Nursing Leadership Competencies: Low-Fidelity Simulation as a Teaching Strategy

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Abstract

Nurses must demonstrate leadership and followership competencies within complex adaptive team environments to ensure patient and staff safety, effective use of resources, and an adaptive health care system. These competencies are demonstrated through the use of communication strategies that are embedded within a relational practice. Health care professionals, regardless of formal position, need to assert their opinions and perspectives using a communication style that demonstrates value of all team members in open discussions about quality patient care, appropriate access, and stewardship. Challenges to effective communication and relational practice are the individual and organizational patterns of behavior, and the subsequent impact that these behaviors have on others. Students articulate situational awareness when they conduct a critical analysis of individual, team, and organizational functioning, and then use this information and evidence gained from a critical literature review to develop recommendations to improve individual, team, and/or organizational performance. Leadership and followership simulation exercises, inclusive of public feedback and debriefing, are used as a pedagogical/andragogical strategy in a nursing baccalaureate senior leadership course to facilitate learning of team communication skills and improve situational awareness. We view this strategy as an alternative to traditional classroom learning activities which provide little opportunity for recursive learning.

Keywords: Leadership; Communication; Simulation; Reflexivity

Introduction

The health care system is a complex interconnected web of relationships. To be successful, health care systems must be adaptable. This adaptability is a function of healthy relationships and of recognition of the importance of self-organization and emergence within a complex chaotic environment. Successful health care systems are able to resist the seductiveness of the “fallacy of linearity” (Beautement and Broenner, 2011, p. 191). In fact, systematic lock-step approaches may not yield all the information that is needed to make the most fitting decision. For example, the more precisely we try to measure our current reality or position, the less precise our ability is to recognize where we are going or how fast we are going. Physicists have referred to this as *Heisenberg's principle of uncertainty*. This principle recognizes that the reality of what we know is determined by what we see (Marciak-Kozlowska and Kozlowski, 2013). As a result, the more we focus on our current position, the more difficult it is to see emerging patterns within health care's large, intertwined, open systems made up of human communities. Therefore, “to be truly successful at healthcare transformation, we must believe this: *People matter*” (MacLeod and Sharkey, 2013, p. 2). It is through recognizing changes in interaction patterns of the team that emerging issues within health care may be identified and the most appropriate action determined. Within open systems, the most appropriate or most fitting course of action is determined through civil communication and dialogue and an attentiveness to the moral climate. At times, communication within a team setting can be difficult. The challenges are often associated with communicating the individual and organizational patterns of behavior; the impact that these behaviors have on others; and recommendations about how to improve individual and organizational performance.

”Being ethically fit is about how one prepares to make good choices and take actions that benefit others ... [and] that we take time for reflection on our practice ... learn[ing] more about ethics.” (Storch, 2013. p. 2). “Ethical fitness” (the term ETHICAL FITNESS is a registered trade mark and developed by Rushworth M. Kidder the founder of the Institute for Global Ethics) is about values based decision making that can be equated to physical fitness in that a person or organization trains to be fit; works to maintain the fitness; and practices it openly with others of like minds (Kidder, 2009; pp. 51–55). It is personal and private but social and public; it is about character and a willingness to mentally engage in thinking about ethical decision making as an individual, a team and an organization (Kidder, 2009; pp. 48–55). Leadership requires “ethical fitness” and the moral courage to act as part of our survival for the future (p. 69). Communication is

critical to our leadership development and it is imperative that we engage students in learning strategies that provide opportunities to enact ethical fitness and moral courage in their decision making as they develop leadership and followership competencies.

Miscommunication and non-communication remain two of the most common root causes of patients experiencing preventable and unnecessary harm within health care settings (Gordon et al., 2012; Symons et al., 2011). Additionally, the lack of conversations, interactions, and disenfranchisement results in a health care system that is stagnant, inflexible, and maladaptive (MacLeod and Sharkey, 2013; Laschinger et al., 2012). Sharpnack et al. (2013) found that simulation exercises improved the application of leadership and followership competencies within senior-level baccalaureate nursing students. For these reasons, leadership and followership simulation, with critical reflection, has been used as an andragogical strategy in a nursing baccalaureate senior leadership course to facilitate learning of theoretical constructs and in particular team communication skills and situational awareness. We view simulation as an alternative to the traditional classroom delivery styles, which provide little opportunity to apply and synthesize leadership and followership constructs. This paper presents an approach to developing communication skills and situational awareness through multiple leadership and followership simulation exercises.

