A Curriculum for Residents to Develop Successful Quality Improvement Projects

Claudia L. Reardon, MD; Shane Creado, MD; Roderick Hafer, PhD; Emily Howell-Little, MD; Frederick J.P. Langheim, MD, PhD; Elliot R. Lee, MD, PhD; Jennifer M. McDonald, MD; Michael J. Peterson, MD, PhD; Art Walaszek, MD

ABSTRACT

Background: Quality improvement (QI) education in residency training has become critical for numerous reasons, but little has been written about factors that lead to successful improvement projects within residency training.

Methods: A quality improvement curriculum for third-year psychiatry residents was developed. The percentage of resident projects that have been successfully implemented was calculated. Residents completed the QI Knowledge Application Tool adapted for psychiatry before and after the curriculum to assess knowledge and skills.

Results: Eighteen of 19 resident projects were successfully implemented. QI Knowledge Application Tool scores improved from 4.8 to 8.1 ($P = 0.0053$) after completion of the curriculum.

Conclusions: Residents are able to implement successful projects and to increase their knowledge and skills in quality improvement when given appropriate resources and incentives.

BACKGROUND

Quality improvement (QI) education in residency training has become critical for several reasons. For example, the Accreditation Council for Graduate Medical Education (ACGME) requires education in QI as a standard for accreditation of residency programs.[1] Residents may also benefit from QI training since maintenance of certification (MOC) requirements after residency now require completion of performance improvement modules.[2] Finally, residents may benefit from preparation for postresidency work in a health care environment that increasingly demands quality outcomes and is based on performance measures.

Few research reports describe residency training programs that result in resident QI projects that are truly successful and sustainably implemented. Most described residency QI curricula are time-limited (often in the form of a 4-week rotation), which may explain the low success rate of resident QI projects.[3] Lack of faculty expertise in QI is also a barrier to educating residents in it.[4] Curricula that combine didactic and experiential learning appear most effective.[5,6] Our objective was to develop a QI curriculum for psychiatry residents at the University of Wisconsin Hospital and Clinics that results in successful QI projects and increased resident QI knowledge and skills.

METHODS

Faculty Development

Faculty development in QI in the University of Wisconsin Department of Psychiatry was undertaken to ensure that faculty members were equipped to teach and mentor residents in QI. During the semester prior to the introduction of the QI curriculum, the Department declared 1 month "UW Psychiatry QI Month," featuring weekly Grand Rounds speakers on a variety of QI topics. This month culminated in a daylong weekend faculty education retreat, which included practical, hands-on workshops addressing QI educational topics as well as an informational talk given by the Wisconsin Medical Society chief medical officer on relevant QI issues within the state of Wisconsin. While UW Psychiatry QI Month was a 1-time event, new core faculty continue to receive training in QI, and current faculty receive ongoing training, via "QI Fact of the Week" emails authored by the QI course director, in which she highlights developments within the QI field, or showcases some aspect of the resident curriculum or projects on which residents are currently working.

• • •

Author Affiliations: Department of Psychiatry, University of Wisconsin School of Medicine and Public Health, Madison, Wis (Reardon, Hafer, Peterson, Walaszek); University of Wisconsin Hospital and Clinics, Madison, Wis (Creado, Howell-Little); SSM Health Dean Medical Group, Madison, Wis (Langheim); Mendota Mental Health Institute, Madison, Wis (Lee); William S. Middleton Memorial Veterans Hospital, Madison, Wis (McDonald).

Corresponding Author: Claudia L. Reardon, MD, University of Wisconsin School of Medicine and Public Health, Department of Psychiatry, 6001 Research Park Blvd, Madison, WI 53719; phone 608.263.6100; fax 608.262.9246; email clreardon@wisc.edu.

Box. Example of a Resident Quality Improvement Project

Project: Screening patients in a mental health setting for sleep-disordered breathing.

Aim Statement: By June 2015, 80% of University of Wisc. psychiatry residents will screen >60% of their outpatients for sleep disordered breathing on intake.

Rationale: Obstructive sleep apnea (OSA) is common, especially in psychiatric patients. OSA causes psychiatric symptoms. Screening is relatively easy.

Intervention: A screening tool (STOP BANG) was mailed to new patients with their intake packet (academic license obtained for its use). An electronic medical record (EMR) Smart Phrase was made available for use by all residents to document screening. Education of residents on relevance to psychiatry, the screening process, and referral information was undertaken. Residents were provided with an information card with a reminder of the Smart Phrase and sleep referral process.

Outcome: Increased screening by 31% within first 2 months of intervention, and significantly more referrals for sleep studies placed.

Sustainability: This process is now an ongoing part of orientation for residents new to this outpatient clinic. The EMR Smart Phrase is now available to all providers and is embedded into note templates.

