Incident Analysis Learning Program - Module Six

Multi-Incident Analysis Method

February 21, 2013
Welcome

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Learning Objectives

The rationale behind and understanding of the methodology for multi-incident analysis.

Outline the steps required to undertake a multi-incident analysis

Give examples of when a multi-incident analysis is recommended

**Agenda**

Knowledge + Q&A  Practice + Q&A  Learn together
Introducing: WebEx

Be prepared to use:
- Raise Hand & Checkmark
- Chat & Q&A
- Pointer & Text
About You

Knowledge of [any] MULTI-INCIDENT analysis

0 - 10
<table>
<thead>
<tr>
<th>CRITERIA</th>
<th>COMPREHENSIVE</th>
<th>CONCISE</th>
<th>MULTI-INCIDENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety Assessment Score</td>
<td>3 and some 2</td>
<td>1 and some 2</td>
<td>1, 2 and 3</td>
</tr>
<tr>
<td>(severity and probability)</td>
<td>(see Figure 3.4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complexity Level (degree of agreement,</td>
<td>Complicated, Complex</td>
<td>Simple, Complicated</td>
<td>Simple, Complicated or</td>
</tr>
<tr>
<td>certainty, number of interactions)</td>
<td></td>
<td></td>
<td>Complex</td>
</tr>
<tr>
<td>Area of Impact</td>
<td>Team, Unit/Program, Organization,</td>
<td>Team, Unit/Program,</td>
<td>Team, Unit/Program,</td>
</tr>
<tr>
<td></td>
<td>System</td>
<td>Possible Organization</td>
<td>Organization, System,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sector, Industry</td>
</tr>
<tr>
<td>Context – Internal and External Pressures</td>
<td>High</td>
<td>Low</td>
<td>Low, Medium or High</td>
</tr>
<tr>
<td>Resources Required/ Available</td>
<td>Moderate to Extensive</td>
<td>Limited</td>
<td>Moderate to Extensive</td>
</tr>
<tr>
<td>(time, financial, human)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Timelines</td>
<td>Weeks to Months</td>
<td>Hours to Days</td>
<td>Variable</td>
</tr>
</tbody>
</table>
Types of Multi-Patient Incident Analyses

Type 1 – Analysis of Many Previous Single-Patient Incidents/Reviews

A. Homogeneous incidents/reviews over a period of time
B. Heterogeneous incidents/reviews over a period of time
   ▪ Varying degrees of harm (including near miss)
   ▪ AKA: cluster, aggregate, meta-analysis

Type 2 – Analysis of a Group of Patients Who Have / May Have Been Impacted by an Incident

▪ Varying degrees of harm (unknown to severe)
▪ AKA: look-backs
Why?

Type 1 – Analysis of Many Previous Single-Patient Incidents/Reviews

- To identify themes, relative frequencies of incidents and/or contributing factors; assess trends over time; assess implementation of recommendations; obtain “forest” perspective

Type 2 – Analysis of a Group of Patients Who Have / May Have Been Impacted by an Incident

- To identify **if** harm occurred (threshold determination key); and if so, who was impacted
- Then, as per single (comprehensive) analysis, to identify how and why it occurred, what can be done to reduce risk
- Usually feeds into multi-patient notification
Utilization of the Seniors Falls Investigation Methodology to Identify System-Wide Causes of Falls in Community-Dwelling Seniors

Alekandra A. Zecic, PhD,1,2 Alan W. Salmon, PhD,3 John H. Lewko, PhD,4 Anthony A. Vandervoort, PhD,3 and Mark Speechley, PhD

