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Illinois Emergency Medical Services for Children



Patient Safety in Pediatric Emergency Care

*Illinois Emergency Medical Services for Children
is a collaborative program between the
Illinois Department of Public Health and
Loyola University Medical Center*

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Patient Safety in Pediatric Emergency Care

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This presentation will provide background information on the need for patient safety and provide a detailed explanation of each of the 2004 JCAHO National Patient Safety Goals.

This presentation is divided into 2 sections -

Part 1: Focuses on background and statistics that will help enlighten healthcare professionals on the issue of patient safety

Part 2: Focuses on each of the JCAHO Patient Safety Goals, including pediatric-specific examples for each

Development of this presentation was supported in part by:

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This presentation was developed under the guidance of the Illinois EMSC Continuous Quality Improvement (CQI) Subcommittee.

Ask Yourself

- What is the most recent patient safety error experienced in the ED?
- What was the most recent near miss? How was it handled?
- What was the last patient safety error/near miss you made?
- What was the last patient safety error/near miss that you reported?

Ask yourself the following questions as we begin this presentation.

Part 1: Background & Statistics



Patient Safety Problems Are An Epidemic

- Have been referred to as a “new epidemic”

“The problem of medical errors has been likened to an epidemic and we are currently in the first stages of understanding this epidemic.”

- Dr. John Eisenberg, AHRQ Director, National Summit on Medical Errors and Patient Safety Research, September 11, 2000


- Numerous entities have begun to aggressively tackle patient safety problems
- However, wide-scale documented improvements are still limited

Patient safety problems have been referred to as a “new epidemic”, due to the high volume of recently reported cases and the lack of available data in the past.

Numerous entities have emphasized the need for patient safety, including:

- Joint Commission on Accreditation of Healthcare Organizations (JCAHO)
- Agency for Healthcare Research & Quality (AHRQ)
- American Academy of Pediatrics (AAP)
- American College of Emergency Physicians (ACEP)
- Emergency Nurses Association (ENA)

Why Focus on Patient Safety Now?

- To Err is Human – Institute of Medicine Report (1999) 
 - Summary of Findings:
 - 44,000 – 98,000 hospitalized patients die each year in the U.S. due to medical error
 - Deaths due to preventable medical errors in hospitals exceed deaths attributed to breast cancer or motor-vehicle collisions or AIDS.
 - \$29 billion annual cost
 - Conclusion: The majority of problems are systemic, not the fault of individual healthcare providers
- The Nature of Healthcare Culture
 - Traditionally, adverse safety events have not been openly discussed or comprehensively documented

Healthcare providers are not fully aware of the extent of the safety problem. These numbers should serve as an alert to the problem - both for us as healthcare providers and as potential patients ourselves.

Current Focus/Efforts

- Most patient safety efforts have primarily focused on:
 - Adults
 - Inpatient care
 - Medication - related adverse events
 - Severe safety events only



Due to limited availability of data sources.

- Pediatric Research Equity Act of 2003
 - New national legislation provides FDA with additional authority to require pediatric studies of pharmaceutical products to ensure safety and effectiveness in children

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Overall, current patient safety efforts have primarily focused on the populations/situations mentioned above. However, even for these populations, there is a limited amount of data sources to study/review.

Especially lacking in data sources are the numerous cases of “near misses.” Which, if thoroughly documented, can provide a great opportunity to identify a potentially lethal problem before it reaches the point of a sentinel event.

Example of a near miss:

Nearly giving a **dose of a cardiac medication** to the wrong patient because the healthcare provider used the patient’s bed space as the only identifying information. If this system failure is not caught and dealt with, it could cause a severe event, even death.

Another current effort of note:

Pediatric Research Equity Act of 2003 – President Bush signed into law this national legislation that will provide the Food and Drug Administration (FDA) with additional authority to require pediatric studies of pharmaceutical products when such studies are needed to ensure the safe and effective use of these products in children.

What Do We Know About Medication Errors ?

- Data suggests medication errors are seen at a higher rate in the ED than other areas of the hospital
- Medication errors positively correlate with inexperience¹, and with stress/fatigue²
- Sedation and resuscitation are especially vulnerable to errors³
- The rate for a potential Adverse Drug Event is 3x higher in hospitalized children than adults⁴
 - Children are at higher risk because of the need for weight-based dosing (potential calculation errors), the practice of diluting stock solutions and limited internal reserves for the child's system to cope with even a small dosage error
- It is suspected that medication errors are underreported

¹Kozer, Pediatrics, 2002; ²Selbst, Pediatric Emergency Care, 1999; ³Coté, Pediatrics, 2000; ⁴Kaushal, JAMA, 2001

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As noted on the previous slide, medication errors have been an area of focus in healthcare. This slide identifies some key points that we have learned in regards to medication errors.

- Data suggests medication errors occur at higher rates in the ED than other areas of the hospital
- Medication errors positively correlate with inexperience on the part of the healthcare professional (Kozer, Pediatrics, 2002), and with stress/fatigue (Selbst, Pediatric Emergency Care, 1999)
- Sedation and resuscitation events are especially vulnerable to errors (Coté, Pediatrics, 2000)

It has been identified that the rate for a potential ADE is 3 times higher in hospitalized children than adults (Kaushal, JAMA, 2001). Children are at higher risk because of the need for weight-based dosing (potential calculation errors), the error-prone practice of diluting stock solutions and the limited internal reserves in the pediatric patient to cope with even a small dosage error.

It is suspected that medication errors are underreported, so the numbers that we have may only represent the tip of the iceberg.

Discussion Point:

1. Would you like to share some of your own experiences regarding these issues?

Where We Are Headed

- Emergency services
 - Up to 20 million children are served each year
- Ambulatory care
 - An estimated 70% of pediatric care takes place in ambulatory settings⁵
- Vulnerable populations include:
 - Children
 - Elderly
 - People with low health literacy
- Non-medication related events:
 - Patient identification issues
 - Procedural complications
 - Care management events
 - Equipment issues



⁵AAP, Summary Statement, 2003

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This slide identifies the high-risk areas and populations that we need to begin focusing on.

Vulnerable Populations

- These are high risk groups that have not been studied to much extent in the past and will be targeted areas of focus in the future.

Non-medication related events should become part of our patient safety efforts, such as:

- Patient identification issues – using room number as one of the patient identifiers
- Procedural complications – inserting chest tube on wrong side of body due to misinterpretation of chest x-ray
- Care management events – miscommunication or lack of communication between multiple healthcare providers
- Equipment issues – using inappropriately-sized equipment/supplies for the pediatric patient

⁵Ambulatory Care statistic - American Academy of Pediatrics. 2003. Summit: setting a research agenda for patient safety agency for healthcare research and quality. Summary statement by the American Academy Of Pediatrics. Washington, DC: American Academy of Pediatrics. Online at:

<http://www.aap.org/advocacy/washing/patientsafety.htm>

What Do We Know About ED – Specific Patient Safety Issues (for Children & Adults)?

