

Students' Critical Incidents Point the Way to Safer Patient Care Transitions

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ABSTRACT

Introduction: Patient care transitions are prevalent in health care, and faulty transition-related communications are associated with 80% of serious medical errors. While medical student curricula on care transitions are increasing, there are limited evaluation reports and little guidance on primary care transition training.

Methods: The Medical College of Wisconsin initiated an annual 2-hour patient care transition intersession for third-year medical students. The intersession used a critical incident report, where students wrote about a recent, de-identified patient transition they witnessed that evoked in them "a strong emotional reaction." Next, intersession training included a novel, structured communication handoff mnemonic. At the intersession conclusion, students wrote what they would do differently if their critical incident transition occurred in the future. Evaluations (2010-2014) consisted of students' post-session reactions and learning. Authors completed a detailed, qualitative analysis of students' critical incident reports from the 2010 intersession.

Results: Students reacted positively to all intersession elements, especially clinician-led, small-group discussions. Student reports revealed that over 90% of their critical incident evoked negative emotional reactions (eg, frustrated, disappointed, helpless). Post-intersession, 86% of students reported intentions to adopt new strategies to improve future care transitions, and 38% referenced components of the learned mnemonic.

Conclusion: Medical students reacted positively to this intersession, especially small-group discussions. Students revealed mostly negative emotions from their critical incident on patient handoffs, but they gained effective strategies for future handoff communications. Authors recommend continued use of the handoff mnemonic, with greater attention to training environments that emphasize patient and learner safety.

INTRODUCTION

Care transitions refer to the movement of patients from one health care provider or setting to another. The patient handoff

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is a related term, which refers to clinician-to-clinician communication that transfers accountability for a patient's care, and sometimes involves a change in patient location. Care transitions are crucial times in patient care when errors may ensue and be propagated in patient outcomes. Failed caregiver communications during patient care transitions are estimated to contribute to 80% of serious medical errors.¹

The high error rates associated with care transitions make them an area of major interest for health care systems, clinicians, health profession schools, and clinicians-in-training as patient safety comes to the forefront. Highlighting the importance of safety and care transitions, the Accreditation Council on Graduate Medical Education (ACGME), through its Clinical Learning Environment Review, identified transitions in care as one of its 6 learning environment review priorities.² The Association of American Medical Colleges' (AAMC) core professional activities for new residents highlight that gradu-

ating medical students must be taught and entrusted to identify system failures and contribute to a culture of safety and improvement.³

As members of health care teams, medical students participate in and observe patient care transitions. Students may help to ascertain medical and social histories, gain insights into chief and secondary complaints, and contribute to care planning around the times of patient entry and departure from hospital units, rehabilitation facilities, and outpatient clinics. They often witness transitions conducted by their supervising resident or attending physician.

As part of patient safety training, curricula focused on care transitions existed prior to 2009.^{4,6} A majority of these interventions were aimed at third- or fourth-year medical students or

residents, were brief (1 hour), and addressed objectives related to communication, inpatient, or discharge care. More recently, a 2014 review of medical student handoff curricula within internal medicine showed that 15% of required clerkships provided a structured handoff curriculum, and over a third (37%) reported handoff curricula during medical students' subinternship rotations.⁷ While medical students may see growing opportunities for care-transition training, there are few reports of their effectiveness or impact.

METHODS

The medical student curriculum presented here focused explicitly on care transitions. In this paper, we present our care transitions curriculum, including the use of student-generated critical incidents and methods for analysis of these incidents. We highlight our curriculum and expand on our prior publication that analyzed student-generated critical incidents.^{8,9} We analyze student reports on what they would do differently in future, similar care transition incidents. Finally, we discuss implications of what we learned as well as study limitations. Our project was granted exempt status by the Medical College of Wisconsin institutional review board.

