Patient Safety Advocacy in Anesthesiology

Institute of Medicine Report
November 1999

- 44,000 - 98,000 Americans die each year from preventable medical errors
- More than...
  - Motor vehicle accidents
  - Breast cancer
  - HIV/AIDS
- Cost...
  - $17-29 billion annually
  - Loss of trust in healthcare system

**Patient Safety**

Advocacy in Anesthesiology

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**Being “good” isn’t good enough**

99% Good (3.8 Sigma) means:

- 20,000 lost articles of mail per hour
- Unsafe drinking water for almost 15 minutes each day
- 5,000 incorrect surgical operations per week
- Two short or long landings at most major airports each day
- 200,000 wrong drug prescriptions each year

**Our “good” health care system**

Kills almost 100,000 Americans every year due to medical error

Gail Wolf, 2006

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**Our “good” health care system**

Gives 1 out of every 100 patients the wrong medicine

Gail Wolf, 2006
Our “good” health care system

Gives one out of every 16 patients an infection

Gail Wolf, 2006

Your chances of dying from avoidable human error are 10,000 times greater here than here

Gail Wolf, 2006

Types of Errors

Diagnostic
- Error or delay in diagnosis
- Failure to employ indicated tests
- Use of outmoded tests or therapy
- Failure to act on results of monitoring or testing

Treatment
- Error in the performance of an operation, procedure, or test
- Error in administering the treatment
- Error in the dose or method of using a drug
- Avoidable delay in treatment or in responding to an abnormal test
- Inappropriate (not indicated) care

Preventive
- Failure to provide prophylactic treatment
- Inadequate monitoring or follow-up of treatment

Other
- Failure of communication
- Equipment failure
- Other system failure

Causes of Errors

“More commonly, errors are caused by faulty systems, processes, and conditions that lead people to make mistakes or fail to prevent them.”

“Building a Safer Health System”

1. Establishing a national focus to create leadership, research, tools, and protocols to enhance the knowledge base about safety.
   - Lack of government agency for monitoring safety
   - Development of research agenda
   - Define prototype safety systems
   - Develop, disseminate, and evaluate tools for identifying and analyzing errors
   - Develop methods for educating consumers about patient safety

   - UPMC
     - Center for Quality Improvement & Innovation
     - Condition “H”


“Building a Safer Health System”

2. Identifying and learning from errors by developing a nationwide public mandatory reporting system and by encouraging health organizations and practitioners to develop and participate in voluntary reporting.
   - Collection of standardized information about adverse medical events
     - Joint Commission/Department of Health
       - Sentinel event
         - Blood transfusion error
         - Wrong-site surgery
         - Serious event
         - Medication swap

   UPMC
“Building a Safer Health System”

3. Raising performance standards and expectations for improvements in safety through the actions of oversight organizations, professional groups, and group purchasers of health care.

- Performance standards
  - Licensing, certification, accreditation
  - Professional societies as leaders
  - Anesthesia Patient Safety Foundation
  - Third party payors
    - Incentives for payment
      - SCIP
      - Performance Initiatives

“Building a Safer Health System”

4. Implementing safety systems in health care organization to ensure safe practices at the delivery level.

- “Culture of safety” or “Just Culture”
  - Design of jobs and working conditions for safety
  - Standardizing and simplifying equipment, supplies, and processes
  - Enabling care providers to avoid reliance on memory
- UPMC Anesthesiology
  - Standard anesthesia machine platform and replacement plan
  - Embarkation on standardization of workplace supplies and workstations.

Surgical Safety Checklist

- Before induction of anesthesia
  - Patient identification
  - Verify consent
  - Set anesthesiologist
  - Confirm correct patient information
  - Verify consent
- Before patient leaves operating room
  - Patient identification
  - Verify consent
  - Set anesthesiologist
  - Confirm correct patient information
  - Verify consent

- Wrong Site Surgery
  - 25% of orthopedic surgeons will do a wrong-site surgery in their careers
  - 50% of spinal surgeons
- In Pennsylvania
  - Total reports (30 months) 427
  - Did not reach patient 253 (59%)
  - Prepped wrong site 14 (3%)
  - Needles, incisions 78 (18%)
  - Whole procedure 83 (19%)

How do Errors Occur?

