Patient Safety Considerations in Emergency Care

Beyond Overcrowding
October 26, 2007
Carolyn Hoffman RN MN
Presentation Overview

• A Complex Health System...where are we starting from?

• Technology...how can it help?

• Systems...what is a systems approach?

• Culture...what is it and what does it look like?

• Canadian Root Cause Analysis Framework

• Canadian Patient Safety Institute
What We Know

- Population is increasingly aging, and 9.9 million baby boomers (those born between 1947 and 1966) are now between 40 and 60 years of age (Foot, 2004)
- Higher acuity in hospitals and long term care
- New technologies allow for more treatments to be carried out in the hospital and community (dialysis, IV therapy, ventilation, etc)
- Every year, approximately 14 million Canadians go to Emergency Departments for care (CADTH, 2006)
What we know

Adverse Event:
An adverse event is an unintended injury or complication which results in disability, death or prolonged hospital stay, and is caused by healthcare management

Wilson et al, 1995
What We Know

• **Adverse Events in Canadian Hospitals** (Baker, R. & Norton, P. et al. (2004))
  • 7.5% of admissions to hospitals in 2000 (approximately 185,000 admissions) were associated with one or more adverse events
  • 37% considered highly preventable (estimated 70,000 preventable adverse events)
  • **Approx. 9,000 - 24,000** preventable AE deaths in Canada (2000)

• Most **common types** of adverse events
  • Events related to surgical procedures (34% of total)
  • Drug or fluid related events (24%)

• Although men and women experienced equal rates of AEs, patients who had AEs were significantly **older** than those who did not
What We Know

Canadian Institute for Health Information

• More deaths after experiencing adverse events in hospital than deaths from breast cancer, motor vehicle and HIV combined

• One in nine adults contract infection in hospital

• One in ten patients receive wrong medication or wrong dose
What We Know

• Pain patch blamed in death of two teens
  – A 15 year old girl and a 14 year old boy suffered respiratory arrest soon after receiving a powerful pain relief patch (Duragesic), designed for treating adults with chronic pain

• Patient dies after receiving wrong painkiller in ED
  – Hydromorphone administered instead of morphine

• Two patients from the Foothills Medical Centre ICU die after receiving a dialysate solution
  – Solution mixed with potassium chloride instead of sodium chloride
Dangerous
(>1/1000)

Regulated

Ultra-safe
(<1/100K)

Total Lives Lost per year

Number of encounters for each fatality

Driving

Offshore rig

Rock Climbing for 25 hrs

timber

truckers

Coal Mining

Firearms

Bungee Jumping

Scuba diving

Ultra-safe
(<1/100K)

Coal Mining

Commercial airlines

Rock Climbing for 25 hrs

Scuba diving

Offshore rig

Driving

Canadian Patient Safety Institute: Building asafer Health System

Risky Activities – Adapted by Dr. Philip Hebert (2005)
Hospitalization – a risky activity?

• Comparison with other un-health related activities unfair.

• In part, the risks of hospitalization are due to the illness or injury that brings the patient to the facility and the lifesaving interventions provided.

• Relevant comparison should be persons with various conditions who don’t come to hospital.

Example: The risk of death from hospitalization is small compared with the (close to certain) risk of death with untreated bacterial meningitis or a ruptured viscus...
## Improve Reliability

- Improve reliability of care delivery processes*

<table>
<thead>
<tr>
<th>Reliability</th>
<th>Failure Rate</th>
<th>Components</th>
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<tbody>
<tr>
<td>~ 9/1</td>
<td>Level 1 $10^{-1}$</td>
<td>~1/10</td>
</tr>
<tr>
<td>~ 95/100</td>
<td>Level 2 $10^{-2}$</td>
<td>~5/100</td>
</tr>
<tr>
<td>~ 995/1000</td>
<td>Level 3 $10^{-3}$</td>
<td>~5/1000</td>
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* Stephen E Muething MD
Technology is a broad concept that deals with a species' usage and knowledge of tools and crafts, and how it affects a species' ability to control and adapt to its environment. In human society, it is a consequence of science and engineering (Wikipedia, 2007)
Human Factors Engineering

A branch of engineering that specializes in understanding how humans interact with the world around them.