- Overcrowding
- Time constraints
- Broad range of illness severity
- Uneven mix of provider training
- Triage is especially error-prone⁶
- Fluctuations in demand
- Fatigue with 24 hour operations
- EMTALA
- Unintended usage
- Multiple handoffs in care
- Complex system
- Rapid bed space turnover



⁶Wuerz, Ann Emerg Med, 1998

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Focusing on emergency services is important since the Emergency Department presents a number of unique safety related issues:

Overcrowding – too many patients at one time

Time constraints – related to overcrowding

Broad range of illness severity – simple/nonacute diagnoses next to life/death situation

Uneven mix of provider training – not all staff are PALS certified, for example

Triage – Need to act quickly on brief assessments; the reliability of current triage assessments is poor (Wuerz, Ann Emerg Med, 1998)

Fluctuations in demand – no reliable way to anticipate when you are going to be overwhelmed w/ patients

Fatigue with 24 hour operations – related to fluctuations and overcrowding

EMTALA – The Emergency Medical Treatment and Active Labor Act - By regulation, it mandates that all ED patients receive a medical screening examination

Unintended usage – some patients use ED as their PCP

Multiple handoffs in care – patients receive care from many/variety of healthcare providers in one visit

Complex system – healthcare system is difficult to navigate, for patient and provider

Rapid bed space turnover – In a short amount of time, one bed space may be occupied by multiple patients. For example, while one patient is in x-ray, his/her unoccupied bed space may be used to treat another ED patient with an entirely different diagnosis.

Children are NOT Little Adults⁷

- Unique epidemiology of conditions requiring hospitalization
- Near universal hospitalization for birth (as a result, birth trauma accounts for the highest rate of pediatric adverse events – 1.5 per 1000 births)
- Weight-based drug and nutrition dosing
- Lower prevalence of major surgical operations
- Less ability to “safety check” own care

⁷Lessons from AHRQ’s Pediatric Patient Safety Research.
Marlene R. Miller, MD, MSc, FAAP; AHRQ, July 2002



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Children have not been focused on in previous safety efforts, and yet they are a vulnerable population that we need to examine because:

- Children present with vastly different and unique illnesses/conditions/ epidemiology than adult population
- The highest rate of pediatric adverse events involves birth trauma (1.5 per 1000 births) – mostly long bone and skull fractures. “Our findings of high rates of adverse events involving birth trauma clearly indicate that attention needs to be paid to the unique event of childbirth and how health providers can prevent such incidents from occurring during this experience.” – Marlene R. Miller
- Drug and nutritional dosing is weight – based rather than a fixed dose as practiced in adults. For example, for most medications, a 100 lb. adult may be prescribed the same dosage as a 200lb. adult. However, a 10 lb. infant would be prescribed a much lower dose than a child weighing 80 – 100 lbs. Children are much more sensitive to the slightest over or under dosing of medication, therefore it is important that dosing is based on their weight.
- Children experience a lower prevalence of major surgical operations (data for this type of patient error is difficult to compare to adult population due to lower frequency)
- Children have substantially less ability to “safety check” their own care. They need to rely on an adult advocate to be vigilant about their care and safety.

(adapted from Lessons from AHRQ’s Pediatric Patient Safety Research. Marlene R. Miller, MD, MSc, FAAP; AHRQ, July 2002)

What Do We Know About Pediatric Issues?

- Inpatient rates of non-medication errors for children occur in high numbers, comparable to hospitalized adults⁸
- Children with special healthcare needs are especially vulnerable⁹
- Children have some unique clinical experiences such as:
 - Relying on adult to be vigilant; their advocate
 - Relying on adult-sized or designed equipment
 - Relying on adult for treatment consent



⁸Miller, Pediatrics, 2003; ⁹Slonim, Pediatrics, 2003
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Inpatient rates of non-medication errors for children are high and comparable to hospitalized adults. Examples of non-medication errors are: postoperative infection, transfusion reaction, gastrointestinal perforation, foreign body left during procedure, etc. As a result of these kinds of patient safety errors, there are significant associations with increased length of stay, in-hospital mortality and increased hospital charges (Miller, Pediatrics, 2003).

Children with special healthcare needs/greater disease burden are especially vulnerable to patient safety errors due to their extended exposure to the hospital environment (Slonim, Pediatrics, March 2003).

Children have some unique clinical experiences such as:

1. Relying on family/guardian to be their advocate/voice since they cannot question their own care plans, etc
2. Relying on adult – sized/designed equipment (such as electronic IV pumps to deliver the correct dosage rather than small volume infusers)
3. Not being able to consent to own treatment which may delay necessary treatment

Discussion Point:

1. Can you think of other examples of how children's clinical experiences are different than adults?

Case History: Josie King

- 18-month-old hospitalized at the Johns Hopkins Children's Center for 2nd degree burns from hot bath water.
 - 2 weeks into successful recovery, began showing signs of infection (vomiting, diarrhea, fever) with no conclusive source
 - Central line was removed as potential source of infection; no other IV access started
 - Mom noticed signs of intense thirst and lethargy, but was assured the vital signs and monitors indicated all systems "normal"
 - Soon after, Josie suffered a cardiac arrest
 - After a prolonged resuscitation process, she was resuscitated, but had suffered irreversible brain damage
 - Was taken off life support 48 hours later and died
 - Case Review Findings:
 - Death was attributed to total breakdown of the healthcare system
 - With King family's support, hospital set up the Josie King Pediatric Patient Safety Program
 - More information at www.josieking.org



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To humanize the statistics, here is a brief case history of one family's direct experience with the epidemic of pediatric patient safety problems.

In reviewing her records, it was shown that the day before the cardiac arrest, Josie's weight dropped nearly 20% and her diarrhea was so severe that she soiled her diaper 14 times in 24 hours.

4 months after Josie's death, Hopkins review stated: Josie's death had resulted from a total breakdown of the system. 3 weeks into her recovery, she suffered devastating brain damage after her heart stopped due to severe dehydration. The medical staff hadn't responded appropriately to the warning signs – her severe weight loss, severe diarrhea, intense thirst and lethargy.

Review Committee Conclusions: Shortcomings in communication, between the surgeons and pain team, between doctors and nurses. Providers should have listened more closely to the concerned parent. The nurse should have been more aggressive in alerting physicians to Josie's symptoms. And, there should have been another peripheral IV line started after the central line was pulled.

In Josie's memory, Sorrel King (her mom) began to work with Dr. Peter Pronovost (a Hopkins physician and patient safety expert) to set up the Josie King Pediatric Patient Safety Program. More information at www.josieking.org

What Do We *Need* to Know/Do?

- Gather more data on the types and epidemiology of medical errors in the pediatric population.
- Understand the culture and science of safety
- Enhance awareness of proven patient safety solutions
- Establish a common language/definitions that are agreed upon within an organization to avoid errors of misinterpretation



Now that we have reviewed the background and key issues associated with patient safety, let's look at ways to further impact the patient safety problem, such as:

- Gather more data on the types and epidemiology of medical errors in the pediatric population.
- Begin to understand and implement a culture of safety, which includes the following:
 - *Acknowledges high risk, error-prone nature of modern healthcare*
 - *Ensures widespread shared acceptance of responsibility for risk reduction*
 - *Encourages open communication about safety concerns in a non-punitive environment*
 - *Facilitates reporting of errors and safety concerns*
 - *Learns from errors*
 - *Embraces accountability for patient safety*
 - *Ensures organizational structure, processes, goals and rewards are aligned with improving patient safety*

(Adopted from presentations by Ken Kizer, MD, President and CEO, National Quality Forum)

Example: the airline industry has given all of its employees the authority and responsibility to speak up if they see/suspect a safety issue – from the captain and co-pilot, to the mechanics and dispatchers.