- The Flow of Information from Before the Operation Until the Site Working
- The Awareness of Information in the Operating Room

In Pennsylvania:
- Rate of 1 wrong site surgery per week
Principles of Safer Surgery: Pre-op Preparation

**PRINCIPLE**
The correct site of the operation should be specified when the procedure is scheduled.

**EVIDENCE**
17/161 (11%) reportable events associated with wrong information on the OR schedule

The correct operating and site should be noted on the record in the H&P

The correct operation and site should be specified on the informed consent.

Anyone reviewing the schedule, consent, H&P, or other reports documenting the diagnosis should check for discrepancies.

The surgeon should have all supporting information uniquely found in the office records at the surgical facility on the day of surgery.

Office information 5.8x more likely to be a source of correction than a source of error.

Principles of Safer Surgery: Transfer to O.R.

**PRINCIPLE**
All information that should be used to support the correct patient, operation, and site should be verified by the nurse and surgeon before the patient enters the O.R.

**EVIDENCE**
98% verification rate by 2 providers in facilities that did NOT have wrong-site surgery

90% verification rate by 2 providers in facilities that HAD wrong-site surgery (p < 0.05)

All verbal verifications should be done using questions that require and ACTIVE response of specific information rather than a PASSIVE agreement.

“Are you Mrs. Jones?”

“Please tell me your name”

Patient identification should always require two unique identifiers.

99% verification rate in facilities that did NOT have wrong-site surgery

85% verification rate in facilities that HAD wrong-site surgery (p<0.01)

Any discrepancies in the information should be resolved by the surgeon, based on primary sources of information, before the patient enters the O.R.

5.7x more likely to be a source of correction (51/174) than a source of error (9/174).

Principles of Safer Surgery: The List Goes On

- **Site marking**
  - Policy/procedure
  - Provider’s initials, not “X”
  - Visible after prep
  - Visible when draped
- **Time Out**
  - Separate for blocks (pain service vs. primary anesthetic)
  - All nonclinical activities should stop during the time-out
  - Verification of information should require an active form of communication rather than passive agreement
  - All members of the team should verbally verify
  - Surgeon should encourage team members to speak up if concerned
  - Any concern should be resolved by the surgeon prior to proceeding.

Doing it right (isn’t easy)

Current Preliminary Associations between Elements of a Prevention Program for Wrong-Site Surgery and Success in Treating Wrong-Site Errors before Harm Occurred

<table>
<thead>
<tr>
<th>ELEMENT</th>
<th>NEAR Misses</th>
<th>MISRECOMMEND SITES</th>
<th>OUTCOMES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site marking discrepancies in documents</td>
<td>0.006</td>
<td>0.001</td>
<td></td>
</tr>
<tr>
<td>Time-out done after cleaning</td>
<td>0.036</td>
<td>0.002</td>
<td></td>
</tr>
<tr>
<td>Surgeon identified on consent</td>
<td>0.024</td>
<td>0.006</td>
<td></td>
</tr>
<tr>
<td>Surgeon did a preoperative verification</td>
<td>0.092</td>
<td>0.015</td>
<td></td>
</tr>
<tr>
<td>Identification involved cord-pull or charting</td>
<td>0.017</td>
<td>0.005</td>
<td></td>
</tr>
<tr>
<td>Surgeon’s records available in the OR</td>
<td>0.004</td>
<td>0.001</td>
<td></td>
</tr>
<tr>
<td>Computer logs available in the OR</td>
<td>0.005</td>
<td>0.001</td>
<td></td>
</tr>
<tr>
<td>Computerized bed was checked by some other person</td>
<td>0.004</td>
<td>0.001</td>
<td></td>
</tr>
<tr>
<td>Patient identification verified during preoperative meeting with surgeon</td>
<td>0.005</td>
<td>0.001</td>
<td></td>
</tr>
<tr>
<td>Procedure confirmed during preoperative checklist</td>
<td>0.005</td>
<td>0.001</td>
<td></td>
</tr>
<tr>
<td>Patient identification verified during preoperative checklist with surgeon</td>
<td>0.005</td>
<td>0.001</td>
<td></td>
</tr>
<tr>
<td>Name-safety brief</td>
<td>0.005</td>
<td>0.001</td>
<td></td>
</tr>
</tbody>
</table>

