be human to make mistakes, it’s also human nature to find better solutions. It no longer works to simply remind people to be attentive and careful. Mistakes are made by all workers. Exemplary employees are not excluded. James Reason in the British Medical Journal says “we cannot change the human condition but we can change the conditions under which humans work”. In Reason’s paper, he states that in the field of aviation maintenance (a hands-on activity that is similar to medical practice in many respects) some 90% of errors were judged to be blameless. In the system approach, different individuals make similar mistakes because of the system context, which leads to the error. A system that includes barriers, safeguards, and defenses will reduce errors by all individuals who work in the system.
Focus on WHAT caused the error, not WHO

Instead of human error, the focus must be on what we do as professionals and how we do it. This concept calls for a redefining of culture where the focus is not on WHO caused the error but WHAT went wrong in the process. For example, in a five-step process, you have five possibilities for error. There is a need to create safer systems that help eliminate the possibility of failure for the health professional and provide consistent quality care to the patient.

A Five-Step Process = Five Possibilities for Error

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Step 1
Step 2
Step 3
Step 4
Step 5
= 5 Possibilities for Error
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The goal of the redefined culture is a non-punitive, blameless one where reporting of errors is the norm. In order to develop voluntary reporting of medical errors, there must be a culture of safety where the system encourages error reporting, accountability, honesty, and rapid settlement of injuries, seeing the injuries as system problems.

Timely reporting of errors is crucial for determining where the system failed and correcting the delivery of care process. This culture calls for leadership to engage and provide continuing education with the focus on system improvement along with the support of staff involved in errors.

Getting to the Root of the Error

What should happen once a medical error has occurred? An investigation or what is referred to, as a root cause analysis is the part of the process that reviews the error and identifies policies and procedures to improve care. A root cause analysis should also evaluate near misses and adverse events. The goal is to generate strategies for prevention while nurturing a culture of safety within the organization. The concept of the root cause analysis is to identify, analyze and correct the events leading to errors or error potentials. When the failure is corrected, it should prevent the adverse event from reoccurring. This analysis includes an in-depth look at small and even inconsequential factors in a system that when looked at together may be a factor in the overall cause of errors.

An objective view without bias is necessary to identify all possible root causes with a focus on the system processes versus an individual. The analysis team questions all those involved in the system or process including those people directly involved in the error, those closest to the process being evaluated, the leadership of the process or system, others from related technologies and unbiased, objective, unrelated members of the organization.

There are two types of root cause analysis:

**Proactive:** studying potential areas where errors could likely occur and putting into action a plan to prevent them.

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**Reactive**: occurring after the fact or after the error has occurred. This includes defining the error, asking why, and then repeatedly asking why until all possibilities for the error are exhausted.

The reactive plan should include not only a sequence of events leading up to the error but a flow chart and time table of the events that should have taken place to prevent it. A close look at the differences between the proactive and reactive analyses helps to identify and pinpoint possible root causes. Following the root cause analysis is the development of a plan with measurable actions that includes improving patient safety, as well as continuing education in the use of current and best practice knowledge. The Joint Commission has a detailed framework for this analysis and plan on their website (see the resources).

**Errors of Omission**

Errors of omission are also included as medical errors. An error of omission results when actions are not taken to prevent injury to patients and the injury occurs. Lack of prevention and the resultant injury are considered a medical error. In *Quality and Safety in Health Care* (2002), Reason suggests that leaving out or omission of necessary steps in the completion of a task is the most common human error made. He points out that healthcare procedures requiring hands on, complex and time pressured tasks are similar to hazardous fields such as aviation and nuclear power generation.

The previously mentioned study focuses on the reduction of omission errors through the use of task analysis and reminders. Reason believes that a glitch in “planning, execution and monitoring” can lead to an omission. It can then be very difficult to discern the exact cognitive processes involved in the error.

Instead, a crucial part of an omission reduction program, according to Reason, is to identify tasks in which omissions are likely to have injurious outcomes. He identifies characteristics prone to omissions including:

- The higher the demands placed on short-term memory for a certain task, the greater the chance that a step will be omitted
- Isolated procedural steps where obvious cuing is missing or tasks do not occur in linear order
- Repetitive or similar steps where the second step that is similar to the first is often omitted
- Tasks near the end of a sequence that are often omitted
- Tasks that follow an unexpected interruption, which often are left out

Once these tasks are identified, they can be broken down into specific steps and then a reminder can be customized for each step. Reminders could include notes and post-its, lists, calendars and timetables, clocks and alarms, mental checking, etc. Regular renewal of reminders always remains important so they don’t move into the background and lose importance.

**A Closer Look at Sentinel Events**

The Joint Commission has a Sentinel Event Policy that was implemented in 1996 and is updated as need arises. Current updates are always available on their website (see the resources). Their policy was put in place to help organizations identify sentinel events and then take steps to prevent recurrence. A *sentinel event* is an unexpected occurrence that involves death or serious physical or psychological injury, or an
occurrence with the risk of a sentinel event. These events are referred to as "sentinel" because they indicate the need for immediate investigation and response utilizing the root cause analysis process. The Joint Commission encourages organizations to report sentinel events along with the root cause analysis and has established the Sentinel Event Hotline at (630) 792-3700.

**New Survey Requirements Redefine the Culture**

As of January 2006, the Joint Commission's Board of Commissioners approved a proposal to conduct all regular accreditation surveys on an unannounced basis.

According to the Joint Commission, unannounced surveys are being implemented:

- To enhance the credibility of the accreditation process by ensuring that surveyors observe organization performance under normal circumstances.
- To reduce the unnecessary costs that health care organizations incur to prepare for survey.
- To address public concerns that the Joint Commission receive an accurate reflection of the quality and safety of care.
- To help health care organizations focus on providing safe, high quality care at all times, and not just when preparing for survey.
- To affirm the expectation of continuous standards compliance both by the Joint Commission of its accredited organizations and by these organizations of themselves.

Adapted from the Joint Commission website: [http://www.jointcommission.org/](http://www.jointcommission.org/)

**National Patient Safety Goals from the Joint Commission**

The culture is also being redefined by the addition of evidence-based requirements by accrediting bodies such as the Joint Commission. In 2006, the Joint Commission’s Board of Commissioners approved the 2007 National Patient Safety Goals (NPSGs). New Goals and requirements are indicated in bold and accreditation program applicability is indicated in brackets. Program-specific language changes are omitted from this version. The goals and requirements for each accreditation program are available on the Joint Commission website. As of January 1, 2007, all Joint Commission accredited health care organizations and the Disease-Specific Care certified programs will be surveyed for implementation of applicable 2007 goals and requirements.

