Enhancing Patient Safety through Undergraduate Inter-professional Health Education

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The Context

Patient safety is a timely and important topic in Newfoundland and Labrador. In 2007, the provincial government established the Commission of Inquiry on Hormone Receptor Testing – conducted by Justice Cameron – as a result of significant estrogen and progesterone receptor testing errors by the Eastern Health Regional Health Authority between 1997 and 2005. Among 60 recommendations outlined in her final report, Justice Cameron recommended the establishment of clear policies relating to adverse event disclosure, electronic occurrence reporting and senior leads for quality in all regional health authorities.

Also in 2007, the provincial government established the Task Force on Adverse Health Events with a mandate to "examine and evaluate how the health system identifies, evaluates, responds, and communicates" adverse events (2009: ix). The task force recommended that all regional health authorities and the provincial Department of Health and Community Services commit to a culture of patient safety. One of the 41 recommendations of the task force was that Memorial University of Newfoundland (MUN) consider implementing an inter-professional curriculum focused on patient safety and that the Canadian Patient Safety Institute (CPSI 2008) Safety Competencies Framework be used for guidance in the curriculum's development. This article describes the development, implementation and evaluation of an undergraduate inter-professional patient safety education module that resulted from this recommendation.

Enhancing a culture of patient safety begins with educating students of health professional programs about concepts such as the importance of working well as an inter-professional team. The ability to work collaboratively can enhance a culture of safety in the workplace and the effective management of adverse health events when they do occur. There is growing evidence that when healthcare professionals communicate effectively and know how to work as a team, the quality of patient care increases (Health Council of Canada 2009). Inter-professional education (IPE) – when two or more professions learn from and about each other (Centre for the Advancement of Interprofessional Education 1997) – is one way to improve communication and collaboration among members of a healthcare team.

In response to the provincial government task force's final report, the dean of medicine at MUN asked the Centre for Collaborative Health Professional Education to develop a proposal for the delivery of IPE concerning patient safety. This centre has a mandate to provide IPE to undergraduate and postgraduate students at MUN and practising healthcare professionals within the healthcare system.

IPE at Memorial University

IPE is well established at MUN. This is the 10th IPE module that students have participated in since 2005, when this university received one of 20 federally funded grants to enhance IPE in Canadian post-secondary institutions. Students from several

academic units have been involved, including those from clinical psychology, human kinetics and recreation, medicine, nursing (three sites), pharmacy and social work. The inclusion of police recruits and education students is planned for the future. Currently, the students also participate in four other undergraduate IPE modules related to mental health, professionalism, children's health and human immunodeficiency syndrome/acquired immunodeficiency syndrome.

Undergraduate IPE modules at MUN are integrated with existing courses, and all students are graded on their participation. The modules are based on a blended learning model whereby part of the learning is facilitated by an online learning management system – Desire2Learn (D2L) – while other learning activities occur face to face in small groups and plenary sessions. For most modules, the online component is two weeks in duration and involves inter-professional groups of students discussing issues related to a case study, such as how an inter-professional healthcare team can provide the best possible care. The face-to-face learning activities occur at the end of the online component. Standardized patient program role playing has been used in many of the face-to-face IPE learning activities to simulate patients or members of the healthcare team. Where possible, a former patient or inter-professional clinical team member is included in a plenary session to provide students with exposure to a real-world experience. Faculty members are recruited from applicable courses to participate in the development and implementation of the IPE modules. They facilitate both online and face-to-face learning activities and direct the development of the learning content and methods.

Patient Safety IPE Module

A committee, composed of the academic leads for undergraduate studies of all participating academic units, facilitates all IPE curriculum planning at MUN. At this level, it was decided that students in first-year medicine, third-year nursing (from both the main campus and west coast) and third-year pharmacy would be involved in the IPE Patient Safety module. Faculty members in the participating academic units were asked to volunteer to develop the module for launch within a six-month time frame. Experts from Eastern Health regional health authority joined the team, including the regional director for professional practice nursing and the assistant director of quality and risk management. The original curriculum team recruited additional members over this short planning period to ensure that sufficient expertise was present at all meetings. In the end, the faculty team was composed of 14 faculty, staff and community experts.

Details of the learning activities are presented below.