Purpose: As a highly heterogeneous group, seniors live in complex environments influenced by multiple physical and social structures that affect their safety. Until now, the major approach to falls research has been centered on个人 case studies. However, in industrial settings, the individuals involved in an accident are seen as the object of system failure. The object of the present study was to investigate safety deficiencies that contributed to falls in community-dwelling seniors using a systems approach. Design and Methods: The investigations were conducted using the Seniors Falls Investigation Methodology (SFIM), an adapted version of a method used to assess transportation accidents, such as airplane crashes. Fifteen seniors, who experienced a fall or near fall, participated in multiple case studies. A cause-and-effect network was used to summarize findings and identify common patterns of causes and safety deficiencies. Results: Falls and near falls are a result of latent unsafe conditions, unsafe acts, and decisions combined in a diverse set of circumstances. If not identified and removed, these unsafe conditions can cause falls for other seniors. Implications: This study provided compelling evidence that causes of falling are systemic and develop over time. It demonstrated that the systems approach is needed to expand the focus from the individual to multilayered organizational and supervisory causes. The SFIM demonstrated capability to identify causes of falls that will allow better prevention and management programs, hence advancing seniors' safety. SFIM shown great potential for implementation in organized settings, such as hospitals and long-term care homes.

Key Words:klamor factors, System approach, Accident investigation, Swiss cheese model, Safety deficiency.

The fast growing body of knowledge in falls research produced great advances in understanding of the systemic and external risk factors of falling (Close, 2001). A number of randomized controlled trials demonstrated that modifying risk factors could reduce fall risk (Gilmore et al., 2002; Tiirila, Micamy, & Klaas, 1996). However, dissemination of research evidence into practice is lagging which could explain why approximately one third of community-dwelling seniors are unable to safely manage their daily activities without falling at least once a year. Much is known about the risk factors (Kullinger & Paris, 2002; Fletcher & Hilde, 2000; Sahl, Robker, Bera, & Auras, 2004), but considerably less is known about the causes of falls and the circumstances surrounding these adverse events (Campbell et al., 1999). In a review of literature on best practices in falls prevention for residents of long-term care (LTC) facilities, Scott, Donaldson, and Callaghan (2003) indicated that comprehensive fall prevention plans

Table 1. Summary of the Most Common Characteristics of the Falls Experienced by Community-Dwelling Seniors Investigated

<table>
<thead>
<tr>
<th>Falls characteristics</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walking just before the fall</td>
<td>81</td>
</tr>
<tr>
<td>Indoor falls</td>
<td>80</td>
</tr>
<tr>
<td>Routine activity</td>
<td>80</td>
</tr>
<tr>
<td>Injurous falls (mild, moderate, and serious)</td>
<td>73</td>
</tr>
<tr>
<td>Laying on the floor or ground after landing</td>
<td>73</td>
</tr>
<tr>
<td>Wore shoes</td>
<td>60</td>
</tr>
<tr>
<td>Entrance area</td>
<td>60</td>
</tr>
<tr>
<td>Time of the fall between 12 and 5 p.m.</td>
<td>54</td>
</tr>
<tr>
<td>Forward fall</td>
<td>53</td>
</tr>
<tr>
<td>Medical help sought after the fall</td>
<td>47</td>
</tr>
<tr>
<td>Required help of another person to get up</td>
<td>47</td>
</tr>
</tbody>
</table>

Note: *A high percentage of injurious falls is in part the consequence of recruitment due to head and facial injuries.

Figure 2. Summary of safety deficiencies identified in 15 investigations at four levels of defenses of the Swiss cheese accident causation model.

ORGANIZATIONAL FACTORS - Organizational philosophy and policies (e.g., snow removal, maintenance), inadequate diagnostics, lack of safety standards and regulations, unregulated training for second-hand purchased assistive devices, lack of services (e.g., lifts after falls), lack of policies to report known hazards or falls ...

SUPERVISION - Inadequate family supervision, lack of social networks, lack of emergency response, inadequate involvement and supervision by family doctor, poor transition between physicians, need for formal and informal monitoring, poor communication ...

PRECONDITIONS - Poor equipment design; lack of instructions, procedures, practices, knowledge or training; constrained places; bad housekeeping (clutter, damaged thresholds); altered perception of risk; acute and chronic health problems; overmedication; poor muscle strength, weather ...

UNSAFE ACTS AND DECISIONS - attention switch, apprehensiveness, rushing, multitasking, self-adjustment of instructions, walking in a dark, walking and turning, quick rise from seats, sitting down on unlocked walkers, failure to report hazards, unsafe habits, risk taking ...

