The Timely Open Communication
for Patient Safety Project

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Abstract

Background: Concern is growing over increased numbers of adverse events experienced by patients when admitted to acute care hospitals in Canada due to breakdowns in communication. The purpose of the Timely Open Communication for Patient Safety (TOC) project was to create a culture of patient safety through enhanced interprofessional communication by developing resources for caregivers and patients.

Methods and Findings: The research was framed by a mixed-methods design that included pre- and post-surveys and focus groups, online educational modules, face-to-face activities, and the development of patient orientation materials. Three clinical sites participated in the study. The findings indicate that supporting healthcare teams to identify strengths, challenges, and future directions of communicating, clarifying roles, functioning, and collaborating, coupled with educational interventions that raise awareness of patient safety, may enhance patient safety. The study was limited by the absence of data regarding the incidence of adverse events during the research period.

Conclusion: The data showed improvement in team members' perceptions of interprofessional collaborative practice within the participating Collaborative Learning Units (CLUs). If the CLU model of care is adopted within the healthcare system, the safety of patients/clients may improve.

Keywords: Patient safety; Educational intervention; Communication; Collaborative learning units; Interprofessional

Introduction

Concern is growing about the increased numbers of adverse events patients experience when admitted to acute care hospitals in Canada [1,2]. The link between a breakdown in communication and patient safety events is well established and acknowledged [3,4]. The second goal of the *2008 National Patient Safety Goals* [5] states "Improve the effectiveness of communication among caregivers" (p. 1). Gaps in communication can seriously affect continuity of care, which brings the danger of inappropriate treatment and potential harm to the patients [3,6]. The Canadian Patient Safety Competencies comprise six domains, one of which is *Communicate effectively for patient safety* [4]. A cross comparison of the roles of healthcare professionals revealed that all are expected to be exemplary communicators and collaborators [7,8]. In order to limit patient safety incidents, efforts to improve communication mechanisms are highlighted as key strategies to ensure patient safety [9-11]. Poor communication is often cited as a factor in patient safety incidents [5,9,12]; the Joint Commission [13] revealed that communication failures were implicated in 72% of newborn mortality and morbidity cases reviewed. Simply

providing a communication strategy, however, will not in all likelihood make a difference if other critical factors are not taken into account.

The conceptual framework for the International Classification for Patient Safety identifies 10 high-level classes of which one, Contributing Factors/Hazards, is subdivided into staff and patient factors [14]. In these subsections, the component parts of communication are listed as method, language difficulties, and health literacy, and can be transferred visually, verbally, and digitally among both staff and patients. Implementing Collaborative Learning Units (CLUs) is a strategy that may increase communication within healthcare teams and decrease the incidence of adverse events.

The development of a CLU structure was first proposed by Lougheed and Galloway Ford [15] as a model for nursing students in clinical fieldwork placements. This model shares the responsibility of supervision and modelling among nursing preceptors within the same clinical unit. The South Eastern Interprofessional Collaborative Learning Environment (SEIPCLE) project, a predecessor to the TOC project, adapted Lougheed and Galloway Ford's [15] definition of a CLU to include the concept of interprofessional collaboration. SEIPCLE defined a CLU as "[a] clinical unit where all members of the staff, together with students, patients/clients, family and community supports, work together to create a positive learning environment and provide high quality patient/client care." By expanding the membership of the CLU to include all staff with direct and regular patient contact, as well as patients themselves, the project team aimed to improve communication to enable a cultural change. In order to prepare clinical sites to model collaboration, the staff on the unit must be prepared to engage in interprofessional collaborative learning. In this project, CLUs were established in three clinical units by an earlier SEIPCLE research project [16] that provided the mechanisms to enhance communication among staff and with patients and their families [17].

Previous work with learners in interprofessional clinical practice highlighted that patients and their families were often worried by not knowing what type of care was provided by the various healthcare professionals [8,18]. Research evidence has revealed that patient safety incidents were more likely to occur during the admission process and when patients/clients were transferred to other locations [3]. The Timely Open Communication for Patient Safety (TOC) project addressed this gap as it was designed to determine if educational interventions could improve communication at vital transition periods and contribute to a culture of patient safety which in turn could lessen the likelihood of patient safety incidents.