Online Component

The online component of the module involved a one-week, case-based self-study. Students were assigned to one of 20 inter-professional groups to participate in online discussion through D2L. The curriculum team developed a case study based loosely on a documented event. It described a pediatric medication error resulting from both individual and system factors. In the case study, the physician, pharmacist and nurse all contributed in some way to the adverse event, so no one health professional was labelled as the cause. Students were asked to review the case and reflect on a series of questions designed to emphasize the importance of working together as a team and the competencies required to create a culture of safety within healthcare. Resources on D2L included the CPSI Safety Competency Framework and Canadian Disclosure Guidelines, the Situation-Background-Assessment-Recommendation (SBAR) communication tool developed by the Canadian Health Services Research Foundation and professional competencies for practising nurses, pharmacists and physicians related to patient safety. For example, the collaborator and manager roles within the CanMEDS Competency Framework were emphasized. Provincial resources included regional policies related to occurrence reporting and disclosure and the Adverse Event Management Framework developed by the task force. The curriculum team revised the case study many times to ensure it was not too complex for the level of the students involved. As well, faculty prepared a glossary of important terms and provided hyperlinks in the case study to additional explanatory information relevant to the medication error. There were also numerous hyperlinks for other resources such as key articles, websites, seminal reports, organizations concerned with patient safety, professional competency frameworks and professional associations' position statements related to patient safety. In preparation for their face-to-face learning activities, students were asked to reflect on all questions and were assigned to lead a discussion on one question within their group. All inter-professional student teams were facilitated by a faculty member from the participating academic units or a trained volunteer.

Face-to-Face Learning Activities

The face-to-face learning activities involved a 45-minute small-group meeting. Students located on the main campus in St. John's met in their inter-professional teams to discuss the assigned case study questions and to formulate questions for the expert panel in the ensuing plenary session. Nursing students on the west coast campus met in uni-professional groups. Each group consisted of nine or 10 students. Case study questions were developed to help the students learn that adverse events occur because of both system and individual issues and the importance of timely occurrence reporting and disclosure to the patient and family. The students were directed in some questions to review resources posted on D2L. The following questions were assigned to students:

- What errors were made by the inter-professional team and by the individual members?
- What CPSI safety competencies are most relevant to this case? [See the resource list.]
- What problems in the system might have led to the errors?
- How could the system be changed to prevent future errors?
- Should an "occurrence report" have been completed for this medication error? If so, who could have completed the form? Why are occurrence reports important? When should an occurrence report be completed? [See policies from Eastern Health and Western Health regarding "occurrence reporting."]
- Should the error have been disclosed to the patient's family? How should the disclosure of occurrences occur? [See policies from Eastern Health and Western Health regarding disclosure and the CPSI Canadian Disclosure Guidelines in the resource list.]
- Why do you think the inter-professional team members chose not to document this error?
- Use the SBAR tool to reflect on what happened in this situation. [See the website resource list.]
- Please review the professional competencies specific to your profession. [See the resource list.] Consider the competencies that might have prevented this occurrence.

The main role of the facilitator in the small-group meeting was to encourage discussion by all participants, promote respectful dialogue and maintain group focus on task in the short time allotted. Although facilitators were not expected to be a source of expertise related to the content matter or scope of practice of any health profession, they were familiar with the case and the background materials provided to the students. If contentious issues arose – for example, disagreement about the cause of the error – facilitators allowed the students to work through the discussion and come to a reasonable solution. When facilitators felt the students lacked some important information, this was imparted once the students concluded their discussion. By being non-directive, facilitators avoided sharing their opinions on issues such as scope of practice and treatment, thereby allowing students to critically reflect on these issues and come to their own conclusions. An answer key was created for each of the case study questions to provide support to the facilitators during the discussion.