Falls (trips, slips, trips) and near falls
Type 1-A: Examples

Aggregate Analysis of Medication Incidents Involving Drug Interactions

Drug interactions are preventable adverse drug events that can lead to increased morbidity and mortality, as well as additional costs to the healthcare system. A drug interaction may occur not only between 2 or more drugs (drug-drug interactions), but also between a drug and food or another drug-food or drug-drug interactions). A drug-drug interaction leads to a change in pharmacologic or toxicologic response of the drugs involved, such as a reduction in efficacy, toxicity, or both. Therefore, the anticipated effect of each drug administered alone may be altered.

Type 1-A: Examples

http://www.ismp-canada.org/ISMPCSafetyBulletins.htm
Total of 30 Reviews
- Medication Related (50%)
- Resuscitation (13%)
- Patient Identification (13%)
- Reached Patient (79%)
- Caused Harm (35%)

Figure 2. Frequency distribution of contributory factors

Cronin, Healthcare Quarterly Vol. 9, 2006
Building Safer Systems through Critical Occurrence Reviews: Nine Years of Learning

Polly Stevens, Lynn Urson, Janice Campbell and Rita Czarniak

The Hospital for Sick Children (SickKids), the term critical occurrence was developed to describe any event that results in an actual or potential serious, undesirable and unexpected patient or staff outcome including death or major permanent loss of function, not related to the natural course of the patient's illness or underlying condition. It also includes a breach of legislation including the Personal Health Information Protection Act of Ontario. Although broader in its definition, the term aligns closely with critical incident as defined within the amendments in Regulation 953, under the Public Hospitals Act (Government of Ontario, 1996).

Critical occurrences may include, but are not limited to potential or actual adverse outcomes (including death) associated with or resulting from medication errors, wrong site, wrong patient, procedure performed on the wrong patient, equipment malfunction, an outbreak or unusual pattern of preventable infections; employer actual or potentially serious injuries.

SickKids’ Program for Patient Safety includes the management of critical occurrences and includes as one component of a system roadmap that has guided the hospital in its actions to sustain a culture of safety (Schein et al., 2005; Mahony et al., 2008). An essential component of the roadmap is the ongoing need to identify failures, examine their contributing factors and apply lessons learned and system thinking to prevent recurrence. In 2003, the Hospital for Sick Children formally implemented an innovative, systematic process for reviewing critical occurrences. This process was implemented following a series of workshops and in response to the Institute of Medicine's report challenging healthcare to learn from sentinel events in an effort to prevent harm (Roter and Donaldson 2000). The review process was largely influenced by the work of the Critical Risk Unit and the Association of Litigation and Risk Management (1999), which described a formal, practical protocol for investigating and analyzing critical incidents. Subsequently, the London Protocol (Taylor-Adams and Vickers 2006) provided further support for a “systemic review” that would identify a variety of contributing factors leading up to the sentinel incident as well as taking into account all aspects of the healthcare system in question.

A systemic approach to incident review recognizes that human performance is greatly influenced by organizational (or systemic) factors. These include factors related to the patient and family (e.g., complexity, ability to communicate); the task and technology (e.g., availability and use of personal decision-making aids); the individual (e.g., training, fatigue, the nurse [i.e., communication]); the workplace (e.g., working conditions); the organization (e.g., priority setting, and hierarchy and government agencies); and ethical, legal, and regulatory (Steen 1995). When problems are identified, their broader aspects of the system are explored in order to determine whether they had an influence on the outcome of caregivers and that what changes can be made to prevent similar events from occurring in the future.

Figure 1. Number of annual reviews over nine years (n = 93)

Figure 2. Percentage reviews by severity

Figure 3. Average number of recommendations per review by year

Figure 4. Percentage of recommendations

Healthcare Quarterly Vol.13 Special Issue September 2010
Type 2: Usual Suspects

1. Diagnostics (especially pathology)
2. Infection Control
3. Privacy Breach
Type 2: Examples

- Toronto (1994)
  - Blood/look-back process
- Toronto (2003)
  - Equipment Cleaning
- Newfoundland (2005)
  - Pathology
- Southern Ontario (2010)
  - Pathology
- Toronto (2011)
  - Actual Nosocomial infection