This article describes the TOC project, the purpose of which was to improve patient safety through enhanced interprofessional communication by developing resources for caregivers, patients, and families. At the time of the study, data about the incidence of adverse events were unavailable to the research team. This article describes the development and implementation of educational interventions provided to the three participating clinical units and the effect on participants' perceptions of collaboration and patient safety culture.
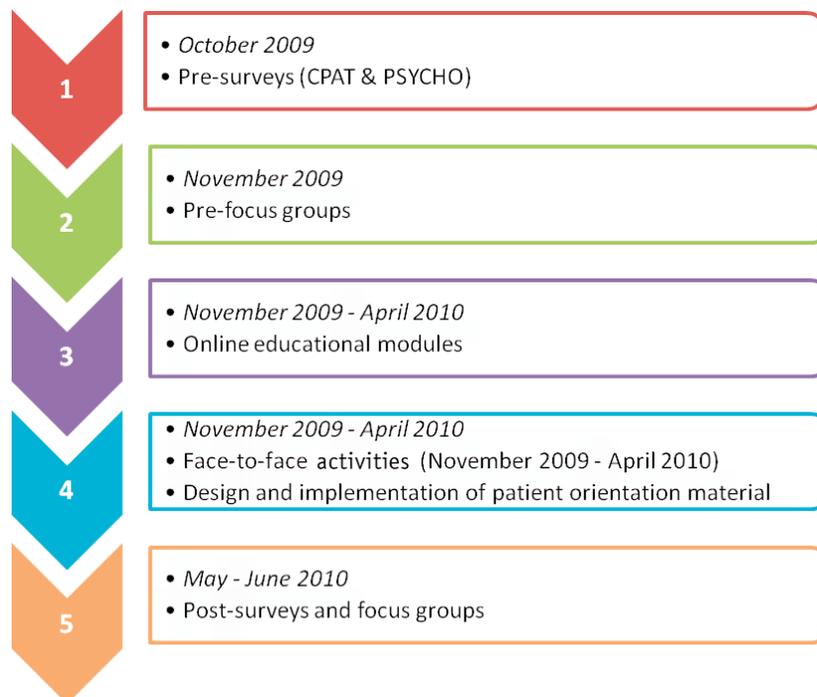
Methods

Prior to the implementation of any research activities, the TOC study received ethical approval from Queen's University Research Ethics Board as well as all the appropriate institutional ethical committees.

Design

The TOC research was framed using a mixed-methods design [19]. The quantitative survey design was employed to provide an overview of the CLU members' perceptions of collaborative practice and patient safety culture. The qualitative case study design was used to examine the effects of the educational interventions on the participants' awareness of and approach to communication and patient safety [20,21]. The design of the study involved five stages (see Figure 1):

1. Pre-intervention surveys of the Collaborative Practice Assessment Tool (CPAT) [17] and the MSI 2007 version of the Patient Safety Culture in Healthcare Organizations (PSCHO) [22]
2. Pre-intervention focus groups conducted with participants from each CLU
3. Intervention: online learning modules completed by each CLU
4. Intervention: face-to-face activities within each CLU and the development and implementation of patient orientation material to assist in the admission and discharge process at each site
5. Post-intervention surveys and focus groups conducted with each CLU

Figure 1
TOC components and timelines

1
- *October 2009*
- Pre-surveys (CPAT & PSYCHO)

2
- *November 2009*
- Pre-focus groups

3
- *November 2009 - April 2010*
- Online educational modules

4
- *November 2009 - April 2010*
- Face-to-face activities (November 2009 - April 2010)
- Design and implementation of patient orientation material

5
- *May - June 2010*
- Post-surveys and focus groups

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Participants were selected based on their willingness to engage in the surveys, educational interventions, and focus groups. The healthcare professions represented in this study were identified from survey item 52 of the PSCHO and represented a number of professions that comprised registered nurses/registered practical nurses ($n = 12$), physician ($n = 1$), allied health professionals, including occupational therapists, physiotherapists, and dietitians ($n = 16$), clinical care manager ($n = 1$), unit clerk ($n = 1$), housekeeper ($n = 1$), leisure/life skills instructor ($n = 1$), and spiritual care provider ($n = 1$), as well as physiotherapist/occupational therapist assistant ($n = 1$). One participant did not respond to this survey item. It should be noted that an additional physician from one of the units was involved in the project as a module developer but did not complete the surveys or participate in the focus groups. At another site, physician turnover prevented active involvement in the project though physician input was included in the patient orientation materials. At the third site, a pharmacist was involved in reviewing orientation materials.

Intervention description: The TOC project

Educational interventions adopted by and implemented in the CLUs included online modules, face-to-face activities, and patient/family orientation materials. The TOC project followed the same process as the SEIPCLE project by developing online modules in which participants could engage individually or in groups, depending on their work schedules. The TOC project used two SEIPCLE modules ("Collaborative Practice" and "Patient Perspective") and two new modules ("Communication for Patient Safety" and "Medication Reconciliation," see Figure 2). Participants from all three sites received the same online educational modules, available to the staff through a publicly accessible website. The modules took one to three hours to complete, depending upon the module and the participant's level of engagement. The modules were designed to provide knowledge and raise awareness of interprofessional collaboration, with an emphasis on communication and key patient safety issues. A variety of presentation styles were used including videos, patient narratives, quizzes, journal articles, and clinical scenarios. Face-to-face activities included interactive posters and information sessions to raise awareness of patient safety issues and strategies for improving patient safety within the clinical units. In addition to these interventions for staff, patient/family orientation materials were created and tailored to meet the unique needs of each CLU. These orientation materials included patient-narrated DVDs and/or booklets that provided an overview of the clinical unit, explained the roles of staff members, provided specific patient safety messages [23], and encouraged patients to take an active role in their own healthcare.

