

SASKATCHEWAN

Improving Patient, Nursing and Organizational Outcomes Utilizing Formal Nurse–Patient Ratios

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Abstract

The issue of nurse-to-patient ratios has been of significant interest to nurses in Saskatchewan. A commitment to a nurse-to-patient pilot project was articulated in a letter of understanding in the 2005 to 2008 contract between the Saskatchewan Union of Nurses (SUN) and the Saskatchewan Association of Health Organizations. The SUN, the Saskatoon Health Region and the Saskatchewan Ministry of Health formed a partnership to engage in the pilot project, which lasted from November 2008 to March 2011. The project involved the creation of a flexible, dynamic and real-time staffing tool to inform day-to-day nurse staffing decisions on a hospital unit and was based on an adaptation of Curley's Synergy Model.

A medical unit at St. Paul's Hospital in Saskatoon was selected for implementation, and all front-line nursing staff as well as unit nursing leaders were involved. A project working group adapted the Synergy-based Patient Scoring Tool (PST), which had been utilized for a recent project in British Columbia, to its own patient population. In April 2010, nurses began assessing each patient on every shift with the goal of determining the most suitable care provider. Patient assignment became based on the holistic assessment of patient needs according to the PST results rather than "geography" (for example, one nurse assigned to a multi-bed unit regardless of the acuity/capability of patients in the unit). Whenever possible, staffing on the unit was increased according to tool calculations.

Positive impacts in patient outcomes began to be noted during the final data collection period for the project – nosocomial infection rates showed improvement, and the number of falls per patient-days decreased. As well, patient needs were made more visible through use of the PST, which created non-threatening opportunities for dialogue related to legislated scopes of practice. While longer timelines and larger sample size are needed to measure impacts on retention and recruitment of nurses, nurses in the project demonstrated increased engagement over the study period. The tools and processes developed in this project are adaptable to other patient populations and care settings.

Background

The issue of nurse-to-patient ratios has received a great deal of attention over the last decade and has been of significant interest to nurses in Saskatchewan. Owing to substantial cuts to funding and the subsequent restructuring of the healthcare system in both Canada and the United States during the 1990s, the number of registered nurse (RN) positions dwindled. In part, nursing resources were affected by a reduction of RN positions (Aiken et al. 1996; Seago et al. 2003), the replacement of RNs with less skilled care providers (Grando 1998; Jawad et al. 2003) and the move to redefine roles (Aiken et al. 2010). These conditions gave rise to significant patient safety issues and a call for higher nurse-to-patient ratios.

Establishing nurse-to-patient ratios has been controversial, but there has also been significant evidence to suggest that these support adequate nurse staffing, healthy practice environments and high-quality patient care. A number of studies reflect associations between hospital nurse staffing characteristics, that is, nurse-to-patient ratios, nursing hours per patient-day, RN level of education vis-à-vis individual patient outcomes and nurse-reported quality of patient care (Aiken et al. 2000, 2002, 2003; Blegen et al. 1998; Hugonnet et al. 2004; Lichtig et al. 1999; Needleman et al. 2002, 2006; Whitman et al. 2002). Research carried out by the Agency for Healthcare Research and Quality demonstrated an inverse relationship between nurse-to-patient ratio and poorer patient outcomes (AHRQ 2004).

During the 2005 contract negotiations between the Saskatchewan Union of Nurses (SUN) and the Saskatchewan Association of Health Organizations, SUN proposed inclusion of nurse-to-patient ratios within the collective agreement. Although this proposal was not fully endorsed, a letter of understanding in the 2005 to 2008 contract indicated commitment to a nurse-to-patient pilot project in Saskatchewan.

When Health Canada funding via the Canadian Federation of Nurses Unions (CFNU) became available, a proposal to examine nurse-to-patient ratios as a way to enhance retention and recruitment of nurses was accepted. An agreement between the CFNU and the Saskatoon Health Region was signed in early 2009.

The unit selected for implementation of the proposal was a medicine unit at St. Paul's Hospital in Saskatoon. This general medicine unit has baseline staffing for 42 beds, but has 46 beds available for patients on the units. There are six close observation beds with cardiac monitoring capabilities. The decision to use this unit was based on criteria developed by the provincial steering committee in consultation with the Saskatoon Health Region's senior leadership team. The unit had been difficult to staff; there were several vacant RN positions at the start of the project, and the team had a relatively high turnover rate, in part because general medicine units are viewed as career entry points for nurses, with turnover of nursing staff expected.