*Note: This is part 2 of a 3-part series on preventable patient injuries. Further information will be available in subsequent issues. *Pennsylvania Patient Safety Authority (2008).
Anesthesiology Success!

- Contributions to success
  - Improvements in intraoperative monitoring and technology
  - Extensive pre-operative testing
  - Formal FDA pre-anesthesia checklist
  - Anesthesia crisis leadership training
  - Pharmacology innovations

Medication Safety in the Operating Room

Standardization

1. High-alert drugs (such as phenylephrine and epinephrine) should be available in standardized concentrations/diluents prepared by pharmacy in a ready-to-use (bolus or infusion) form that is appropriate for both adult and pediatric patients. Infusions should be delivered by an electronically-controlled smart device containing a drug library.

Medication Safety in the Operating Room

Standardization

2. Ready-to-use syringes and infusions should have standardized fully bar-coded machine-readable labels.

3. Additional ideas:
   a) Interdisciplinary and uniform curriculum for medication administration safety to be available to all training programs and facilities.
   b) No concentrated versions of any potentially lethal agents in the operating room.
   c) Required read-back in an environment for extremely high alert drugs such as heparin.
   d) Standardized placement of drugs within all anesthesia workstations in an institution.
   e) Convene required method to save all used syringes and drug containers until case concluded.
   f) Standardized infusion libraries/protocols throughout the institution.
   g) Standardized route-specific connectors for tubing (IV, arterial, epidural, enteral).
Medication Safety in the Operating Room

Technology
1. Every anesthetizing location should have a mechanism to identify medications before drawing up or administering them (bar code reader) and a mechanism to provide feedback, decision support, and documentation (automated information system).

2. Additional ideas:
   a) Technology training and device education for all users, possibly requiring formal certification.
   b) Improved and standardized user interfaces on infusion pumps.
   c) Mandatory safety checklists incorporated into all operating room systems.

Medication Safety in the Operating Room

Pharmacy
1. Routine provider-prepared medications should be discontinued whenever possible.

2. Clinical pharmacists should be part of the perioperative/operating room team.

3. Standardized pre-prepared medication kits by case type should be used whenever possible.

4. Additional ideas:
   a) Interdisciplinary and uniform curriculum for medication administration safety for all anesthesia professionals and pharmacists.
   b) Enhanced training of operating room pharmacists specifically as perioperative consultants.
   c) Deployment of ubiquitous automated dispensing machines in the operating room suite (with communication to central pharmacy and its information management system).

Medication Safety in the Operating Room

Culture
1. Establish a "just culture" for reporting errors (including near misses) and discussion of lessons learned.

2. Establish a culture of education, understanding, and accountability via a required curriculum and CME and dissemination of dramatic stories in the APSF Newsletter and educational videos.

3. Establish a culture of cooperating and recognition of the benefits of standardization between institutions, professional organizations, and accreditation agencies.