Setting

Three clinical units in southeastern Ontario participated in the study: a specialized geriatric day hospital, an acute care inpatient oncology unit, and a mood disorders unit. In each setting, a clinical site coordinator was hired by the TOC project to work on a part-time basis in tandem with their clinical position. The clinical site coordinators played a key role in the project as they worked within the units as

Figure 2
Online education modules

Collaborative Practice (CP):
What is Collaborative Practice?
Why Collaborative Practice?
How is Collaborative Practice achieved?
Practice Setting Variables
Essential Elements
Reflections

Patient Perspective:
A Patient's Voice Video
Bridging Relationships Video
Key Elements of Patient/Client-Centred Practice
Patients' Messages
Reflections

IP Communication for Patient Safety:
Why IP Communication matters
Challenges
Communication Skills 101
Challenging Cases
Personalized Portfolio
Reflections

Medication Reconciliation:
What is Medication Reconciliation?
Who should be involved?
Best Practice Medication History (BPMH)
Transfers and Discharges

Samples

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members of existing teams and were known and trusted by their colleagues. They were responsible for liaising between the clinical unit and project team, assisting in the development of the educational interventions and the implementation of the project. Two units that had previously participated in the SEIPCLE project were invited to continue their collaboration in the TOC project. A new team expressed interest and was also invited to participate. All the units received the support of management and administration from their institution.

Data collection and analysis

Quantitative and qualitative data were collected using two confidential surveys (CPAT and PSCHO) and six focus groups. The CPAT is a 56-item survey with eight domains, and two pilot tests indicated that the CPAT is a valid and reliable measure of collaborative practice in healthcare teams [16]. The PSCHO survey is a 46-item tool that, for the purpose of the TOC project, was divided into seven domains [23]: Leadership/Management, Staffing, Communication, Reporting, Climate, Actions after a Major Event, and Overall Perception of Patient Safety. A pre- and post-test method was used for both surveys to determine the aggregated differences in collaborative practice and patient safety culture from the beginning to the end of the project. Using the quantitative data analysis program SPSS 18 [24], both surveys were analyzed through descriptive statistics—means, frequencies, and percentages [25]. The content validity of the surveys was obtained through triangulation of data from all sources.

Qualitative data was collected from a pre- and post-focus group at each clinical site, as well as from field notes taken during the focus groups [26]. The focus groups included team members from diverse healthcare professions as well as support staff. Each focus group session was digitally recorded. The sessions were approximately 60 minutes long and transcribed verbatim. Table 1 provides an abridged version of the post–focus group interview protocol.

Table 1

Abridged version of the Post-Focus Group Interview Protocol

Post-Focus Group Questions

1) Do any of these results [from the post-survey results] surprise you? Why or why not?
2) Have you noticed any of these changes [significant differences between the pre- and post-survey results] in your own work or how you work as a team? Please give an example.
   • Why do you think these changes occurred?
3) Has being a part of this project helped improve patient safety on the unit? Can you give an example?
4) In what ways did the online modules help you in your job (e.g., performance, awareness)

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5) Your team assisted in developing orientation materials for patients and families.
   - How have these resources been used?
   - How might they be used and/or enhanced in future (e.g., dissemination, methods of use)?
6) How has participating in this project strengthened you and/or your team?
7) What are some of the challenges that you and your team still face in trying to improve the care and safety of your patients?
8) Does anyone have any final thoughts they would like to share?

The qualitative data analysis software program Atlas.ti was used to manage the data, and transcripts were coded. Using the constant comparative method of analysis [27], the focus group transcripts were coded by one member of the research team until no new codes were needed. Two focus group transcripts were then given to another member of the research team for coding verification and inter-rater reliability [28]. Upon comparing the coding from both researchers it was determined that 75% of the transcripts were identically coded. The remaining 25% were ascribed to (a) overlap in the meaning of some codes, (b) additional coded segments in the transcripts, and (c) elimination of one code. Initially, there were 44 codes. Once the codes were further compared, discussed, and verified, they were reduced to 39. Next, the segments were organized into 31 emergent topics. The topics were then collapsed into nine themes and generated three patterns (see Table 2). Four members of the research team were involved in coding verification and inter-rater reliability with participation in various aspects of the analysis to arrive at the final patterns and themes.

Results

This mixed-methods research project produced many interesting and rich findings from both the quantitative CPAT and PSCHO data and the qualitative data. The three patterns that emerged were Strengths, Challenges, and Future Directions. Participants believed the primary strength of their CLU, which was consistent throughout the TOC project, was teamwork. Three new strengths to emerge from the post-intervention data were Leadership, Educational Interventions, and Working Environment. Communication and collaboration emerged as the major challenges to improving patient safety. Collaboration only emerged in the post-research data. The findings suggest team interactions and interprofessional (IP) communication were issues that participants hoped to improve upon in the future. Tables 3 and 4 summarize the quantitative findings from the CPAT and PSCHO. The means were aggregated across all three sites for both the CPAT and PSCHO. *A priori* decisions made by the research team, as done in previous studies [18], identified the difference from mean scores of 0.5 or greater between the pre- and post-survey results to be considered clinically significant.