Objectives

The objectives of the project were to

- improve patient outcomes, including patient safety and satisfaction;
- maximize nursing and organizational outcomes, including enhancing retention and recruitment of nurses;
- assess the day-to-day adequacy of staffing within an individual unit;
- provide opportunities for nurses to utilize their professional judgment in determining appropriate formal nurse-to-patient ratios for their unit;
- provide opportunities for nurses to work to their full competence, with the goal of maximizing their scope of practice;
- improve the work environment and create a magnet environment;
- create and test a process whereby nurses at the point of care fully participate in developing and implementing formal nurse-to-patient ratios on a unit;
- establish a mechanism to ensure that formal nurse-to-patient ratios can be maintained and adjusted as required when patient needs or demands for service alter; and
- add to the body of knowledge on the impact of nurse-to-patient ratios.

The project was centred around the identification and implementation of a flexible, dynamic and live staffing tool to inform day-to-day nurse staffing decisions on a hospital unit based on an adaptation of the Synergy Model (Curley 1998, 2007). The Synergy staffing plan takes into consideration eight patient characteristics and allows nurses to consider the impact of patient needs on workload,

and to plan care and professional nursing resources accordingly. The model creates a real-time communication tool for handovers and shift-to-shift reports.

Overview: Design and Planning

The project coordinator was hired for the period April 2009 to March 2011 to coordinate work at the provincial and national levels. The project lasted from November 2008 to March 2011, with the involvement of nursing staff on the unit beginning in September 2009. Between September and December 2009, baseline patient and staff data were collected, and the nursing leadership on the unit was oriented to the project. In December 2009, the nurses on the unit were introduced to details about the Synergy Model as the basis for the Patient Scoring Tool (PST). The academic lead for the above-mentioned project in British Columbia came to Saskatoon and took part in orienting the staff. An understanding of the eight universal patient characteristics – stability, vulnerability, predictability, complexity, resiliency, participation in care, participation in decision-making and resources – is considered essential to permit a full assessment of the holistic care needs of patients. Once nursing staff were familiar with these characteristics, they were able to adapt the Synergy-based PST that had been utilized in the British Columbia Nurses Union Workforce Project (McPhee et al. 2010).

Over the next few months the project working group, composed of front-line RNs and unit leaders, formulated descriptors specific to their patient population to illustrate the patient characteristics. The provincial steering committee decided to refrain from including assessment of the “nurse characteristics” side of the Synergy Model. This decision was due to the project’s short timeframe. A proxy in place of the characteristics was used that included licensure status, years of service on the unit and special training.

Beginning in April 2010, the nurses began to assess each patient on every shift using the PST and to calculate an overall score. The unit used a 12-hour staffing pattern and scoring done each shift to capture any changes in patients’ conditions. They would then inform staffing for subsequent shifts. Feedback to the project working group and midterm evaluations indicated some concerns related to patient scoring. As a result, the working group revised the tool in order to increase the accuracy of patient scores.

In May 2010, a clinical resource nurse was added to the project to support after-hours work, helping to implement the PST and staffing calculation tool use, facilitating staffing adjustments and providing a clinical resource for the many newly graduated nurses hired to the implementation unit. The unit’s white-

board, where patient assignments were posted, was upgraded to include colour-coded magnets displaying PST scores to facilitate recognition of areas of greatest patient need.

Implementation

The project involved all the front-line RN staff on the unit (35 permanent RNs, six float pool RNs and casual RN staff) as well as the unit nursing leaders (the manager of nursing, clinical nurse educator, clinical nurse specialist and the clinical coordinator). While initial plans focused on RNs, it became apparent that the nurse providing primary nursing care for the patient could most optimally identify and score patient needs. Thus, about 15 licensed practical nurses (LPNs) were included in the project's work.

The project working group met approximately every two weeks to discuss issues related to the tool itself, its implementation and the ongoing operations of the project. The five front-line RNs and two LPNs in the working group played a significant role in working group activities, became the project “champions” and provided communication links to other front-line staff.

The nurses began, in April 2010, to assess each patient on every shift using the PST. Several nurses would score the same patient and discuss their scoring as a way of learning and developing consistent scoring practices. Their feedback led to the inclusion of categories and scores for patient acuity and capability. These revisions provided a clearer picture of patient needs and helped nurses determine the most suitable care provider. RNs were assigned to patients with higher acuity needs (less stability and predictability; more complexity and vulnerability) or those with complex care planning or extensive education needs to increase self-care capabilities. An overall or average score continued to be calculated.