Teaching Care Transitions: The STEP Team and PRIMARY Mnemonic

Two years prior to the first student intersession, a group of 12 Medical College of Wisconsin primary care faculty members—pediatricians, general internists, and family medicine educators—took part in a faculty development project titled Safe Transitions for Every Patient (STEP), with the goal of developing medical education curricula on safe handoffs. We began with a comprehensive needs assessment that included a literature review, written surveys, and in-person discussions with medical residents, internists, pediatricians, and family physicians at conferences, including continuing education venues in south central and southeastern Wisconsin.¹⁰ Three main findings from the needs assessment were: (1) primary care clinicians view patient care transitions as challenging and complex, often evoking their strong emotional responses, such as irritation and frustration; (2) formal preclinical training for conducting successful handoffs is missing or inadequate; and (3) emerging care transition models such as SBAR (Situation, Background, Assessment, Recommendation) were designed mainly for in-hospital use, and there has been less attention to the interests and perspectives of primary care clinicians serving outpatients.¹¹

Furthermore, our needs assessment sources confirmed the overall usefulness of written and retrievable electronic formats for handoff communication, although they expressed being hampered by nonstandardization across various health care systems. They indicated that the pace and demands of primary care often required in-person care transition communications that consider

the people involved in the transition (including the patient, family members, community providers, and subspecialists), their assessed capacity to assist the transition, opportunities for input and interaction between the sender and receiver, and clarifying who was accountable for carrying out the agreed-upon recommendations. These emphases are consistent with recent communication solutions advanced by the Joint Commission.¹²

The instructional format selected for teaching our medical students was a mandatory care transition intersession. The intersession format had been used previously for improving patient-centered care and teaching professionalism.^{13,14} Our STEP project team developed and presented the curriculum for the first time in April 2010, and early in each calendar year since then. We delivered our required curriculum during the middle of the third year. By then students have had exposure to care transitions and would still have opportunities to implement what they learned during medical school, residency, and beyond. Intersession goals were to raise awareness of care transition risks, ascertain student experiences and reactions to handoffs, and teach the STEP model for effective handoffs. The full intersession curriculum and worksheets are available online.⁸ Intersession elements are summarized in Table 1.

Critical incident worksheets were particularly important to the intersession. After the introduction, but prior to the didactic presentation, students completed the first part of the worksheet, identifying a care transition they witnessed or experienced that evoked a strong emotional reaction, briefly describing the context and the types of information exchanged, as well as the emotions they felt and why. Facilitators then guided students to briefly summarize their critical incident inside their small group (6 to 8 students and a facilitator), and a few were shared with the large group, allowing time for questions.

A lecture-discussion on the risks of poor handoffs followed, featuring both a well-publicized story of a failed handoff and a physician's detailed and personal "near miss" story and its impact on his role/responsibilities. Next, the model of the 7 PRIMARY care transition mnemonic elements created by the STEP team was presented, emphasizing reciprocal provider communication during successful care transitions: People involved, Reason for the handoff, Input by the handoff receiver, Medical course, Assessment, Recommendations and responsibilities, and Your turn—a chance to resolve any remaining issues.^{8,9} Students were told that the freely available PRIMARY mnemonic pocket cards (available at their tables) had been disseminated and discussed with primary care residents, faculty, and practicing physicians in southeastern Wisconsin and elsewhere.⁸

To provide students with hands-on practice applying the PRIMARY mnemonic in a safe, nonclinical setting, students re-presented their critical incident in their small group, applying each of the PRIMARY elements. Faculty facilitators were

Table 1. Session Outline: Patient Care Transition Intersession

Format/Activity	Duration	Purpose
Lecture/introduce care transitions	20 min	Present goals, significance, schedule.
Small group/critical incident report (part 1)	20 min	Students reflect on, write and discuss critical incident, eg, where, when, who.
Lecture-discussion/care transitions + PRIMARY	15 min	Present risks of poor handoffs and a model for inperson handoffs (PRIMARY).
Small group/practice PRIMARY + interactive	40 min	Students use the handoff model, trying out new approaches to their critical incident.
Small group/CI report (part 2)	15 min	Reflect on and write intersession influence on learning (critical incident-related) and reactions.
Large group summary, wrap-up, session evaluation	10 min	Guide students to other resources/next steps.

Major elements of Medical College of Wisconsin's intersession on patient care transitions for third-year medical students. Minutes are approximate, allowing for questions, transitions between small and large groups, etc.

Abbreviations: PRIMARY, People involved, Reason for the handoff, Input by the handoff receiver, Medical course, Assessment, Recommendations and responsibilities, and Your turn.

Table 2. Themes That Emerged From Medical Student Responses on "What, if Anything, Would You Do Differently?"