Table 2
Emergent topics, themes, and patterns from pre- and post-focus group data analysis

Pattern (Relationship among themes)	Theme (Meaning of connected topics)	Topic (Subject Identification)
Strengths of the CLU (Pr, Po)	Teamwork (Pr, Po)	Mutual trust and respect (Pr, Po) Communication (Pr, Po) Sense of pride (Po) Collaboration (Po) Client mentorship (Po)
	Environment (Po)	Atmosphere (Po) Human resources (Po)
	Leadership (Po)	Managers (Po) Project coordinators (Po)
	Educational Interventions (Po)	Professional learning (Po) Patient/Client/Family-centred learning (Po)
Challenges of the CLU (Pr, Po)	Communication (Pr, Po)	Professional orientation and training (Pr) Team mission, values and beliefs (Pr) Methods of communication (Pr, Po) Decision-making process (Pr, Po) Role clarification (Po) Scopes of Practice (Po) Professional wellbeing (Po)
	Resources (Pr, Po)	Human (Pr, Po) Equipment (Pr, Po) Educational resources (Po)
	Collaboration (Po)	Patient/family engagement (Pr, Po) Physician engagement (Pr, Po) Lack of opportunities (Po) Language (Po)
Future Directions for the CLU (Pr, Po)	Team Interactions (Pr)	Environment (Pr) Communication methods/Dialogue (Pr) Modelling change (Pr) Common mission, beliefs, and action plan (Pr)
	Interprofessional Communication (Po)	Information dissemination (Po) Orientation material (Po)

Note: Pr = Pre-focus group; Po = Post-focus group

The CPAT revealed significant clinical differences in 25 survey items in all eight overall domains. The greatest differences in the participants' perceptions of their collaborative practice occurred in the Communication and Information Exchange domains (see Table 3). Eighty-eight percent of the items in this domain were signif-

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icant and included increased trust and respect of team members' roles and responsibilities, effective communication through shared patient/client treatment goals, relevant information exchange of patient/client care plans among team members, open and comfortable team meetings, and effective use of the patient/client health records for documentation. The smallest significant difference occurred in the Decision-making and Conflict Management domain (20% of the survey items); the only improvement in participants' perception within this domain being that there were now processes in place to quickly identify and respond to a problem.

Table 3
Results from the Communication and Information Exchange Domain for the CPAT Scores

Survey Item	Communication and Information Exchange	Aggregated Mean	
		Pre-Test ($n = 51$)	Post-Test ($n = 34$)
36	Patients/clients concerns are addressed effectively through regular team meetings and discussion.	4.9	5.8*
37	Our team has developed effective communication strategies to share patient/client treatment goals and outcomes of care.	5.3	5.9*
38	Relevant information relating to changes in patient/client status or care plan is reported to the appropriate team members.	5.1	5.8*
39	I trust the accuracy of information reported among team members in a timely manner.	6.1	6.3
40	Our team meetings provide an open, comfortable, safe place to discuss concerns.	5.2	6.0*
41	The patient/client health record is used effectively by all team members as a communication tool.	4.6	5.2*

Notes: *significant difference; Scale: 1 = Strongly Disagree; 2 = Mostly Disagree; 3 = Somewhat Disagree; 4 = Neither Agree or Disagree; 5 = Somewhat Agree; 6 = Mostly Agree; 7 = Strongly Agree

Although the PSCHO results revealed no significant differences in the Communication domain between the pre- and post-data, it did show significant clinical differences in two of the seven domains: Staffing and Leadership/Management (see Table 4). The participants perceived that their unit took the time required to identify and assess risks to patients (survey item 5), and that senior management provided a climate that promoted patient safety (survey item 7). The findings revealed that perceptions about collaborative practice remained relatively consistent throughout all the domains. It may be that more time is needed to statistically determine a cultural change in knowing and doing within the three clinical sites studied.

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Table 4
Results of the Communication Domain from the PSCHO Survey Scores

Survey Item	Domain	Aggregated Mean	
		Pre-Test ($n = 43$)	Post-Test ($n = 36$)
	Communication		
2	Good communication flow exists up the chain of command regarding patient safety issues	3.2	3.6
8	Asking for help is a sign of incompetence	1.6	1.4
9	If I make a mistake that has significant consequences and nobody notices, I do not tell anyone about it	1.4	1.4
27	Staff are given feedback about changes put into place based on incident reports	2.5	2.9
33	On this unit, when an incident occurs, we think about it carefully	3.9	4.0
34	On this unit, when people make mistakes, they ask others about they could have prevented it	3.5	3.6
35	On this unit, after an incident has occurred, we think about how it came about and how to prevent the same mistake in the future	3.8	3.8
36	On this unit, when an incident occurs, we analyze it thoroughly	3.6	3.5
37	On this unit, it is difficult to discuss errors	2.4	2.3
38	On this unit, after an incident has occurred, we think long and hard about how to correct it	3.5	3.7
	Staffing		
5	My unit takes the time to identify and assess risks to patients	3.7	4.2*
	Leadership/Management		
7	Senior management provides a climate that promotes patient safety	3.3	3.8*

