Case Study: On the Leading Edge of New Curricula Concepts: Systems and Safety in Nursing Education

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Abstract

The Nursing Division of the Saskatchewan Institute of Applied Science and Technology (SIAST) first included systems and patient safety as a priority in its institutional business and strategic plan in 2003. Three interrelated leading-edge, two-year projects (2004–2006) were launched: Best Practice, Mentorship and Patient Safety, with the intent that each project would enhance the others. This case study focuses on the work of the Patient Safety Project Team. The team developed a project framework and strategic plan, conducted a literature review and identified key concepts related to systems and patient safety. Strategies to integrate these concepts into the school's 15 nursing education programs are being implemented.

The front page of the September 29, 1998 *Winnipeg Free Press* featured this headline and opening paragraph:

> **Baby Deaths Inquest**
> **Parents get last word as probe ends**
> After two and a half years of testimony, the longest inquest in Canadian history – into the deaths of baby heart patients at Children's Hospital – will wrap up its hearings today. The parents of two of the infant victims and the lawyer acting for the parents will be the last to offer their suggestions and recommendations to associate chief provincial Judge Murray Sinclair this morning. After that, Sinclair, who has presided over 265 days of testimony from doctors, nurses, families and medical experts, will undertake the onerous task of reducing over 48,000 pages of transcripts into a formal set of recommendations aimed at the ***future safety of patients. … Financial pressures now share the bottom line with a second concern – patient safety.*** (Paul 1998)

The Manitoba Paediatric Cardiac Surgery Inquest, known as the Winnipeg Inquest, examined the deaths of 12 children who had undergone cardiac surgery in 1994 at the Winnipeg Health Sciences Centre. The deaths and the events that led to them were "a tragic example of health care system design flaws and system failure … a high-profile example of the need for action in Canada on systems and patient safety." Justice Murray Sinclair, who oversaw the three-year inquest, wrote in his report that of the 12 children who died in the cardiac paediatric surgical unit at the Winnipeg Health Sciences Centre, at least five deaths were preventable, another four might have been prevented and only one death was not preventable (Sinclair 2001).

In 2002, the landmark document *Building a Safer System: A National Integrated Strategy for Improving Patient Safety in Canadian Health Care* was released (National Steering Committee 2002). The Canadian Patient Safety Institute's (CPSI) inaugural board of directors was appointed in January 2004. CPSI is supported by the 2003 federal budget allocation of $50 million over five years and is guided by a five-year plan (CPSI 2004). Actions by many in Canada's health-care settings have been directed towards enhancing patient safety by examining systems vulnerabilities, reducing errors, near misses and adverse events (Reason et al. 2001; CPSI 2004) and using what we know from other jurisdictions and from Canadian research on the astonishing rate of error in Canadian healthcare (Baker et al. 2004).

What does this mean for nursing and other healthcare provider education? The Manitoba Association of Registered Nurses (MARN), which represented the involved registered nurses at the Winnipeg inquest from its 1995 beginning, took the view that if the system prevents RNs from advocating and protecting their patients from harm, injury or death then system issues must be addressed (Sibbald 1997). The events leading to the deaths of the 12 children, the recommendations of the inquest, the ensuing national report recommendations (National Steering Committee 2002) and the patient safety literature provided the SIAST'S dean, administrative team and faculty with the impetus for action on the systems approach to patient safety.

Actions

- Systems and patient safety was first included as a priority in the five-year SIAST institutional business and strategic plan, 2003.
- There was a patient safety focus in the *SIAST Nursing Division News* Message from the Dean, fall 2003 and fall 2004 (Davidson Dick 2004a, 2004b).
- The August 2004 Nursing Division annual meeting and one-day scholarship development workshop included:
  - the launch of three related two-year projects (2004–2006) – Patient Safety, Best Practice and Mentorship – addressing project purpose, goals and development guidelines with the aim that all three projects would inform each other as they became established and solidified.
  - the launch of the Scholar-in-Residence Program to support and assist faculty with scholarship development on the above three projects and other areas of development, writing and research.
- A call to faculty was issued, with each project established in fall 2004, and strategic plans developed in academic year 2004/05 for the two-year timeframe.
- Presentations to all faculty on the systems approach to patient safety and its significance for nursing education were delivered by the dean in fall 2004 in three sessions at two campuses. Emphasis was given to the high rate of

Patient Safety Systems

Concepts for translation into curriculum concepts, teaching/learning settings and minimum standards and competencies:

- Systems approach to patient safety; individual, shared and system accountability for patient safety and patient error.
- Adverse events, near misses and critical incidents.
- Patient-as-partner with full information and locus of control; inviting the patient into the discussion, with full disclosure and options and fully informed consent.
- Patient-as-partner assessment of patient literacy (reading, writing, hearing, listening) with the recognition that individual literacy capacity varies with the degree of illness or stress.
- Interdisciplinary competencies such as planning, communication, coordination and collaboration.
- Organizational shift from culture of blame to culture of safety, and from silencing to voicing errors, critical incidents and near misses.
- Active and latent errors.
- Understanding systems: structure, process and outcome.
- Individual and team accountability.
- Definitions of types of patient safety and patient safety indicators.
- Teaching people to challenge and to expect and accept challenge as a central norm in a culture of patient safety (healthcare providers, patients, administrators, families).
- Root cause analysis.
- Error model: blunt end/sharp end; failure mode analysis (FMA); human error mode and effects analysis.
- Curricula that include nursing practice opportunities to create and foster critical thinking, creativity, moral–ethical reasoning, increased independence and safe clinical practice.
- Central role of healthcare team; respect, communication, coordination and team development.
- Communication within and across disciplines as a central safety strategy.
- The safety of patients: power gradient, power balance related to gender, age, sexual orientation, class, race, language, citizenship status (immigrant, refugee).
- CNA Code of Ethics for Registered Nurses.
- Quality of work life.

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Davidson Dick 2004b.

systems-based error in Canada's acute care system (Baker et al. 2004) and the Winnipeg inquest as a pivotal catalyst in the Canadian patient safety movement as the basis for the need to redesign curricula and educational approaches in class, seminar and clinical teaching.

- Administrative support to the project teams was provided. Funding was provided for faculty release time to develop systems safety course content during 2005/06. Funding for a research assistant to support all three projects for summer 2006 was secured.

The Patient Safety Project deliverable entails the integration of new patient safety knowledge and practice into Nursing Division programs, thereby transforming nursing education at SIAST. The key component for this project is a systems approach to patient safety and the effects this perspective has on the education setting, patient care and practice standards. The project is an opportunity for the Nursing Division to be a national and international leader in meeting a critical priority in healthcare and education, by integrating contemporary patient safety

knowledge and practice into programs and transforming the work into scholarly currency (CPSI 2005).

Challenges

- Patient safety has always been an established underpinning of nursing education, practice, research, administration, policy and programs. The classic traditional and historic approach has focused on the individual student/provider and the individual patient. The systems approach includes the focus on the individual, yet also considers a broader analysis to identify and define systems solutions to prevent errors or adverse events from occurring and recurring. The challenge has been redefining the concept of patient safety in terms of systems in thought, curriculum redesign and teaching practice.
- Redesigning thinking and conceptualization includes the introduction and integration of new concepts such as adverse event, incident, critical incident, root cause analysis, sharp end-blunt end sources of error, culture of safety. (See Systems and Patient Safety: Key Terms Box p. 39).
- With over 2,300 students, 15 programs, and heavy demands on the 139 faculty for teaching, committee work, research and course development, finding the time for faculty to meet and take on a new time-consuming project is a daunting challenge, regardless of how passionate the interest.
- Translating the systems approach to patient safety from primarily a health services system issue to include education, and identifying how to work with other disciplines in education and with clinical partners in the redesign of clinical thought and practice, will be ongoing challenges, as will the examination of the education system itself.
- Identifying how to include the public/patients in the rethinking and redesign of systems (healthcare delivery and education) was and remains a continuing challenge requiring creative, non-traditional consultation and strategic approaches to partnership.

Successes

- Students in a year one course have taken to the systems approach analysis in the curricula with enthusiasm. These students engage in discussions regarding national trends in patient safety, apply systems models to authentic case studies and reflect on their clinical practice experiences from a systems perspective.
- The Patient Safety Project Team has developed core curricula for programs across the Nursing Division as stand alone modules that can be incorporated into programs and course content in the 15 programs. Six foundational competencies are being developed in the first phase of the project:
    - current trends and key terms of patient safety.
    - conceptual models of patient safety and harm.
    - systems approach to patient safety.

- change theory and systems.
- transformational learning.
- the culture of patient safety.

Systems and Patient Safety: Key Terms

Adverse Event

An adverse event is an unintended injury or complication which results in disability, death or prolonged hospital stay, and is caused by health care management (Canadian Patient Safety Dictionary, 2003, p. 40) which includes actions of individual hospital staff, broader systems and care processes. Adverse events are related to diagnostic errors, surgical procedures, fractures, anesthesia, medical procedures, drugs, clinical management and system error. CIHR http://www.cihr-irsc.gc.ca/e/22698.html

Incident

The meaning of incident varies ... (it) may be a small but noteworthy event. The incident may also refer to events causing harm.
Canadian Patient Safety Dictionary, 2003, p. 41.

Critical Incident

An incident resulting in serious harm (loss of life, limb or vital organ) to the patient, or the significant risk thereof. Incidents are considered critical when there is an evident need for immediate investigation and response. The investigation identifies contributing factors and the response includes actions to reduce the likelihood of recurrence. Canadian Patient Safety Dictionary, 2003 p. 40.