- Toronto (2011)
  - Risk of nosocomial infection
- BC (2011)
  - Radiology
- Alberta (2012)
  - Pathology, Radiology
  - Loss of personal health information
Process Overview

Understand WHAT HAPPENED
- Review incident reports and/or analyses and supporting information
- Review additional information: policies, procedures, literature, environmental scan, previously reported incidents, previous analyses, consultations with colleagues or experts, etc.
- Compare and contrast the incident reports and/or analyses that comprise the themed analysis (can use process mapping)
- Complete a quantitative analysis (descriptive statistics)

Determine HOW AND WHY IT HAPPENED
- Complete a qualitative analysis: Compare and contrast contributing factors and/or recommended actions to look for common trends or themes
- Summarize findings
  - Include any trends, patterns of contributing factors, and any other findings

Develop and Manage Recommended Actions (Section 3.6.6)
WHAT CAN BE DONE TO REDUCE THE RISK OF RECURRENCE AND MAKE CARE SAFER
- Develop recommended actions
- Suggest and order of priority
- Forward to applicable decision maker for final decisions and actions
- Manage recommended actions

FOLLOW-THROUGH: IMPLEMENT, MONITOR, ASSESS
CLOSE THE LOOP: SHARE WHAT WAS LEARNED (INTERNALLY AND EXTERNALLY)
Prepare (Type 1)

1. Determine the theme and inclusion criteria
2. Gather data
3. Convene an interdisciplinary team
4. Review literature and obtain expert opinions to lend perspective to the analysis
5. Develop the analysis plan and prepare the materials
1. Convene an interdisciplinary team
2. Obtain expert opinions
   - clinical, epidemiological, risk management
3. Establish look back plan and gather data
   - carefully consider expected false negative and positive rates, particularly when using newer, more sensitive test methods
4. Assess results
5. Plan disclosure (if required)
   - clinical, epidemiological, ethical, legal/insurer(s), professionals
SPECIFIC CIRCUMSTANCES

The following section highlights some important situations that may affect the approach to disclosure. Each circumstance should be addressed on a case-by-case basis and some may require consultation with legal counsel.

LARGE SCALE DISCLOSURE

Sometimes there is a need to communicate about the same patient safety incident with many patients of a single healthcare provider or organization, or patients of many healthcare providers or organizations. Although many healthcare providers and organizations have adopted policies and practices that support and guide disclosure, these policies and practices seldom address the distinctive challenges of large-scale patient safety incidents.

The process and content of communication about large-scale patient safety incidents can vary widely because of the enormous potential variation in the numbers of affected persons and the risks and scope of potential harm. These differences have important implications for strategies and plans about how, when, and what to disclose. Healthcare providers and organizations should establish well thought out approaches to large-scale patient safety incidents, including the following elements.

Multi-patient Disclosure

Assessing risk and identifying at-risk patient populations
A very significant challenge of large-scale patient safety incident disclosure is deciding which patients potentially exposed to a patient safety incident, are at risk and require disclosure. Where the likelihood of harm is high, the need to contact all affected patients is clear. As the likelihood of harm decreases, a complex weighing of ethical probabilities and ethical obligations may be required. Ultimately, the criteria for contacting patients should be established with regard to the assessed risk.

Meeting this challenge requires access to current evidence-based risk assessment information and research. Healthcare organizations should anticipate these challenges by having clinical, epidemiological, ethical, administrative, communications, legal and other expertise, including a patient experience expert, available to consider disclosure in a structured way and decide on the requirement and potential process for a large-scale patient safety incident disclosure.

Identifying and locating at-risk patient populations
Another challenge of a large-scale patient safety incident disclosure is locating patients, especially when the patient safety incident is in the distant past. Information retrieval may no longer be possible, and the contact information, if retained, may no longer be current. Multiple methods of identifying patients should be considered with other available information systems (e.g., Provincial Medical Records System) to increase communications with patients who are not at risk or patients who are deceased.

It is also prudent to consider whether other health care organizations need to be alerted to the possibility of similar hazards that may exist in their systems, so that they might identify and locate at-risk patients.