The first National Patient Safety Goals took effect in 2002. The Joint Commission established these goals to help accredited organizations address areas of patient safety concern. The goals and recommendations are re-evaluated yearly. Each July, new goals and recommendations are announced and become effective on January 1 of the following year. These goals are prescriptive accreditation requirements, not accreditation standards.

The NPSGs apply to all accredited organizations and to those seeking accreditation. Each requirement is considered with respect to the services that the organization provides. For example, if the organization does not do any surgical or other invasive procedures, the requirements relating to wrong-site surgery would not be relevant.
The following goals were adapted from the Joint Commission website: [http://www.jointcommission.org/](http://www.jointcommission.org/)

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<tr>
<th>Goal 1</th>
<th>Improve the accuracy of patient identification.</th>
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<td><strong>1A</strong></td>
<td>Use at least two patient identifiers when providing care, treatment or services. [Ambulatory, Assisted Living, Behavioral Health Care, Critical Access Hospital, Disease-Specific Care, Home Care, Hospital, Lab, Long Term Care, Office-Based Surgery]</td>
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<td><strong>1B</strong></td>
<td>Prior to the start of any invasive procedure, conduct a final verification process, (such as a “time out,”) to confirm the correct patient, procedure and site using active—not passive—communication techniques. [Assisted Living, Home Care, Lab, Long Term Care]</td>
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<th>Goal 2</th>
<th>Improve the effectiveness of communication among caregivers.</th>
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<td><strong>2A</strong></td>
<td>For verbal or telephone orders or for telephonic reporting of critical test results, verify the complete order or test result by having the person receiving the information record and “read-back” the complete order or test result. [Ambulatory, Assisted Living, Behavioral Health Care, Critical Access Hospital, Disease-Specific Care, Home Care, Hospital, Lab, Long Term Care, Office-Based Surgery]</td>
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<td><strong>2B</strong></td>
<td>Standardize a list of abbreviations, acronyms, symbols, and dose designations that are not to be used throughout the organization. [Ambulatory, Assisted Living, Behavioral Health Care, Critical Access Hospital, Disease-Specific Care, Home Care, Hospital, Lab, Long Term Care, Office-Based Surgery]</td>
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<td><strong>2C</strong></td>
<td>Measure, assess and, if appropriate, take action to improve the timeliness of reporting, and the timeliness of receipt by the responsible licensed caregiver, of critical test results and values. [Ambulatory, Behavioral Health Care, Critical Access Hospital, Disease-Specific Care, Home Care, Hospital, Lab, Office-Based Surgery]</td>
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<td><strong>2E</strong></td>
<td>Implement a standardized approach to “hand off” communications, including an opportunity to ask and respond to questions. [Ambulatory, Assisted Living, Behavioral Health Care, Critical Access Hospital, Disease-Specific Care, Home Care, Hospital, Lab, Long Term Care, Office-Based Surgery]</td>
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<th>Goal 3</th>
<th>Improve the safety of using medications.</th>
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<td><strong>3B</strong></td>
<td>Standardize and limit the number of drug concentrations used by the organization. [Ambulatory, Behavioral Health Care, Critical Access Hospital, Disease-Specific Care, Home Care, Hospital, Long Term Care, Office-Based Surgery]</td>
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<tr>
<td><strong>3C</strong></td>
<td>Identify and, at a minimum, annually review a list of look-alike/sound-alike drugs used by the organization, and take action to prevent errors involving the interchange of these drugs. [Ambulatory, Behavioral Health Care, Critical Access Hospital, Home Care, Hospital, Long Term Care, Office-Based Surgery]</td>
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<tr>
<td><strong>3D</strong></td>
<td>Label all medications, medication containers (for example, syringes, medicine cups, basins), or other solutions on and off the sterile field. [Ambulatory, Critical Access Hospital, Hospital, Office-Based Surgery]</td>
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<th>Goal 7</th>
<th>Reduce the risk of health care-associated infections.</th>
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<td><strong>7A</strong></td>
<td>Comply with current Centers for Disease Control and Prevention (CDC) hand hygiene guidelines. [Ambulatory, Assisted Living, Behavioral Health Care, Critical Access Hospital, Disease-Specific Care, Home Care, Hospital, Lab, Long Term Care, Office-Based Surgery]</td>
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<td><strong>7B</strong></td>
<td>Manage as sentinel events all identified cases of unanticipated death or major permanent loss of function associated with a health care-associated infection. [Ambulatory, Assisted Living, Behavioral Health Care, Critical Access Hospital, Disease-Specific Care, Home Care, Hospital, Lab, Long Term Care, Office-Based Surgery]</td>
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<th>Goal 8</th>
<th>Accurately and completely reconcile medications across the continuum of care.</th>
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<td><strong>8A</strong></td>
<td>There is a process for comparing the patient’s current medications with those ordered for the patient while under the care of the organization. [Ambulatory, Assisted Living, Behavioral Health Care, Critical Access Hospital, Disease-Specific Care, Home Care, Hospital, Long Term Care, Office-Based Surgery]</td>
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<tr>
<td><strong>8B</strong></td>
<td>A complete list of the patient’s medications is communicated to the next provider of service when a patient is referred or transferred to another setting, service, practitioner or level of care within or outside the organization. The complete list of medications is also provided to the patient on discharge from the facility. [Ambulatory, Assisted Living, Behavioral Health Care, Critical Access Hospital, Disease-Specific Care, Home Care, Hospital, Long Term Care, Office-Based Surgery]</td>
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Goal 9  Reduce the risk of patient harm resulting from falls.  
9B  Implement a fall reduction program including an evaluation of the effectiveness of the program. [Assisted Living, Critical Access Hospital, Disease-Specific Care, Home Care, Hospital, Long Term Care]

Goal 10  Reduce the risk of influenza and pneumococcal disease in institutionalized older adults.  
10A  Develop and implement a protocol for administration and documentation of the flu vaccine. [Assisted Living, Disease-Specific Care, Long Term Care]  
10B  Develop and implement a protocol for administration and documentation of the pneumococcus vaccine. [Assisted Living, Disease-Specific Care, Long Term Care]  
10C  Develop and implement a protocol to identify new cases of influenza and to manage an outbreak. [Assisted Living, Disease-Specific Care, Long Term Care]

Goal 11  Reduce the risk of surgical fires.  
11A  Educate staff, including operating licensed independent practitioners and anesthesia providers, on how to control heat sources and manage fuels with enough time for patient preparation, and establish guidelines to minimize oxygen concentration under drapes. [Ambulatory, Office-Based Surgery]

Goal 12  Implementation of applicable National Patient Safety Goals and associated requirements by components and practitioner sites.  
12A  Inform and encourage components and practitioner sites to implement the applicable National Patient Safety Goals and associated requirements. [Networks]