- Enhance awareness of proven patient safety solutions – need to design and then implement processes that are effective.
- Establish a common language to avoid misinterpretation errors. Refer to **GOAL #2 Slide** (seen later in this presentation) for more information regarding prohibited abbreviations

Discussion Points:

1. What patient safety protocols/solutions do we have in place?
2. Can you think of other solutions?

What Can We Do?

- Establish a “just” culture¹⁰ of safety rather than one primarily based on blame

- Design and implement better reporting systems
 - Identify what is wrong with current system
 - Encourage and expect reporting behavior from leadership level down
 - Encourage acknowledgment and evaluation of errors
 - Ensure system is non-punitive
 - Use system for improvement and learning – not blame
 - Encourage frequent use, for any sort of error/problem that should be prevented/improved upon – not just medical error

¹⁰Institute of Medicine (IOM) 2003

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Establish a “just” culture of safety:

A just culture seeks to balance the need to learn from mistakes and the need to take disciplinary action when appropriate. With the exception of criminal behavior or purposeful negligence on their part, healthcare providers should be protected from disciplinary action when they report injuries, errors and near misses (IOM, Patient Safety: Achieving a New Standard for Care. 2003)

Design and implement better reporting systems

For example, the National Institutes of Health (NIH) Clinical Center’s reporting system is called an **Occurrence Reporting System (ORS)**. It is a non-punitive, *voluntary* reporting system linked to the medical information system, which is used for improvement and for learning. It is used for a variety of different kinds of events – from a true medical error to a tray arriving with cold food. The NIH encourages all employees to use it frequently – not just for medical error. Aggregate data regarding occurrences are reported to the Clinical Quality Committee at least quarterly. These occurrence reports are part of the formal Clinical Center peer review process. Individuals whom are part of the peer review process are granted access to the ORS database and may use these data for peer review, quality improvement and educational activities. (Source: <http://push.cc.nih.gov/policies/PDF/M88-3.pdf>)

Other suggestions:

- Implement multidisciplinary safety rounds (including physicians, nurses, pharmacists, administrators, etc.) to oversee all patient care areas. Members should be assigned to departments other than their own in order to avoid familiarity bias.
- Conduct team analysis of “near misses”; define the scope of near misses in order to conduct analyses in a timely and efficient manner.

Proven Safety Solutions

- Reduce complexity/number of steps
- Create independent redundancies or force functions
- Improve team function
- Identify and challenge assumptions



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Case History: 5-year-old boy died of respiratory arrest following an epileptic seizure. According to state investigation, the child was not given the proper drugs, and the physicians who were present (as well as several specialists consulted by phone at the time) all believed someone else was in charge. No one noticed when he stopped breathing. (USA Today, September 2003)

Reduce complexity/number of steps – **Example:** In the ED, stock the crash carts with pre-mixed, standardized unit doses of resuscitation medications and have dosing calculators available. Ideally, a pharmacist should be included as a member of the pediatric code team to ensure appropriate medication dosing calculations.

Create independent redundancies or force functions - Set up a system of checks and balances that are clearly defined, and required.

Example: Computerize healthcare provider notes so that a required field must be completed (such as a patient's weight) before being allowed to proceed to next screen.

Example: A 2-person check system for blood product administration is standard, expected and routine. Extend this 2-person check system to administration of other high-risk medications.

Improve team function – Train your ED staff in the working principles of teamwork so that they have a structure and process for challenging the traditional authority pattern. In turn, challenges regarding patient care should be viewed as positive behavior to prevent medical error and improve overall patient care.

Establish a “loop of continuous care” across specialties and across boundaries so that information is effectively shared, quality is improved, and individual achievements refocus on team achievements. But, these efforts need to be supported by the institution's leadership or they will fail.

Identify and challenge assumptions – Set high expectations that identify that everyone is accountable for patient safety. Empower all staff to call attention to potential adverse events/issues related to patient care or processes.

Risk Management's View on Pediatric Patient Safety Issues

- What are some potential obstacles to reducing/eliminating pediatric patient safety issues in your department, organization or institution?

For example, some obstacles may be:

- Practical
- Legal
- Financial
- Other



Let's talk about...

1. How would you describe our institution's culture?
2. What changes (positive or negative) are taking place in our institution?
3. What could you do to positively impact on our culture?
4. Do you know the process for reporting a medical error in our institution?
5. How comfortable do you feel reporting a medical error or patient safety issue?
6. What are alternative ways/systems in which to share information with our colleagues other than the traditional lecture format?
7. Other suggestions for change or improvement?

Part 2: JCAHO 2004 National Patient Safety Goals



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JCAHO 2004 National Patient Safety Goals - History

- Initially developed in 2002
- Developed to address safety issues and ensure hospitals have effective safety mechanisms in place
- As of January 2003, all JCAHO accredited healthcare organizations are required to have implemented the published requirements
- Further changes to the goals continue to be made

You can find more information about the JCAHO 2004 Safety goals at:
<http://www.jcaho.org/accredited+organizations/patient+safety/04+npsg/index.htm>

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In 2002, JCAHO developed the first set of national patient safety goals. This presentation reflects the most current version of the national patient safety goals, as of April 2004.

Further changes to the goals continue to be made because patient safety research initiatives are relatively new. As more light is shed on the topic and additional funding is granted for safety research, further information will be available, leading to more refined goals.



JCAHO 2004 National Patient Safety Goals

1. Improve the accuracy of patient identification
2. Improve the effectiveness of communication among caregivers
3. Improve the safety of using high-alert medications
4. Eliminate wrong-site, wrong-patient, wrong-procedure surgery
5. Improve the safety of using infusion pumps
6. Improve the effectiveness of clinical alarm systems
7. Reduce the risk of healthcare-acquired infections

As of April 2004, these are the seven JCAHO National Patient Safety Goals.

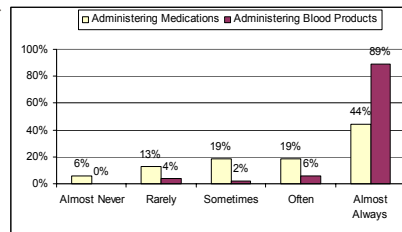
Goal 1: Improve the Accuracy of Patient Identification

- Goal 1a: Use at least two patient identifiers whenever taking blood samples or administering medications or blood products.
 - Neither should be the patient's room number

- Examples of acceptable identifiers:

- Full Name
- Assigned Identification Number
- Date of Birth
- Social Security Number
- Telephone Number
- Address
- Other Unique Number

Goal 1a. For pediatric patients (age 0-15 years) in the emergency department, how often does your staff use at least two patient identifiers for the following clinical activities ? (54 survey responses):



Data Source: Illinois EMSC Survey, 2002

The intent of this goal is to implement measures to reliably identify the individual as the patient for whom the service/treatment is intended, and to match the service/treatment to that patient.

