CREATING PATIENT SAFETY WITH ORGANIZATIONAL LEARNING: A CASE-BASED LEARNING INTERVENTION AT A PUBLIC AND PRIVATE HOSPITAL

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A critical component of a high reliability organization (HRO) is believed to be a safety culture. Historically, healthcare placed the onus on individuals for perfection in performance of complex work. A six-month, case-based learning intervention at a public and private hospital, SafetyMinutes™, attempted to shift the focus from the individual to systems. The intervention is organized in rotating modules of a medical and non-medical incident that exemplify a safety concept, displayed via posters in a staff meeting space, followed by a moderated discussion. Moderators asked how the stories resembled or differed from the nurses' experiences and guided participants away from ingrained "blame" responses in order to look more deeply at systemic and organizational factors. We assessed program effectiveness by ethnographic analysis of written transcripts of the moderated sessions and discuss lessons learned.

INTRODUCTION

A critical component of a high reliability organization (HRO) is believed to be a safety culture (Cooper, 2000; Rochlin, 1999; Weick, 1987). Historically, healthcare placed the onus on individuals for perfection in performance of complex work. A safety culture shifts the focus from the individual to the system and provides organizational support for desired behavior by practitioners. In health care, a safety culture is often associated with system redesign following adverse outcomes rather than a "name, blame, and shame" response.

Exactly how to create a safety culture is not clear, although many agree that it will include continuous organizational learning from "near miss" incidents as well as accidents (Ringstad and Szameitat, 2000). We believe that the creation of a safety culture in health care will require a series of incremental shifts toward a target of patient safety being embedded in the fundamental framework of an organization. Specifically, we believe that these aspects characterize a safety culture:

1) widespread learning and acceptance of the non-intuitive set of concepts referred to as the NEW LOOK at patient safety (Ebright *et al.*, in press)
2) leadership buy-in, promotion, and visible commitment
3) continuous learning from near miss incidents and accidents, in conjunction with a reduction of punitive investigations
4) empowerment of individuals and interdisciplinary teams to redesign work processes regardless of job descriptions or rank

We have created and implemented a series of learning experiences that are designed to address the first aspect by disseminating NEW LOOK concepts throughout five Veteran's Administration hospitals in Ohio (Eisenlohr *et al.*, 2001; Patterson *et al.*, 2001; Ebright *et al.,* in press; Render *et al.*, 2001). In this paper, we describe one of these programs, which we call SafetyMinutes™, qualitatively assess the impact of the program, and discuss lessons learned.

METHODS

SafetyMinutes™ is a six-month, case-based learning curriculum designed to shift the focus from the individual to systems when learning from incidents. Each month is dedicated to a single safety concept, depicted iconically, that is

illustrated by both a medical and non-medical case (Table 1), abstracted and explained, and explored in a group discussion. The medical case, safety concept, and non-medical case are displayed in a poster format (Figure 1) that is rotated weekly in the staff conference room. Fifteen minute discussions are held at several times selected by the nursing manager on the fourth week of the month in order to allow participation by all shifts.

Most of the learning occurs during the group discussions. The moderators play several important roles during these sessions. First, they ask for volunteers to quickly summarize one of the stories or safety concepts, or summarize it themselves if there are no volunteers. Then they seed the discussion with a divergent question such as "Is there anything about this case that is similar to something that you've seen in your own work?" These types of questions challenge the participants, could have many possible answers, and help people develop insights about relationships about ideas that might seemingly have been unrelated (Marsick, 1988). Once the discussion is underway, the moderator mainly supports sharing of information, encourages participants to answer each other's questions, and encourages the use of new vocabulary associated with the safety concept. The moderator is able to assess real-time how well the participants understand the concept based on their ability to identify similar stories from their experience or make analogies, explain the concept in their own words, and brainstorm ideas for how the concept could be used to improve safety on their unit.

Because the "name, blame, and shame" culture is deeply ingrained in most health care settings, one of the critical roles of the moderator is to remind participants to avoid blame-oriented responses to the incidents and instead probe more deeply into systemic and organizational factors. Stereotypical, non-productive responses that the moderators discourage include:

- focusing on the experience, motivation, or actions of an individual in a case (e.g., "The surgeon should have followed standard procedure and checked to make sure it was the right leg before operating.")
- emphasizing features that differentiate the case under discussion from their particular workplace environment (e.g., "That could never happen here because we do not have that medication as ward stock.")
- demonizing sub-populations in health care (e.g., "horrible surgical resident" stories)
- defending why change is not possible (e.g., "With our continuous shortage of nursing staff, we're lucky if we get the medications out to the patients before noon"; "Administration never listens to us; they are the ones who need to take this class.").