The development process for the tool was time intensive, as it required RN and LPN education, pilot use of the PST and staff feedback on it, revisions of the PST and re-education several times. During this time, patient assignment processes were also examined. The historical assignment of patients by geography (for example, one nurse assigned to all patients in a multi-bed room regardless of acuity/capability) was questioned, and the skill and knowledge sets associated with legislated scope of practice and Saskatoon Health Region policies related to scopes of practice were reviewed. As a result, patient assignment became based on the holistic assessment of patient needs according to PST results, with assignment to an RN or LPN to better match care provision with patient need.

Linking the overall score on the PST to nursing numbers (nurse-to-patient ratio) was the second step of the process. Initially, the overall PST score was used to identify the nursing “team” or unit area with the highest patient needs, and additional RN staff were brought and assigned to patients on this team. However, as the number of patients on each team was not equal and the unit frequently ran over capacity by four patients, a method was developed to reflect patient volume and patient needs per PST assessment. The “amount of nurse” per patient calculation was developed with the staffing calculation tool. The calculated number of nurses required was compared to the scheduled number of nurses, and staffing was adjusted accordingly. By the end of August 2010, the unit was able to operationalize the staffing calculation tool results to inform staffing numbers.

While RN FTEs were initially allocated to the project, complexities (as outlined under “Challenges,” below) arose and additional staff from existing sources (casuals, float pool, part-time and overtime) were required to adjust nurse-to-patient ratios as indicated by the tools and to provide release time for project-associated activities such as meetings and focus groups.

Challenges

The project experienced challenges with respect to timelines, small sample size, disease outbreaks, staff turnover and the delineation of roles and responsibilities. Initial project plans were for two implementation units and one comparator unit, but owing to other initiatives in the Saskatoon Health Region and restructuring, only one unit was able to pilot this project.

The H1N1 pandemic planning in fall 2009 led to delays in the project start-up, and an outbreak of gastrointestinal virus in early 2010 led to a unit quarantine that slowed implementation. Throughout the project, the unit frequently operated over capacity by four patients because of pressures on the system.

Originally, it was anticipated that additional staffing and budget would be added to the unit to support implementation as project needs dictated. Because of budget pressures the additional funds were pulled back, but staffing was increased according to tool calculations whenever possible. As a result, the unit’s staffing budget was in a negative variance, which was a concern for the manager.

During the initial stages of the project, the unit had a significant nursing vacancy rate, and 18 new RNs and 12 new LPNs were hired during the project’s term. Finding time to orient new staff to the project, and especially to the PST, was difficult. In addition, orientation of intermediate RN staff to the

unit's six close observation beds and charge nurse roles also presented challenges as they tried to fit PST and staffing calculations into their new roles. Float staff had to rely on the clinical resource nurse or other staff to complete the PST for their assigned patients.

RNs expressed concern regarding the junior/senior experience mix of nurses on the unit, especially in relation to having fewer experienced nurses to staff high-acuity areas and to provide clinical guidance in complex care situations. Nurse skill level was only roughly measured according to criteria of experience and scope of practice (RN/LPN). Although the tool did not inform RN/LPN skill mix, more acute patients were generally assigned to an RN.

Nurses commented on the need for supports for new staff to ensure patient safety and attention to holistic patient needs. It took several months to recruit an RN for the clinical resource nurse position on the project, primarily because it was a seven-month, full-time position of weekday evening shifts.

Leadership changes on the unit meant the clinical coordinator was the only member of the unit nursing leadership team who had continuity with unit staff. The provincial steering committee also underwent many changes of personnel during the project.

While the project was slated to start in December 2008, the provincial steering committee was unable to engage a local researcher until June 2009. Further delays resulted, as patient outcome baseline data needed to be collected before the implementation phase could begin. The objectives and methodology of the project were developed prior to contracting a researcher, resulting in some tension throughout the project related to objectives and implementation processes.

In spite of the aforementioned difficulties, the pilot unit succeeded in achieving staff buy-in, implemented the PST and studied its impact over several months. Nurses felt the PST provided them with a common language to discuss workload issues, and it increased nurse leadership by involving them in collaborative decision-making. The tool also helped match appropriate staff (RN or LPN) to patients, thereby increasing safety.