For pediatric patients, you can use the wrist/ankle band to confirm child's name *and* unique number (such as MR#, birth date, SS#, etc.)

If a parent/guardian is available, you can ask them for the information.

Correct way to ask: "What is your child's name"

Incorrect way to ask: "Is your child's name Mary Smith"

Goal 1a. graph is based on responses to a survey conducted by Illinois EMSC in 2002. It compares responses of how often the emergency department staff use **at least two patient identifiers** for the following clinical activities – administering medications and administering blood products.

As you see from the graph, 95% of ED staff reported that they Often or Almost Always use at least two patient identifiers when administering blood products.

However, 63% of ED staff reported that they Often or Almost Always use at least two patient identifiers when administering medications.

Discussion Points:

1. What are some barriers to meeting Goal 1a. when it comes to administering medications?
2. What are some possible solutions to these barriers?
3. Once the patient arrives in our ED, how long does it typically take for that patient to receive an armband?

Goal 1: Improve the Accuracy of Patient Identification (cont.)

- Goal 1b: Prior to the start of any surgical or invasive procedure, conduct a final verification process, such as a “**time out**”, to confirm the correct patient, procedure and site, using active versus passive communication techniques.
 - JCAHO requires *active verbal* verification (from all participating staff) of 3 components right before the start of procedure:
 - Correct patient
 - Correct procedure
 - Correct procedure site
 - The written informed consent form is compared to the immediate plan for invasive action.

A “time-out” process should occur prior to the start of any procedure. The use of unique identifiers during the time-out process is essential in order to ensure that tests, procedures, medications, etc. are not performed or administered on the wrong patient.

During the “time-out”, everyone involved in the procedure must agree that all of the information is correct before proceeding. The time-out should be documented.

Even when there is only one person doing the procedure, a brief pause to confirm the correct patient, procedure and site, is appropriate.

An example of a pediatric safety issue in the ED:

1. Performing a lumbar puncture on the wrong child (since there may be more than one child in the ED diagnosed with a “fever”)

Note: Effective July 1, 2004, the “time out” requirement will be replaced by similar provisions in the Universal Protocol for Preventing Wrong Site, Wrong Procedure, Wrong Person Surgery.

<http://www.jcaho.org/accredited+organizations/patient+safety/universal+protocol/universal+protocol.pdf>

Goal 2: Improve the Effectiveness of Communication Among Caregivers

- Goal 2a: Implement a confirmation process when taking verbal/telephone orders or receiving critical test results.
 - REMEMBER: Write it down and then read it back
- Goal 2b: Standardize the abbreviations, acronyms and symbols used throughout the organization. Be sure to include a list of abbreviations, acronyms and symbols **NOT** to use.
 - Download a published and approved "minimum list" of dangerous abbreviations, acronyms and symbols:
http://www.jcaho.org/accredited+organizations/patient+safety/04+npsg/04_faqs.htm#abbreviations

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Goal 2a Example: A physician calls the patient's nurse with an order to administer 20 units of regular insulin to Billy Jones, a 10-year-old with new onset Diabetes. The nurse writes down the order and then **reads back** the order to the physician, "You asked me to give 20 units of regular insulin to 10-year-old Billy Jones." The physician confirms or corrects the nurse's understanding of what she has written down. It is after physician confirmation that the nurse administers the order.

As of 2004, the "read-back" requirement applies to all verbal or telephone orders, not just those for medications. This requirement also applies to "critical test results" reported verbally or by phone. Personnel who receive critical test results by telephone must write down and read back the results to the personnel initiating the call.

In **code** or **critical situations**, the verbal order should be repeated and verified by the practitioner giving the order before carrying it out. The order should be documented by a code recorder.

Goal 2b. JCAHO has published and approved a "minimum list" of dangerous abbreviations, acronyms and symbols found at:
http://www.jcaho.org/accredited+organizations/patient+safety/04+npsg/04_faqs.htm#abbreviation

Proven Strategies:

1. Pediatric orders should be written as mg/kg dosages
2. Weigh children on kilogram – only scales in order to prevent calculation errors when converting pounds to kilograms
3. Place posters of unacceptable abbreviations on the unit, in the medication area, at the physician desk area, etc.

Case History: Jose Martinez – 2-month-old who exhibited early signs of CHF. His physician ordered IV Digoxin over an extended length of stay. However, due to a decimal point error, Jose received a dose that was 10 times what was intended. Jose died. (AAP Summit; Summary Statement, 2003)

Goal 3: Improve the Safety of High-Alert Medications

- Goal 3a: Remove concentrated electrolytes from patient care units
 - Including, but not limited to, potassium chloride, potassium phosphate, sodium chloride > 0.9%
- Goal 3b: Standardize and limit the number of drug concentrations available in the organization



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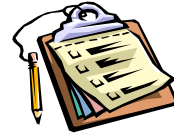
Error - Prevention Strategies:

- Review list of stock ED medications; identify high-risk medications
- Avoid stocking the same medication in different forms unless necessary (such as an unique dosage for infants)
- Do not store “look-alike” drugs near each other (such as Heparin and Insulin)
- Use pre-mixed IV solutions whenever possible
- Ensure adherence to policies set forth to prevent errors (i.e., 2 nurses to double check prepared insulin dose or other high-risk medications, PCA pump programming, dosage calculations, etc.)
- Ensure pediatric medication resources are readily available in the ED and that staff are trained to utilize such resources appropriately (such as a Broselow™ tape/cart or other weight-based systems)
- Have calculators available to aid in pediatric dosage calculation and medication administration
- Specify actual drug dose, not volume, and write out the dosage calculation as part of the order

Note: JCAHO has concluded that the Rule of 6 and other dosing methodologies that result in individualized concentrations are not in compliance with Safety Goal #3b. There is evidence that use of standardized concentrations (in place of the Rule of 6) result in fewer errors.

Goal 4: Eliminate Wrong-Site, Wrong-Patient, Wrong-Procedure Surgery

- Goal 4a: Create and use a preoperative verification process, such as a checklist, to confirm that appropriate documents are available such as:
 - Medical records
 - Imaging studies
 - Signed treatment consent
 - Etc.
- Goal 4b: Implement a process to mark the surgical site and involve the patient in the marking process
 - JCAHO recommends only marking the intended site
 - Always use non-washable marking pens
 - Mark directly over the site or as close as possible (e.g., near the correct eye)



Case Study: Jesica Santillan – a 17-year-old girl who died from complications after mistakenly receiving a heart-lung transplant from a donor with the wrong blood type. The critical failure was the absence of positive confirmation between the donor organ ABO compatibility with that of the recipient patient. The transplant surgeon did not recall receiving or requesting information regarding the donor's ABO type from the procurement coordinator. The surgeon **assumed** that the Carolina Donor Services would only have released the organs if they were a match.