Notes: *significant difference; Scale: 1 = Strongly Disagree; 2 = Mostly Disagree; 3 = Somewhat Disagree; 4 = Neither Agree or Disagree; 5 = Somewhat Agree; 6 = Mostly Agree; 7 = Strongly Agree

Strength: Teamwork

Teamwork was the one consistent theme that emerged from both the pre- and post-focus group data in all three clinical sites. Most participants believed there was mutual trust and respect among team members as well as a sense of pride in their teamworking skills. For example, one participant stated a belief that, "There is a very clear respect here for the scope of practice of the members of the team and trying to figure out what it is everybody does and how we include people in the care for the patient." Another team member stated that the TOC project "has really given us

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a chance to get to know everybody and feel comfortable bringing up issues." The data from the CPAT supported the focus group findings. For example, there was a significant improvement in the perception that team meetings provided an open and safe environment for discussing concerns (see Table 3). The trust, respect, and pride team members had for each other appeared to be strengthened by an understanding of participants' professional roles and scope of practice. The following quote is representative of other comments from CLU members concerning the TOC project:

> When I started the project, I dreaded having to ask my colleagues to do this task or that task. We are all busy but every time I got such support. I felt that this team you could count on … I feel much stronger that my colleagues will be there for me and I want to be there for them. You always want to be there for your colleagues, but now it's sort of like, "Go-Team-Go!"

When asked if developing the patient/family orientation materials together helped with role clarification as related to trusting and respecting each other, one participant expressed the views of the group:

> It [the DVD] certainly did for me, and I thought I had a pretty good understanding, but it actually sensitized me more, partly because I have a coordinating role. It sensitized me more to who felt valued and who didn't, and I think the video helped level that a bit.

These findings were also supported in the CPAT analysis. The differences between the pre- and post-test analysis indicate that, by the end of the TOC project, participants respected each other's roles and expertise, and trusted each other's work and contributions related to patient/client care.

Many participants in the post–focus groups recognized that teamwork in healthcare settings included the patient/client as a member of the team. For example, one participant stated that, "A good portion of the folks on this floor are oncology and are here for a long time so it becomes relationship building. What happens with the staff also happens with the patients—that's the focus." Another participant described a teamwork process where the patient/client was identified as an important mentor within the healthcare team:

> Our clients come as a group and we identify some of the appropriate clients to play the role of ambassador. They welcome the newbies that come in, take them under their hand [*sic*], and act as a resource. They get the benefit of being in a leadership role and we get the benefit … of having someone else keep an eye out … the other [clients] get the benefit of being taken under a wing. I really like it and it is peer run … I wonder if our heightened awareness of patients can play a strong role in helping us … I think from a safety point of view, it's a huge help to know we are all in this together.

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The CPAT findings also support this finding; participants stated that team members were better at recognizing and encouraging the patient/client as a member of the healthcare team. Participants also believed their team's and patient/client's goals were clearer and more useful and appropriate to their practice.

Collaboration was an aspect of teamwork that emerged only in the post–focus group data from all three sites. It was not a recognized strength by the participants at the onset of the project. The CPAT revealed that positive changes in perception occurred in participants. At the conclusion of the TOC project, the majority of participants believed team members worked together effectively by sharing knowledge and learning together. This type of teamwork was described as follows:

> One thing I was going to comment on is the staff meetings with the interprofessional collaboration that we have been working on in the unit here. The staff meetings are not only primarily nurses any more. We do see the other disciplines come in to our staff meetings as well, which is a positive thing.

> I do think that we work better as a team here for the greater good of the patient. I think on [another unit] you walk onto the floor and you're looked at as an intruder; you're not welcome. … The team collaboration that does exist is heads and shoulders above other units'.

The majority of participants at each clinical site also believed that communication had become one of the strengths of the CLU by the end of the TOC project. Team members perceived that they communicated with each other to reduce adverse events and increase awareness of patient safety issues. One participant described the two-way communication process on their unit: "Even though there are structural problems, the communication, the openness in dealing with it, with management and with each other, is a positive … We are dealing with things as best we can in an open way and we're being heard as well."

By the end of the TOC project, communication with the patients/clients and their families also appeared to increase in importance. A participant described one process of disseminating patient/client/family feedback:

> The care coordinators bring the Patient Satisfaction surveys back to us. You can learn a lot from those. I thought it was kind of hokey at the time, but I actually really enjoy it. We start our business meetings with a mission moment; it is client or family feedback that constitutes one of those mission moments.

The CPAT also suggested that participants' teamwork improved throughout the project as indicated by the significant differences between the aggregated mean scores for survey items in Table 3. The positive teamwork described by participants in this study revealed a sense of pride that team members had in their ability to work as a team based on mutual trust, respect, collaboration, and communication.

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Strength: Leadership

At the end of the TOC project, leadership emerged as a new strength in all three clinical units. Most participants believed the clinical site coordinators were vital to the success of the project and to their team's functioning effectively to improve patient safety and care. For example, one participant described the importance of the project coordinator's role, a view expressed by the majority of the post–focus group respondents when she stated, "This project worked because the project coordinators are our team members. They're visible on the floor and we know that they had a big stake in it. That makes you want to buy in more when you know the person, not that we don't trust you guys [researchers]."