Literature review

A literature review was conducted focusing on resources between the years 2010 and 2014 using the key terms “team communication” “leadership” “followership” “simulation” “learning” “safety” and “inter-professional education” within the Cumulative Index to Nursing and Allied Health Literature, Academic Search Complete, Business Source Complete, Education Research Complete and Google Scholar databases. Additional material has been utilized from the private libraries and resources of the authors that informed course design and development from 2010 to 2014 in this senior level leadership course.

Communication

Making a difference begins with communication. It requires communicating that there are parts of the system, parts of the organization, and aspects of individual behaviors that are working well and components that need to be changed. While recognizing that “one cannot make a change without affecting both the situation itself and one's place in the changing events” (Beautement and Broenner, 2011, p. 194), health care professionals need to assert their opinions and perspectives using a communication style that demonstrates value of all team members – regardless of formal position – in open discussions about quality patient care, appropriate access, and financial stewardship. Utilizing strategies that encourage and sustain civility are critical in the development of effective and meaningful communication styles within individuals, teams and organizations (Clark, 2013, p. 169). Clark (2013) describes the “dance of incivility and civility” and the importance of a climate of civility for effective engagement in learning organizations and the development of creative processes (p. 41). Patient safety is a critical example of a primary challenge in health care.

Communication is a foundational aspect of ensuring patient and staff safety. It has been demonstrated that team communication skills are critical to avoiding harmful incidents or adverse events within health care settings (Symons et al., 2011). Unfortunately, despite strong evidence of the importance of communication within the health care team (Manojlovich, 2013), consistent, effective communication does not occur. Several strategies have been proposed to improve the effectiveness of communication. They include Situation-Background-Assessment-Recommendation (SBAR) communication skills (Wacogne and Diwakar, 2010), the Concerned-Uncomfortable-Safety Issue (CUS) communication strategy (Simons, 2008), Crew Resource Management (Sculli et al., 2011), and the Triad for Optimal Patient Safety (Seghal et al., 2008). The Canadian Patient Safety Institute (CPSI) describes teamwork and communication as essential for creating a culture of safety and supporting the safe delivery of patient care and provides a framework for teamwork and communication that includes collaboration, leadership, transparency, open honest disclosure, and commitment to continuous learning and process improvement (Teamwork and Communication Working Group, 2011; pp. 1–2).

Team communication strategies

The best way to facilitate the development of team communication skills is not known (Aebersold et al., 2013), nor is the best way to develop situational awareness skills within the context of a team known. CPSI (2011) outlines characteristics of effective teams with identification of “structured communication techniques to support effective communication”. (Teamwork and Communication Working Group, 2011; pp. 5–6). Common to all successful team communication development programs was found to be the skill of situational awareness and the utilization of the educational tool of debriefing (Teamwork and Communication Working Group, 2011; pp. 10–11, p. 15). Most of the current training strategies for improving communication and situational awareness within health care have focused on individual or personal skill development with private, individual performance feedback. An innovative view of strategies to mitigate and understand individual performance and team performance is offered through “patterns within a patient safety culture: blinding unfamiliarity; dismissive urgency; unyielding determination; and illusion of control” where communication and teams play a critical role (Michell et al., 2011). The challenge of creating understanding and engaging in full disclosure with patients and teams within a just and trusting patient culture (Disclosure Working Group, 2011) demands that students have an opportunity to rehearse in a risk free setting that can be created in simulations inclusive of sound debriefing and awareness of situational factors.

Leadership and followership

Teaching leadership is a challenge when considering the knowledge practice gap and the importance of translation of learning into front line practice for all nurses. Discourse on the subject of leadership and how it should be developed or translated into practice (Melina et al., 2013; Barbour and Hickman, 2011) suggests that an instructor could teach about leadership but learning how to be a leader was a personal embodiment of knowledge or transformation that required situational awareness of knowledge

skills and attitudes and time to form this leadership being by the student. This strengthened our resolve to develop simulations that offered opportunities for transformative learning for both students and faculty. Grossman and Valiga (2013) clearly identify the importance of reflective practice in the development of leadership (pp. 97–98). Kouzes and Posner (2007) emphasize the importance of values for leadership by individuals, teams and organizations (pp. 45–72); and as we have come to understand, it is this "ethical fitness" (Kidder, 2009 p. 48.) that is critical to reflexivity and the development and embodiment of both leadership and followership.

