Accidents as Decision Side Effects

University of Southern Maine Patient Safety Academy 2018
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• Working across high-consequence industries
  ➢ *Human factors and cognitive systems engineering*

• Accidents as Decision Side Effect
  ➢ *Case example*

• The Critical Decision Method

• Case Discussion

• Wrap-up
Human Factors

A multi-disciplinary/multi-specialty field of research and practice concerned with optimizing human performance, especially in high-risk, high-consequence settings and domains.
Cognitive Systems Engineering

A specialty discipline of human factors focused on the design and management of sociotechnical systems.
A Sociotechnical System: failures result from the unanticipated effects of interactions among system components.

- A System is defined by its interrelated/interdependent components
- Systems are embedded within systems—micro to macro.
- The performance of a system is shaped dynamically by the interactions of its components
- These attributes establish common ground for safety management across domains—health care, air transport, electrical transmission, military operations...
Understanding System Performance in Context

- **Field data collection:** observations, structured interviews, *artifact* collection; SME review and validation.
- **Analyses** that identify decision requirements and design requirements
- **Applications** (technology, training, policy, procedure, physical space...) based on those requirements
- **Evaluation** based on performance criteria developed during data collection and analysis

Bad outcomes as decision side-effects...
SAFETY ETHICS
Cases from Aviation, Healthcare and Occupational and Environmental Health

MANOJ S. PATANKAR
JEFFREY P. BROWN
MELINDA D. TREADWELL
High-level (interrelated) themes in the experience of **Moral Distress** related to the quality and safety of care:

1. Organizational structure

2. Autonomy pursued at the expense of managing role/task interdependencies

3. Accidents as decision side effects

4. Erosion and Recovery
Latent organizational conditions

Adapted from Managing the Risk of Organizational Accidents, J. Reason, 1997

Latent workplace conditions

Front line work setting

Active Failure

Safety or Security Event

Latent organizational conditions
A Terrorist Escapes
Terrorist escapes

Active Failure

Latent workplace conditions

Latent organizational conditions

Failure to retain, failure to apprehend…

Extreme fatigue; micro-sleep; vigilance decrement; fatal crashes on and off shift; staffing of police and border security at half of that required by policy; back to back mandatory shifts—in violation of policy; no time for breaks or meals, punitive climate; burnout; attrition; high divorce rate...

Reduction in force; empty positions not filled;

Political emphasis on Cost cutting

Adapted from Managing the Risk of Organizational Accidents, J. Reason, 1997
Common Ground in Healthcare...

- Completed a 12 hour shift
- “We are short-staffed because of the new staffing formula.”
- Called back to the OR after a couple of hours off...”you were home and this re-set your [duty time].”
- “I am holding equipment at the end of the procedure and just not sure I cleaned it—I just couldn’t remember and kept trying. I left notes everywhere saying I couldn’t be sure I’d cleaned things.”
- “I was hallucinating—seeing things driving home. Then I had to be back for my day shift at 0630.”
What the!?
RPA Crash

Latent organizational conditions

Loss of control during cruise, ground station operator unable to recover...

Operators unaware of software upgrade—Preflight switching sequence inadvertently disabled automated management of fuel distribution—Center Of Gravity shifted aft during extended cruise...

Unreliable communication of design changes, no prospective identification and communication of potential operator concerns following changes in control function/design...

Latent workplace conditions

Active Failure

Adapted from Managing the Risk of Organizational Accidents, J. Reason, 1997
“Even the [theme park] customer service training didn’t help!”
ED Patient sat
In the hopper

Latent organizational conditions

Very high wait times, patients leaving exam rooms without being seen by a provider, Infarct in ED waiting room; Complaints…

Communication and coordination break-down among ED staff; highly variable triage practice, nurses acting as agents for supply vendors; anger among physicians, nurses, and techs palpable…

Corporate CFO outsourced ED supplies; Corporate CNO required nurses to act as suppliers’ agents. Local CNO home-grown triage by non-clinicians; new HIT to improve ED communication and coordination, no time budgeted for “reflective practice”.