Another participant described how his or her project coordinator was supportive of the team members in completing the project tasks:

> Every time I turn around you [project coordinator] are offering something that's creative. You're thinking way ahead of the game and you've really been a leader for the coordinators, even though some of them have had more experience. I think they've felt their environments have been very, very difficult as well, and you've kind of cheered everyone up and said, "Here is something we can try, let's do that."

The post–focus group also revealed that participants believed the managers were dedicated team members who truly tried to effect change for the good of the patient. One participant described his or her manager:

> The manager really is trying to find ways to listen to the nurses' comments and she will take all of that information and try to make something change rather than it just being "Tell me what you want" and nothing ever comes of it. She actually has a final result. She can make the change happen and I think that there's a trust in the management.

A member of another CLU explicitly acknowledged the efficiency of his or her manager in dealing with conflict and the pride this member had in the approachability of the manager's leadership:

> I'd say we've given ourselves permission to deal with things. Recently there was something that bothered me and I cracked off a note to the clinical director and she responded and it was dealt with … I just felt the power to ask the questions.

The CPAT and PSCHO findings also support the perception that the teams' leadership became a strength during the project. Participants suggested that by the end of the TOC project team, leadership provided (a) more encouragement for team members to take the initiative in supporting patient/client care goals, (b) support for professional development, (c) modelling and advocacy for best practices, (d) encouragement for team members to practise within their full professional scope (Table 3), and (e) a climate that promoted patient safety (Table 4).

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Strength: Educational interventions

The educational interventions were viewed by all participants in the post–focus groups as important components for their own professional development and for patient/client/family learning. Most participants completed the online learning modules. Participants at one site assisted the research team in the creation and implementation of an orientation DVD for patients/families on their unit; participants at another site assisted in the creation of orientation booklets for clients at their site; participants at the third site were involved in creating both resources for their patients/families. All team members, including patients/clients, were involved in the unit-specific materials created.

The online modules became a tool for the CLUs that allowed team members the opportunity to apply their theoretical learning to increase awareness in practice:

> The feedback … from the staff has been from the Medication Reconciliation module [and] is that people feel that they were aware but that it has made more sense after [completing] the module. The whole process makes more sense to them. It's a term we have been toying with for a couple of years, but we didn't really know what it was about … it's been an eye opener.

The increased awareness in communication, collaboration, and medication reconciliation also prompted a focus on patient safety issues among the CLUs. For example, one participant stated that, "One thing that tends to be on the agenda all the time now is patient safety. This has been initiated with the TOC project."

The DVDs were educational interventions that appeared to have a profound effect on the professional learning of the CLU members and instilled pride among the team members involved in the development of these orientation resources. One participant response that represented this finding was "I think the DVD clarified a lot for a couple of the newer members of the team." The DVD also served to educate patients and their families about their role in the healthcare team. They received encouragement to speak up and contribute to their own care:

> In doing the video, every person in their script addressed [encouraged] the client to feel free to speak up. One of the safety focuses was to engage the client and encourage them to be an active participant in the team care. Any client who sees that video is going to have heard it loud and clear from every discipline.

The post–focus group data analysis of all three sites supported the view that the patient/family orientation materials were positively received. One participant noted that "One good thing that came out of this orientation package is the communication to our patients" and "The TOC book brought more to the surface in that we needed to make sure the patients were their own advocates as well. It [increased] awareness which I think is important."

Strength: Work environment

The working environment (physical space, atmosphere, and human resources) was not considered to be one of the strengths by any participants in the pre-intervention focus group. One unit moved to a new wing in the hospital during the research study and their physical environment was definitely improved as a result. The post–focus group data revealed, however, that these elements of the working environment were considered strengths by most participants in two of the clinical sites. This was a change in perception that occurred over the course of the TOC project. The CPAT also revealed that team meetings provided an open, comfortable, and safe place to discuss concerns and advocate for the patient/client (see Table 3). The positive atmosphere appeared to decrease feelings of anxiety and increase support between team members, as demonstrated in the following quotes: "There isn't the atmosphere of anxiety about doing this. One good thing is that when an incident occurs now there are a number of us involved" and "I'd rather spend all my time here if I could. It's because the atmosphere here and the energy level are a little bit different."

One unexpected theme that emerged throughout the post–focus group data was a sense of pride by all participants in their accomplishments and team strengths throughout the TOC project. One participant stated that she had "A sense of pride in this floor, in this team and I'm not quiet about it either with my colleagues. I've said, 'Hey, this is what [teamwork] can be like,' with wrinkles for sure, but it's a positive thing and it's motivating."

Challenges: Communication

Participants continued to perceive a need for effective communication networks between the team and management in the forms of support and guidance. This was evident when one participant stated:

> I do think that management is quick to tell us what we're doing wrong … and very slow to give us any guidance about what needs to be [done]. We're told that we need to work more efficiently but, I never know what they expect of me—just more. The clarity of their message and their advocacy for us or their belief [that] we do is worth advocating for, is a challenge.