In response, Duke University Hospital conducted a root-cause analysis of the event and the organ procurement process. During that review, they recognized the lack of system redundancy to be a weakness. Now, active validation of the ABO compatibility and other key data elements regarding the donor and recipient is performed by the transplant surgeon, the transplant coordinator and the procuring surgeon prior to transplant.

Goal 4b. JCAHO recommends marking only the intended site. **Do not** mark the non-operative site. Several cases of surgery on the wrong site have occurred in organizations that have a policy for marking only the non-operative site.

Patients need to be involved in the site marking process, but they should not mark their own site.

Do not use adhesive stickers as your only site marking method. The mark must be “sufficiently permanent” to remain visible after prepping the skin.

NOTE: In emergency situations where the practitioner performing the procedure is in continuous attendance of the patient from the point of decision-making to doing the procedure, then the site marking is not necessary.



Goal 5: Improve the Safety of Using Infusion Pumps

- Goal 5: Use free-flow protection on all general-use and PCA intravenous infusion pumps

- **To test pump:**
 - Turn off power, but keep infusion set primed and loaded in device
 - Verify that no fluid flows out of the set as it hangs straight down from the device while all of the tubing clamps are open, and the fluid container is as high above the device as the tubing will allow
 - Remove the set from the device (while tubing clamps are still open) and verify once again that no fluid flows out of the set

Practice how to test your infusion pumps:

To test pump:

- Turn off power, but keep infusion set primed and loaded in device
- Verify that no fluid flows out of the set as it hangs straight down from the device while all of the tubing clamps are open, and the fluid container is as high above the device as the tubing will allow
- Remove the set from the device (while tubing clamps are still open) and verify once again that no fluid flows out of the set

Recommended pediatric IV medication infusion practices:

1. When a high-risk medication is administered, assign one nurse to set up the pump and check the settings. Then, assign another nurse to double-check the set up and settings.
2. Utilize a small volume infuser for your pediatric patients on IV medications.

Ensure education and training of all personnel and family members re:

- Pump alarms
- Disconnection of tubing

Goal 6: Improve the Effectiveness of Clinical Alarm Systems

- Goal 6a: Implement regular preventive maintenance and testing of alarm systems, such as:
 - Vital signs monitor
 - Infusion/PCA pumps
 - Fire alarm system
 - Pediatric surveillance

- Goal 6b: Assure that alarms are activated with appropriate settings and are sufficiently audible with respect to distances and competing noise within the unit



Keep in mind that the hospital setting is a very intimidating place for patients, especially children who have much less life experience to help cope with their new environment.

Alarms are loud, annoying and meant to get your attention. While clinical staff are accustomed to the noise, a patient is typically not. An adult patient has the ability to ask questions about what the alarm is for, call for a nurse when the alarm is going off, etc. A child may have the ability to do the same, but may not feel/know that they are allowed to do so.

REMEMBER to:

- Reduce background noise so you can hear alarms in patient rooms
- Set appropriate default parameters based on child's age (neonatal setting vs. pediatric setting)
- Respond in a timely manner to the alarm
- Explain the alarm's purpose(s) to both patients and their family members (even if not directly asked)
- Set expectations for when the alarm may sound to take away some of the fear of the unknown.

Biomedical issues:

- Evaluate all alarms to meet established standards
- If your facility has the capability, set the monitors to flash in the central nursing station in order to alert the nurse who may not hear the alarm

Goal 7: Reduce the Risk of Health Care-Acquired Infections

- Goal 7a: Comply with current CDC hand hygiene guidelines
 - Wash your hands or use antiseptic gel before and after any patient encounter (including when you enter and leave a patient/exam room)
- Goal 7b: Manage as sentinel events all identified cases of unanticipated death or major permanent loss of function associated with a healthcare-acquired infection.



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Goal 7a: Download the CDC hand hygiene guidelines from the CDC website:
<http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5116a1.htm>

Wash your hands or use antiseptic gel before *and* after any patient encounter (including entering and leaving patient room or exam room)

Note: Hands must be washed with antiseptic soap and water when visibly soiled or contaminated with blood or body fluids.

When you use antiseptic hand gel, remember:

-Apply 1 – 2 pumps of agent to palm of hand

-Rub hands together, covering all surfaces of hands and fingers, until hands are dry

Goal 7b: Manage as sentinel events all identified cases of unanticipated death or major permanent loss of function associated with a healthcare-acquired infection.

The CDC estimates that nearly two million patients in the United States acquire infections in hospitals each year, and about 90,000 of these patients die as a result of their infection.

In 2003 (according to the JCAHO database) only 10 infection-related reports have been reviewed under the sentinel event policy since its implementation in 1996, which highlights the under-reporting of these events.

Let's Put Safety First



- What kinds of safety measures are in place in your institution?
- What kinds of special protection are in place for your pediatric patients?
- What patient safety measures would you want in place if the patient were:
 - You?
 - Your Child?
 - A Loved One?

Current Efforts in Illinois

- Illinois Hospital Association (IHA) - ***“Organizational Framework for a Culture of Safety”*** template
- IHA - Spotlight on Safety series
 - Highlights on-going efforts of Illinois-area hospitals concerning patient safety initiatives
- Illinois Hospital Report Card Act (in effect as of 1/1/04)
 - State mandate that requires hospitals to provide consumers public access to information about hospital staffing and patient outcomes
- Illinois Hospital Performance Improvement Activity Examples
 - Working in partnership with the Illinois Department of Public Health and other state and federal agencies, Illinois facilities are engaged in ongoing trending and quality improvement activities addressing specific patient populations.
- Chicago Patient Safety Forum
 - Network aimed at improving patient safety in the Chicago metropolitan area
 - www.chicagopatientsafety.org

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Illinois Hospital Association (IHA) developed a template entitled the ***“Organizational Framework for a Culture of Safety”***

The template provides a broad outline regarding the most basic elements of a patient safety framework for excellence. Download at: <http://www.ihatoday.com/public/patsafety/framework.pdf>

The IHA also offers a **Spotlight on Safety** series that highlights on-going efforts of Illinois-area hospitals concerning patient safety initiatives. View presentations and reports at: <http://www.ihatoday.com/public/patsafety/spotonsafety.htm>

Illinois Hospital Report Card Act (in effect on 1/1/04)

State mandate that requires hospitals to provide consumers with information about quality of healthcare so that consumers can make better decisions about their choice of a provider. More info: <http://www.ihatoday.com/public/patsafety/repcardact.htm>

Illinois Hospital Performance Improvement Activity

Working in partnership with the Illinois Department of Public Health and other state and federal agencies, Illinois hospitals are engaged in ongoing trending and quality improvement activities addressing specific patient populations. This website offers examples of quality improvement initiatives within Illinois <http://www.ihatoday.com/public/patsafety/perfimp.htm>

Chicago Patient Safety Forum

Chicago Patient Safety Forum (CPSF) is a community-based network whose mission is to facilitate innovative system approaches to understanding and improving patient safety in the Chicago metropolitan area. Steering committee members include physician leaders from Chicago's major medical centers, the IHA, the INA, Illinois State Medical Society, the IOM-Chicago and the Chicago Business Group on Health.
<http://www.chicagopatientsafety.org>

Current National Efforts

- "The Quality Initiative: A Public Resource on Hospital Performance"
 - The 1st public Website to display hospitals' performance on clinical measures of care
- JCAHO - Universal Protocol for Preventing Wrong Site, Wrong Procedure, Wrong Person Surgery™
- AHRQ – Online journal and forum on patient safety and healthcare quality
- National Patient Safety Forum – A valuable resource for individuals and organizations committed to improving the safety of patients
- Patient Safety and Quality Improvement Act - HR 663/S720
 - Authorizes a system of Patient Safety Organizations (PSO) to receive voluntary, confidential reports on medical errors from hospitals, doctors, and other medical personnel in order to identify ways to reduce errors.