Gardiner (2006) emphasizes the importance of human relationships within new organizations and the "restructuring of our consciousness for higher levels of shared governance" within and across organizations and that the "future of our planet depends on increasing the level of authentic communication and authentic relationship among human beings" (p. 67). Such is the work that we propose in developing situational awareness and team communication effectiveness. Huetterman (2013) adds to the importance of human relationships and communication by leaders in the creation of team identification as this study suggests the importance of both collective and individual leadership behaviors to team identification by followers. The structuring of the leadership simulations allows for both perspectives of the student as leader and the student as follower within a process recording perspective for the analysis of relationships and communication and debriefing of the class on larger group issues.

Reflexivity

Critical reflection can serve the purpose of integrating theory and practice. It is a transformative strategy to encourage recursive learning from experience and create new perspectives (Shaw, 2013; Norrie et al., 2012). There is a suggestion that reflective practice is poorly understood and often interpreted too simplistically: a better understanding is required for teaching critically reflective practice to ensure that full analysis and an emancipatory consciousness for a new perspective or recursion is achieved (Thompson and Pascal, 2012; pp. 312, 317, 319). Deep reflection demands that students consider how they think, feel and believe (Burnard, 1989). This encompasses a process of description of the event, feelings and emotions; and linking all of these components with values and beliefs on an individual and group basis. It is critical to "reflect on both personally held and professionally embedded values" (Nairn et al., 2012, p. 196.) Reflexivity demands an integration of multiple ways of knowing that results from an open-minded inquiring approach to learning (Shaw, 2013; Thompson and Pascal, 2012). Reflective practice may assist in developing autonomous professional identities (Norrie et al., 2012, p. 573.) and debriefing by skilled facilitators may enhance the reflexivity achieved within individuals and groups (Nairn et al., 2012, p. 197). A model for achieving critical reflection was utilized in debriefing to grade all student assignments written post team simulation exercises.

Simulation

The recent publication in 2013 by the *International Nursing Association for Clinical Simulation and Learning* (INACSL) clearly establishes the standards for developing and managing simulations as a teaching/learning strategy. Of particular interest are the Debriefing (Decker et al., 2013; pp. S26–S29) and Facilitation (Franklin et al., 2013; pp. S19–S21) standards that facilitate double loop learning. Yeo (2002) and Hammond (2013) both provide an integrated review of single, double and triple loop learning for consideration in debriefing and facilitation of simulations. Hammond (2013) describes the importance of "the concept of recursion… as simply feeding the output of one cycle of a process as input into the ongoing evolution of the process" (p. 1398) which is critical for double and triple loop learning and for the analysis of process and development of critical consciousness within the leadership simulations. Recursion is viewed as an important construct for our understanding of the transformation and embodiment of leadership from increased authentic communications and development of authentic relationships discussed above. Facilitating student inquiry within debriefing enables this recursive type of learning.

Low-fidelity simulation exercises have been used effectively to increase student confidence within nursing education programs (Zulkosky, 2012). Additionally, student nurses also reported increased levels of satisfaction using low-fidelity simulations as compared to high-fidelity simulation techniques (Tosterud et al., 2013). When students were asked to rank what they considered most important in their learning and application of clinical judgment with simulation; debriefing, reflection, and guidance by the experienced academic were the top 3 of 11 components (Kelly et al., 2014, p. 100). Debriefing and reflective activities were intentionally incorporated into all leadership course simulation activities.

Research design

The purpose of this study was to examine if leadership and followership simulation exercises, inclusive of public feedback and debriefing, could be used as a pedagogical/andragogical strategy in a nursing baccalaureate senior leadership course to better facilitate learning of team communication skills and improve situational awareness. The development of this quality improvement question arose as the faculty reflected on student feedback, performance in the course, and recent graduate feedback related to the relevance of the course content to their practice setting. As the activities related to this study were exclusively used for continuous quality improvement purposes it did not constitute research and did not fall within the scope of our university's Research Ethics Board (Canadian Institutes of Health Research, Natural Sciences and Engineering Research Council of Canada, and Social Sciences and Humanities Research Council of Canada, 2010).