Adapted from Managing the Risk of Organizational Accidents, J. Reason, 1997
It is very common to find "normalized" unsafe and error-provoking conditions in clinical settings of which senior leaders are completely unaware. Overlaying customer service training on this "hot mess" accomplished nothing other than the further aggravation of ED staff. Healthcare organizations often lack reliable learning systems—methods and processes for monitoring frontline experience to continuously detect and intervene in emergent problems.
Discovering unsafe and error-provoking conditions by eliciting frontline experience.
Our Understanding of How Failure Occurs Shapes the Quality of Our Investigations
# A “New” Perspective on Error

<table>
<thead>
<tr>
<th>The Old View</th>
<th>The New View</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human error is a cause of trouble</td>
<td>Error is a symptom of trouble deeper inside a system—within the interactive context</td>
</tr>
<tr>
<td>To explain you must seek failures</td>
<td>To explain failure, do not try to find where people went wrong</td>
</tr>
<tr>
<td>You must find people’s inaccurate assessments, wrong decisions, bad judgments</td>
<td>Find out how people’s assessments and choices made sense at the time given the circumstances that surrounded them</td>
</tr>
</tbody>
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Hindsight Bias

- People have a tendency to simplify a complex story by alluding to what people should or should not have done.

- Often this process is used to explain the event.
Counterfactual reasoning

- “They shouldn’t have.......”
- “They could have.....”
- “They didn’t.....”
- “They failed to”
- “If only they had.....”

When we do the above, we rapidly move away from the potential to understand the situation and context that shaped events.
# A Revised Understanding of System Safety

<table>
<thead>
<tr>
<th>The Old View</th>
<th>The Revised Perspective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complex systems are basically safe</td>
<td>Complex systems are <em>not</em> basically safe</td>
</tr>
<tr>
<td>Unreliable, erratic humans undermine defenses, rules</td>
<td>Complex systems are trade-offs between multiple irreconcilable goals (e.g. safety</td>
</tr>
<tr>
<td>and regulations</td>
<td>and efficiency)</td>
</tr>
<tr>
<td>You must find people's inaccurate assessments, wrong</td>
<td>People have to create safety through practice <em>at all levels of an organization</em></td>
</tr>
<tr>
<td>decisions, bad judgments</td>
<td></td>
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</tbody>
</table>

• The consequence of flawed inquiry is the missed opportunity to make the environment safer for the future.
  – E.g., the Mouseketeer response to a “hot mess”

• An investigation that concludes with a determination of ‘human error’ is a waste of resources and morale.
“The reality is that there is no such thing as the cause, or primary cause or root cause. Cause is something you construct, not find”

Our focus needs to be on why the choice(s) made at the time made sense to those involved.

- We need get inside the situation they were managing.
Cognition in Context

Get inside the heads and environments of those involved in the action and look at the world through their eyes.
CONTEXT is essential:

- Knowledge, Skills and Abilities are essentially inert until the person is put in a particular situation that elicits them.

- How the person uses those KSAs is going to depend on the context…the situational dynamics

- Investigative methods that emphasize understanding of an event in context are essential—that illuminate situation changes as the event unfolded…
A Model of Decision Making “in the wild”

Cognitive Task Analysis:

Methods to Improve Patient-Centered Medical Home Models by Understanding and Leveraging its Knowledge Work
Critical Decision Method

Acronym: CDM

Description:
An extension of the critical incident technique, the critical decision method (CDM) utilizes cognitive probes in a structured way to assess and improve decision processes.
Critical Decision Method (CDM)

A method for reactive and proactive elicitation of incident accounts from individuals and groups.

To design better processes, systems, and training, we must understand cognition—what are frontline operators thinking, noticing, adapting to in context?