It draws upon applied research in many areas, such as biomechanics, kinesiology, physiology, and cognitive science, to define the parameters and constraints that influence human performance. This specialized knowledge is used to design efficient, human-centred processes to improve reliability and safety.
Designing for Safety

Weaker Actions

- Double checks
- Warnings and labels
- New procedure/memorandum/policy
- Training
- Additional study/analysis

VA NCPS, 2002
Designing for Safety

Intermediate Actions

• Increase in staffing/decrease in workload
• Software enhancements/modifications
• Eliminate/reduce distractions (sterile medical environment)
• Checklist/cognitive aid
• Eliminate look and sound alikes
• Read back
• Enhanced documentation/communication
• Redundancy
Stronger Actions

- Architectural/physical plant changes
- New device with usability testing before purchasing
- Engineering control or interlock (forcing functions)
- Simplify the process (↓ unnecessary steps)
- Standardize equipment or processes
- Tangible involvement and action by leadership in support of patient safety

VA NCPS, 2002
Designing for Safety

Baseline Code Cart Drawer
Designing for Safety

5th Version - Code Cart Drawer
Designing for Safety
Designing for Safety

Additional Information

Kim Vicente

The Human Factor

Revolutionizing the Way We Live with Technology

 CPSI-ICSP
Understanding the System

Sharp End:
- Immediate Cause(s)
  - Patient / Health Care Provider / Team / Task and Environmental Factors

Blunt End:
- Underlying Cause(s)
  - Management / Organizational / Regulatory Factors
  - Contributing Factors
  - Root Cause(s)

Examples: Medication AEs, Nosocomial Infections
Examples: Communications Culture Physical Environment Policies / Procedures

Adapted from the NHS Report – Doing Less Harm, 2001
Organizational Culture

A pattern of basic assumptions that has worked well enough to be considered valid, and is taught to new members as the correct way to perceive, think and feel in relation to problems.

Schein 1990
Patient Safety Culture

A "safety" culture is one that integrates the Hippocratic maxim of "first do no harm" into the very fibre of its identity, infuses it into the norms and operations of an entire organization, and elevates it to the level of a top priority mission.

Pernal-Wallag and Dwyer (2002)
What does a Safety Culture Look Like?

✓ Leadership commitment
✓ Necessary resources
✓ Safety is valued over production
✓ Effective and open communication
✓ Openness about problems and errors
✓ Organizational learning is valued
✓ Unsafe acts are uncommon

(Singer, Gaba, Gappert, Sinakio and Park, 2003)
Leadership

For many reasons, senior executives in health care have generally not embraced the pursuit of safety with the needed level of discipline and investment.

Perhaps they have feared taking that gigantic first step of admitting that we do have a problem, and thereby exposing themselves and their colleagues to external criticism.

Perhaps they have lacked the specific, technical training to understand the causes and remedies of safety problems, themselves.

Don Berwick IHI, April 2006
Model developed by Shell Oil (Corporate Safety Team) – presented by Dianne Parker, University of Manchester at Halifax 6
Seven Steps (NHS – 2004)

- Build a safety culture*
  - Create a culture that is open and fair
- Lead and support staff**
  - Promote / facilitate a patient safety focus
- Integrate risk management activity**
  - Client concerns, incidents, litigation, good catches...
- Promote reporting**
  - Actively seek and support reporting

* Also a CCHSA Patient Safety Goal
** Related to CCHSA Patient Safety Goal
Seven Steps (NHS – 2004)

• Involve and communicate with patients / public**
  - Listen to learn, supportive disclosure processes...
• Learn and share safety lessons**
  - RCA, FMEA...
• Implement solutions to prevent harm**
  - An organization with a memory
  - Teams collaborate and implement tests of change then integrate effective changes into practice

* * Related CCHSA Patient Safety Goal
Canadian Root Cause Analysis Framework

A Tool for Identifying and Addressing the Root Causes of Critical Incidents in Health Care
RCA Framework

Saskatchewan Health
- Jennifer White, Provincial Quality of Care Coordinator

Institute for Safe Medication Practices Canada
- David U, President and CEO
- Julie Greenall, Project Leader

Canadian Institute for Patient Safety
- Carolyn Hoffman, Director of Operations (ON to BC)
- Paula Beard, Project Manager
Definition

An analytic tool that can be used to perform a comprehensive, system-based review of critical incidents. It includes the identification of the root and contributory factors, identification of risk reduction strategies, and development of action plans along with measurement strategies to evaluate the effectiveness of the plans.