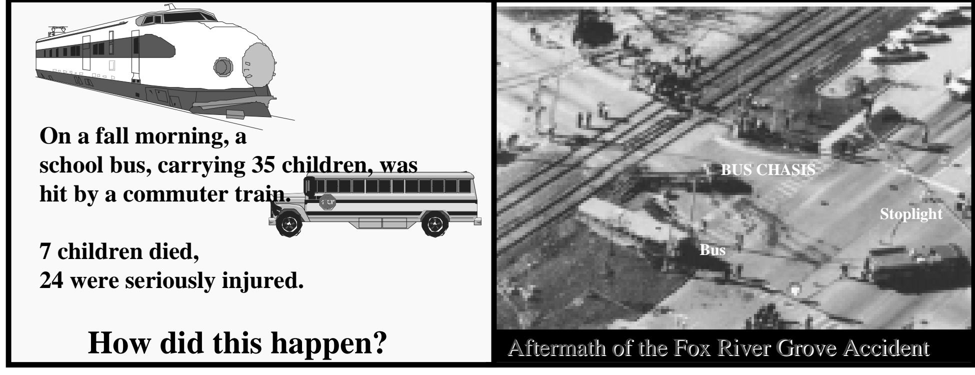

Figure 1. Two of eleven panels on a SafetyMinutes™ poster from Month 1, Week 3

Table 1. SafetyMinutes™ Concepts, Cases, and Icons

Concept	Medical Case	Non-Medical Case	Icon
"Swiss cheese": Model of accidents with multiple contributors, breaching of systemic defenses, and latent failures (Reason, 1990).	A muscle-depolarizing agent (Mivacron) was administered instead of an antibiotic (Metronidazole) to four patients, three of whom arrested, and one of whom died.	A Fox River Grove school bus driver stopped at a red light, unaware that the rear of the bus was on train tracks, resulting in the deaths of 7 children.	
Sharp End/Blunt End: Relationship between "sharp end" patient care and "blunt end" administrative priorities and decisions (Woods *et al.*, 1994).	An inoperative operating room refrigerator contributed to unavailable blood during surgery.	The Ariane 501 rocket launcher exploded on maiden voyage due to software design flaw, resulting in loss of uninsured $500M satellite.	
Hindsight Bias: Effect of outcome knowledge on causal attribution process following accidents (Fischhoff, 1975).	A massive overdose of penicillin prescribed to counter a possible exposure to syphilis resulted in infant death in Denver; three nurses were indicted for negligent homicide.	A Libyan civilian airliner was shot down by Israeli fighter pilots who erroneously believed the plane to be hostile; 110 of 116 passengers died.	
Drift Toward failure: Model of how systemic defenses against failure erode over time due to short-term production pressures (Reason, 1997).	A non-intubated ICU patient received propofol to reduce agitation, which was risky because the ability to revive the sedated, non-intubated patient was poor.	The Texas A&M Bonfire, a 90-year old tradition, collapsed during construction, killing 12 students.	
Knowledge: Being unaware of information contributes to poor outcomes. Poorly designed information and communication systems contribute to missed knowledge (Terveen, 1995).	Wrong leg amputation occurred despite one staff member's awareness that the wrong leg was scheduled for the procedure.	A plane crashed in Charlotte, killing 37 passengers, despite others' awareness of hazardous windshear conditions.	
Teamwork: Teamwork requires cooperation, coordination, and communication to obtain a shared objective. Breakdowns occur when members differ on how to trade off goals, do not clearly define roles and responsibilities, and fail to communicate updates to a shared plan (Larson, 1989).	Betsy Lehman died suddenly while undergoing treatment for breast cancer. The cause of death was a massive overdose of cytoxin, which went undetected by 3 pharmacists and 7 nurses.	Collision between the USS Greeneville nuclear submarine and a Japanese fishing boat claimed nine lives, partly due to poor communication about detected vessels with a sonar and periscope search prior to a demonstration of emergency rapid ascent.	

METHOD

The SafetyMinutes™ program was conducted in parallel over a period of six months at a nursing unit of both a public and private hospital. The nursing units were selected by the participating hospitals. The nursing unit manager selected the fifteen-minute discussion times at the end of each month. Healthcare workers were encouraged to participate by the provision of continuing education credit and direct participation by the unit nurse manager. All SafetyMinutes™ sessions conducted by the primary moderator were audio-taped, transcribed, and de-identified.