Research in cognitive psychology makes it clear that people cannot simply tell you how they think—A technique for eliciting thought processes is required.

Incident-based methods (i.e. CDM) are the gold standard for accomplishing this.
Critical Decision Method

• Developed by Gary Klein and colleagues.

• Based on Flanagan’s Critical Incident Technique (1954)

• Structured around *real, lived experiences*

• The Goal is to elicit critical cognitive elements and surrounding context

• Flexible; can be adapted to a variety of purposes
What are the Benefits?

Grounding the interview in a real, lived incident:

– Increases **accuracy of recall**
– Facilitates discussion of **context**
– Encourages **first-person perspective**
– Evokes **detailed memories**

...all of which are helpful for understanding adverse events.
How do you get people to tell you what was going on in their heads?
People think these are what we do with CDM

<table>
<thead>
<tr>
<th>Questions</th>
<th>Answers</th>
</tr>
</thead>
<tbody>
<tr>
<td>What do you think about when you do X?</td>
<td>“It depends…”</td>
</tr>
<tr>
<td>Why did you do that?</td>
<td>“I didn’t intend that to happen…I didn’t mean for this to happen.”</td>
</tr>
<tr>
<td>How did you make the decision to.....</td>
<td>“I don’t really know…”</td>
</tr>
</tbody>
</table>

These are also common RCA questions.
➢ not usually informative
➢ not usually accurate (often not aligned well with what is observed)
Incident Identification

and selection

Ask: Can you think of a time when you were (type of incident) and your skills were really challenged? Tell me about the last time you... Can you think of a time when your skills really made a difference – maybe things would have gone differently if you weren’t there?

Listen For: An incident that fits your study goals, in which your participant played a key role.

Instructions:
- Obtain an incident

Timeline Verification

and decision point identification

Ask: Will you give me a quick run through of the incident?

Listen For: Decision points, shifts in situation assessment, places to probe, gaps in the story, gaps in the timeline, conceptual leaps, anomalies/violated expectancies, errors, ambiguous cues, individual differences.

Flags: I just knew... It felt right... It was just a gut feeling... Something felt wrong... I've seen it before...
It depends...

Instructions:
- Ask interviewee for an overview
- Say back the incident
- Record Decision points, shifts in SA, and major events
- Ask clarifying questions

Deepening

and the story behind the story

Ask:
- Situation Assessment
  - What was it about the situation that let you know what was going to happen?
  - What was it about the situation that let you know what to do?
  - What led up to this decision?
  - What were your overriding concerns at that point?
    - If you were turning this case (incident) over at this point, what would you be sure to tell the relief person?
    - How would you summarize the incident at this point?

- Cues:
  - What were you noticing at that point?
  - What were you seeing, hearing, and/or smelling?
  - What information did you use in making this decision?
  - How did you get this information?
  - What knowledge was necessary, or helpful in this situation or at this point?

- Goals:
  - What were your specific goals at this time?
  - What were you hoping/intending to accomplish at this point?

Listen For: Critical decisions, cues and their implications, ambiguous cues, strategies, anomalies/violated expectancies.

Instructions:
- Use “what if” questions to tease out specific elements
- Ask what a new person might have done
- Ask what mistakes might have been made earlier in the situation or a different way.

What If Queries
<table>
<thead>
<tr>
<th>Probe Type</th>
<th>Probe Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cues</td>
<td>What were you seeing and hearing?</td>
</tr>
<tr>
<td>Knowledge</td>
<td>What information did you use in making this decision, how was it obtained?</td>
</tr>
<tr>
<td>Goals</td>
<td>What were your specific goals at the time?</td>
</tr>
<tr>
<td>Situation Assessment</td>
<td>If you had to describe the situation to someone else at this point, how would you summarize it?</td>
</tr>
<tr>
<td>Options</td>
<td>What other courses of action were considered, or were available to you?</td>
</tr>
<tr>
<td>Basis of Choice</td>
<td>How was this option selected/other options rejected?</td>
</tr>
<tr>
<td>Experience</td>
<td>What specific training or experience was necessary or helpful in making this decision?</td>
</tr>
<tr>
<td>Aiding</td>
<td>If the decision was not the best, what training, knowledge, or information could have helped?</td>
</tr>
<tr>
<td>Hypotheticals</td>
<td>If a key feature of the situation had been different, what difference would it have made in your decision?</td>
</tr>
</tbody>
</table>
The CDM “Sweeps” Overview

