Causes of Near Misses: Perceptions of Perioperative Nurses

By: Dr. Barbara Cohoon

Deputy Director of Government Relations
National Military Family Association
Problem Statement

• Consistent with other industries studies of quality and safety
• Quality and safety concerns are endemic, costly, and avoidable

Need for the Study

• Little is known conceptually and practically
  – Research limitations/methods
  – Motivation of health care systems
  – Perception and recognition by registered nurses
  – Types, causes, and frequency of near misses
• Near misses may serve as an early warning system to prevent/avoid/detect impending systems’ failure (van der Schaaf, 1992; IOM, 2004)
• Patient Safety Authority Report 2004, 2005, and 2006 found errors and complications in surgical procedures
Literature Review

- Reviewed 400 documents and research reports covering a wide range published over a 50-year period (1950 - 2008)
- Revealed very little is known about near misses occurrence in health care systems and in perioperative settings

Purpose of Study

- To gain information about perioperative nurses perception of near miss experiences
- To understand perioperative nurses recognition and perception of near miss concerning
  - Type
  - Frequency
  - Causes
Research Questions

- What are the types and frequency of near misses reported by perioperative nurses?
- What are the causes (contributing factors) of near misses reported by perioperative nurses using the Pennsylvania Patient Safety Reporting System (PA-PSRS) Causal Factors?

Simple Model (System Failures)

(Framework based on van Vuuren, 1998)

*Simple model of Incident Causation*

- Technical failure
- Dangerous situation
- Human failure
- Organizational failure

Return to normal
Near Miss

Developing incident
Adequate recovery?
Medical Error
Adequate defenses?
Definition of Near Miss

Near miss is:
“a deviation which has clearly significant potential consequences” (van der Schaaf, Lucas, & Hale, 1991, p.142).

Research Methods

• Mixed methods
  – Quantitative
  – Qualitative
• Statistical methods
  – SSPS 15.0
  – Descriptive, correlation, and control chart analysis using Tukey and Xmr
  – Qualitative analysis using Ricoeur’s analytic steps
Study Sample

- Voluntary, convenient sample of perioperative nurses
- 5 hospitals within a large health care system

Survey Administration Methods

- Invited 377 (100%) perioperative nurses
- Recruited 91 participants using on-site briefings in 15 perioperative settings (preoperative holding, operating room, and recovery room)
- Power analysis indicated 100 surveys (four surveys per participant)
- Provided written materials
- 55 (15%) perioperative nurses signed informed consents
- Anonymous and self reporting
- Financial incentives
- Survey’s completed outside of the hospital and mailed in pre-stamped envelopes to researcher
- Dummy coding for participants
Survey

24-item Near Miss Survey self reported and developed for this study

- Survey subscale
  - Contributing factors (PA-PSRS)
    - Team Factors
    - Work Environment
    - Task Factors
    - Staff Factors
    - Patient Characteristics
    - Hospital Characteristics

Validity of Measures

- Instrument (PA-PSRS) has been used by the Commonwealth of Pennsylvania 2003 - current
- Permission was obtained from ECRI, Evidence Based Practice Center
- Content validity established by using five expert consultants in the field of statistical research and Risk Managers involved in health care system’s quality and patient safety instruments for medical errors and near miss data analysis
- Cronbach alpha was .746
- Qualitative analysis identified themes were reviewed by an expert consultant
Study Results

- Received 163 (74%) Near Miss Surveys between August 2007 to January 2008
- 100% met Near Miss Survey’s definition of a near miss
- Demographics
  - Average years as a registered nurse (17 yrs)
  - Average years as a perioperative nurse (7.4 yrs)

Study Results using Near Miss Survey and open-ended responses
(Derived from Ricoeur's to reach saturation N = 163, more than one response)

- Date during collection, October 5, 2007 (3%)
- Day of week, Tuesday (24%)
- Time of of day ranged, 12:30 am to 6:00 pm
- Age of patient, Adult <65
- Location discovered
  - Operating Room (46%),
  - Preoperative holding (35%)
  - Recovery Room (16%)
- Perioperative phase near miss caught was prior to the start of the surgical case
### Type and Frequency of NM Reported using open-ended responses

(Derived from Ricoeur’s to reach saturation N = 163)

<table>
<thead>
<tr>
<th>Type</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medication</td>
<td>15.9%</td>
</tr>
<tr>
<td>Allergy</td>
<td>10.4%</td>
</tr>
<tr>
<td>Potential contamination</td>
<td>9.8%</td>
</tr>
<tr>
<td>Tests</td>
<td>8.6%</td>
</tr>
<tr>
<td>Wrong count</td>
<td>8%</td>
</tr>
<tr>
<td>Informed consent</td>
<td>8%</td>
</tr>
<tr>
<td>Label</td>
<td>7.4%</td>
</tr>
<tr>
<td>Equipment</td>
<td>5.5%</td>
</tr>
<tr>
<td>Transfer</td>
<td>4.9%</td>
</tr>
<tr>
<td>Supply needed</td>
<td>4.9%</td>
</tr>
<tr>
<td>Wrong side surgery</td>
<td>4.3%</td>
</tr>
<tr>
<td>Wrong patient</td>
<td>3.1%</td>
</tr>
<tr>
<td>Documentation in chart</td>
<td>3.1%</td>
</tr>
<tr>
<td>Surgical complications</td>
<td>2.5%</td>
</tr>
<tr>
<td>ID bracelet</td>
<td>2.5%</td>
</tr>
<tr>
<td>No check-in procedure</td>
<td>1.2%</td>
</tr>
</tbody>
</table>