Goal 13  Encourage patients’ active involvement in their own care as a patient safety strategy.  
13A  Define and communicate the means for patients and their families to report concerns about safety and encourage them to do so. [Ambulatory, Assisted Living, Behavioral Health Care, Critical Access Hospital, Disease-Specific Care, Home Care, Hospital, Lab, Long Term Care, Office-Based Surgery]

Goal 14  Prevent health care-associated pressure ulcers (decubitus ulcers).  
14A  Assess and periodically reassess each resident’s risk for developing a pressure ulcer (decubitus ulcer) and take action to address any identified risks. [Long Term Care]

Goal 15  The organization identifies safety risks inherent in its patient population.  
15A  The organization identifies patients at risk for suicide. [Behavioral Health Care, Hospital (applicable to psychiatric hospitals and patients being treated for emotional or behavioral disorders in general hospitals)]  
15B  The organization identifies risks associated with long-term oxygen therapy such as home fires. [Home Care]

FAQ: “Over the years, the numbering of the NPSG has become confusing. As goals are integrated into other initiatives or retired/integrated into standards, we end up with gaps. We have discussed the numbering of the NPSG requirements quite a bit and have decided that keeping the original numbers, even though there may be resulting gaps for any given year and/or program, was better than renumbering them every year—which would make tracking them from year-to-year quite difficult—or having different numbering for each of the different accreditation programs.” - the Joint Commission

Error Reduction and Prevention

The Joint Commission Do Not Use List of abbreviations, acronyms and symbols

In 2005, the Joint Commission affirmed its "do not use" list of abbreviations. The list was created in 2004 by the Joint Commission as part of the requirements for meeting National Patient Safety Goal (NPSG) requirement 2B (Standardize a list of abbreviations, acronyms and symbols that are not to be used throughout the organization).
Also, the Institute for Safe Medication Practices (ISMP) has published a list of dangerous abbreviations relating to medication use that it recommends should be explicitly prohibited. This list is available on the ISMP website: http://www.ismp.org/
Tips for Eliminating Dangerous Abbreviations

The Joint Commission polled accredited organizations to find out how they have implemented the **prohibited abbreviations** requirement of the National Patient Safety Goals (Goal 2b). Here are some of the tips from organizations that are effectively communicating their prohibited abbreviation list to staff:

- Print list on brightly colored paper/post-it notes/posters/stickers/magnets and place in medical records/patient charts, place at/on/near computers, and post in patient care areas.
- Provide pocket-sized cards with the list to staff.
- Print the list in the margin or bottom of the physician order sheets and/or progress notes.
- Attach laminated copies of the list to the back of the physician order divider in the patient chart.
- Delete prohibited abbreviations from preprinted order sheets and other forms.
- Create clipboard cover that provides the list.
- Provide the list on the front page of the intranet.
- Provide a card with the list that can be attached to the back of the identification badge.
- Place tent cards with the list where physicians write orders and dictate.
- Send monthly reminders of the list to staff via computer.
- Educate and monitor staff who document in the medical record.
- Create an educational display for use during Patient Safety Awareness Week.
- Educate affiliated health care professional education programs about the list.
- Place articles in employee and physician newsletters.
- Provide mouse pads with the list.
- Convene regional/community meeting to develop consistent list for physicians who maintain privileges at two or more facilities.
- Direct pharmacy not to accept any of the prohibited abbreviations. Orders with dangerous abbreviations or illegible handwriting must be corrected before dispensing.
- Conduct a mock survey and question staff to test their knowledge.
- Work with software vendors to ensure changes are consistent with the list.
• At every medical staff meeting, give patient safety updates, including information about the prohibited abbreviations.

• Identify and promote "Physician Champions" who support accreditation-related activities and advocate for full compliance with the NPSGs.

• Create a catchy name or theme: Do the "Write" Thing; Dirty Dozen; Outlaw Abbreviations—Join the Patient Safety Posse.

• Promote a "Do not use abbreviation of the month" campaign.

• Create a song incorporating the "do not use" list.

• Create a slide show/presentation illustrating poor handwriting and dangerous abbreviations. Include actual examples from your organization.

Adapted from:

Bar Code Label Requirements

As an example of change, St. Vincent’s Hospital in Birmingham, Alabama, is working to reduce errors and save lives with the use of bar codes and bedside admissions. As the hospital phases out paper work and medical charts, easy-to-maneuver computer carts are brought to the bedside to handle admissions while bar codes track patients and medications to reduce errors. They plan to switch from telephones to voice-activated devices for hands-free communication. Nurses are now mobile instead of in a nursing station. St. Vincent’s is also looking into robots to deliver meals and assist in surgery.

St. Vincent’s hospital is ahead of the game, but as of 2004, the Food and Drug Administration (FDA) published a final rule titled, Bar Code Label Requirements for Human Drug Products and Biological Products. This final rule requires "bar codes" on most prescription drugs and on certain over-the-counter drugs to address medication errors associated with drug products.

How the bar code requirements work

Linear bar codes are required on most prescription drugs and on over-the-counter drugs commonly used in hospitals and dispensed according to an order. The bar code must contain the drug’s National Drug Code (NDC) number, which uniquely identifies the drug.

For blood and components intended for transfusion, the final rule requires the use of machine-readable information in a format approved by FDA. The machine-readable information must include the facility identifier, the lot number relating to the donor, the product code, and the donor’s blood type and Rh factor.

The inclusion of bar codes on drugs would help prevent medication errors when used with a bar code scanning system and computerized database. Here is how the system should work:
1. Upon admission to the hospital, the patient receives a bar-coded identification bracelet to link the patient to his or her computerized medical record.

2. Most prescription drugs and certain over-the-counter drugs would have a bar code on their labels reflecting the drug's NDC number.

3. The hospital would be set up with bar code scanners or readers that link to the hospital's electronic medical records system.

4. Before a healthcare worker administers a drug to the patient, the healthcare worker scans the patient's bar code, which pulls up the patient's computerized medical record.

5. The healthcare worker then scans the drug(s) that the hospital pharmacy has provided for the patient. This scan informs the computer which drug is being administered.

6. The computer then compares the patient's medical record to the drug(s) to make sure that they match. If there is a problem, the computer sends an error message, and the healthcare worker investigates the problem.

The problem could be one of many things:

- Wrong patient
- Wrong dose of drug
- Wrong drug
- Wrong time to administer the drug
- New orders issued on the patient’s chart

As an example, a bar code system could prevent a patient from receiving a duplicate dose of a drug he or she had already received.

The FDA estimates that the bar code rule will result in 500,000 fewer adverse events over the next 20 years. Thus, FDA estimates a 50% reduction in medication errors that would otherwise occur when drugs are dispensed or administered.