1. Incident identification and selection
2. Timeline verification and decision point identification
3. Deepening; the story behind the story
4. “What if” queries, expert-novice differences, decision errors, etc.
Situation Change detected

Status Quo → Event → Ind./Team Sensemaking,
several iterations → Status Quo
Situation Change detected

Situation Change detected

Situation Change detected

Multiple perception-response cycles--RPD
Around 0200 [event start] ...still not decreasing, increased insulin again.

Was thinking was the occasional patient that needed more insulin because he wasn’t responding at all. Started by following our protocol—it’s a guideline-- then once it was clear this wasn’t adequate, started bolusing because it was increasing.

I was outside of normal, but not absolutely abnormal. Because I was giving a bolus and higher rates than comfortable with, I checked blood sugar about every 15 minutes. At 0200 it was normal/abnormal. About 0230-0300 [star] started checking frequently because it was not coming down, it was abnormal/abnormal.

Just about anybody should have been responding to insulin at that point. I started consulting really experienced nurses—the charge nurse. Checked the lines to make nothing missing—going where they should, and ensure what is in the lines. Other check them too. An experienced nurse thought there might be a drug combination problem.

At 0330 after multiple adjustments and still not responding, it was a type of abnormal I had not even heard of before. Went outside the unit—asked night pharmacist (central pharmacy) if there were hospital max doses on insulin and to see if they had ideas.

A senior nurse, charge nurse, nurse working next to me was doing google, maybe two other nurses came down to see if they could help.

Some were new nurses wanted to see what was happening, others offering ideas. Talked to one on one and in groups. Contacted Dr. X on his cell phone at 0430,approx. Gave him an update on intraoperative problems and blood sugar problems. There wasn’t a whole lot we weren’t doing already. Around 0530 called surgeon and described the insulin situation to him and some other things. He said, ‘okay, it will come down’. Didn’t [allay my concerns] that the surgeon not concerned. I called Med Director because [he will trouble shoot]. I told surgeon so he wouldn’t come in and be surprised. Went up on insulin until right before 0600. Blood sugar test about every 15 minutes. When below 200 (198 ) at 0600 (which is the witching hour for process deviations being reported). It was back to
Uses:
To generate knowledge for the development of expert systems, develop training materials and identify requirements, and determine the effect of expert systems on task performance.

How do I use this tool?:

1. DEFINE THE TASK OR SCENARIO UNDER ANALYSIS. Typically, the focus will be on nonroutine, emergency, or extreme incidents.

2. SELECT CDM PROBES. The CDM method utilizes probes to elicit knowledge from subject-matter experts (SMEs). The purpose is to gain insight into the decision-making process the SMEs undergo during critical points in the incident being analyzed. The probes should be defined before the analysis is conducted to prevent irrelevant or non-compliant information. If no pre-existing probes are found, analysts can develop their own based on the needs of the analysis.

3. SELECT APPROPRIATE PARTICIPANT. After identifying the scenario to be analyzed and the probes that will be used, select appropriate participants. Normally, the SMEs are primary decision makers within the scenario you are analyzing.

4. GATHER AND RECORD ACCOUNT OF THE INCIDENT. The CDM can be used for incidents which were observed by the actual analyst or for incidents that are described from memory by one of the participants involved. If performing a CDM analysis on something that is observed, simply observe the incident and then record the observed account. If recalling from memory, the analyst performing the CDM must obtain a description of the incident from the SME, from beginning to end.