Canadian RCA Framework, 2006
Root Cause Analysis

- The goals of a root cause analysis are to find out:
  - What happened
  - Why it happened, and
  - What can be done to reduce the likelihood of a recurrence.
There are four types of incidents that are not recommended for a multidisciplinary root cause analysis forum:

1. Events thought to be the result of a criminal act;
2. Purposefully unsafe acts (an act where care providers intend to cause harm by their actions);
3. Acts related to substance abuse by provider/staff;
4. Events involving suspected patient abuse of any kind.
Conducting a Root Cause Analysis

Gather information
Initial Understanding
Additional Information
Literature Review
Timeline and Final Understanding
Determine Root Causes/ Contributing Factors
Formulate Causal Statements
Develop Actions
### RCA Team Action Plan (Q. 19)

<table>
<thead>
<tr>
<th>Case Number:</th>
<th>RCA Team Action Plan</th>
<th>Edit Mode</th>
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**Root Cause/ Contributing Factor**

<table>
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<tr>
<th>Action</th>
<th>Outcome Measures</th>
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<tbody>
<tr>
<td><strong>1.</strong> Time limitations led to no training for the nurse on the lengthy 200-page manual for the pacemaker resulting in a useless medical device due to a meaningless error code.</td>
<td>File dissatisfaction complaint with the company, recommend product design change. Notify VSN, NCPS.</td>
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<tr>
<td></td>
<td>Safety Alert sent to all users through NCPS.</td>
</tr>
<tr>
<td><strong>Date</strong></td>
<td><strong>Person Assigned</strong></td>
</tr>
<tr>
<td>12/31/1999</td>
<td>J Elaine, RN</td>
</tr>
<tr>
<td><strong>2.</strong> Because the staff nurse was not trained prior to her first use of the pacemaker, she was forced to change to another pacemaker when the error code appeared resulting in delayed treatment and putting the patient at risk.</td>
<td>Staff re-trained on this feature. Training incorporated in all new training for this product. Notify all physician-staff involved with the external pacemaker of the Safety Alert and error code ##XX.</td>
</tr>
<tr>
<td></td>
<td>Inservice attendance records (E15) will show that staff who use the product, and all staff in intensive care units who received training before first use.</td>
</tr>
<tr>
<td><strong>Date</strong></td>
<td><strong>Person Assigned</strong></td>
</tr>
<tr>
<td>12/31/1999</td>
<td>K Williams</td>
</tr>
<tr>
<td>2/1/2000</td>
<td>C McMillen</td>
</tr>
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| **3.** The pacemaker company’s troubleshooting card did not include the error code feature resulting in the error code’s first appearance in critical use for a patient. | Discuss implementation concerns with the company and the need for a product design change. |
| | Receive written acknowledgement from the company of resolution of the dissatisfaction complaint. |

**Mgmt Concur & Notes**

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<th><strong>Add/Edit Concur</strong></th>
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<tbody>
<tr>
<td>Yes</td>
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**Actions/Outcomes (Q. 19)**

- Basic Information (Q. 1-7)
- Charter Memo
- Previous Event (Q. 8)
- Immediate Action (Q. 9)
- Init. Understanding (Q. 10)
- Resources Needed (Q. 11)
- Personnel Needed (Q. 12)
- References (Q. 13)
- Final Understanding (Q. 14)
- Root Cause Table (Q. 15)
- Prev. Interventions (Q. 16)
- Reporter Feedback (Q. 17)
- Lessons Learned (Q. 18)
- **Actions/Outcomes (Q. 19)**
- Costs and Methods (Q. 20)
- Attachments (Q. 21)
- Concurrence (Q. 22)
Mandate / Mission / Vision
CPSI Mandate

• Established by Health Canada December 2003
  – $10 million per year for five years committed to patient safety

• Pan-Canadian coordinated approach to complex system issues

• Arm’s length independence – fully transparent and accountable

• Involves patients, health-care providers and public
Mission

To provide national leadership in building and advancing a safer Canadian health system.
Vision

We envision a Canadian health system where:

• Patients, providers, governments and others work together to build and advance a safer health system;

• Providers take pride in their ability to deliver the safest and highest quality of care possible; and

• Every Canadian in need of healthcare can be confident that the care they receive is the safest in the world.
Partial List of CPSI Activities

- *Safer Healthcare Now!*
- Research Funding
- Partner in Halifax Symposia
- Development of patient safety core competencies and professional educational programs
- Partner in the development & implementation of CMIRPS
- Development of the Pan-Canadian RCA Framework
“Never doubt that a small group of thoughtful, committed citizens can change the world. Indeed, it is the only thing that ever has.”

Margaret Mead
(as quoted by Helvarg, 1995)
Contact Information

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