### Type and Frequency of NM Reported

<table>
<thead>
<tr>
<th>Medication</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Order entry</td>
<td>4.9%</td>
</tr>
<tr>
<td>Wrong dosage</td>
<td></td>
</tr>
<tr>
<td>Wrong medication</td>
<td></td>
</tr>
<tr>
<td>Patient allergic</td>
<td></td>
</tr>
<tr>
<td>Wrong medication</td>
<td>3.1%</td>
</tr>
<tr>
<td>Wrong mixture</td>
<td>2.5%</td>
</tr>
<tr>
<td>Wrong dose</td>
<td>1.8%</td>
</tr>
<tr>
<td>Omitted</td>
<td>1.8%</td>
</tr>
<tr>
<td>Adverse reaction</td>
<td>1.2%</td>
</tr>
<tr>
<td>Wrong site</td>
<td>0.6%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Allergy</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross-allergic reaction</td>
<td>6.1%</td>
</tr>
<tr>
<td>Latex</td>
<td>2.5%</td>
</tr>
<tr>
<td>Documentation</td>
<td>1.8%</td>
</tr>
</tbody>
</table>
Causes of NM Reported using open-ended responses

Six causal factors revealed subcategories
- Inconsistent information
- Incorrect monitoring
- Both subcategories

Causal Factor Subcategory: Inconsistent information
- Medication
- Allergy
- Label
- Documentation in the patient’s chart
- Informed consent
- Identification bracelet
Causal Factor Subcategory: Incorrect Monitoring

- Potential contamination
- Tests
- Equipment
- Supply needed
- Transfer
- Complications from surgery
- No check-in procedure done

Causal Factor Subcategory: Contained Both

- Wrong count
- Wrong side surgery
- Wrong patient
“Causal Attributes” of Near Misses using Commonwealth of Pennsylvania’s Survey (N = 163, with more than one response provided)

- Team Factor (87%)
  - Communication between teams
- Workload Factor (73%)
  - Distractions, Interruptions
- Task Factor (70%)
  - Training issues, Inexperienced staff, and Inadequate supervision
- Hospital Characteristics (66%)
  - Policy not followed, Procedure not followed, and Lack of procedure
- Staff Factor (63%)
  - Proficiency issues, Fatigue, and Insufficient staff
- Patient Characteristics (21%)
  - Lack of patient understanding, Lack of compliance

Top Contributing Factors of NM

- Communication between team (members)
- Distractions
- Policy(s) not followed
- Procedure(s) not followed
- Interruptions
- Training issue
- Inexperienced staff member(s)
“Causal Attributes” of Near Misses
using open-ended responses
(51% respondents’ provided written comments)

• Hospital Characteristics
  – Outside department involved
    • Emergency Room
    • Other nursing units
    • Laboratory and Blood bank
    • Surgeon’s medical office
    • Presurgical admittance
  – Command climate
    • Employee difficult to work with
    • Being hurried or pushed to proceed
  – Inadequate hospital workspace
  – Inconsistent information

• Team Factor
  – Thought I needed to do it myself
  – Thought someone else had done it/checked already

“Causal Attributes” of Near Misses
using open-ended responses (Cont.)

• Workload Factor
  – Became complacent to details/not paying attention
  – Incorrect monitoring

• Patient Characteristics
  – Presenting conditions
    • Abnormal laboratory work
    • Size of patient
    • Presenting infection(s)
Time to Next NM Event using control chart findings

- All types of near miss events (5 days)
- Medication near miss event (22 days)
- Allergy near miss event (20 days)
- Frequency of occurrence increased during the middle of the collection period

Discussion of Findings

- Insight into which type of near misses to focus on first
- Insight into contributing factors
  - Communication between teams
  - Following policies and procedures
  - Training and proficiency issues
  - Creating an environment to reduce distractions and interruptions
  - Addressing command climate
Limitations

- Convenience sample
- Sample size
- Self reported
- Generalizability
- Individual perceptions

Conclusions

- This study helped gain an understanding of the perioperative setting near miss experience
- This study helped gain an understanding of the type, causes, and frequency of perioperative setting near misses
- Results expanded the Commonwealth of Pennsylvania’s survey (PA-PSRS)
- Potential policy change
- Future research
Thank you

BCohoon@MilitaryFamily.org
703.931.6632