As a means of addressing student comments related to the lack of clarity regarding the direct applicability of leadership and followership to their future practice, alternatives to traditional pedagogical classroom learning activities were explored. Subsequently, andragogical simulation exercises were developed with recursive double and triple loop learning strategies.

Leadership in nursing course overview

Leadership in Nursing is a required senior nursing course that is delivered within 45 instructional hours. The purpose of the course is to examine personal, organizational, and societal influences as they relate to leadership development for nurses within the health care system. These are examined through the exploration of leadership and followership principles, theories, and competencies. Transformational leadership as described by Kouzes and Posner (2007) and identified as a preferred style of leadership

for “every nurse” (Canadian Nurses Association, 2009; Registered Nurses' Association of Ontario (2013)) is primarily utilized to guide/facilitate competencies (knowledge, attitudes, skills and behaviors) development within the course.

Philosophically, the course is grounded within critical social theory, phenomenology, and behaviouralism. Therefore, the concepts of excellence, credibility, power, authority, influence, relational practice and change are discussed in relation to nursing leadership and leader roles. The development of leadership and followership competencies is viewed as an iterative process of collaborative learning within the context of community (team, class, university, etc.). Learning is a recursive process and the importance of reflexivity is reflected in the leadership course simulations. The concept of nursing leadership in this course is very broad: It encompasses the nurse acting as a social change agent and steward to ensure quality care is delivered in a timely and fiscally responsible manner. It is about understanding the transactional, transformational and transcendent continuum of leadership style needed as we move from the simple to the complicated to the complex; and understanding the governance required in a global community within the 21st century (Gardiner, 2006). Followership is also considered very broadly. The essential features of followership include the ability to engage in critical thinking and assume shared responsibility for decisions (Kelley, 2008), and provide courageous, accurate and concise feedback to leaders and followers regardless of formal position of authority (Chaleff, 2009).

Leadership and followership simulations

Within the 45 instructional in-class theory hours, there are approximately 9 h allotted for low-fidelity leadership and followership simulation exercises. The key educational processes used in these leadership/followership simulations are deliberate practice, reflexivity (Thompson and Pascal, 2012), debriefing evaluation including double and triple loop learning (Hammond, 2013; Yeo, 2002) and constructive evaluation. Based on the tenets of experiential recursive learning, in which the learner “constructs knowledge by linking new information and new experiences with previous knowledge and understanding” (Maran and Glavin, 2003, p. 23), many of the simulation exercises are developed from situations that are familiar to the senior nursing student and require deliberate demonstration of leadership and followership skills. This andragogical strategy is used to accomplish several of the course's learning objectives, including demonstrating the interdependence between leaders and followers, evaluating the fundamental competencies of leadership and followership within the context of a team, and describing how nurse leaders effectively use the change process to further enhance team and organizational functioning.

Students are divided into teams that do not exceed five members. Over the course of 15 weeks, each team completes six team simulation exercises. Each exercise represents an aspect of the essential components of transformational leadership (Kouzes and Posner, 2007) and transformational followership. Both authors use exercises designed for the same purpose but simulations may be used in a different order or may have different components between class sections. The first exercise has each team develop its own vision statement and team charter; this activity provides students with an opportunity to practice the skill set required to *inspire a shared vision*. The second exercise develops skills related to *modeling the way*. Students identify how they model the way for other team members, for other nursing students within the class, and, more broadly, for other nursing students within the program, specifically related to fostering an environment that values relational ethics and professional integrity. There is also an opportunity to identify how nursing students can model the way for other nurses during their clinical placements. An alternate second exercise used is an “Origami” frog exercise (adapted from Sronce and Arendt, 2009) to emphasize the role of active and passive follower styles and how followers influence leader behavior and model the way for other followers. A competitive timed activity (making frogs) that requires cooperative and collaborative learning within their team and within pre-set roles also begins a process of seeing followership from a follower-centric perspective rather than a leader-centric perspective. Origami frog is a simple exercise that emphasizes a transactional style of leadership in a competitive environment. The preset teams and roles allow for assigned leaders to gain insight into the influence of values as expressed in judgments and assumptions about followers and followers' behaviors.