Adapted from [http://www.fda.gov/oc/initiatives/barcode-sadr/fs-barcode.html](http://www.fda.gov/oc/initiatives/barcode-sadr/fs-barcode.html)

**The Florida Statutes**

Although there is no nationwide regulation for mandatory reporting of medical errors, some state statutes including Florida do require it. The Florida Statutes Title XXIX Public Health, Chapter 395.0197 Hospital Licensing and Regulation, Part I Hospital and Other Licensed Facilities state:

(6)(a) Each licensed facility subject to this section shall submit an annual report to the agency summarizing the incident reports that have been filed in the facility for that year. The report shall include:

1. The total number of adverse incidents.
2. A listing, by category, of the types of operations, diagnostic or treatment procedures, or other actions causing the injuries, and the number of incidents occurring within each category.

3. A listing, by category, of the types of injuries caused and the number of incidents occurring within each category.

4. A code number using the health care professional's licensure number and a separate code number identifying all other individuals directly involved in adverse incidents to patients, the relationship of the individual to the licensed facility, and the number of incidents in which each individual has been directly involved. Each licensed facility shall maintain names of the health care professionals and individuals identified by code numbers for purposes of this section.

5. A description of all malpractice claims filed against the licensed facility, including the total number of pending and closed claims and the nature of the incident which led to, the persons involved in, and the status and disposition of each claim. Each report shall update status and disposition for all prior reports.

6. The licensed facility shall notify the agency no later than 1 business day after the risk manager or his or her designee has received a report pursuant to paragraph (1)(d) and can determine within 1 business day that any of the following adverse incidents has occurred, whether occurring in the licensed facility or arising from health care prior to admission in the licensed facility:

(a) The death of a patient;

(b) Brain or spinal damage to a patient;

(c) The performance of a surgical procedure on the wrong patient;

(d) The performance of a wrong-site surgical procedure;

(e) The performance of a wrong surgical procedure.

Florida Statutes: [http://www.leg.state.fl.us/Statutes](http://www.leg.state.fl.us/Statutes)

**Patients’ Right to Know**

In 2005, Florida passed the “Patients’ Right to Know About Adverse Medical Incidents Act”, Florida Statutes XXIX, Public Health Chapter 381, Statute 381.028. This purpose of this act is to allow patients access to records of adverse medical incidents when these records were made or received in the course of business by a health care facility or provider.

According to the statute, the definition of adverse medical incident is:

(b)"Adverse medical incident" means medical negligence, intentional misconduct, and any other act, neglect, or default of a health care facility or health care provider which caused or could have caused injury to or the death of a patient, including, but not limited to, those incidents that are required by state or federal law to be reported to any governmental agency or body, incidents that are reported to any governmental agency or body, and incidents that are reported to or reviewed by any health care facility peer review, risk management, quality assurance, credentials, or similar committee or any representative of any such committee.
Florida Statutes:  
http://www.flsenate.gov/statutes/index.cfm?mode=View%20Statutes&SubMenu=1&App_mode=Display_Statute&Search_String=patient+right+to+know&URL=CH0381/Sec028.HTM

The USP MER Program

The United States Pharmacopeia (USP) also has a nationwide program called the MER or Medical Errors Reporting Program for health care professionals to report errors or potential errors confidentially. These reports can contribute to improved patient safety and to the development of educational services for the prevention of future errors. The USP reviews each report and sends the information to the FDA and the product manufacturer and will act as a liaison with the FDA and the manufacturer for anyone who wishes to submit a report anonymously.

The Patient Safety and Quality Improvement Act of 2005

Additionally, the Patient Safety and Quality Improvement Act of 2005 (Public Law 109-41), was signed into law on July 29, 2005. This public law was enacted Federal Government in response to concern about medical errors in the United States and the Institute of Medicine's 1999 report, To Err is Human: Building a Safer Health System. The thrust of this Act is to improve patient safety by encouraging voluntary and confidential reporting of events that adversely affect patients.

Patient Safety Organizations (PSOs) will collect, aggregate, and analyze confidential information reported by health care providers. Through the analysis of medical errors data, PSOs will be able to identify patterns of failures and propose measures to help eliminate errors.

To help dispel the fear that leads to underreporting of errors, the Act addresses these fears by providing Federal legal privilege and confidentiality protections to information that is assembled and reported by providers to a PSO or developed by a PSO ("patient safety work product"). The Act also significantly limits the use of this information in criminal, civil, and administrative proceedings. The Act includes provisions for monetary penalties for violations of confidentiality or privilege protections.

Additionally, the Act specifies the role of PSOs and defines "patient safety work product" and "patient safety evaluation systems," which focus on how patient safety event information is collected, developed, analyzed, and maintained.

Adapted from The Patient Safety and Quality Improvement Act of 2005: http://www.ahrq.gov/qual/psoact.htm

Ethics and Disclosure

Disclosure vs. nondisclosure

In addition to patient health and safety, medical errors also have important implications for physician trust and institutional integrity. In the Archives of Internal Medicine (2000), Rosner et al discussed the moral and professional obligations of physicians as pertaining to the disclosure of errors. According to the position of the American College of Physicians as stated in their Ethics Manual, physicians should disclose judgment or procedural errors made during care to the patient if the information affects the patient’s well being. There may be instances where the disclosure would cause more harm than nondisclosure but these cases are in the minority. A medical error does not necessarily mean improper, negligent or unethical behavior but the failure to disclose the incident may. To follow are several additional examples of ethics codes from various professional organizations.
Full disclosure

Similarly, the Code of Medical Ethics of the American Medical Association states that, on occasion, situations occur where a patient experiences significant complications resulting from the physician’s mistake or judgment. The physician is ethically required to tell the patient all the facts necessary to enable clear understanding of the occurrence. Through full disclosure the patient is able to make informed decisions regarding their future care. The nursing code of ethics aligns with the same perspective that errors do not necessarily constitute negligence or unethical behavior but the failure to disclose them may.

To make the case for full disclosure, The Sorry Works! Coalition has put together an organization of doctors, lawyers, insurers, and patient advocates where full disclosure and apologies for medical errors are the "middle-ground solution" in the medical errors. According to their protocol (Jt Comm J Qual Patient Saf. 2006), if a standard of care was not met as determined by a root cause analysis resulting in a bad outcome or adverse event, the providers and their insurer should apologize to the patient/family, admit fault, provide an explanation of what happened and how the hospital will ensure that the error is not repeated, and offer compensation. According to the coalition, their educational efforts are intended to overcome cultural and legal barriers to full disclosure, often representing emotional, knee-jerk responses within all the communities.

The Sorry Works! protocol is based on the disclosure program developed at the Department of Veterans Affairs Hospital in Lexington, Kentucky. GOALS: The coalition’s goals are to:
(1) educate all stakeholders in the medical liability debate
(2) serve as an organizing force for the full-disclosure movement
(3) advocate for legislative incentives, including pilot programs.

Sorry Works! entails changing the culture of medicine, medical risk management, and the associated insurance and legal support structure.