5. CONSTRUCT INCIDENT TIMELINE. After an account of the incident is gathered, a timeline of the incident can be constructed. The goal is to provide the analyst with an accurate view of what occurred, including the time and duration of each event. The timeline should include details of both physical events (e.g., alarms going off) and cognitive details (i.e., what the person being interviewed thought and perceived while the incident was occurring).

6. DIVIDE THE INCIDENT INTO KEY PHASES OR DECISION POINTS. After it is certain that the analyst has a cogent understanding of the incident. Normally this is completed alongside the SME, and the incident is divided into four or five phases.

7. USE CDM PROBES TO QUERY PARTICIPANT DECISIONMAKING. The analyst should delve into each incident phase identified in step 6, using the CDM probes that were selected during step 2. This should be completed using the probes in the context of an unstructured interview - the goal is to determine the SMEs decision making process within each phase.

8. TRANSCRIBE INTERVIEW DATA from audio recording once the interview is completed.

9. CONSTRUCT CDM TABLES by displaying the CDM probes with their associated answers in a tabular format.

Expertise Required:
Users of this tool usually have some training or experience in its use.
# Challenges and Interventions

## Safety & Teamwork Challenges

<table>
<thead>
<tr>
<th>Possible Interventions</th>
<th>Clarify roles and expectations</th>
<th>Expanded view of team: FDS, OR, PACU</th>
<th>Surgeons as Leaders Program</th>
<th>Fill the gaps in DPC and RES cards</th>
<th>Integrity of Patient Portfolio</th>
<th>Pre Op briefing for surgical team</th>
<th>Post surgical debrief</th>
<th>Standardized format, difficult conversations</th>
<th>Standardized language for conveying concern</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overconfidence in culture of safety</td>
<td>✔</td>
<td>✔</td>
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<td>✔</td>
<td>✔</td>
<td>✔</td>
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<tr>
<td>Conflict Avoidance; Passive-aggressive behavior</td>
<td>✔</td>
<td>✔</td>
<td>✗</td>
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<tr>
<td>Surgeons lack training/ preparation to be leaders</td>
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<td>Disruptions in coordination of patient care (turbulent flow)</td>
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<td>Economic Pressures</td>
<td>✔</td>
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<tr>
<td>Shallow teamwork concepts</td>
<td>✔</td>
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<tr>
<td>Role and function ambiguity; Lack of accountability</td>
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<tr>
<td>Consequences of the Power/Authority Gradient</td>
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<tr>
<td>Porous Information Flow</td>
<td>✔</td>
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<tr>
<td>Organization and culture factors: reliance on heroes; tolerance for bad behavior</td>
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of a sinusoidal representation of depth that exhibits at fixed wave period. Figure 2 displays images excerpted from two different screen captures of the Display. The first image (left) appeared in the Functional Description Document (FDD) and second (right) in the screen capture used for Step 2 Testing. The full scale of the past time axis in the FDD image was 60 minutes (1 hr.), whereas that used for Step 2 Testing was 6 hours. As the images show, the sinusoidal representation of past depth appears to exhibit a fixed wave period of about 2 minutes, and thus it visually expands and compresses with time scale changes, appearing remarkably different in the two images and indistinct due to compression in the Step 2 Testing image.

Figure 2. Images excerpted from two different screen captures of Display. The left hand image is from the Functional Description Document. The right hand image is from the screen capture used in Step 2 Testing. Use of different scales for the past time axis affects the depictions of ownship depth and towed array depth.