Curriculum Development

QI curricula were developed that primarily involved educational experiences for the post-graduate year (PGY)-3 psychiatry residents. This experience included 15.5 hours of didactic seminars, which addressed QI topics including development of an aim statement, plan-do-check-act (PDCA) cycles, involvement of stakeholders in QI projects, principles of survey design for QI projects, patient safety, root cause analysis, MOC and performance in practice modules, and QI Journal Club. It also included 9 months of protected time (10% time per week) for QI project development. During their QI project time, which occurred concomitant with the didactic portion of the curriculum, residents worked in pairs to develop a QI project. They met with an assigned QI faculty supervisor 30 minutes per week, with whom they used an internally developed QI workbook (available upon request) to guide their project. Residents were asked to align their projects with existing quality initiatives, eg, those of our clinic or hospital system, the Choosing Wisely campaign,[7] or others. Content for this curriculum (the entirety of which is also available upon request) was developed based on knowledge gleaned from a number of local and statewide QI-related professional development events attended by the QI curriculum director.

Residents were required to present progress on their projects at numerous time points. This included a midpoint presentation to their classmates and the QI curriculum director, a presentation in the latter third of the year to residents from all classes and the residency training directors, and a presentation to the department's QI Committee at one of its monthly meetings. They presented final results of their projects at department grand rounds at the end of the academic year. In the latter venue, they also displayed a poster in A3 format (a standard format for illustrating QI projects) depicting the results of their projects. In addition to these presentations, the curriculum also included each resident participating in a hospital peer review meeting for psychiatry, and presenting a Morbidity and Mortality case (not one in which they were involved personally) to our department.

Curriculum Tie-In to Maintenance of Certification

As part of this curriculum, residents complete 1 American Board of Psychiatry and Neurology (ABPN) Improvement in Medical Practice module and present the results to their peers. Additionally, residents are informed that if they complete all of the QI curriculum requirements for the year, they may claim ABPN credit for completion of a Patient Safety Course. Such a course is a new requirement as of 2016 for ABPN diplomates that must be completed by the end of the first MOC block. ABPN has granted approval for completion of this requirement as part of residency training, even prior to residents actually becoming board certified.[8]

Data Analysis Methods

The University of Wisconsin Health Sciences Institutional Review Board granted exemption from full review for this study. Spanning the entire 8 years that this curriculum has existed, the percentage of resident projects completed that have been sustainably implemented was calculated. This was based on determination by the curriculum director as to how many projects were continuously incorporated into clinical practice 3 months after completion of the residents' protected time to work on them. The first 2 cohorts of residents participating in the curriculum (N = 16) completed the QI Knowledge Application Tool (QIKAT), adapted for psychiatry (available upon request), before and after the curriculum to assess the effectiveness of the curriculum in increasing resident QI knowledge and skills.[4]

RESULTS

Eighteen of 19 (95%) resident QI projects that have been developed since the start of this curriculum have been sustainably implemented. Example resident QI projects have included improving rates of screening patients in a mental health setting for sleep-disordered breathing (Box), improving resident satisfaction with information provided via paging from nursing staff and improving nursing satisfaction with resident timeliness in response to pages, improving the psychiatry consultation-liaison sign-out process, and increasing smoking cessation clinic referrals from an inpatient unit. Some resident QI projects have been published[9] or have received national attention and grant dollars[10] for their continuation after completion of the residents' rotation.

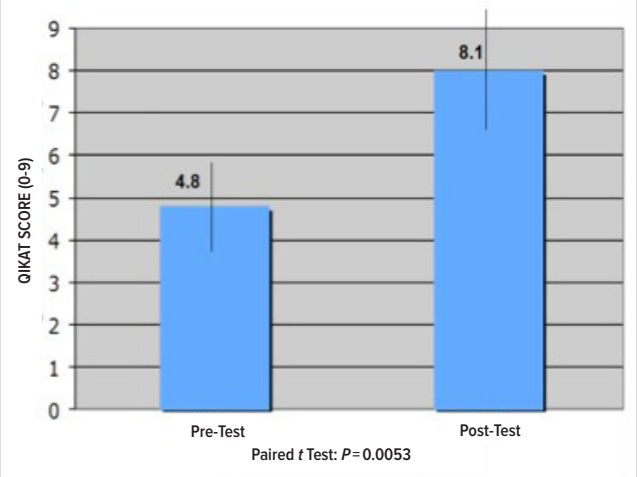
QIKAT scores improved from an average of 4.8 to 8.1 (maximum score 9) as measured by paired *t* test ($P = 0.0053$) (Figure).

DISCUSSION

This study demonstrates that psychiatry residents are able to implement successful QI projects, and to increase their knowledge and skills in QI, when given appropriate resources and incentives. It is important to try to determine which factors are important in the success of a program's residents in implementing QI projects, since many programs have reported difficulty with successful implementation of resident projects.[3] This conclusion was reached both through literature review of those factors associated with success (or lack thereof) in implementing and sustaining projects, as well as through incremental evolution of this curriculum over the 8 years it has been in existence, correlating with improved project quality.