Ethics and the dietetics practitioner

The ethics code of the American Dietetic Association states that the dietetics practitioner assumes responsibility and accountability for personal competence in practice, continually striving to increase professional knowledge and skills and to apply them in practice. Also, the dietetics practitioner recognizes and exercises professional judgment within the limits of his/her qualifications and collaborates with others, seeks counsel, or makes referrals as appropriate. The dietetics practitioner also conducts himself/herself with honesty, integrity, and fairness.

Ethics and psychologists

The American Psychological Association ethics code states that in the process of making decisions regarding their professional behavior, psychologists must consider their Ethics Code in addition to applicable laws and psychology board regulations. In applying the Ethics Code to their professional work, psychologists may consider other materials and guidelines that have been adopted or endorsed by scientific and professional psychological organizations and the dictates of their own conscience, as well as consult with others within the field. If this Ethics Code establishes a higher standard of conduct than is required by law, psychologists must meet the higher ethical standard. If psychologists’ ethical responsibilities conflict with law, regulations, or other governing legal authority, psychologists should make known their commitment to this Ethics Code and take steps to resolve the conflict in a responsible manner. If the conflict is irresolvable via such means, psychologists may adhere to the requirements of the law, regulations, or other governing authority in keeping with basic principles of human rights.”
Ethics and speech, language, hearing professionals

The Code of Ethics for the American Speech-Language-Hearing Association states that individuals shall honor their responsibilities to the professions and their relationships with colleagues, students, and members of allied professions. Individuals shall uphold the dignity and autonomy of the professions, maintain harmonious inter-professional and intra-professional relationships, and accept the professions’ self-imposed standards.

Admission of errors

Honest and open disclosure and discussion can preserve the patient’s trust in the health care professional. Many times, patients are already suspicious that something has gone wrong and consider it an act of respect to them for the physician or health care professional to bring it out in the open. Patients then get a more realistic view of the limitations of health care. In addition, in depth discussions may strengthen trust and can communicate mutual respect. However, admission of errors is difficult for most health care professionals. Although not typically addressed in school or other training, Rosner says that telling the truth should be the norm, not unique, and is the sign of a healthier health care system. What remains unclear, according to Rosner and his associates is whether there is an obligation to report minor errors. Minor errors are referred to as those without material consequence to the patient’s well being. Most patients want to be told about all errors, even minor ones.

Patient safety is everyone’s obligation

What about the obligation of a health care professional when he or she recognizes the error of another health care professional? In the case of a consultant, the primary practitioner should encourage the consultant practitioner to discuss the error with the patient. Should the consultant be unwilling, the primary practitioner is obligated to discuss the incident with both the patient and the facility. When a health care professional recognizes an error, the supervisor should be informed. Again, this process will become much easier when there is a non-punitive atmosphere, as well as an atmosphere that supports professionals in reporting medical errors and where patient safety is everyone’s obligation.

How to Empower Your Patients and Clients

Research on Improving Patient Safety & Preventing Medical Errors – The Good News

Amidst all the negative statistics, there is a lot of good news. Research has shown that most medical errors can be prevented. With system enhancements, medical error rates can decrease leading to improvement in the quality of health care that patients receive. For example:

- Based on the data reported in the *Archives of Internal Medicine* (2002) a follow up study in the *American Journal of Health-System Pharmacy* (2002) analyzed the validity and cost effectiveness of three methods for detecting medication errors. Incident report review, chart review and direct observation methods were used by registered nurses (RNs), licensed practical nurses (LPNs) and pharmacy technicians to detect errors.

- Of the 457 pharmacist confirmed medication errors (457 of 2556 doses or 17.7% error rate), direct observation detected 300 of these errors, chart reviewers found 17 errors and one was found by incident report review. The researchers concluded that direct observation was more efficient and accurate than reviewing
incident reports or charts. The pharmacy technicians were more accurate than the RNs or LPNs in collecting data about medication errors.

- As of June 30, 2006, the Food and Drug Administration has adopted the Systematized Nomenclature of Medicine (SNOMED) as the standard vocabulary for certain terms on electronic prescription drug labels taking a major step toward a national health information infrastructure. Standardization should reduce medication errors by helping doctors, pharmacists, nurses and other medical professionals find information about drugs and their proper uses. The FDA will add structured product labels to drugs that the agency approves, including all drugs approved within the past five years. Structured product labels are an electronic format for the information printed on package inserts. The SNOMED terms will be included in the new highlights section of the electronic label.

The FDA has adopted a subset of SNOMED that the Department of Veterans Affairs and Kaiser Permanente developed. SNOMED is one of the health information technology standards that the government has adopted for use in federal systems.

- Castellanos and Andrews (Journal of the American Dietetic Association 2002) evaluated the accuracy of estimating the meal consumption of nursing home residents where the meal tray was examined and consumption assigned a value of 0%, 25%, 50%, 75% or 100%. The study was conducted under both routine and controlled conditions in a 180 bed long term care facility in Florida. In addition, this crossover design required the nursing assistants to report the consumption both immediately and in a delayed time frame.

- The accuracy of food intake data is very important as dietitians use this information for the completion of the resident’s nutritional status including the initial and ongoing risk assessment. This data is also used to complete the Comprehensive Resident Assessment/Minimum Data Set (MDS) mandated by the Omnibus Senate Reconciliation Act of 1987 (OBRA). Per OBRA regulations, when a resident consumes 75% or less of most meals, a physical and health reassessment is triggered. These records are included by state inspectors in the governmental monitoring process.

The results of this study found that even under optimal conditions, the overall estimate of meal intake does not have an acceptable level of accuracy. The estimates from the nursing assistants were correct less than 45% of the time under both controlled and routine conditions.

This prior study points to incidents where medical errors could occur. OBRA requires an assessment when a resident’s consumption is 75% or less at most meals. In their conclusions, only 25% of single meal intakes below 75% were accurately identified in the medical record under routine conditions. In addition, staff did not identify 65% of the residents eating poorly (< 75%) at two out of three meals. Controlled conditions did not improve the estimates between nursing assistants’ estimates and weighed values.

Monthly weights are the norm in many long-term care facilities and with inaccurate food consumption estimates; the diagnosis of an acute illness could be delayed and could result in a resident’s death. Currently, no valid method of meal consumption estimation has been found. The authors suggest that an optimal system would require the recording of estimates while the tray is being viewed. Therefore, health professionals should look to body weight measures for assessment of whether food intake is adequate. This may call for a change in the frequency of body weight measurements.
• A study in the Journal of the American Pharmaceutical Association (2002) simulated unit-of-use dispensing and count-and-pour dispensing with two teams composed of one pharmacist and one pharmacy technician in a community pharmacy. The outcome measures included the time for each team to dispense 50 prescriptions, dispensing activities performed by both the technicians and the pharmacists and the number of errors.