Outcomes

Positive impacts on patient outcomes were noted during the project timeframe, but these were not of statistical significance owing to the short implementation phase, low overall numbers of events and changes in data collection formats in

the Saskatoon Health Region during the RTA project timeframe. Nosocomial infection rates showed improvement, and number of falls per patient-days decreased slightly. Greater diligence in reporting medication incidents was also noted as a positive step in facilitating system improvement.

During the project, 18 new RNs and 12 new LPNs joined the unit in permanent and casual positions. Recruitment initiatives such as bursaries, changes in nursing job market and the RTA project may have influenced this influx of nurses, and the project may also have had some impact. While longer timelines and larger sample size are needed to fully reflect impacts on retention and recruitment of nurses, the increased engagement of nurses over the project study period was noted.

Use of the PST has changed how nurses think about patients, bringing patient needs to the forefront when decisions are made about care. Use of the Synergy Model as the foundation for patient assessment demonstrates the ability to link nursing theory to front-line practice and to develop tools, such as the PST, that are grounded in theory. Use of the PST for staffing calculations is a significant step in the development of real-time, dynamic nurse-to-patient ratios driven by patient need. This foundational work adds important Canadian evidence about nurse-to-patient ratios.

The PST allowed front-line nurses to show leadership and to bring their professional skills and judgment to bear when determining nurse-to-patient ratios. It allowed nurses to track changes in workload and available staffing, and to use this information as a basis for staffing decisions.

Having patient needs made more visible through use of the PST created non-threatening opportunities for dialogue related to legislated scopes of practice. RNs identified the need for ongoing work to further clarify their responsibilities in daily practice and advance their roles in relation to patient advocacy, teaching and discharge planning, and team leadership. LPNs reported increased ability to provide holistic care for patients delegated to them. Use of the PST helped ensure they could provide all aspects of care within their scope of practice.

Research on RN competencies – related to critical analysis and problem-solving capabilities, assessment and diagnosis, appropriate and timely interventions, planning and leadership skills – demonstrates a direct relationship between these competencies and improved patient outcomes (Aiken et al. 2011; Wong

and Cummings 2007; Burnes Bolton et al. 2007). Further studies have shown that the value added in cost avoidance and cost savings related to both patient and nurse outcomes (i.e., length of stay, readmission rates, turnover) has the potential to offset the investment costs of hiring additional RN staff (Shamliyan et al. 2009; Dall et al. 2009; Needleman et al. 2011) While more research in this area is necessary, this project helped inform the importance of RNs and differentiate the scopes of practice of RNs and LPNs.

Nurses engaged in the project, especially those participating in working group activities, benefited by learning and experiencing roles as unit leaders and change agents. All nurses on the unit had exposure to “research” in a participatory action methodology and saw at first-hand how change takes place within the plan–do–study–act cycle. These learnings can be applied to other initiatives. Problem solving, collaboration and leadership capacities within nursing staff have been discovered and strengthened.

Lessons Learned

- Involvement of front-line RNs and LPNs in the development and evaluation of the PST and the staffing calculation tool was an essential factor in staff buy-in to the project.
- Nurses support the concept of a dynamic nurse-to-patient ratio based on patient need as assessed by their professional judgment.
- Having each nurse complete PST assessments for her or his assigned patients promotes critical thinking and a collaborative decision-making process for staffing with input by all RNs and LPNs.

Sustainability and Transferability

The long-term sustainability of the PST requires continued engagement of the unit working group to further revise it and the staffing calculation tool for ease of use and for some validity and reliability testing. As well, options to automate the tools should be investigated, ensuring that staff are engaged in the development and design of the program. Further, more robust evidence should be developed to prove that the application of a flexible, dynamic nurse-to-patient ratio grounded in patient need does lead to improvements in patient, nursing and organizational outcomes.

The employer will explore opportunities (most specifically, funding and human resources) that will allow continued use of the staffing tool for a period of time after the formal project has ended. During this time, the tools and their application would be refined and evaluation continued in terms of patient, nursing and

organizational outcomes. It is expected that the Saskatoon Health Region will not support the costs involved in maintenance or spread of this model if significant outcomes are not demonstrated.

The tools and processes developed in this project are adaptable to other patient populations and care settings. The Synergy Model was used as the foundation for the PST and correlated to nurse-to-patient ratios. The model could be further utilized as the foundation for care planning, orientation curriculum and risk management planning.

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