How Health Professions Education Can Advance Patient Safety and Quality Improvement

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Abstract

A commonly held belief is that education and training are weak interventions that have limited success on their own in improving system reliability, clinical processes and, ultimately, patient safety and healthcare quality (Caffazzo and St-Cyr 2012). Yet, for emerging fields such as patient safety and quality improvement (PS/QI), one should not underestimate the importance of educating frontline staff in the fundamentals of these disciplines. For most healthcare institutions, there is a major bandwidth problem when it comes to PS/QI work, which acts as a critical barrier to accelerating change and improving patient safety and healthcare quality. Too few people are relied on to solve all of the institution's safety and quality problems.

Thus, engaging in efforts to broadly educate frontline providers and establish a basic understanding of core PS/QI principles has the potential to build capacity and significantly increase the number of active participants to support PS/QI initiatives (Ruud et al. 2012), minimize resistance to change and contribute to an improved institutional culture for PS/QI (Ginsburg et al. 2005; Pronovost et al. 2008). In this perspective, we review the evolution of patient safety health professions education in the wake of *To Err Is Human* (Kohn et al. 2000), provide an organizing framework that summarizes the different ways that health professionals learn about PS/QI and consider the critical next steps that need to be taken to achieve our ultimate goal, which is to ensure that all health professional are proficient in PS/QI.

Patient Safety Education in the Years After To Err Is Human

One can trace the evolution of patient safety and quality improvement (PS/QI) training back to the seminal Institute of Medicine (IOM) reports *To Err Is Human* (Kohn 2000) and *Crossing the Quality Chasm* (IOM 2001). It is generally known that these reports spurred a groundswell of research and discussion about patient safety issues (Stelfox et al. 2006), as well as the widespread adoption of a number of patient safety practices (Clancy 2009). Interestingly, there was a parallel trend towards an increased commitment to start teaching PS/QI to learners in all health professions that coincided with the release of these two reports.

In 2002, the Accreditation Council for Graduate Medical Education (ACGME), as part of their Outcome Project, implemented accreditation standards requiring postgraduate training programs to incorporate formal training to ensure that physicians developed competence in six core domains (Batalden et al. 2002). Two of the core competencies, namely, practice-based learning and improvement and systems-based practice, specifically define physician competencies that relate to PS/QI. For example, within systems-based practice, specific outcomes include developing physicians who can

"work in interprofessional teams to enhance patient safety and improve patient care quality" and "participate in identifying system errors and implementing potential system solutions."

One year later, the IOM released its "Health Professions Education: A Bridge to Quality" report (Greiner and Knebel 2007), which highlighted the need to redefine globally how physicians, nurses, pharmacists and other health professionals should be trained. This report proposed five key competencies that all health practitioners should acquire to meet the needs of patients, one of which specifically refers to "applying quality improvement." In light of this recommendation, the Quality and Safety Education for Nurses project was established to "prepare nurses with the knowledge, skills and attitudes to participate in continuously improving the healthcare systems in which they work" (Cronenwett et al. 2007, 2009). Funded by the Robert Wood Johnson Foundation, a national group of key stakeholders defined six competencies adopted from the IOM report, two of which specifically relate to quality improvement and patient safety.

In Canada, the Royal College of Physicians and Surgeons of Canada (RCPSC) introduced the CanMEDS competency framework in 2005 (Frank and Danoff 2007) and defined seven physician roles. Unlike the competency frameworks that were emerging in the United States, CanMEDS only peripherally indicated the need for physicians to develop competence in PS/QI. In recognition of this gap, the RCPSC collaborated with the Canadian Patient Safety Institute to develop a competency framework titled "The Safety Competencies: Enhancing Patient Safety Across Health Professions" (Frank and Brien 2008), intended to identify the knowledge, skills and attitudes required of all healthcare professionals to deliver safe patient care. This framework served as the basis for informing the integration of PS/QI competencies into the upcoming revision of the CanMEDS competency framework, due to be released in 2015 (Wong et al. 2014).