As well, there was no significant clinical difference in the pre- and post-survey scores of survey item 27 of the PSCHO, revealing that most participants disagreed that staff are informed of changes based on incident reports.

Some participants in all focus groups described the communication process for informing the CLUs of adverse events (AEs) or near misses as unclear. The PSCHO responses were neutral when participants were asked about the strength of their teams' communication and their analysis and reflection during AEs. This suggests they are unsure whether this is a strength or barrier for their team. As well, the post–focus group revealed that the team was uncertain about the communication process for AEs as evident in one participant's description of the process:

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On a medication level, we may not be directly involved. Maybe at the nursing team meetings the charge nurse and the program manager would address it and get feedback on what was done to prevent it from happening in the future. I'm just guessing. I'm hopeful that is what happens.

The findings from the CPAT (survey item 34) revealed that participants mostly agreed that team members have the responsibility to communicate and provide their expertise in an assertive manner. The focus group data revealed that many respondents found the decision-making process remained predominately a traditional top-down approach rather than a shared model involving all team members. One participant remarked, "I just wonder when decisions like that are made, how collaborative and how interprofessional it is. Who's around the table when decisions are being made?" This observation was corroborated in survey item 2 of the PSCHO; respondents were neutral in their perception of the communication flow between the CLU and administration about patient safety issues.

One site suggested that there was a breakdown in communication for clarifying team members' roles, responsibilities, and scopes of practice within the greater clinical site community. For example, one CLU member stated, "You'll see the tours of the facility and I have to cover my eyes and ears when I hear what [the tour guides] say we do. People don't really know what we do!" Another described her frustration with the communication process, stating "My concern is quite often that patients really don't understand who's seen them or who's mobilized them."

Challenges: Collaboration

Physician and patient/client/family engagement emerged from the focus group data as barriers to collaborative communication. All participants at two of the three clinical sites suggested that the lack of physician involvement with the team was a barrier to healthcare. As one participant stated,

> If the physicians are going to be a part of our team they need to be part of our care planning and in our conferences. That's where we plan our patient care with the team so it is very difficult when the physicians are absent.

Although physician engagement was considered a concern in all three CLUs at the beginning of the TOC project, only two sites considered it to be a major challenge by the end of the project. It is interesting to note, however, that no physicians accepted the invitation to participate in any of the focus groups.

At the conclusion of the TOC project only a few participants at one site perceived difficulties with including the patient/client/family in their healthcare teams' collaborative efforts. This area of collaborative communication appears to have improved throughout the TOC project as the findings from the pre–focus group data identified all three sites as having the challenge of including the patient/client/family in their plan of care.

One clinical site identified a lack of opportunity to engage in collaborative practice as barriers to the communication processes. This was identified in statements such as, "It's not a matter of not having the commitment to want to work collaboratively, but there's a lack of opportunity."

Future Directions

Dialoguing and modelling change were common themes among all clinical sites in the pre-focus group data. The post–focus group data, however, revealed a shift to an interprofessional (IP) focus, one that included a holistic team approach for disseminating information and for implementing the educational material used and developed through TOC with the overall focus being to improve awareness of patient safety issues.

By the end of the TOC project, most participants were focused on how the team could disseminate the material they had created through the research project for optimum impact and usefulness. Many responses suggested that the patient orientation materials could be used in many settings and with diverse populations in addition to its target audience of newly admitted patients and their families. The data from all sites also revealed that the teams were not only proud of the patient-centred products they created during the TOC project, but they also reflected on extending the implementation strategies of the educational material. For example, participants from all three CLUs suggested that the patient orientation materials also be used to orient managers and new staff, as the materials included pertinent information about each profession's roles, responsibilities, and scope of practice: "I think the DVD is helpful for new staff too, not just for clients." Participants also suggested there could be a more personalized process for disseminating the orientation material. One CLU suggested that "It would be helpful to put the patient's name on it so it's not just literature that's left behind. It's specifically for the person in the bed and their family. It might be more invitational and more personal—John Doe and Family, or The Doe Family."

The language participants used in all the post–focus groups was in stark contrast to that used in the pre–focus groups. By the end of the project, participants were using language that suggests an increase in awareness and knowledge about interprofessional education and collaborative practice. They spoke of teamwork, collaboration, interprofessional meetings and practice, and interprofessional care models versus medical models. This suggests that the CLUs in this study are engaged in a cultural shift of knowing and doing; knowing through Interprofessional Education (IPE) and doing through applying IPE to practice. Participants recognize that they are attempting to move from a medical model to an interprofessional collaborative care model. They are also able to identify many of the components necessary to achieve this shift in practice as evident in both the language they now use and in their actions.

At the conclusion of the project, participants were asked how they might sustain the steps taken in the TOC project. Many ideas were generated, indicating interest, and motivation to continue with collaborative activities and efforts on the units. For

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example, one participant stated that, "Pharmacy and Nursing are working on developing a tool that we can use here on the unit that is coming from the Medication Reconciliation module."