• Their results indicated that 46.5 minutes per 100 prescriptions were saved with unit-of-use dispensing or about 27 seconds per prescription. Pharmacists assisted in gathering and counting medication for 26% of the bulk dispensing but only four percent when unit-of-use packaging was used as the pharmacist spent more time verifying the prescription orders and medications dispensed by the technicians.

• No errors were made with the unit-of-use packaging while two counting errors occurred. Researchers concluded that unit-of-use packaging could reduce the time and increase the efficiency of the pharmacists’ dispensing activities.

The FDA reports that liquid medications can be a source of errors since they are unlikely to be dispensed in a unit dose. Millimeters can be confused for teaspoons. Unit dose syringes are one alternative as is double checking that the instructions and calculated dose are correct by independently calculating the dose from the milligram per kilogram on which the dose is based.

Another study in the Journal of the American Medical Informatics Association (2002) evaluated computerized physician order entry (POE) and electronic medication administration records (eMAR) as to the effect on medical care in an academic health system inpatient-nursing unit. Comparisons of the pre-POE with the post-POE indicated the following reductions:

• Medication turn around time - decreased 64%
• Radiology procedure completion time - decreased 43%
• Lab result reporting time – decreased 25%

Furthermore, POE in combination with eMAR eliminated all physician and nursing transcription errors. Researchers concluded that POE and eMAR provide a framework for improvement in patient safety as well as the timeliness of care.

Computerized physician order entry (CPOE) has been touted as a major improvement in patient safety, primarily as a result of the Institute of Medicine’s 1999 report on medical errors. A more recent article in the Journal of the American Medical Informatics Association (2004) contends that although the literature suggests that such systems have the potential to improve patient outcomes through decrease of adverse drug events, actual improvements in medical outcomes have not been documented. The authors also suggest that installation of such systems could actually increase the number of adverse drug events and result in higher overall medical costs, particularly in the first few years of their adoption.

Furthermore, another article in the Journal of the American Medical Association (2005) reported that computerized physician order entry (CPOE) systems are widely regarded as the technical solution to medication ordering errors, the largest identified source of preventable hospital medical error. However, Koppel et al identified and quantified the role of CPOE in facilitating prescription error risks at a tertiary-care teaching hospital (2002-2004). They surveyed house staff (N = 261; 88% of CPOE users); conducted 5 focus groups and 32 intensive one-on-one interviews with house staff, information technology leaders, pharmacy leaders, attending physicians, and nurses; shadowed house staff and nurses; and observed them using CPOE. Participants included house staff, nurses, and hospital leaders.
The authors found that a widely used CPOE system facilitated 22 types of medication error risks. They cite examples as: fragmented CPOE displays that prevent a coherent view of patients' medications, pharmacy inventory displays mistaken for dosage guidelines, ignored antibiotic renewal notices placed on paper charts rather than in the CPOE system, separation of functions that facilitate double dosing and incompatible orders, and inflexible ordering formats generating wrong orders.

Three quarters of the house staff reported observing each of these error risks, indicating that they occur weekly or more often. The conclusion indicated that a leading CPOE system often facilitated medication error risks, with many reported to occur frequently. The authors suggest that as CPOE systems are implemented, clinicians and hospitals must address errors that these systems cause in addition to errors that they prevent.

Drug names and bottles can also be confusing. *FDA Consumer Magazine* (Nordenberg, 2000) reported that the FDA has received over 100 reports of confusion between the three drugs Celebrex, Cerebyx and Celexa making name confusion a common medical error. In response to these and other drugs with confusing names, the FDA’s Office of Postmarketing Drug Risk Assessment (part of the Center for Drug Evaluation and Research) now reviews the brand names of drugs in order to avoid names that look and sound alike. The FDA will work with a drug company to change the name of any new product it feels may cause confusion among health professionals.

**Lower the Costs, Boost the Quality**

Imagine a healthcare model that is run and paid for by the US government and provides the top notch care in this country. Want to be a part of such care? Then you better run out and join the military. According to a number of independent groups (Business Week 2006), the clinics and hospitals run by the Veterans Affairs (VA) Department are ranked ‘best-in-class’ on a broad range of measures including such areas as heart disease prevention and chronic care, offering the same or more services than health care providers in the private sector.

A Rand Corporation study found that the VA system provides 66% of the care as recommended by standards from such groups as the Agency for Healthcare Research & Quality compared to only 50% for the private-sector hospitals.

Additionally, research indicates that three to eight percent of prescriptions in the private sector are filled incorrectly while the VA’s prescription accuracy is greater than 99.9%. The VA enjoys use of the most advanced computerized system for medical records in the US. Patient satisfaction ratings in the VA also surpass those in private hospitals according to data from the National Quality Research Center.

In the late 1990s, the VA was revamped and reinvented under the guidance of Dr. Kenneth Kizer who was serving as the VA’s Health Under Secretary. According to Harvard’s Dr. Lucian Leape, an authority on patient safety, “The VA proves that you can get better results with an integrated, organized, national health-care system.” “We will not achieve even close to the level of quality and safety we need as long as we have individual practitioners and hospitals doing individual things.” Why? Experts suggest that the VA where doctors are on salary is the exact opposite of private health care where doctors work as independent contractors and insurance pays the bills.

Without reliance on insurance reimbursement, the VA finances large capital improvements such as the medical records system while only about 20% of civilian hospitals have medical records computerized. Don’t let the salary aspect fool you; the VA has top notch doctors with a Nobel Prize winner among the list.

By treating patients throughout their lifespan, the VA has the unique advantage of investing in prevention and primary care with the goal of lower cost in the long term. The “Sorry Now” program of accountability by adopting a culture of patient safety and quality is pervasive in the VA system.
Let Prevention Become Your Attitude

Besides computers, patient safety is enhanced by decreasing reliance on memory, standardizing protocols and using checklists. Surveyors will likely ask questions about what you and your facility are doing to prevent medical errors and improve patient safety. Make it “routine” to check your area for potential errors and safety issues. Let prevention become an attitude that is part of the prevailing corporate culture.

Tips for Professionals to Prevent Medical Errors

1. Develop a culture of patient safety and prevention of medical errors in your practice/organization
2. Establish safety programs in your practice/organization
3. Engage clients/patients/families in helping to improve safety
4. Ensure that staff has proper training
5. Establish a policy for verbal and telephone orders
6. Establish comprehensive assessment forms and other checklists
7. Be specific about what has been communicated to others, provide the outcomes of care and document the details
8. Insist on a safe work environment
9. Report or remove questionable equipment
10. Develop a reporting system that is blame-free with open communication, which analyzes the system or process
11. Disclose mistakes, acknowledge responsibility and apologize for mistakes to clients/patients/ families
12. Report all errors, near mistakes, and substandard care
13. Review incident reports with the safety committee or other appropriate group
14. Practice doing root cause analysis

Many professional organizations are offering resources for their health professionals. The American Dietetic Association is publishing a series of “Medical Nutrition Therapy Evidence Based Guides for Practice” for common diagnoses such as diabetes, cardiovascular disease, gestational diabetes and others. These guides provide a standard of practice that, when followed, should help to decrease errors in medical nutrition therapy.