Table 2 summarizes responses from both participants to questionnaire items 1 through 20 and their ratings of specific enhancements in order of usefulness. The rating scale for items 1 through 10 ranged from Very Difficult (1) to Very Easy (7), and the scale for questions 11 through 19 ranged from Not Effective (1) to Very Effective (7). Item 20 asked respondents to indicate how much display improvement they would allocate to. Average and standard deviation of the ratings are shown for each class and each item on the questionnaire. Appendix E provides histogram representations of the responses to items 1 through 20 for both participants (23 individuals) and participants (18 individuals). Appendix G and Appendix H offer a categorization of handwritten comments from participants in the respective.
“Morphine is Morphine.”
An investigation from an urban hospital

...as told by the physician leader who led the inquiry.

Let’s give it a whirl...
The Morphine Case—VP Quality and Patient Safety’s Perspective:

- Recently, a nurse educator contacted the Office of Risk Management in my hospital, asking for advice on how to ‘scare nursing staff into being concerned about patient safety’.

- Underlying this request was an emergent problem: unlabeled syringes were occasionally being found in the hospital. They contained morphine in saline solution. The risk and safety concerns were obvious.

- The Director of Risk Management and Director of Nursing asked me to assist the nurse educator in resolving this problem.

- The nurse educator said that the problem seemed to have begun about a month and a half earlier. Apparently, nurses had fallen into the habit of keeping syringes containing morphine solution in their pockets, especially in areas where frequent pain management was required.

- Her efforts to stop morphine mishandling by admonishing nurses to be more careful, and by re-educating staff on policy and procedure, had not corrected the problem.

- This needed immediate attention. Morphine filled syringes had not spontaneously appeared around the hospital in the past. Why now?

You will start your investigation by interviewing Bob, a nurse.
The U.S. Healthcare System’s Cascade of Decision Side-effects
Cost Cutting Focus on Efficiency

The U.S. Healthcare System’s Cascade of Decision Side-effects

A

B

C

D

Payments Tort Law Legislation…

Clinical Space
The U.S. Healthcare System’s Cascade of Decision Side-effects

- Slips
- Lapses
- Mistakes...

- Fragmentation of care processes
- Understaffing
- Time Pressure
- Fatigue

- Cost Cutting
- Focus on Efficiency

- Payments
  - Tort Law
  - Legislation...

- Clinical Space

Payments → Cost Cutting → Clinical Space
Cost Cutting → Focus on Efficiency → Clinical Space
Clinical Space → Time Pressure → Fatigue
Fatigue → Fragmentation of care processes
Fragmentation of care processes → Slips Lapses Mistakes...
Slips Lapses Mistakes... → Clinical Space
The U.S. Healthcare System’s Cascade of Decision Side-effects

- Slips, Lapses, Mistakes...
- Fragmentation of care processes
- Understaffing, Time Pressure, Fatigue
- Adverse Event
- Clinical Space

- Cost Cutting, Focus on Efficiency
- Payments, Tort Law, Legislation...

A
B
C
D
Slips
Lapses
Mistakes...

Normalized risk; unsafe behavior

Heightened potential for an adverse event

Time pressure, usual workflow interrupted, unworkable procedure, inadequate # scanners...

New facility planned
Cost cutting
Focus on efficiency

Payments
Tort Law
Legislation…

Judith’s Story
“Normalized Risk”

• Deviation from law, policy, and procedure was normalized within two weeks—
  – humans are the most adaptive component of the system.
Here is what is “getting squished”—the key contribution of the human component of the health system.
In the absence of opportunity for interdisciplinary review and improvement of practice—with inclusive, curious, frontline-oriented leaders--bad situations will worsen...
Accountability and Goal Conflicts

What we attend to is strongly influenced by what we are held accountable for.
Visualizing the Blind Spot—the need for effective safety management learning systems

Highly sensitive surveillance is needed in clinical settings: risk triggers, prospective investigation, team debriefing, safety reporting, walk-arounds…
Harnessing frontline intelligence

“When technical systems have more variety than a single individual can comprehend, one of the few ways humans can match this variety is by networks and teams of divergent individuals...”