Categories	% Coded	Illustrative Student Response
Align change to PRIMARY mnemonic	38	"Clarify each other's roles and what each person is going to do to set the plan in motion." (P = people involved).
Improve overall communication	34	"I will speak up more and ask more questions."
Greater awareness or a new attitude	14	"I saw how important it is to have both teams agree."
Would not do anything different	14	"These things happen...this [care transition] was a learning experience."

In part 2 of the critical incident worksheet, after their discussion and small group practice, students were asked to write "What if anything would you do differently?" In the table are Categories determined by the study team, percentage of the total number of student entries (173 entries from 193 students), and representative responses in each category.

equipped with 1 "sender" and 1 "receiver" table card, and students volunteered to be the "sender" of the handoff described on their worksheet. Another student in their group was the designated handoff "receiver." Senders and receivers were instructed to consider the PRIMARY model and adjust any handoff details to improve its outcome and not get hung up about missing language or unknown clinical details.

Group members not in sender/receiver roles were observers who tracked the use of the PRIMARY mnemonic. After each interaction, group members joined in a debriefing about the presence and strength of various PRIMARY elements used and proposed new language to the sender or receiver to improve the transition exchange. The duration of these sender-receiver exchanges ranged between 3 and 5 minutes, after which the facilitator requested new volunteers, cycling through as many of the student-authored incidents as time permitted.

After the PRIMARY exercise, each student completed part 2 of the critical incident worksheet, which directed students to reconsider their critical incident and describe what, if anything, they would do differently based on the intersession experience. Next, presenters made closing remarks that included opportunities for students to continue care transition discussions postintersession. Students then completed all evaluation materials.

There were 2 modifications in the intersession curriculum between 2010 and 2014. Starting in 2011, facilitators were given information on support services appropriate for referrals if stu-

dents wished to continue to discuss an issue raised during the intersession. Starting in 2014, brief introductions of other handoff tools that students were likely to come into contact with were briefly discussed and materials provided.

Evaluation Methods

For the intersession years 2010 through 2014, students completed an institutional evaluation form with Likert scale items focusing on quality of the session and the value of activities relative to time spent. Specific items included "did the critical incident enhance learning," "how effective was your small group," and the overall intersession grade.

Steps to analyze our critical incident worksheets have been detailed elsewhere,^{8,9} and were adapted from prior intersession studies.^{13,14} Our study team, composed of MD and PhD faculty, used qualitative methods to examine 2 areas of student responses: the emotional content of students' critical incidents, and what, if anything, students intended to do differently if faced with a similar care transition in the future. We analyzed all critical incident worksheets from the 2010 intersession using a constant comparative method to arrive at coding categories.¹⁵ Using this method, we compared new data (student-generated text) with existing data, and coding was refined by team members until agreement on codes and data was reached. This method resulted in the formation of agreed-upon categories, counts, and percentages of items in each category.

RESULTS

An average of 191 students completed the intersession and evaluation each year from 2010 through 2014. Ratings were positive, with an annual average of 92% rating their small-group experience as “very good” or “excellent,” and 78% rating “agree” or “strongly agree” that the critical incident component of the intersession enhanced their learning. Students graded each year of the intersession as “high pass” (scale: fail, low pass, pass, high pass, honors).

A detailed, qualitative analysis was conducted on all students' (n=193) critical incidents from the 2010 intersession. On a critical incident worksheet, each student first described a care transition he or she observed that evoked a strong emotional response. This item analysis is summarized here and more fully described elsewhere.⁹ One or more emotions were identified in 121 of 193 (63%) of critical incidents. A large percentage of emotional responses (92%) were coded as negative with 80% including frustration, anger, annoyance, or a combination (frustrated/angry). A total of 12% of all coded emotions were categorized as “disturbing,” and these included feelings of regret, fear, and helplessness. Positive emotions were identified in 8% of all critical incidents, with appreciation and pride mentioned most often.

In part 2 of the worksheet, students responded to the question “what, if anything, would you do differently” if faced with a future, similar care transition incident. For this question, 173 of 193 students (90%) responded with a worksheet entry. The most often cited intention (38% of responses) was to incorporate a behavior clearly aligned with the PRIMARY model taught during the intersession. The next largest category of student responses (34%) involved their intention to improve overall communication. In 14% of responses, students reported their intention to express a new attitude or awareness associated with handoff communication. Finally, 14% of students indicated that they would do nothing different. (See representative coded entries in Table 2.)