Safe Injection Practices

Some Things Should Never Be Reused

In injection practices among clinicians in United States health care settings
Gina Pugliese, RN, MS, Cathie Gosnell, RN, MS, MBA, Judene M. Bartley, MS, MPH, CIC and Scott Robinson, MA, MPH
American Journal of Infection Control
December 2010

<table>
<thead>
<tr>
<th>Practice Description</th>
<th>Never (%)</th>
<th>Always or Sometimes (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enter single-dose vial more than once for the same patient</td>
<td>3703 (68.8%)</td>
<td>1599 (30.2%)</td>
</tr>
<tr>
<td>Use multi-dose vials for more than one patient</td>
<td>3187 (34.4%)</td>
<td>4984 (65.6%)</td>
</tr>
<tr>
<td>Use single-dose vials for more than one patient</td>
<td>4817 (91.5%)</td>
<td>448 (8.5%)</td>
</tr>
<tr>
<td>Administer medication to more than 3 patients using the same syringe but a sterile needle</td>
<td>5247 (99.2%)</td>
<td>62 (0.8%)</td>
</tr>
<tr>
<td>Use a bag or bottle of IV solution as a source of diluent for more than 1 patient</td>
<td>4821 (91.5%)</td>
<td>466 (8.5%)</td>
</tr>
<tr>
<td>Reuse a syringe to obtain additional doses from the same multi-use vial for the same patient</td>
<td>4982 (94.9%)</td>
<td>318 (5.1%)</td>
</tr>
<tr>
<td>Disposition of vial from above scenario</td>
<td>Discard 738 (93.5%) Leave for use on another patient 51 (6.5%)</td>
<td></td>
</tr>
</tbody>
</table>
**Injection practices among clinicians in United States health care settings**

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Practice You Must Know</th>
<th>CDC Category</th>
</tr>
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<tbody>
<tr>
<td>Use aseptic technique</td>
<td>Avoid contamination of sterile syringes and needles</td>
<td>1A</td>
</tr>
<tr>
<td>Use open vials and syringes</td>
<td>Do not introduce medications from sources other than the prescriber</td>
<td>1A</td>
</tr>
<tr>
<td>Use once-use vials for personal or home use whenever possible</td>
<td>Do not give medications from open vials or syringes to multiple patients</td>
<td>1A</td>
</tr>
<tr>
<td>If multiple doses are used, source it in a single patient whenever possible</td>
<td>Do not introduce medications from single-dose vials or syringes to multiple patients</td>
<td>1A</td>
</tr>
<tr>
<td>Use sharps and syringes correctly</td>
<td>Do not destroy sharps or syringes used to administer medications</td>
<td>1A</td>
</tr>
<tr>
<td>Use dedicated sharps and syringes</td>
<td>Do not reuse sharps and syringes</td>
<td>1A</td>
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</table>

**Areas for Improvement**

"I want to relate an exchange I had with a vascular surgery fellow last Wednesday afternoon. We were doing an emergency case, a patient with a bleeding A-V fistula. Aside from EKG, the patient was post liver transplant, receiving chemotherapy, and on steroids. As you can imagine, the case was quite busy for a while, with blood and platelets to give, and other drugs to administer. As the surgeon and the fellow were closing, she looked at me and said "You are the most attentive anesthesiologist I have ever worked with." I asked "What do you mean?" She replied "Every time I look over the drapes, you are watching the monitor, watching what we are doing, or doing something with the patient. Usually they are on the phone, texting or playing on a computer." I thanked her and said no more. I am not telling you this to give myself a pat on the back, but because I think it is a terrible perception for others to have of your attention. It is very difficult to deal with a case and have an iPod Touch with Epocrates and a calculator that I frequently use. I think we all need to be aware of the picture we are presenting to our coworkers while doing these things. Obviously texting and phone calls are out of place."

**Technology and Vigilance**

**Patient Advocacy**

- CRNA Role as voice for patient
- New time-out procedures
- Education
- Reporting of events

**Technology**

"Reducing Medical Errors Starts with YOU."

**Nurse Anesthetists**

The AANA’s mission: “Advancing patient safety and excellence in anesthesia.”

Today, the nation’s 40,000 nurse anesthetists safely provide millions of anesthetics to patients each year."