Communicating with and disclosing to at-risk patient populations
Providing information and meeting the clinical and emotional needs of patients is paramount, and the communication plan developed by the disclosure team should reflect this requirement. Communication with patients should happen as soon as possible after the minimum amount of information required to make the communication meaningful is available. The greater the risk of harm to the patient, the more compressed this timeline should be. The best practice for initial disclosure communication with at-risk patients is to be done concurrently. Where the scope of communication makes this impractical, communication may need to take place in sequential stages.

The best practice for initial disclosure communication with at-risk patients is that it be done in person, and the more urgent or serious the risk of harm, the sooner the case for in-person initial disclosure. However, where the risk is less urgent or less serious, or where in-person initial disclosure is not practical, written communication may need to be considered.
What (Type 1)

- Review incident reports and/or analyses and supporting information
- Review additional information: policies, procedures, literature, environmental scan, previously reported incidents, previous analyses, consultations with colleagues or experts, etc.
- Compare and contrast the incident reports and/or analyses that comprise the themed analysis (can use process mapping)
- Complete quantitative analysis (descriptive statistics)
How and Why (Type 1)

• Complete a qualitative analysis:
  • Compare and contrast contributing factors and/or recommended actions to look for common trends or themes
• Summarize findings
  • Include any trends, patterns of contributing factors, and any other findings
What Can Be Done (Type 1)

- Develop recommended actions
- Suggest an order of priority
- Forward to applicable decision maker(s) for final decisions and actions
- Manage recommended actions
Follow-through
• Implement
• Monitor
• Assess

Close the Loop
• Share what was learned
  o Internally
  o Externally (Publish?)
Questions?
Real-life Experience

Kate Wilkinson
Multi-incident Analyses

An Analysis of Common Causes Identified in Near Miss Reporting
At Bridgepoint the term **Good Catch** is used to refer collectively to either a near miss or a reportable circumstance.
Why Near Misses

- Valuable source of knowledge on how safe is your system
- Provides data for development of strategies for patient safety improvement
- Determine system and process issues that may contribute to errors reaching the patient
- Enhance reporting by providing meaningful feedback to staff
Driving Improvement

• Review ‘clusters’ of no harm events or near misses
• Looking for common themes
• Understand system vulnerabilities
Prepare for Analysis

- Determine theme or focus of review
- Determine what type of data you have or may need to collect
- Develop a framework to record information
Understand What Happened

Incident report database

- Report filters
  - Good Catch
  - Medication / Fluid
  - Falls

- Compare and contrast incident report data
Common Cause Analysis

• Developed Common Cause tracking tool
• Analyzed reported Good Catches for Medication/Fluid events and Fall events between June 1, 2011 and June 2012
• Identified occurrence of both system, individual and patient factors
• Total of 18 Good Catches that were either type A or B classification*:

  ➢ **A = Potential error in process** e.g.: Pharmacist noted wrong medication dispensed before leaving pharmacy; or a sound-a-like/look-a-like medication stored side by side

  ➢ **B = Error detected before administration of 1st dose** e.g.: error noted by nurse when transcribing order; or a wrong medication caught before 1st dose given to patient

* NCC MERP Index for Categorizing Medication Error
<table>
<thead>
<tr>
<th>Individual</th>
<th>System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inattention</td>
<td>Missing/Incorrect information</td>
</tr>
<tr>
<td>Distraction</td>
<td>Work Flow</td>
</tr>
<tr>
<td>Lapse in judgment</td>
<td>Poor hand off/lack of information</td>
</tr>
<tr>
<td>Misinterpretation</td>
<td>Checking/validating</td>
</tr>
<tr>
<td>Failure to validate</td>
<td>Policy/Protocol</td>
</tr>
<tr>
<td>Short cut taken</td>
<td>Technology</td>
</tr>
<tr>
<td>Knowledge/Skills</td>
<td>Human Factors</td>
</tr>
<tr>
<td></td>
<td>Environment/noise</td>
</tr>
<tr>
<td></td>
<td>Culture/team work</td>
</tr>
<tr>
<td></td>
<td>Work load/span of control.</td>
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</tbody>
</table>
What Did We Learn…