The American Speech-Language Hearing Association has a number of special interest divisions that offer practice standards and clinical guidelines that are intended to support the professional development and education of specialists in various fields. For example, ASHA’s Division 13 on Swallowing and Swallowing Disorders (Dysphagia), provides resources on practice standards for dysphagia assessment and treatment, treatment outcome research, and considerations for risk management. Other divisions offer similar support resources to other specialties.
Not to be overlooked are populations at greater risk such as persons with psychiatric disorders, children, the elderly, the homeless, hearing impaired, those with language and cultural differences and those with reduced access to health care for financial or other reasons. These populations may deal with issues such as the use of restraints, delirium following conscious sedation for procedures and surgery, skin tears, or sensory loss and handicaps which require close monitoring and a care plan with approaches that reflects the safety standards of the facility.

How can we as professionals empower our patients and clients to take an active part in their own health care? One way is to provide them with information they can use to obtain safe patient care. From a behavioral standpoint, there are many ways patients can do this.

**Patient-friendly tips from the Agency for Healthcare Research and Quality include:**

1. Be an involved member in all of your health care decisions. Most importantly, choose health care providers that you feel comfortable talking to. There is nothing wrong with asking questions and expecting understandable answers. Take a friend or relative with you who can listen and take notes as needed. If you’re Internet active, check out the latest evidence-based guidelines and treatment strategies that clinicians may follow for the treatment on your condition from the National Guidelines Clearinghouse. The website is [http://www.guideline.gov](http://www.guideline.gov)

2. Make a list of the medications, both prescription and over-the-counter, vitamins, herbs and any other supplements that you take and tell every doctor. It’s also a good idea to discuss your medications with your pharmacist. Their expertise includes knowing which drugs may not mix well with other drugs or food. On occasion, bring all the medications to your doctor visit for review and update if needed.

3. Don’t forget to mention medication allergies or any allergic reactions you may have experienced in the past.

4. When you get a new prescription, make sure you can read the doctor’s handwriting. If you can’t, the pharmacist may not be able to either. Ask the doctor questions such as:

   - What is this drug for?
   - How long will I take it and how do I take it?
   - Are there any foods, drink or activities that should be avoided while on the medication?
   - Are there side effects?

5. Make sure the prescription label is for the drug your doctor ordered. You may want to purchase a copy of the Physicians’ Desk Reference where you can look up the drug, see a picture of it and read the literature. Other groups such as Consumer Reports publish consumer-friendly drug references.

6. Ask the pharmacist if there are any side effects or interactions with food you should be aware of. Discuss the other drugs you take at this time.
7. When you have a test or procedure done, be sure and get the results. Just because you don't hear from anyone, do not assume the results are fine. The results could have been lost in the mail, misplaced in the office, etc. Go over the results with your health care provider and ask what they mean for your health.

8. If you are being admitted to the hospital, find out if you have a choice of facilities. Ask your doctor which one provides the best treatment for your condition. Be sure that you and your doctor are in agreement as to your plan of care. Inquire about:

   - How long you will stay?
   - What can you expect and how will you feel?
   - Will you need special care after discharge?

9. While you’re in the hospital, don’t hesitate to ask if the workers have washed their hands. It’s a great way to prevent infection.

10. If your doctor ordered a special medical diet, check the tray to make sure you have received the correct meal. If you have questions about the diet, ask to see the Registered Dietitian (RD). Also, if you plan to follow the medical diet at home, ask your physician to order a consult with the RD for medical nutrition therapy while you are in the hospital.

**More Tips from the Agency for Healthcare Research and Quality to prevent medical errors in children include:**

1. Be an active member of your child's health care team. Take part in every decision about your child's health care. Research shows that parents who are more involved with their child's care tend to get better results.

2. Make sure that all of your child's doctors know about every medicine your child is taking and his or her weight. This includes prescription and over-the-counter medicines, and dietary supplements such as vitamins and herbs. At least once a year, bring all of your child's medicines and supplements with you to the doctor.

3. Make sure your child's doctor knows about any allergies and how your child reacts to medicines.

4. When your child's doctor writes you a prescription, make sure you can read it.

5. When you pick up your child's medicine from the pharmacy, ask: Is this the medicine that my child's doctor prescribed?

6. Ask for information about your child's medicines such as:

   - What is the name of the medicine?
   - What is the medicine for?
   - Is the dose of this medicine appropriate for my child based on his or her weight?
   - How often is my child supposed to take it, and for how long?
   - What side effects are likely? What do I do if they occur?
   - Is this medicine safe for my child to take with other medicines or dietary supplements?
• What food, drink, or activities should my child avoid while taking this medicine?

• When should I see an improvement?

7. Ask your pharmacist for the best device to measure your child's liquid medicine. Also, ask questions if you're not sure how to use the device. Research shows that many people do not understand the right way to measure liquid medicines. For example, many use household teaspoons, which often do not hold a true teaspoon of liquid. Special devices, like marked oral syringes, help people to measure the right dose.

8. Ask for written information about the side effects your child's medicine could cause. If you know what might happen, you will be better prepared if it does. That way, you can report the problem right away and get help before it gets worse. If your child experiences side effects, alert the doctor and pharmacist right away.

9. If your child requires hospitalization, choose a hospital at which many children have the procedure or surgery your child needs. Patients tend to have better results when they are treated in hospitals that have a great deal of experience with their condition. Find out how many of the procedures that your child needs have been performed at the hospital. While your child is in the hospital, make sure he or she is always wearing an identification bracelet.

11. Ask all health care workers who have direct contact with your child whether they have washed their hands. Hand washing is an important way to prevent the spread of infections.

12. Ask the health professionals to explain the treatment plan you will use at home for your child. This includes information about your child's medicines and finding out when he or she can get back to regular activities.

13. Should your child require surgery, make sure that you, your child's doctor, and the surgeon all agree and are clear on exactly what will be done.

14. Speak up if you have questions or concerns. You have a right to question anyone who is involved with your child's care. Make sure that you know who is in charge of his or her care.

15. Ask a family member or friend to be with you and to be your advocate. Choose someone who can help get things done and speak up for you if you can't.

16. Find out why each test or procedure is being done and when the results will be available. If you don't hear from the doctor or the lab, call to ask about the test results.