DISCUSSION

We have delivered the care transitions intersession annually since 2010, and each year it has been evaluated positively by students. From our qualitative analysis, we have learned that a high percentage (86%) of students reported intentions to incorporate positive intersession lessons in future care transitions. Student-authored critical incidents were a focal point of the intersession, and 78% of students agreed or strongly agreed that they enhanced their learning. There was a high percentage (92%) of critical incidents associated with negative student emotions, deserving of additional comment.

Care transitions are crucial times for emphasizing patient safety because they are often associated with communication errors.¹ Medical student roles as care transition observers and clinical team members bring them into close contact with patient-

focused communication and related learning opportunities. But without appropriate preparation, care transitions may be a source of frustration and distress, which may compromise professionalism and add to a culture some call the “hidden curriculum” of medical education.¹⁶

If medical students are not safeguarded with proper training and tools, strong negative emotions associated with care transitions may contribute to their detachment, burnout, and compassion fatigue.¹⁷ Strong negative emotions can contribute to nonconscious stereotyping, leading to bias in health care providers' choices and behaviors.¹⁸ These negative emotions may compromise the doctor-patient relationship and could lead to poor patient care.¹⁷ However, efforts to prepare students for these emotions and prevent their distress may “have an amplified effect by benefitting their future patients as well.”¹⁹ We support the recommendation that improved medical trainee curricula are sorely needed to address these gaps^{4,17,18} and applaud the new ACGME and AAMC emphases on patient safety and quality.^{2,3}

A majority of students recorded what they would do differently if presented with a similar, future care transition. As noted earlier, 86% of students reported that they acquired a new approach or attitude about care transition communication. The largest percentage of these responses (38%) aligned directly with elements of the PRIMARY model. While this is a highly positive intersession outcome, it may reflect our students' recent exposure to the model. Another large percentage of those who responded to this item described approaches to improve overall communication or gained an overall greater awareness of the options and positive attitudes needed to improve care transitions. We believe that these positive findings were enhanced by 3 factors. First, the care transitions that students worked on were theirs—witnessed or experienced by them. This seemed to add a higher level of commitment to work together—a richness of strategies and ideas. Second, a care transition model was used that emerged from local primary care faculty and practices, a mnemonic which students identified as a highlight of the intersession. Finally, we believe that having supportive and clinically experienced faculty facilitators inside each intersession discussion group contributed to a learning environment where new ideas and communication approaches could be safely tested.

Limitations

There were limitations to this study. Student ratings of the intersession and critical incident component were equally high through all 5 years of data collection, but the indepth qualitative analysis we report was conducted on all critical incidents collected in 1 year. While authors agree that intersession methods and outcomes changed only minimally during the 5 years of the intersession reported here, a different critical incident sampling method may have discovered year-to-year differences. A second possible limit involves the critical incident method that asked

each student to select 1 handoff experience that evoked a strong emotional reaction. We advise caution about generalizing from reported incidents, as they were not intended to represent the range, intensity or frequency of our students' or other students' handoff experiences. We asked students what, if anything, they would do differently in the critical incident they reported, but it wasn't required that the reported incident was recent or even that the student participated. This may have introduced bias in our results due to confusion on the part of students who may have been in the role of clinical team member or bystander. Additionally, this analysis was completed by a team of clinician-educators, all of whom had a role in the curriculum design and delivery, which may have biased our results. Another possible limitation is that the PRIMARY mnemonic was designed to meet the needs of primary care providers, but as reported elsewhere, only 8% of our students' reported incidents originated in an outpatient setting.⁹

This study did not assess students' sustained learning or behavior change. These would be important emphases for follow-up or future studies. Finally, this project focused on a single educational intervention at 1 institution, which may limit its use elsewhere.

CONCLUSION

We were encouraged by the project's outcomes and have sustained this intersession annually at the Medical College of Wisconsin. We have recommended trials of this curricular approach and the PRIMARY mnemonic at other institutions. Because of the complexity of care transitions—especially in the broad range of primary care setting—we have encouraged adaptation and revision, such as implementing the curriculum within a clinical setting rather than a classroom, involving interprofessional learners, and applying the tools as part of quality improvement projects.

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