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National Efforts:

"The Quality Initiative: A Public Resource on Hospital Performance" recently unveiled first public Website to display hospitals' performance on select clinical measures of care.

<http://www.cms.hhs.gov/quality>

JCAHO - Universal Protocol for Preventing Wrong Site, Wrong Procedure, Wrong Person Surgery™ has been endorsed by AHA and 40 other healthcare organizations; compliance with the Universal Protocol will be required beginning 7/1/04 for all accredited hospitals, ambulatory care and office-based surgery facilities

Agency for Healthcare Research & Quality has set up an online journal and forum on patient safety and healthcare quality topics. Website: <http://www.webmm.ahrq.gov>

Patient Safety and Quality Improvement Act - HR 663/S720

Bill authorizes a system of Patient Safety Organizations (PSO) to receive voluntary, confidential reports on medical errors from hospitals, doctors, and other medical personnel. The PSOs would analyze the information and report to hospitals and other medical institutions on how to reduce the errors. The names of those supplying the information would be held confidential as would the names of those committing the errors. The PSOs would not be required to reveal the information by civil or administrative subpoena, the Freedom of Information Act or similar federal and state laws, nor could it be forced to reveal it for evidence in any civil or administrative proceeding. For more information, go to <http://thomas.loc.gov>

Online Resources

- www.ahrq.gov – Agency for Healthcare Quality & Research
- www.acep.org – American College of Emergency Physicians
- www.hospitalconnect.com/DesktopServlet – American Hospital Association
- www.cdc.gov – CDC
- www.faa.gov/safety – Federal Aviation Administration
- www.hfes.org – Human Factors and Ergonomics Society
- www.ihatoday.org/public/patsafety – Illinois Hospital Association
- www.ihi.org – Institute for Healthcare Improvement
- www.ismp.org – Institute for Safe Medication Practices
- www.iom.edu – Institute of Medicine
- www.josieking.org/psi/main/index.cfm – Johns Hopkins' Patient Safety Institute
- www.jcaho.org – Joint Commission on Accred. of Healthcare Organizations
- www.leapfroggroup.org – Leapfrog Group
- www.mchc.org – Metropolitan Chicago Healthcare Council
- www.nccmerp.org – National Coordinating Council for Med Error & Prevention
- www.npsf.org – National Patient Safety Foundation
- www.patientsafety.gov – Veterans Affairs – National Center for Patient Safety

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Patient Safety in Pediatric Emergency Care

Appendix A

Continuing Education

- Healthcare Provider Continuing Education Information
- Nursing Continuing Education Hours Submission Form
- Post - Test

Continuing Education Information

This *Patient Safety in Pediatric Emergency Care* educational module is intended to provide continuing education for physicians, nurses, mid-level practitioners and ancillary healthcare professionals who manage the pediatric patient.

**For Physicians
and Physician
Assistants**

Attending this presentation and completion of the post-test in this appendix will meet Category II CME requirements.

**For Nurses
and Nurse
Practitioners**

To obtain continuing education hours, follow submission instructions contained within this appendix which include submitting the enclosed submission form, post-test that achieves an 80% score and evaluation form to the Illinois EMSC office.

NOTE: Healthcare professionals can submit this educational module to their professional organization accreditation body for continuing education credit.

Continuing Education Hours Submission Form

Nursing Continuing Education Units (CEU's)

To receive CEU's for *Patient Safety in Pediatric Emergency Care* you must submit this form along with the following after attending/delivering the presentation.

1. Completed post-test with a score of at least 80%.
2. Completed *Patient Safety in Pediatric Emergency Care* Evaluation Form.
3. Complete name and address where CEU certificate can be mailed to:

(Please print)

Name: _____

Mailing Address: _____

Submit this form and the above information to:

EMSC Program
Attention: Ramona Rendon
Loyola University Medical Center
2160 South First Avenue
Building 110-LL-0263
Maywood, Illinois 60153

Call 708-327-EMSC (3672) for questions

Patient Safety in Pediatric Emergency Care

Post - Test

NAME: _____ DATE: _____

1. One of the 2004 National Patient Safety goals aims to improve the safety of high-alert medications
 - a. True
 - b. False
2. Common issues that can lead to patient errors in the ED include each of the following, except:
 - a. Multiple handoffs in care
 - b. Overcrowding
 - c. Multidisciplinary safety rounds
 - d. Unintended usage of the ED
3. The majority of patient errors are typically the result of an individual healthcare provider.
 - a. True
 - b. False
4. A culture of safety based on justice is more effective than one based on blame.
 - a. True
 - b. False
5. When designing an effective reporting system, it is important to discourage employees from reporting all errors except ones that result in a sentinel event.
 - a. True
 - b. False
6. Which one of the following patient identifiers is not acceptable?
 - a. Room number
 - b. Name
 - c. Social Security #
 - d. Date of Birth
7. To prevent medication errors, do not store “look alike” drugs near each other.
 - a. True
 - b. False
8. Patients do not need to be involved in the pre-surgical marking process.
 - a. True
 - b. False
9. Strategies to improve the effectiveness of communication among caregivers include all of the following, except:
 - a. Placing posters of unacceptable abbreviations in multiple key areas on the unit
 - b. Reading back all telephone and verbal orders to verify accuracy
 - c. Making it a practice to only verify verbal orders in code situations
 - d. Writing pediatric medication orders as mg/kg dosages
10. Children are a unique population because:
 - a. They have less ability to safety check their own care
 - b. They present with different illnesses/epidemiology than adult patients
 - c. They require a strict adherence to weight-based drug and nutrition dosing
 - d. All of the above

Patient Safety in Pediatric Emergency Care

Appendix B

Evaluation

- Participant Evaluation Form
- Presenter Evaluation Form

Patient Safety in Pediatric Emergency Care
Participant Evaluation Form

The overall purpose of this presentation is to provide an overview of the 2004 JCAHO patient safety goals and to promote integration of these goals into the practice of all healthcare practitioners who care for children in the emergency department setting.

Please assist us in evaluating this presentation and planning future educational modules by completing this evaluation form.