Subsequent exercises are designed to facilitate the development of competencies related to *enabling others to act*, *challenging the process*, and *encouraging from the heart*. Exercises in the form of case studies, role plays, and games progress from individual to global; from the simple to the complicated to the complex (Kowch, 2013); from “day to day ethics” and values provided in our *Nursing Code of Ethics* (Canadian Nurses Association, 2008) to utilization of principles and higher order values such as transparency, just and trusting, and social justice; and from transactional to transformational and transcendent leadership and followership relationship concepts. The last exercise, referred to as “The Wildcard” or an alternate exercise that was adapted from the “Name Game” (Hunsaker, 2004) has students demonstrating leadership and followership competencies through a simulation that is theoretically based within complexity science and complex adaptive systems. Students are expected to demonstrate interconnectedness within and among teams; how their group is impacted by the other teams in the class; and describe how competition, collaboration and adaptiveness (self-organization and emergence) are essential attributes for creatively managing change and innovation within the health care system. The goals of the “Wildcard” simulation are threefold: (1) for students to further understand the non-linearity of complex team dynamics and change, (2) to provide a critical analysis of the emerging issues and themes within the course, and (3) to identify relationships, and the means of establishing those relationships, that will help to ensure students' success as they transition to the role of the graduate nurse. The goal of the “Name Game” is to recreate a complex adaptive system (CAS) within the classroom and allow students the time to self-organize, go to the edge of chaos, and allow emergence to be expressed within the classroom. When principles and practices of CAS are applied within the exercise, innovation and creativity naturally occurs among teams to complete the task. In debriefing students identify that the communication process within the game is the critical factor in understanding the class and team adaptations to chaos and complexity.

Within all of the simulation exercises, an emphasis is placed on communication (constructive feedback, succinct reporting, and reciprocity); practicing team relational ethics (respect, mutual engagement, embodied knowledge, the environment, and uncertainty); emotional intelligence; appreciative inquiry and civility. Situational awareness is key to establishing professional identify so that as students transition to the graduate role they are more able to function with a strong nursing identity within an interdisciplinary team. Deliberate practice, feedback, debriefing, reflection and reflexivity are linked to several of the evaluative components of the course. For example, student team members provide formative evaluations publicly to their peers within a team activity. After the simulations, the faculty members facilitate a class debriefing that reviews relevant teaching points and further links theory, practice, and research. At this time, students also provide feedback related to their simulations. Similar but different methods have also been used by the authors in debriefing and feedback.

After each simulation selected students (the designated leader and the process recorder from each team), are responsible for observing and reporting on team dynamics and to also provide summative evaluations. The summative evaluation provides

information to team members about what went well, what behavior or attitude could be changed or developed to strengthen their leadership or followership competencies, how the identified behavior or attitude impacted team functioning, and specific suggestions on how this behavior or attitude could be changed. The faculty member also provides summative evaluations to team members who have held formal leader and process recorder roles within the team. This evaluation is based on the comprehensiveness of a structured team report, quality of the feedback to other team members, ability to meet the deliverables of the leadership/followership exercises, and the degree that the reports by the leader and process recorder reflect the observations made by the faculty member of the team dynamics displayed during the exercise. This type of comprehensive feedback is required to promote growth in leadership and followership knowledge, skills, attitudes, and behaviors (Meurling et al., 2013).

Another aspect of the teamwork assignment has students critically think about the individual teams as part of a larger system. Based on the content of the structured reports delivered by all the leaders and the process recorders, students are required, individually, to identify evaluative themes, highlighting class priority learning needs, and propose an evidence-informed strategy that could be used to address the gaps in leadership and followership competencies. This assignment is submitted individually by each student to the faculty for grading. It is through this component of the simulations that students can attach additional meaning to multiple team functioning and gain a “big picture” perspective. They are required to make decisions about emerging trends in the class. In addition to facilitating further reflection about the team functioning and dynamics, this task aids students in recognizing system issues, which has been identified as an important skill in analyzing patient safety incidents and improving patient and staff safety (Urlich, 2013).