Discussion

The purpose of this research project was to facilitate patient safety through improved IP communication by developing educational resources for caregivers, and patients/clients and their families to help increase awareness of collaborative practice, communication, and patient safety issues. The findings from the TOC project indicate that practising timely open communication to improve patient safety is a complex process composed of a number of inter-connected components including communication, collaboration, leadership, professional development, working environment, and team pride. It should be noted that the sense of pride gained through effective team collaboration is a novel finding for the literature in this field. Providing educational resources to patients and their families, in order to encourage active participation in their own care, was positively received by the CLUs.

These research findings concerning improved patient safety appear to be linked directly to five of the six IP competency domains that the Canadian Interprofessional Health Collaborative (CIHC) [6] deem essential to "enable optimal health outcomes" (p. 8): interprofessional communication, patient-/client-/family-/community-centred care, role clarification, team functioning, and collaborative leadership. Conflict resolution was the only one of the CIHC competency domains that did not emerge in these findings. CIHC's National Competency Framework [6] suggests interprofessional communication is an essential IP competency for improving healthcare. It is defined as an action in which "learners/practitioners from different professions communicate with each other in a collaborative, responsive and responsible manner" (p. 16). The research results indicate that the CLU members in this study are aware of and attempt to practise collaborative communication through trusting and respecting each other's abilities, encouraging shared decision-making processes, collaborating on patient-/client-centred plans of care, and actively engaging patients and their families. This is directly linked to role clarification, a second IP competency in the framework [6], which suggests that recognizing, understanding, respecting, and accessing their own roles and those of other healthcare professionals is important to "establish and achieve patient/client/family and community goals" (p. 12). This competency was clearly identified as both a strength and a challenge by the CLUs, and as a necessary component of their work if the CLUs hoped to improve patient safety. The participants in this study recognize that it is important to understand and appreciate all professional roles, responsibilities, and scopes of practice.

Patient-/client-/family-/community-centred care, a third national IP competency deemed essential to improving healthcare [6] is also connected to the findings in the TOC project. This competency was a predominant component of the CLUs' mission to improve patient safety. The educational materials developed and engaged in focused on the importance of including the patient/client/family "as

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integral partners with those healthcare personnel providing their care or service planning, implementation, and evaluation" [6] (p. 13). This was especially noticeable in the contributions patients and families made to the orientation materials created and disseminated by the CLUs – for example, the DVDs in which patients were the narrators. CIHR [29] defines knowledge translation as "a dynamic and iterative process that includes synthesis, dissemination, exchange and ethically-sound application of knowledge" and appears to be a noticeable outcome of engaging in inclusive-centred care. As well, team functioning and collaborative practice, both CIHC IP competencies [6], were found to be key components of engaging in open communication for improved patient safety. The CLU members who participated in the study interacted effectively, and understood the need for shared decision-making and care-planning for optimum improvement in patient safety.

One unexpected finding, not explicitly stated elsewhere in the literature, suggests that gaining a sense of pride through effective team collaboration is an important component of open communication and interprofessional practice, and is woven throughout all IP competencies. Team collaboration, for the purpose of this article, incorporates the World Health Organization's [30] definition and is referred to as the relationships and interactions that take place between co-workers from different professions. This is a process of gaining knowledge and building consensus in order to achieve a common goal of improving patient safety through open communication. It appears that continual collaborative efforts improve over time and lead to a sense of pride among team members. The CLUs encourage pride in all aspects of collaborations including interactions, teamwork, leadership, and educational interventions in the working environment. This suggests that the more time together and support that healthcare teams are given, the greater the likelihood of improving patient safety through timely open communication.

The study design was not as strong as we would have liked as there was no control group. This can affect the internal validity of the results. The study design was pragmatic, not least because the timeline for the study was short due to funding constraints. However, we demonstrated clearly that the education intervention had positive results. This may have been because the unit staff involved were eager to engage in an educational intervention that they valued. It would be hard to find a unit where staff were not eager to engage in a project but would consent to be a control group and be required to complete surveys. A future study could evaluate a control group with the promise to have the education intervention after the study was completed.

In conclusion, this mixed-methods research project focused on enhancing interprofessional communication and collaborative practice in order to improve patient safety. Educational resources were developed for care providers and patients and their families to increase awareness of patient safety issues and communication strategies. The findings suggest that team members were able to clearly articulate the communication challenges that potentially lead to patient safety issues and perceived that their team collaboration had been enhanced. Participants recognized that communication was improved by ensuring that staff, patients, and families all

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had relevant information and resources. This research suggests that healthcare teams can benefit from identification of their strengths and challenges and that educational interventions can raise awareness of patient safety issues that may reduce the number of near misses and adverse events for patients. Further research is warranted to examine the relationship between enhanced communication processes and the incidence of adverse events.

Acknowledgements

Abbreviations

CLU: Collaborative Learning Unit
CPAT: Collaborative Practice Assessment Tool
IPE: Interprofessional Education
PSCHO: Patient Safety Culture in Healthcare Organizations
SEIPCLE: South Eastern Interprofessional Collaborative Learning Environment
TOC: Timely Open Communication

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