Please use the following rating scale for evaluation objectives and circle the appropriate number:

To a Great Extent (4) To a Moderate Extent (3) To a Slight Extent (2) Not at All (1)

As a result of this presentation, I feel I have achieved the following objectives:

1.	<i>Define the reasons behind the Joint Commission Standards on patient safety.</i>	4	3	2	1
2.	<i>Provide 3 examples of a patient medical error.</i>	4	3	2	1
3.	<i>Describe how the patient safety problem is affecting the pediatric population, and how that differs from the adult population.</i>	4	3	2	1
4.	<i>Identify the key components of patient error - reduction strategies as they relate to pediatric emergency care.</i>	4	3	2	1
5.	<i>Identify the perceived barriers to reducing patient errors.</i>	4	3	2	1
6.	<i>Identify the seven JCAHO National Patient Safety Goals and how they relate to pediatric emergency care.</i>	4	3	2	1
7.	<i>Emphasize importance of staff awareness regarding patient safety errors.</i>	4	3	2	1
8.	<i>Describe at least one practical strategy to comply with each of the seven JCAHO National Patient Safety Goals</i>	4	3	2	1
9.	<i>Identify current local and national initiatives and resources focused on reducing the patient safety problem.</i>	4	3	2	1

Please use the following rating scale to rate the criteria below and circle the appropriate number:

Excellent (4) Good (3) Fair (2) Poor (1)

1.	<i>The overall value of the presentation</i>	4	3	2	1
2.	<i>The length of presentation</i>	4	3	2	1
3.	<i>The teaching effectiveness of the presenter</i>	4	3	2	1

The content was presented without bias of any commercial product or drug: (Circle one) Yes No

NAME: _____ DATE: _____

TITLE: _____ DEPARTMENT: _____

Patient Safety in Pediatric Emergency Care
Presenter Evaluation Form

Introduction: In order for Illinois EMSC to better serve its colleagues, we need to understand how our materials are being used and how useful they are to you. Please, take a few minutes to complete and return the following survey to the EMSC office.

1. Approximately, how long did the presentation last? _____
2. How many people attended your presentation? _____
3. Approximately how many people in the following positions attended your presentation?

ED staff nurses _____	Administration _____
ED physicians _____	In-pt. staff RN/MDs _____
EMT/Paramedics _____	Other: <i>(Please specify)</i> _____

4. In making the presentation, did you...
 - a. Present the material 'as is' Yes No
 - b. Present additional material Yes No
 - c. Other (Please specify) _____

5. **Please explain any modifications you made to the existing presentation.**

6. **On a 4-point scale, with 4 being STRONGLY AGREE and 1 being STRONGLY DISAGREE, please respond to the following statements:**

	Strongly Agree	Somewhat Agree	Somewhat Disagree	Strongly Disagree
Overall, the presentation was valuable to me	4	3	2	1
The presentation was well organized	4	3	2	1
The presentation had the right amount of information	4	3	2	1
The presentation was easy to present	4	3	2	1
The audience responded positively to the presentation	4	3	2	1
The slide notes were a valuable part of the presentation	4	3	2	1

7. **What could we do to improve this presentation?**

8. **Any other comments?**

That concludes our survey. Thank you for your time and attention.

NAME: _____ DATE: _____

TITLE: _____ DEPARTMENT: _____

Patient Safety in Pediatric Emergency Care

Appendix C

Resources

- JCAHO – “Do Not Use” List
- JCAHO – Universal Protocol/Guidelines for Preventing Wrong Site, Wrong Procedure, Wrong Person Surgery™
- Additional Resources
- Bibliography

JCAHO “Do Not Use” LIST

A "minimum list" of dangerous abbreviations, acronyms, and symbols has been approved by JCAHO. Beginning January 1, 2004, the following items must be included on each accredited organization's "Do not use" list:

Set	Item	Abbreviation	Potential Problem	Preferred Term
1.	1.	U (for unit)	Mistaken as zero, four or cc.	Write "unit"
2.	2.	IU (for international unit)	Mistaken as IV (intravenous) or 10 (ten).	Write "international unit"
3.	3. 4.	Q.D., Q.O.D. (Latin abbreviation for once daily and every other day)	Mistaken for each other. The period after the Q can be mistaken for an "I" and the "O" can be mistaken for "I".	Write "daily" and "every other day"
4.	5. 6.	Trailing zero (X.0 mg) [<i>Note: Prohibited only for medication-related notations</i>]; Lack of leading zero (.X mg)	Decimal point is missed.	Never write a zero by itself after a decimal point (X mg), and always use a zero before a decimal point (0.X mg)
5.	7. 8. 9.	MS MSO ₄ MgSO ₄	Confused for one another. Can mean morphine sulfate or magnesium sulfate.	Write "morphine sulfate" or "magnesium sulfate"

Effective April 1, 2004 (if your organization does not already have additional "do not use" items in place), each organization must identify and apply at least another three "do not use" abbreviations, acronyms, or symbols of its own choosing. [Revised 11/3/03]

In addition to the "minimum required list" provided above, the following items should also be considered when expanding the "Do not use" list to include the additional three or more items referenced in the preceding FAQ:

μg (for microgram)	Mistaken for mg (milligrams) resulting in one thousand-fold dosing overdose.	Write "mcg"
H.S. (for half-strength or Latin abbreviation for bedtime)	Mistaken for either half-strength or hour of sleep (at bedtime). q.H.S. mistaken for every hour. All can result in a dosing error.	Write out "half-strength" or "at bedtime"
T.I.W. (for three times a week)	Mistaken for three times a day or twice weekly resulting in an overdose.	Write "3 times weekly" or "three times weekly"
S.C. or S.Q. (for subcutaneous)	Mistaken as SL for sublingual, or "5 every".	Write "Sub-Q", "subQ", or "subcutaneously"
D/C (for discharge)	Interpreted as discontinue whatever medications follow (typically discharge meds).	Write "discharge"
c.c. (for cubic centimeter)	Mistaken for U (units) when poorly written.	Write "ml" for milliliters
A.S., A.D., A.U. (Latin abbreviation for left, right, or both ears)	Mistaken for OS, OD, and OU, etc.).	Write: "left ear," "right ear" or "both ears"

Source: <http://www.jcaho.org>

Universal Protocol For Preventing Wrong Site, Wrong Procedure, Wrong Person Surgery™

Wrong site, wrong procedure, wrong person surgery can be prevented. This universal protocol is intended to achieve that goal. It is based on the consensus of experts from the relevant clinical specialties and professional disciplines and is endorsed by more than 40 professional medical associations and organizations.

In developing this protocol, consensus was reached on the following principles:

- ❑ Wrong site, wrong procedure, wrong person surgery can and must be prevented.
- ❑ A robust approach—using multiple, complementary strategies—is necessary to achieve the goal of eliminating wrong site, wrong procedure, wrong person surgery.
- ❑ Active involvement and effective communication among all members of the surgical team is important for success.
- ❑ To the extent possible, the patient (or legally designated representative) should be involved in the process.
- ❑ Consistent implementation of a standardized approach using a universal, consensus-based protocol will be most effective.
- ❑ The protocol should be flexible enough to allow for implementation with appropriate adaptation when required to meet specific patient needs.
- ❑ A requirement for site marking should focus on cases involving right/left distinction, multiple structures (fingers, toes), or levels (spine).
- ❑ The universal protocol should be applicable or adaptable to all operative and other invasive procedures that expose patients to harm, including procedures done in settings other than the operating room.