Plenary Session

Students assembled in an auditorium for the 75-minute plenary session; nursing students from MUN's west coast campus participated by video-conference. An inter-professional panel led the discussion during the plenary. The panel was composed of a physician, a pharmacist and a nurse who is an organizational lead for quality and risk management. Standardized Patient program members role-played the disclosure of an occurrence following a script developed from the case study. The roles within the simulation included the mother of the child who had received incorrect medication, the prescribing physician and the unit manager. There were two parts to the role-play. The first was a poor disclosure scenario in which the physician was evasive and defensive and the unit manager was not fully informed of the situation and was visibly frustrated. In this scenario, the mother became upset, indicating she would take further action. After the role-play, the panel members asked the students to discuss the disclosure, including how it could be improved. This step was followed by the enactment of a much more positive occurrence disclosure in which the physician clearly explained to the mother how the medication error occurred, the steps taken once the error was discovered, the subsequent care provided and current condition of her child. The mother's feelings were acknowledged, an apology was issued and the mother was encouraged to contact the unit manager if she had any further questions or concerns. This resulted in a more calm reaction from the mother. The students were again asked to reflect on this disclosure and to discuss how it supported a more positive patient safety environment. The panel members discussed various issues pertinent to patient safety, such as the importance of working together as a team to manage safety risks and clear institutional policy regarding occurrence reporting and disclosure. The plenary session ended with students posing questions to the panel regarding the case and the issue of patient safety in general.

Patient Safety Competencies

The CPSI Safety Competencies Framework identifies the knowledge, skills and attitudes required by health professionals to achieve a culture of safety in healthcare settings. CPSI recommends that competencies related to six domains be incorporated into health professional curricula at the pre- and post-licensure levels. While the students in the IPE module were required to reflect on all six patient safety competency domains, the curriculum team chose to emphasize two: (1) Work in Teams for Patient Safety – working within inter-professional teams to optimize both patient safety and quality of care – and (2) Manage Safety Risks – anticipating, recognizing and managing situations that place patients at risk.

The case study and associated questions were designed to encourage student reflection on key competences required for working in teams, including an understanding of the roles and responsibilities of each team member and protocols for the team's response to an adverse event. Similarly, competencies related to managing safety risks included the importance of recognizing that both individual and system factors contribute to adverse events and that standardized approaches and processes can increase patient safety.

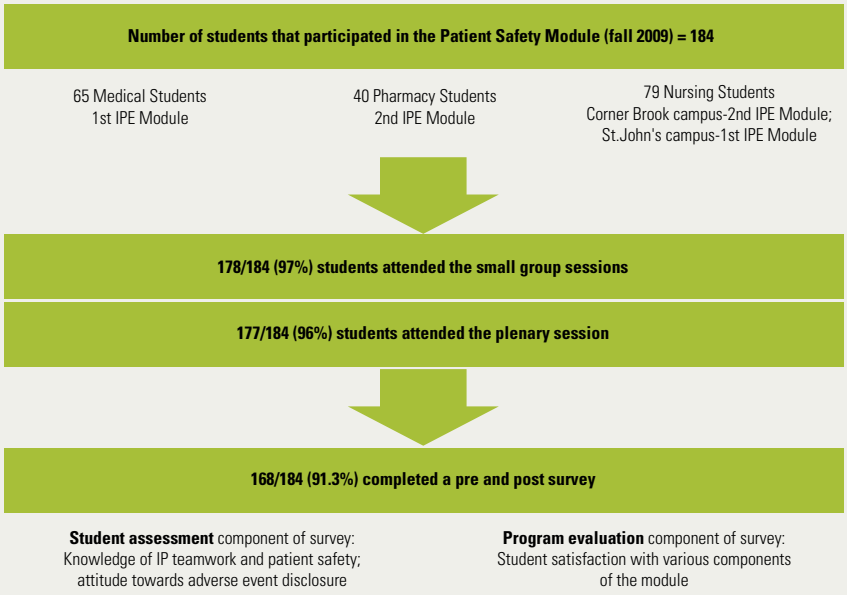
Evaluation

Approval to administer the student assessment and program evaluation data collection tools was received from the research ethics board at MUN.

A total of 184 students from medicine, pharmacy and nursing (two sites) participated in the 2009 Interprofessional Patient Safety module (see Figure 1). Of these, 168 students completed an evaluation of the module (91.3%).

The instrument measuring student attitude toward adverse event disclosure was adapted from a survey tool assessing students' attitudes about quality, safety and teamwork developed by Cox et al. (2009). It was piloted with a small sample of students from participating academic units. This 13-item five-point Likert scale was administered to the students before and after the module implementation. A 14-item five-point Likert scale measuring students' knowledge of inter-professional teamwork and patient safety, as well as their satisfaction with the module, was administered post-implementation.

Figure 1: Flowchart outlining module participation rates, student assessment and program evaluation



Student assessment data demonstrated a significant attitude shift toward teamwork, adverse event reporting and documentation to improve patient safety. Similarly, students reported that they had increased knowledge about patient safety, the importance of the inter-professional team and the role of other health professionals in delivering safe patient care. Program evaluation data demonstrated high student satisfaction with the learning experience (see Table 1).