These competency frameworks provide the necessary foundation for the development of accreditation standards and training requirements in health professions education that will ensure that PS/QI concepts are introduced early in training. There are limited data to know whether the establishment of these competency frameworks resulted in the implementation of actual PS/QI training. However, a recent survey of U.S. pediatric residencies reported that the majority deliver QI training to learners in their program (Mann et al. 2014), suggesting that the implementation of accreditation standards in 2002 by the ACGME mandating PS/QI training has likely achieved its goal of introducing some PS/QI training into graduate medical education.

How Do Health Professionals Learn About PS/QI?

One way to categorize the ways that healthcare providers learn about PS/QI is to consider the *formal*, *informal* and *hidden* curricula that relate to PS/QI. Formal patient safety training might range from a seminar series or a workshop on a specific aspect of patient safety (e.g., teaching frontline nurses how to use a structured communication strategy such as Situation-Background-Assessment-Recommendation, or teamwork training to enhance patient safety) to an explicit patient safety curriculum delivered to medical or nursing students (Headrick et al. 2012). Several systematic reviews focused on clinicians (Boonyasai et al. 2007) and medical trainees specifically (Patow et al. 2009; Wong et al. 2010) suggest that formal training in PS/QI can improve knowledge and attitudes, and may even result in some improvements in clinical processes. However, there are few examples whereby training in PS/QI can be demonstrably linked to improvement in patient outcomes, although recently, the implementation of formal handoff training combined with direct observation and feedback in a U.S. pediatric residency program resulted in a significant reduction in adverse events (Starmer et al. 2013).

Even in settings where formal training does not exist, healthcare providers will often report that they are familiar with basic PS/QI practices. This is thought to be due to the fact that providers and trainees learn informally on the job about the use of tools that intend to improve patient safety and healthcare quality (Pingleton et al. 2010). For example, nurses might learn from a colleague about how to file an incident report. A pharmacy student might observe how a clinical pharmacist completes a medication reconciliation form. Medical students might observe teams using a surgical checklist prior to an operation. All of these experiences introduce a variety of PS/QI tools, and potentially the rationale for their use, in an informal way to health professionals and learners.

Perhaps the most underappreciated but incredibly powerful influence is what health professionals learn through the *hidden* curriculum. Fred Hafferty first coined the term and defined the hidden curriculum as "the set of influences or unintended messages that function at the level of organizational structure and culture" (Hafferty and Franks 1994). For example, a hospital might embark on an initiative to provide formal training across the institution to promote incident reporting. However, when a respected frontline staff member is seen telling his or her colleagues "what's the point in filing a report…no one responds to these anyways," this strongly influences the likelihood that others will see this as an pointless activity. In patient safety circles, this is often referred to as the patient safety culture of an organization.

Whatever the term, it is important to recognize the immense impact that this implicit form of role modelling has on what providers learn about PS/QI. The hidden curriculum often has a negative impact on learning, and can undo what has formally been taught about PS/QI. A recent study of medicine, nursing

and pharmacy students in Toronto revealed a concerning decrease in nursing students' perceptions of the quality of their learning about patient safety, as it related to working in teams when they entered the clinical setting. While there may be many explanations for this, one possibility is the hidden curriculum or institutional culture that exists, as it relates to interprofessional team functioning and the engrained hierarchies that exist between professions (specifically physicians and nurses). Medical students experience similar tensions, as they enter the clinical phase of their training (Liao et al. 2014a). There are medical student accounts with sobering examples of dysfunctional teams and unsupportive supervisors who impede students from speaking up in unsafe situations (Liao et al. 2014b). These clinical learning environments serve to demoralize students, reinforce existing hierarchies and may promote unsafe practices that can have a lasting effect on trainees.

In fact, there is evidence that suggests that where you train and the quality of care of that clinical environment matter when it comes to the quality of care that you eventually provide in your future practice. For example, Monette and colleagues (1997) found that one of the predictors of whether physicians in practice prescribed inappropriate benzodiazepine medications to elderly patients was the medical school that they attended; students graduating from one of the four medical schools in Quebec were much more likely to prescribe inappropriately than students graduating from the other three schools. More recently, Asch and colleagues (2009) found that women had a 32% higher relative risk of suffering a major post-partum complication if they were treated by obstetricians who trained in institutions in the bottom quintile with respect to major maternal complication rates.