Patient Safety

The reduction and mitigation of unsafe acts within the healthcare system, as well as through the use of best practices shown to lead to optimal patient outcomes.
Canadian Patient Safety Dictionary, 2003 p. 12.

Root Cause Analysis

An analytic tool used to perform a comprehensive system-based review of critical incidents. It includes the identification of 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 Root Cause Analysis Framework 2005, Canadian Patient Safety Institute www.patientsafetyinstitute.ca.

Note on Error

"It cannot be assumed that a human error is the root cause of an accidental stream of events." Rasmussen, 1994.

Sharp end-Blunt End source of error

Involves the pathophysiology of errors (Reason 2000). Refers to the triangular shape of a system in which the health care provider and setting may be the sharp end source of the error. Root cause analysis may reveal many system elements that move from the sharp end to the blunt end or base of the system. Such system elements may include budgets, staffing, training, managing, product purchase, medication packaging, storage, distribution and other individual, cultural and system factors.

System

The healthcare system is defined as a "grouping of interrelated components" that "act together" to "achieve a particular outcome". These parts can be related to the three phases of medical care: structure, process, outcome.
(Donabedian 1966, Canadian Patient Safety Dictionary, 2003, p. 13.

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- An interdisciplinary project supported by Health Canada Patient Centred Interprofessional Team Experience (P-CITE) was launched in 2005/06 featuring patient safety learning outcomes using problem-based learning. The results showed that the participants from nine programs from the SIAST Nursing and SIAST Science and Health divisions changed their perceptions about interprofessional education and patient safety.
- A student-focused event reporting instrument developed by SIAST Nursing Division and First Nations University of Canada faculty (Adverse Event, Near Miss and Critical Incident Report Form) was piloted for one year. Based on the pilot results the instrument was redesigned. (*See Future Plans, below.)
- Contributions and actions of the faculty have been recognized through presentations and publications, attracting and generating provincial and national interest.

Future Plans

Future plans include the development of:

- Five additional curriculum modules: research, quality improvement and case management, root cause analysis, reporting systems and an interdisciplinary team approach to patient safety.
- A participatory process for education-based root cause analysis of student-related errors, near misses and adverse events for the purpose of enhancing and revising educational approaches to safe patient care.
- An electronic database for student reporting and data analysis of student clinical errors, near misses or adverse events (nearing completion).* Anonymized data will be aggregated and analyzed. These data are anticipated to be helpful in clinical teaching, with the expectation that a student-focused incident reporting mechanism will help students:
  - embrace the culture and values of openness and safety associated with incident reporting.
  - experience the relationship between reporting and the potential for change in procedure, practice and systems, and the safety of patients.
  - reinforce that reporting of errors contributes to students' own and other healthcare providers' safe practice.

Discussion and Conclusion

No patient should be harmed as a consequence of their experience with Canada's health system. No family should experience the pain and frustration of caring for a loved one who is harmed as a result of an adverse event. And no provider should feel that reporting an adverse event will compromise their career. Yet, each of the scenarios plays out every day in Canada's health system. This message is not intended to be critical or accusatory. Rather, this is a frank assessment of the current state of

> Canada's healthcare system. Given this reality, we believe that patient safety will be a defining issue of healthcare in Canada over the next 20–30 years (CPSI 2004).

The nursing education system can benefit from the systems analysis and safety experience of other disciplines, systems and industries. In 1973, two jet aircraft collided on a runway, prompting the aviation industry to scrutinize the accident and the circumstances surrounding it. Examination revealed that the co-pilot of the plane that should not have been on the runway was aware of the circumstances but was too intimidated by the pilot to challenge him, with disastrous results. The aviation inquiry revealed that unacceptable rates of accidents were occurring because ineffective systems contributed to errors by good and competent people. In response, the aviation industry put into place more effective systems and structures, improving outcomes and making the system markedly and measurably safer. This industry was able to reduce errors and accidents by understanding both the individual approach to error and taking a systems approach to building a culture of safety.

This same approach is precisely what is being advocated and implemented by the patient safety movement for Canada's public and for the healthcare system. For nursing education, this means changes to curricula in undergraduate, graduate and continuing education programs. It means restructuring the way educators and administrators design programs and their delivery in class and in clinical practice learning experiences (Davidson Dick 2004b; Gregory et al. [In Press]). It also means that we have an obligation to examine nursing education systems using such examples as the airline industry and healthcare services delivery systems. For example, what would Canada wide data show about how our curricula and education system are addressing the issue of systems and safety for students, faculty and patients?

The case study of the SIAST Nursing Division's approach to addressing the issue of systems and patient safety is a beginning that will contribute to the momentum to make differences in both theoretical and practical approaches to the teaching/learning enterprise. Out of respect for our students, graduates, patients and their families, we need to work concertedly with one another and with those in other systems to advance the patient safety movement. We can do this by integrating what we know about systems and safety into nursing education systems and curricula in Canada.

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