An organizational focus on improving process and outcome measures alone is not safety management. We need to evolve...
111 patient safety benchmarks | 2018

Written by Mackenzie Bean and Megan Knowles / July 16, 2018 | Print | Email

Benchmarking data is valuable for hospital and health system leaders to measure individual institutions and discover areas of excellence, as well as identify opportunities for improvement.

*Becker's Hospital Review* compiled 111 patient safety benchmarks from various sources for hospital comparison.

**Readmissions, Mortality and Complications**

Entries one through 11 are based on data from CMS' Hospital Compare [website], last updated May 23, 2018. Data presented reflect the national average.

30-day average readmission rates

1. Heart attack: 16.3 percent  
2. Heart failure: 21.6 percent  
3. Pneumonia: 16.9 percent

30-day average death rates

4. Heart attack: 13.6 percent  
5. Heart failure: 11.9 percent  
6. Pneumonia: 15.8 percent
Phenotype or Genotype?
The Accident See-saw
Organizational Learning, Forgetting and The Functioning of Frontline Units Over Time

Adapted from Managing the Risk of Organizational Accidents, J. Reason, 1997
Dampening the Accident See-Saw
Sensitive, Continuous Surveillance: early detection, proactive analysis, and intervention

Adapted from Managing the Risk of Organizational Accidents, J. Reason, 1997
The Accident See-saw
Organizational Learning, Forgetting and The Functioning of Frontline Units Over Time

Adapted from Managing the Risk of Organizational Accidents, J. Reason, 1997
There are no guaranteed, lasting solutions to safety in complex systems—every moment of every day may be characterized as an experiment with the effects of changes to the system.

Achieving safer, more reliable care requires real-time/near-real time intelligence on emergent conditions for failure, and better investigation and analysis methods to intervene effectively in these conditions.

To learn how to effectively identify and mitigate risk, and improve the safety of patient care, healthcare facilities and systems should be re-cast as laboratories—not just for clinical sciences, but for safety management learning systems.
<table>
<thead>
<tr>
<th>Drug</th>
<th>Dose (mg)</th>
<th>Route</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fentanyl</td>
<td>100</td>
<td>IV</td>
<td>q1h</td>
</tr>
<tr>
<td>Hydromorphone</td>
<td>10</td>
<td>IV</td>
<td>q2h</td>
</tr>
<tr>
<td>Ativan</td>
<td>1mg</td>
<td>IV</td>
<td>q4h</td>
</tr>
</tbody>
</table>

**Pain Management Plan**

- Fentanyl: 100mg q1h
- Hydromorphone: 10mg q2h
- Ativan: 1mg q4h

**Mental Status**

- Orientation: Full
- Speech: Clear
- Thought Process: Goal-directed

**Lab Results**

- CBC: WBC 10,000, Hgb 11.5, Platelets 200,000
- Chemistry: Na 140, K 4.5, Ca 9.5, Mg 2.0

**Symptoms**

- Pain: 0/10
- Fatigue: 2/10
- Nausea: 0/10

**Plan for Tomorrow**

- Fentanyl: 100mg IV q1h
- Hydromorphone: 10mg IV q2h
- Ativan: 1mg IV q4h

**Notes**

- Document in chart: Fentanyl 100mg IV q1h
- Document in chart: Hydromorphone 10mg IV q2h
- Document in chart: Ativan 1mg IV q4h

**Discharge**

- Discharge date: 2/14/2014
- Discharge diagnosis: Pain Management

**Prescription**

- Fentanyl 100mg x 30
- Hydromorphone 10mg x 50
- Ativan 1mg x 50

**Allergies**

- Penciclovir
- Penicillin
- Sulfa

**Emergency Contacts**

- Primary Care Provider: Dr. John Doe
- Phone: 555-1234
- Home Address: 123 Main St, Anytown, USA

**Patient Teaching**

- Pain management techniques
- Importance of rest and nutrition
- Follow-up appointment: 2/14/2014