• Failure to validate was the highest cause of the potential error

• Missing or incorrect information noted primarily occurs as part of admission process
  – Medication reconciliation by pharmacist caught errors before reached patient

• Sound-a-like errors occurred on a small number of occasions
Near Miss Falls

• 116 reported Good Catches for risk of Falls
• Number one contributing factors relate to Behavioral /Cognitive issues resulting in:
  • Not requesting assistance with transfers or for other comfort measures
  • Not using mobility devices appropriately
• Failing to comply with the documented plan of care was noted on two occasions
• 33% files had documented changes to the plan of care as a result of the report
## Contributing Factors

A simple tally sheet is used to collect all contributing factors documented

<table>
<thead>
<tr>
<th>System</th>
<th>Individual</th>
<th>Patient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clutter/Trip Hazards in room or hallways</td>
<td>Risk not known as assessment not yet completed or re-evaluated</td>
<td>Did not request assistance with transfers or for other comfort measures</td>
</tr>
<tr>
<td>Floor Surfaces</td>
<td>Call Bells / equipment not left in reach of patient</td>
<td>Does not have well fitting, non slip footwear</td>
</tr>
<tr>
<td>Slippery / uneven</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inappropriate Lighting</td>
<td>Established plan of care not followed by staff (e.g. bed alarm, floor mat)</td>
<td>Patient does not follow / understand instructions given to prevent falls</td>
</tr>
<tr>
<td>Equipment failure</td>
<td>Bed not left in optimal position for safe transfers</td>
<td>Family does not follow / understand instructions given to prevent falls</td>
</tr>
<tr>
<td>Equipment not available</td>
<td>Locks not engaged bed / W/C</td>
<td>Cognitive / behavioural factors e.g. not recognizing limitations, confusion</td>
</tr>
<tr>
<td>Staffing / failure to monitor patient based on risk level</td>
<td></td>
<td>Does not use mobility devices appropriately</td>
</tr>
<tr>
<td>Environment (bathroom not barrier free / placement of W/C)</td>
<td></td>
<td>Language / Communication factors</td>
</tr>
</tbody>
</table>

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Close the Loop

• Follow up with managers where information lead the team to believe the information related to an actual incident and did not meet the definition of a Good Catch
What Can Be Done...

- Presentation to PCM group
  - Staff meetings
  - Safety Huddles
- Management follow-up on file improved from 61% in Q1 to 84% in Q2
- Importance of Medication reconciliation and checking information on transitions in care
Share What Was Learned

• Annual Good Catch Awards 2009 - 2012
  1. Pharmacist – ‘Most Serious’ – ‘Life Saver’
     • Hydromorphone / Morphine pump
  2. PCM - Best Management Follow-Up
  3. Highest Reporting Unit or Department.
Share What Was Learned

- Staff Newsletters
  - The Point
  - Safe Med Times

The impact of a Good Catch...

“A quality and safety initiative on 7 West was the implementation of individual CMAR binders for our patients.”

Good Catch Facts and Figures

A Good Catch is defined as an incident that did not reach the patient or a reportable circumstance (i.e., a situation in which there was a significant potential for harm, but no incident occurred).

Common causes for fall Good Catches are: behavioral/cognitive factors; failure to request assistance with transfers or other comfort measures; and, failure to use mobility devices.

The majority of medication error Good Catches include both system and individual factors.
Share What Was Learned
Next Steps

- Reporting frequency: quarterly
- Expand interprofessional team involvement
- Disseminate information more broadly
- Include no harm or minor harm incidents
Questions?
Learn from Each Other
Q&A with the 2 presenters
  • Main room

Learn from each other
  • Whiteboard 1: Meta-analysis
    o Analysis of many previous single-patient incidents
  • Whiteboard 2: Multi-patient
    o Analysis of a group of patients impacted by an incident
Recap and Next Steps

End of session evaluation - tomorrow
Follow up survey – 6 months

• Follow-through and share what was learned
  March 28, 2013

• Recommendations management
  March 7, 2013
Learning Program – previous modules:

Incident Analysis Tools
http://www.patientsafetyinstitute.ca/English/toolsResources/IncidentAnalysis/Pages/Tools.aspx