Students' responses to open-ended questions also demonstrated knowledge and an attitude change in relation to patient safety, including the importance of inter-professional collaboration, occurrence reporting and taking responsibility for an error as a team (as opposed to blaming individual team members). Students additionally commented on aspects of the module they particularly enjoyed, including the small-group inter-professional discussion, the Standardized Patient program role-plays and the panel discussion.

Data were collected from students six months after module implementation to determine if there was a sustained change in attitudes toward adverse event disclosure. On the instrument measuring student attitude toward adverse event disclosure, there were no significant changes in eight items such as "making errors in healthcare delivery is inevitable" and "healthcare professionals should routinely share information about clinical errors and what caused them," indicating that students still held positive attitudes on these items. On the other hand, students demonstrated a negative attitude shift on five items including "to consistently achieve good healthcare outcomes, patient care must be well coordinated" (p = .012) and "errors that reach the patient should be reported, even if the patient is not harmed" (p = .007). Data collection will occur again at one year post-implementation in the fall of 2010.

Lessons Learned

As with all IPE activities, there are several challenges that have to be resolved. The first of these is the logistics involved in putting together this learning experience, including finding a common time for the curriculum team to meet and for students to participate. The first challenge was addressed by adding additional members to the team. This increased the likelihood there would be at least one faculty member from each participating academic unit present at all planning meetings to ensure that the material prepared was accurate and congruent with the professional competencies. Finding a common time for students to participate in IPE activities is an ever-present challenge as the academic units have different schedules. This requires advance planning, patience, a measure of goodwill and a strong commitment to

Table 1. Student satisfaction with the Patient Safety module*

Survey Statement	*n*	Mean
This learning experience has enhanced my understanding of patient safety.	166	4.25
I learned about the role of the inter-professional team in delivering safe patient care.	166	4.27
I learned about the role of my profession on an inter-professional team in delivering safe patient care.	166	4.17
I learned about the role of other health professionals in delivering safe patient care.	166	4.21
This learning experience enhanced my understanding of the process of adverse event disclosure.	165	4.27
I feel that I have an introductory knowledge base regarding patient safety.	165	4.23
I am now aware of the competencies required by healthcare professionals to deliver safe patient care.	165	4.09
I feel better prepared to participate in an inter-professional team.	166	4.10
The learning objectives for this module were clear.	165	4.06
The workload for this module was fair.	166	4.25
This module was well organized.	165	4.29
The following activities were useful in facilitating my learning:		
Online course information	165	4.00
Case study	166	4.34
Small–group, inter-professional learning experiences	166	4.40
Standardized patient disclosure role-play	164	4.35
Panel/group discussion	164	4.36
I would recommend this module to other learners.	165	4.25
Overall, this was a meaning learning experience.	164	4.30

*168 students rated the module on a five-point Likert scale.

IPE on the part of all participating academic units as they may be asked to make adjustments in their program to allow their students to participate.

Creating the instructional materials for this IPE module was more complex and time consuming than anticipated. All instructional material had to be easily understood because participating students were at varying stages of their education and some of the small-group facilitators were not health professionals. This necessitated many iterations of the case study and the development of the auxiliary learning materials that were posted on D2L. The time involved in creating these materials proved to be worthwhile. Neither the students nor facilitators voiced any concerns regarding the learning materials.

When developing the materials, the curriculum team was cognizant of making students aware that both system factors and individual factors contribute to the occurrence of adverse events. There were a number of system issues in the case that contributed to the error, and some students remarked on this. As one student stated in the post-module survey, "When errors occur, the inter-professional team takes responsibility as a team (a system error), rather than individual human error, so the team can work together to prevent the error from happening again." It was also important that all members of the healthcare team involved in the case study contributed in some way to the error to avoid labelling one profession as the cause. In this case, the physician, pharmacist and nurse all contributed to the error and to its non-reporting.

Conclusion

In summary, the first implementation of the Patient Safety IPE module had a positive effect on student knowledge and attitudes toward inter-professional teamwork, patient safety and adverse event disclosure. Over time, we anticipate this module will contribute to creating a culture of patient safety within healthcare settings. HQ

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