In concert with these principles, the following steps, taken together, comprise the Universal Protocol for eliminating wrong site, wrong procedure, wrong person surgery:

- ❑ Pre-operative verification process
 - Purpose: To ensure that all of the relevant documents and studies are available prior to the start of the procedure and that they have been reviewed and are consistent with each other and with the patient's expectations and with the team's understanding of the intended patient, procedure, site and, as applicable, any implants. Missing information or discrepancies must be addressed before starting the procedure.
 - Process: An ongoing process of information gathering and verification, beginning with the determination to do the procedure, continuing through all settings and interventions involved in the preoperative preparation of the patient, up to and including the "time out" just before the start of the procedure.
- ❑ Marking the operative site
 - Purpose: To identify unambiguously the intended site of incision or insertion.
 - Process: For procedures involving right/left distinction, multiple structures (such as fingers and toes), or multiple levels (as in spinal procedures), the intended site must be marked such that the mark will be visible after the patient has been prepped and draped.
- ❑ "Time out" immediately before starting the procedure
 - Purpose: To conduct a final verification of the correct patient, procedure, site and, as applicable, implants.
 - Process: Active communication among all members of the surgical/procedure team, consistently initiated by a designated member of the team, conducted in a "fail-safe" mode, i.e., the procedure is not started until any questions or concerns are resolved.

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Guidelines for Implementing the Universal Protocol for Preventing Wrong Site, Wrong Procedure and Wrong Person Surgery™

These guidelines provide detailed implementation requirements, exemptions and adaptations for special situations.

❑ **Pre-operative verification process**

Verification of the correct person, procedure, and site should occur (as applicable):

- At the time the surgery/procedure is scheduled.
- At the time of admission or entry into the facility.
- Anytime the responsibility for care of the patient is transferred to another caregiver.
- With the patient involved, awake and aware, if possible.
- Before the patient leaves the preoperative area or enters the procedure/surgical room.

A preoperative verification checklist may be helpful to ensure availability and review of the following, prior to the start of the procedure:

- Relevant documentation (e.g., H&P, consent).
- Relevant images, properly labeled and displayed.
- Any required implants and special equipment.

❑ **Marking the operative site**

- Make the mark at or near the incision site. Do NOT mark any non-operative site(s) unless necessary for some other aspect of care.
- The mark must be unambiguous (e.g., use initials or “YES” or a line representing the proposed incision; consider that “X” may be ambiguous).
- The mark must be positioned to be visible after the patient is prepped and draped.
- The mark must be made using a marker that is sufficiently permanent to remain visible after completion of the skin prep. Adhesive site markers should not be used as the sole means of marking the site.
- The method of marking and type of mark should be consistent throughout the organization.
- At a minimum, mark all cases involving laterality, multiple structures (fingers, toes, lesions), or multiple levels (spine). Note: In addition to pre-operative skin marking of the general spinal region, special intraoperative radiographic techniques are used for marking the exact vertebral level).
- The person performing the procedure should do the site marking.
- Marking must take place with the patient involved, awake and aware, if possible.
- Final verification of the site mark must take place during the “time out.”
- A defined procedure must be in place for patients who refuse site marking.

▪ **Exemptions:**

- Single organ cases (e.g., Cesarean section, cardiac surgery).
- Interventional cases for which the catheter/instrument insertion site is not predetermined (e.g., cardiac catheterization).
- Teeth—BUT, indicate operative tooth name(s) on documentation *OR* mark the operative tooth (teeth) on the dental radiographs or dental diagram.
- Premature infants, for whom the mark may cause a permanent tattoo.

❑ **“Time out” immediately before starting the procedure**

Must be conducted in the location where the procedure will be done, just before starting the procedure. It must involve the entire operative team, use active communication, be briefly documented, such as in a checklist (the organization should determine the type and amount of documentation) and must, at the least, include:

- Correct patient identity.
- Correct side and site.
- Agreement on the procedure to be done.
- Correct patient position.
- Availability of correct implants and any special equipment or special requirements.

The organization should have processes and systems in place for reconciling differences in staff responses during the “time out.”

❑ **Procedures for non-OR settings including bedside procedures.**

- Site marking must be done for any procedure that involves laterality, multiple structures or levels (even if the procedure takes place outside of an OR).
- Verification, site marking, and “time out” procedures should be as consistent as possible throughout the organization, including the OR and other locations where invasive procedures are done.
- Exception: Cases in which the individual doing the procedure is in continuous attendance with the patient from the time of decision to do the procedure and consent from the patient through to the conduct of the procedure may be exempted from the site marking requirement. The requirement for a “time out” final verification still applies.

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ADDITIONAL PATIENT SAFETY RESOURCES

Books/Articles/Brochures

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Online Resources and Videos

AHRQ – patient safety indicators. Online at: <http://www.qualityindicators.ahrq.gov/qiix.htm>

Healthcare Marketplace – online store for healthcare management professionals. Online at: http://www.hcmarketplace.com/Listings.cfm?topic=M2_SAF_PTS

Institute for Healthcare Improvement. Trigger Tool for Measuring Adverse Drug Events. Online at: <http://www.qualityhealthcare.org/QHC/Topics/PatientSafety/MedicationSystems/Tools/Trigger+Tool+for+Measuring+Adverse+Drug+Events+%28IHI+Tool%29.htm>

Institute for Safe Medical Practices – patient safety videos. Online at: <http://www.ismp.org/Pages/videos.htm>

Joint Commissions Resources – disseminates information regarding accreditation, standards development and compliance, good practices, and health care quality improvement. Online at: <http://www.jcrinc.com/education.asp?durki=176>

Josie King Patient Safety Program – Johns Hopkins' Patient Safety Institute. Online at: <http://josieking.org/psi/main/index.cfm>

Laerdal™ SimMan™ Universal Patient Simulator – is a portable, universal patient simulator that “offers you the ability to provide simulation education to challenge and test your students’ clinical and decision-making skills during realistic patient care scenarios”. Online at: <http://www.medicalplastics.com/simman.html>

Patient Safety Resources (cont.)

National Patient Safety Foundation – patient safety store.

<http://www.mederrors.org/Merchant2/merchant.mv>

National Patient Safety Foundation – newest video

<http://www.npsf.org/html/envision.html> -- This new training program from NPSF was produced in partnership with Envision Inc., and covers JCAHO and CMS Guidelines mandating that all health care facilities make patient safety a top priority, and features key leaders.

OSF – St. Joseph Medical Center (Bloomington, IL) – Summary of Quality and Patient Safety Initiatives.

Online at: <http://www.osfstjoseph.org/whoquality.html>

Pediasim™ - The pediatric human patient simulator (HPS), called PediaSim, is approximately the size of a 7-year-old child weighing 20 kilograms. PediaSim simulates "real" responses to critical injury and medical interventions. He features a realistic airway and realistic pulmonary, cardiovascular, metabolic and neurological systems, and can be programmed to display a wide range of conditions and symptoms.

<http://www.meti.com/pediasim.html>

Premier Safety Institute. Checklist for Patient Safety and JCAHO Standards. Online at:

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