Alternatively, individual self- reflection tools, inclusive of double loop learning, are available for individual student use after each simulation exercise. Written reflections (essays) with the goal of developing critical consciousness are submitted individually by each student for grading and course credit. The critical reflections written by students basically recognize what is happening or what they are doing individually and as a group; why it is happening or why the group is doing it; what knowledge and evidence underpins the decisions/actions and perceptions (inclusive of values, emotions and feelings); and what changes or new perspective is recommended. It is about social awareness and communication as a team. The focus is also to encourage reflexivity as a lifelong learning aspect of continuing professional development. Shaw (2013) proposes a specific model of this “transformative journey into reflexivity” or of making meaning of a practice world and an ability to challenge judgments and question more deeply. Such a model could enhance the development of reflexivity by students which is critical to professional identity and the ability to learn to challenge and it is through reflexivity that a student can become more confident (p. 332) and develop emotional intelligence, clearly linking feelings and emotions.

Results

Since the implementation of the changes from a pedagogical course delivery style to more intentional use of andragogical strategies course participants have generally provided very positive feedback. For example, each student could identify how leadership and followership skills would be used within their next clinical and the importance of these attributes as being essential to their future career as a nurse. The emphasis on leadership as part of relational practice with a clear ethical focus is understood. Students tended to evolve leadership development into a strengths based approach based on the five effective practices and ten commitments by Kouzes and Posner (2007, p. 26) rather than as a deficit approach to competency development. Students have also reported that participating in the activities was realistic and they felt like the decisional complexities experienced in the class were likely the ones they would also need to deal with in their future practice.

Faculty from the clinical courses that have students apply the material covered in this course also report that the students are coming better prepared, their communication techniques, and their ability to be reflexive have improved since the changes to the course delivery modes. Student reflective comments while in the clinical course are often “now I get it” and several students have acknowledged that their knowledge, skills and attitudes facilitate their engagement in professional discourse with their clinical coaches and preceptors. The subsequent clinical course for our leadership students have them working with leader coaches in a clinical arena designing, facilitating and managing a practice or organizational change project.

The only potentially negative comment was a student indicating that perhaps not all nurses have the attributes of leadership. Upon reflecting on this comment, there is an assumption in this course that leadership and followership can be developed. There is also the assumption that leadership and followership are critically important for the profession of nursing and that every nurse has the professional responsibility to exercise these abilities. This assumption is supported by the Canadian Nurses Association Nursing Leadership Position Statement (2009) which states “Canadian nurses in all positions must develop and exert leadership – from the enthusiastic student to the competent professional clinician, from the excellent team member to the senior executive, and from the novice researcher to the most experienced educator” (p. 2).

Discussion

Although there have been significant improvements made to this course since its inception, a few gaps remain. One of these gaps is the direct integration of an inter-professional component; which would allow the students to directly and immediately experience aspects of an inter-professional team. Inter-professional education (IPE) has become an important topic within simulation as has the need for more collaborative approaches with interdisciplinary teams in the delivery of health care in the 21st century. Student engagement in IPE and theories associated with group development and teamwork for understanding IPE provide insight into the importance of developing team communication and social awareness (Hutchings et al., 2013). D'Eon (2004) proposed the structuring of increasingly complex tasks or scaffolding complexity for teams to develop teamwork and group skills and that learning teams need to reflect on what has happened and identify ways to improve functioning particularly in relational group skills (pp. 605–606). Curran et al. (2010) identified that the ideal time to introduce inter-professional education into professional curriculums is not clearly established though IPE has

generally had positive results (p. 48).

The team based simulations developed for this leadership course do not involve IPE but it is believed that as students develop a stronger professional identity within their teams and develop collaborative team communication approaches within a social awareness of individual, team and organization that they are being better prepared for interprofessional health care teams. A subsequent course for our students has begun to include IPE simulation experiences and in part our simulations could help prepare some senior level students for increased interprofessional team success.

Conclusion

As MacLeod and Sharkey (2013) have indicated, successful health care, safe health care, and efficient health care are delivered through a complex maze of effective relationships. Therefore, in order to improve the health care system, we must improve communication skills, our awareness of team dynamics, and the impact that these have on team and patient outcomes. Low-fidelity simulation exercises have demonstrated positive outcomes as a means of facilitating the development of non-technical skills. The example presented herein illustrates that the use of low-fidelity simulation exercises in a senior nursing leadership course exposes students to complex adaptive systems in a safe and secure practice environment while also improving their leadership and followership competencies. A strong nursing identity supported by relationally oriented leadership prepares graduates to assume responsibilities within interdisciplinary teams of a complex health care system positioned for change in the 21st century.

Conflict of interest statement

The authors declare that there are no conflicting interests that could inappropriately influence (bias) this work.

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