QUALITATIVE EVALUATION

We assessed program effectiveness by ethnographic analysis of twelve written transcripts from monthly discussions at both hospitals. The transcripts were coded according to the categories in Table 2, which were iteratively generated during the analysis, and verified to include nearly all of the significant comments. Transcripts were coded statement by statement with most short and some long statements receiving one code. When appropriate, longer statement received as many as four codes. Comparisons between the two units were not made because of the differences in the total number of transcripts.

Table 2. Coding categories and frequency counts from twelve moderated sessions

Categories	**Category Totals**
S: Systems (e.g., providing relevant examples that indicate systems thinking has developed)	**68**
Q: Questions (e.g., asking questions that indicate understanding is developing)	**108**
N: Stories (e.g., re-tell stories in their own words)	**90**
B: Blame (e.g., blaming an individual in an adverse event)	**19**
P: Power (e.g., comments about balance of power with relation to physicians)	**109**
E: Environmental (e.g., information about equipment and staffing shortages)	**210**
F: Feedback (e.g., improve presentation of stories)	**69**
C: Challenging (e.g., challenging the usefulness of the program)	**33**

Table 3. Coding categories and frequency counts from Nurse Manager Interviews

Categories	**Unit A**	**Unit B**	**Category Totals**
S: Systems (e.g., providing relevant examples that indicate systems thinking has developed)	**8**	**5**	**13**
E: Environmental (e.g., information about equipment and staffing shortages)	**13**	**9**	**22**
FP: Feedback, positive(e.g., positive comments about the program)	**10**	**8**	**18**
FN: Feedback, negative(related to the difficulty of questions and the use of non-medical critical incidents)	**2**	**3**	**5**
P: Power (awareness of role, bureaucratic & collegial constraints, including time)	**1**	**2**	**3**
D: Duties (description of duties and special projects)	**8**	**6**	**14**
I: Ideas (Ideas and suggestions for changes to intervention or other interventions)	**6**	**6**	**12**
N: Narration and use of vocabulary	**4**	**2**	**6**
U: Unsung heroes—stories about how systems thinking prevented a critical incident	**3**	**3**	**6**
B: Breakdown of system leading to critical incident; recognition of contributing factors	**4**	**1**	**5**
L: Learning opportunities-(problems providing opportunities for improving staff competency)	**3**	**1**	**4**

DISCUSSION

The qualitative evaluation results suggest that the SafetyMinutes™ intervention successfully engaged participants in systems thinking during the monthly discussions, and only occasionally did the discussions revert to more traditional blame-oriented responses to the presented stories. Although there were several instances where the participants challenged the usefulness of the intervention, note that 18 of 33 challenging statements were presented in an early session by a single nurse, and that the challenging statements decreased over time.

Generally, participants were positive about the experience, although they had many suggestions for revision, and most of them felt that all the nursing units, administrators, physicians, and pharmacists at their hospital should take the curriculum. For example, the nurse manager at the private hospital, in response to whether she saw benefit from the SafetyMinutes™ program, said: "Oh, yeah! Oh, gosh, yeah!... everybody I talked to thought it was beneficial. I think they've gotten away a little bit from the punitive issue.... everybody that looked at it learned stuff." Both nurse managers requested the program be repeated for new employees and extended on their wards.

One of the main goals of the program was to begin to lay the foundations for a safety culture by creating a shared common vocabulary about safety issues and incidents that is less blame-oriented. During exit interviews, both the nurse managers stated that they felt that the new vocabulary was being used in informal conversations in their daily interactions: "They're using the verbiage" (public hospital) and "They're using lining up the cheese…the holes, and the shift thing." It is our hope that this new vocabulary will permeate farther through the organization than just to the direct participants in one curriculum.

Although we expected that the participants would learn new vocabulary and increase the sharing of stories as a result of the curriculum, it also appears that the curriculum encourages reflection about the state of the current culture. As shown in the comments during the moderated sessions, the nurses discussed cultural and other barriers that they perceived in applying the new concepts to improving system design in their workplace setting. Clearly, environmental conditions, and particularly nursing staff shortages, were a dominant concern in their daily work. Until the environmental conditions are improved, it was felt by several of the nurses that very little can be done to improve patient safety. Another issue raised during many of the discussions involved the perceived inability of the nurses to override what they consider to be unsafe decisions by healthcare providers with more power. Past experience seemed to result in a feeling of helplessness, where nurses did not feel empowered to redesign systems or perform cross-checking functions with providers with more power to create a treatment plan.

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