Conclusion

As health care professionals, we can help reduce medical errors and improve patient care by being accountable, reporting errors, working to create safer health care systems, and staying up-to-date with the latest evidence-based practice while empowering our patients and clients with information they can use to obtain better care.
**Action plan:** designed after completion of the root cause analysis, this plan identifies the strategies that an organization intends to implement to reduce the risk of similar errors in the future.

**Adverse drug event:** an incident where the use of a medication or a special nutritional product (for example, dietary supplement or infant formula) results in an adverse patient outcome.

**Adverse event:** An adverse event is defined by the IOM as "an injury caused by medical management rather than by the underlying disease or condition of the patient." Adverse events resulting in medical errors are considered preventable adverse events. Adverse events are undesirable and typically unanticipated such as a patient death or a patient fall even if there is no permanent effect on the patient.

**Aphasia:** Partial or total loss of the ability to articulate ideas or comprehend spoken or written language, resulting from damage to the brain caused by injury or disease.

**Change analysis:** Looks at the differences between the expected and actual performance of a process.

**Dysphagia:** Difficulty in swallowing or inability to swallow. Also called *aglutition, aphagia, odynophagia*.

**Dystonia:** Abnormal tonicity of muscle, characterized by prolonged, repetitive muscle contractions that may cause twisting or jerking movements of the body or a body part.

**Error of commission:** An error that occurs as a result of an action taken.

**Error of omission:** An error that occurs as a result of an action not taken.

**Medical error:** Defined by the IOM as "the failure to complete a planned action as intended or the use of a wrong plan to achieve an aim." The error occurs in either the planning stage or the execution stage.

**Near Miss:** A situation that could have resulted in an accident or illness but did not due to competent action or chance.

**Root cause:** The fundamental reason for the failure of a process.

**Root cause analysis:** Identifying the factor(s) that affect differences in performance.

**Sentinel event:** An unexpected occurrence, which involves death or serious physical or psychological injury or an event with the risk of a sentinel event. These events are referred to as "sentinel" because they indicate the need for immediate investigation and response.
American Society of Health-System Pharmacists: http://www.ashp.org

CDC Hand Hygiene Recommendations:
http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5116a1.htm

Florida Statutes Online: http://www.leg.state.fl.us/Statutes/index.cfm

Food and Drug Administration: http://www.fda.gov/cdrh/safety.html

HealthGrades: http://www.healthgrades.com

Joint Commission on the Accreditation of Health Care Organizations (The Joint Commission):
http://www.jointcommission.org/

Joint Commission’s Sentinel Event Hot Line: 630-792-3700.

National Center for Patient Safety: http://www.patientsafety.gov/

National Committee for Quality Assurance: http://www.ncqa.org


The Leapfrog Group for Patient Safety: http://www.leapfroggroup.org/

The National Academy of Sciences Institute of Medicine: http://www.iom.edu/

The National Patient Safety Foundation: http://www.npsf.org

To sign up for The Joint Commission newsletters online:
http://www.jointcommission.org/Library/Newsletters/list_serve.htm

USP Medication Errors Reporting (MER) Program: http://www.usp.org/patientSafety/mer/ or call 1-800-233-7767
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Bates DW. Drugs and adverse drug reactions; how worried should we be? JAMA. 1998; 279:1216-1217.


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20-10 Preventing Medical Errors – Posttest

1. Which of these is the definition of a medical error offered by the Institute of Medicine (IOM)?
   a. An act involving an unintentional deviation from truth or accuracy
   b. An injury caused by medical management rather than by an underlying disease or condition
   c. The failure to complete a planned action as intended or the use of a wrong plan to achieve an aim
   d. Incomplete patient information such as allergies and current medication

2. In the 2002 Archives of Internal Medicine study noted in the text, which of these was the most common medical error reported?
   a. Giving patients the wrong drug
   b. Giving patients the wrong dose of a drug
   c. Giving a drug to the wrong patient
   d. Giving patients drugs at the wrong time or not at all

3. Which of these is an example of system failure as opposed to human error? “Errors that occur as a consequence of...”
   a. Individual negligence
   b. Individual misconduct
   c. Inadequate attention
   d. Conditions in the workplace

4. The idea of __________ is to identify, analyze, and correct the events leading to errors or error potentials.
   a. Sentinel events
   b. Root cause analysis
   c. Mandatory reporting
   d. Error reduction

5. Which of these occur when actions are not taken to prevent injury to patients and the injury occurs?
   a. Errors of omission
   b. Proactive errors
   c. Errors of commission
   d. Reactive errors

6. Events that indicate the need for immediate investigation and response using the root cause analysis process are called:
   a. Accidents
   b. Crises
   c. Sentinel events
   d. Mistakes

7. The National Patient Safety Goals (NPSGs) are accreditation standards, not prescriptive accreditation requirements.
   a. True
   b. False

8. Which of these is NOT one of the NPSGs offered by the Joint Commission to help organizations reduce medical errors?
   a. Improve accuracy of patient identification
   b. Improve communication among caregivers
   c. Improve the safety of using medications
   d. Improve training in the use of linear bar codes

9. The State of Florida requires hospitals and other licensed facilities to:
   a. Submit annual reports summarizing incident reports
   b. Submit monthly reports summarizing incident reports
   c. Report the death of any patient within one month
   d. Report wrong-site surgeries within one month

10. A medical error does not necessarily mean improper, negligent, or unethical behavior, but failure to disclose the incident may.
    a. True
    b. False
11. Which of these is NOT a strategy healthcare professionals can use to prevent medical errors?
   a. Engage clients/patients/families in helping to improve safety
   b. Establish a policy for verbal and telephone orders
   c. Make sure the prescription label is for the drug your doctor ordered
   d. Report all errors, near mistakes, and substandard care

12. Which of these is NOT listed as a strategy patients can use to enhance the safety of their own medical care?
   a. Be an involved member in all your health care decisions
   b. Ensure that staff has proper training
   c. Ask hospital workers if they have washed their hands
   d. Make a list of medications you are taking

13. As of 2006, all Joint Commission regular accreditation surveys are conducted on an unannounced basis. Unannounced surveys were implemented:
   a. To enhance the credibility of the accreditation process by ensuring that surveyors observe organization performance under normal circumstances.
   b. To reduce the unnecessary costs that health care organizations incur to prepare for survey.
   c. To address public concerns that the Joint Commission receive an accurate reflection of the quality and safety of care.
   d. To help health care organizations focus on providing safe, high quality care at all times, and not just when preparing for survey.
   e. All of the above

14. The Patient Safety and Quality Improvement Act of 2005:
   a. Is a public law enacted by the Federal Government
   b. Sets out to improve patient safety by encouraging voluntary and confidential reporting of errors.
   c. Will utilize Patient Safety Organizations (PSOs) to collect and analyze the confidential information.
   d. All of the above