

Integrating Quality Improvement into the Oklahoma State University Rural Medical Track Curriculum

Krista Schumacher, PhD, Oklahoma State University Center for Health Sciences, Center for Rural Health

Alex Hall, OMS-IV, Oklahoma State University for Health Sciences, College of Osteopathic Medicine Rural Medical Track

Gretchan Moore, OMS-IV, Oklahoma State University for Health Sciences, College of Osteopathic Medicine Rural Medical Track

Shelby Willis, OMS-IV, Oklahoma State University for Health Sciences, College of Osteopathic Medicine Rural Medical Track

Abstract

Background

Physician residency program accreditation requires, among other components, engaging trainees in didactic and experiential education in health care quality improvement (QI). Medical school graduates who possess these skills will be more attractive to residency programs, making it imperative to integrate QI into the undergraduate medical education curriculum.

Methods

The Oklahoma State University Center for Rural Health (OSU-CRH), in collaboration with the OSU College of Osteopathic Medicine, piloted QI training for Rural Medical Track students during the 2018-19 academic year. Training consisted of 1) an online summer elective course using Institute for Healthcare Improvement (IHI) Open School modules and 2) an applied experience designing a QI project during rotation at a rural community-based clinic with mentoring from OSU-CRH researchers. Six students participated in either the summer didactic course or the clinic-based QI design process.

Results

Students planned a variety of projects in collaboration with rotation sites. For each site, projects stemmed from needs clinics had previously identified but never pursued for lack of training and resources. Following the training, scores on an IHI assessment of QI knowledge increased considerably over baseline for all students. Results from this first year of QI training are promising. Students indicated they had never been exposed to health care QI before the training and appreciated opportunities to apply QI knowledge to designing an improvement project.

Conclusion

The combination of no-cost IHI modules and mentoring during an applied experience represents an effective and inexpensive approach to integrating QI into the undergraduate medical curriculum.

Keywords: Quality improvement, medical education, rural health, residency programs

Introduction

“Practice-based learning and improvement” and “systems-based practice” are among core competencies mandated by the American Association of Colleges of Osteopathic Medicine¹ and by the Accreditation Council for Graduate Medical Education. These accrediting agencies require physician residency programs to enhance trainee skills in quality improvement (QI) activities and knowledge of how systems impact such efforts.²

QI is defined as “the combined and unceasing efforts of everyone – health care professionals, patients and their families, researchers, payers, planners and educators – to make the changes that will lead to better patient outcomes (health), better system performance (care) and better professional development (learning).”^{3(p2)}

Although medical schools have started integrating QI into the undergraduate medical curriculum, pedagogical methods have varied, leaving no definitive best practices.⁴ Promising approaches include online modules from the Institute for Healthcare Improvement (IHI) and engaging students in QI planning and implementation. For example, fourth-year medical students who completed training that included IHI modules and faculty-mentored QI projects demonstrated increased knowledge of QI principles and confidence applying QI skills compared to control students.⁵ Similar programs have yielded comparable results.^{6,7}

Based on a comprehensive review of 27 studies examining QI training effects for medical students and residents, Ogrinc et al.⁸ developed a framework for integrating didactic and experiential QI training into the curriculum. The framework relies on starting the process early in medical school and includes the use of faculty mentors to guide medical students throughout the QI process. The Oklahoma State University Center for Rural Health (OSU-CRH), in collaboration with the OSU College of Osteopathic Medicine (OSU-COM), piloted an approach during the 2018-19 academic year to train Rural Medical Track (RMT) students in QI.

Methodology

The RMT enrolls about 24 students per cohort, and all students are required to complete a research project and present findings in spring of the third year of medical school. Despite efforts to engage students in research early in the program, many students were starting the third year without a research project in mind. To better involve students in research throughout their education and integrate QI into the curriculum, the RMT implemented two new efforts: a new RMT elective course and a QI planning project.

The new course, CLME 8132 Early Research Experience, is a 2-credit-hour online elective offered the summer between the first and second years. Taught by CRH research staff, the course uses 13 IHI modules that lead to the *IHI Basic Certificate in Quality and Safety*. Lessons cover IHI’s Model for Improvement, including how to identify patient-safety issues and develop small tests of change. Students complete short assignments, such as writing aim statements, describing proposed tests of change, and identifying expected outcomes, that lay the foundation for QI projects. The course was offered for the first time in summer 2019.

The QI planning project was offered as a research option for third-year RMT students enrolled in the spring 2019 Community Clinic rotation. Five students opted to fulfill their research requirements with a QI project. Prior to starting their rotations, students completed five online QI learning modules through the IHI Open School. Mentoring was provided by an OSU-CRH researcher/QI mentor who holds the *IHI Basic Certificate in Quality and Safety*.

The IHI Open School offers no-cost online courses for health professionals and health professions students.⁹ In addition, the IHI offers fee-based experiential virtual courses and

provides resources for establishing IHI Open School chapters at educational institutions. Progress in Open School courses is tracked through an institutional subscription. During their rotations, students designed QI projects based on the needs of their rotation sites. Students met with their preceptors and clinic staff to identify areas for improvement and developed plan-do-study-act (PDSA) cycles to assess a proposed test of change. Students presented their QI designs via Zoom to the Community Clinic coordinator and OSU-CRH researcher/QI mentor at the end of the rotation. Projects consisted of a brief literature review of the problem to be addressed, aim statement, proposed test of change, project measures, cause-and-effect diagram, and potential stakeholders and barriers. Because this was a pilot to assess both student and clinic receptiveness to the project, students were not required to implement their QI designs.

Results

Both the elective course and the QI planning project demonstrated the feasibility and benefits of these approaches. A short IHI assessment showed considerable improvement in QI knowledge from pre to post training.

QI planning projects varied and addressed topics such as increasing hepatitis C and lung cancer screening rates for older adults, reducing high blood pressure among patients with cardiovascular disease and/or hypertension, improving the efficiency of ordering lab supplies, and increasing child vaccination rates.

Perhaps the most interesting finding from the QI planning projects was that for each of the five projects, plans stemmed from needs clinics had previously identified but for which they lacked the resources, time, and training to address. This demonstrates that the benefits of applying QI learning in the field extend beyond students by strengthening health care for rural Oklahomans.

Discussion

Students in the elective course and Community Clinic rotation learned about the role of QI in health care and how to apply IHI's Model for Improvement to testing changes. Students reported this was their first time being exposed to health care QI and appreciated the opportunity to apply their learning to designing a QI project. As one student commented when asked for feedback on the QI planning experience, *"I view clinics in a different capacity. Every system can be improved to some capacity...but until completing this training, I never truly appreciated it."*

Next steps include working with clinics to provide opportunities for students to carry out QI projects during month-long research rotations and integrating QI training into the curriculum at the OSU-COM at Cherokee Nation campus. Engaging students in QI early will equip them with practice transformation skills needed during residency and throughout their careers.

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