Clearly, as we contemplate how best to establish patient safety competency among our healthcare providers, it will require formal training that is reinforced informally in the clinical care setting, and supported by providers who exemplify those attributes and behaviours that foster a positive safety culture.

What Needs to Happen to Advance PS/QI Health Professions Education?

One obvious challenge as we contemplate the expansion of PS/QI training across health professions education is the need to develop faculty who can teach the basics of patient safety to a broad audience of providers and trainees. Many institutions have identified this need for professional development programs to establish patient safety trainers, yet few examples of successful programs exist. One promising model is the train-the-trainer model, which, when implemented broadly across a number of trusts in the United Kingdom, resulted in the establishment of a cadre of senior-level patient safety trainers who successfully implemented patient safety training programs across numerous institutions (Ahmed et al. 2013).

The Canadian Patient Safety Institute established the Patient Safety Education Program – Canada (PSEP) in partnership with Northwestern University, which provides interprofessional team-based training with the aim to develop patient safety trainers who can return to their home institutions and deliver patient safety training to frontline staff (Canadian Patient Safety Institute 2014). In 2012 alone, this program trained more than 200 participants from a variety of health professional backgrounds from across the country. Recently, PSEP has been adapted to meet the needs of postgraduate and undergraduate medical trainees. Named ASPIRE (Advancing Safety for Patients in Residency Education), the inaugural program included more than 50 attendees from Canada, the United States and the Netherlands (Royal College of Physicians and Surgeons of Canada 2014). While the impact of these programs is currently unknown, their emergence signals recognition at the national level for addressing this need as a key enabler to promote patient safety education.

However, even if we undertake a massive effort to create the capacity to deliver PS/QI training in the majority of health professions schools, there is still the possibility for trainees to "unlearn" what is taught formally if we fail to improve the safety culture where they train. Lucian Leape has long recognized this concern as a major unmet need in our health professions training and calls for action to abolish the culture of disrespect that has become the norm in our training environments (Lucian Leape Institute 2010; Leape et al. 2012). This will require the joint effort of healthcare institutions and their partner health professions schools and the bodies that govern their educational practices.

This is starting to happen. The best example is the Clinical Learning Environment Review program launched by the ACGME in the United States (Weiss et al. 2013). This program was established to provide training programs with a review of their clinical learning environment on six key domains: patient safety, quality improvement, supervision, care transitions, professionalism and duty-hour oversight/fatigue management. The early experience from the first year of the program indicates a "generalized lack of resident engagement in a 'systems-based practice' of medicine in the clinical environments in which they learn and provide clinical care" (Nasca et al. 2014). Much of the attention will ultimately rest on improving safety culture and interprofessionalism (Bagian et al. 2014), which one hopes would have broad implications for the training of all health professionals in these clinical learning environments. Eventually, if successful, this program will improve upon these critical elements within the training environment and produce high-quality, safe health professionals who can deliver high-quality, safe care.

Are we certain that focusing on the training environment and addressing the informal and hidden curricula will yield

the desired result with respect to PS/QI education? Clearly, the answer at this time is unknown. However, the evidence is mounting that this aspect of PS/QI education can no longer be ignored. Furthermore, there are examples where positive role modelling can lead to tangible improvements in safety practices among health professionals. A recent study found that when the first person who enters and exits a patient room on a patient care team performed hand hygiene, the remaining team members were much more likely to also perform hand hygiene (Haessler et al. 2012). Interestingly, this effect was observed even when a more junior member of the team was the first to enter the room. There is no reason to believe that students immersed in an environment where the culture lives and breathes quality and safety would not come out at the end of their training better equipped to provide safer, higher-quality care.

Conclusion

We have come a long way over the past decade and a half since To Err Is Human with respect to PS/QI health professions education. We know now more than we ever have about how best to teach PS/QI. We have competency frameworks that clearly define the key and enabling competencies that are required of all health professionals. Yet, there is still much to be done if we intend to continue on our journey of transformation towards a safer, higher-quality healthcare system. Much will rest on the coordinated effort between health professions schools and healthcare institutions to foster clinical learning environments that support implicitly what is explicitly taught, and build towards a culture that emphasizes the importance of providing safe, high-quality care. HQ

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