Longitudinal duration of time dedicated to the quality improvement curriculum is likely the most important factor in the success of this program's residents in implementing QI projects. It takes time to research best practices or benchmarks; appropriately involve all relevant stakeholders; gather baseline, interim, and final data; and run multiple PDCA cycles. A 1-month rotation, reportedly common for QI rotations within residency programs,[3] will likely not allow careful completion of all of those steps. Resident protected time for QI project development also appears to be an important factor, so that projects are not completed in haste in small amounts of time once other clinical work is completed. Protected daytime hours often are needed for meetings with stakeholders and discussions with information technology staff who can provide clinical data. Provision of protected time conveys to the residents that QI work is important and worthy of significant attention. Additionally, we have found that automatically scheduled weekly meetings with faculty QI project supervisors, who help with selection of measurable projects that can realistically be completed during the course of the rotation, are critical. We initially did not schedule these meetings for residents and rather informed them that their supervisors were available for help with projects when needed. That approach did not lead to regular meetings between supervisors and residents. Residents also are kept accountable via several interim project presentations, such that they do not have the option of waiting until the end of the rotation to put together a project. Full participation in the QI curriculum is incentivized via offering of ABPN MOC credit in advance of residency graduation only for those residents who complete all required aspects of the curriculum. Project work is also incentivized via provision of opportunities for publication and presentation of the projects in numerous venues. For example, in requiring residents to print A3 posters depicting the results of their projects, we inform them that these posters would likely be acceptable for presentation at several local, regional, and even national QI or research symposia. Anecdotally, they have appreciated these opportunities, which require little additional work beyond the time they are already putting into the requirements for the QI curriculum. Finally, we developed rotation evaluations (available upon request) that reward success and sustainability of projects.

Figure. Effectiveness of Quality Improvement (QI) Curriculum in Increasing Resident Knowledge and Skills in QI as Measured by Precurriculum vs Postcurriculum QI Knowledge Application Tool (QIKAT) Scores, N=16



Strengths of this study include the 8-year longitudinal evolution of this QI curriculum leading to incremental improvements through application of QI methodologies to the curriculum itself, in turn resulting in improved project quality and sustainability. Limitations of this study include that it represents a single specialty at a single institution. However, quality improvement is a universal process that transcends specialty, and very few aspects of this curriculum would not be applicable to all specialties. The program described in this report is also fortunate to have many resources dedicated to its quality improvement curriculum, and that may not be feasible for all programs.

Future directions may include study of this type of curriculum within a broader audience of residents or fellows, impact of this curriculum on future incorporation of QI principles into post-residency work, and ultimate impact of this curriculum on quality of patient care.

Funding/Support: None declared.

Financial Disclosures: None declared.

REFERENCES

1. Common program requirements. Accreditation Council for Graduate Medical Education. http://www.acgme.org/Portals/0/PFAssets/ProgramRequirements/CPRs_07012016.pdf. Published July 1, 2016. Accessed March 14, 2017.

2. Maintenance of certification part IV improvement in medical practice. American Board of Medical Specialties. http://www.abms.org/media/84747/abms_memberboards requirementsproject_moc_partiv.pdf. Published July 15, 2016. Accessed March 14, 2017.

3. Patow CA, Karpovich K, Riesenberg LA, et al. Residents' engagement in quality improvement: a systematic review of the literature. *Acad Med.* 2009;84:1757-1764. doi:10.1097/ACM.0b013e3181bf53ab.

4. Reardon CL, Ogrinc G, Walaszek A. A didactic and experiential quality improvement curriculum for psychiatry residents. *J Grad Med Educ.* 2011;3(4):562-565. doi:10.4300/JGME-D-11-0008.1.

5. Armstrong G, Headrick L, Madigosky W, Ogrinc G. Designing education to improve care. *Jt Comm J Qual Patient Saf.* 2012;38(1):5-14.

6. Ogrinc G, Headrick LA, Morrison LJ, Foster T. Teaching and assessing resident competence in practice-based learning and improvement. *J Gen Intern Med.* 2004;19(5 Pt 2);496-500.

7. Choosing Wisely®. Promoting conversations between patients and clinicians. ABIM Foundation. http://www.choosingwisely.org. Updated 2017. Accessed March 15, 2017.

8. Patient safety activity. American Board of Psychiatry and Neurology. http://www.abpn.com/maintain-certification/moc-activity-requirements/patient-safety-course-effective-2016/. Published 2017. Accessed March 15, 2017.

9. Langheim FJ, Heiligenstein E. Evaluation of the timeliness of psychiatric consultations. *J Clin Med Res.* 2014;6(4):242-244. doi:10.14740/jocmr1809w.

10. Veterans Health Administration. Veterans tell their stories. U.S. Department of Veterans Affairs. https://www.va.gov/health/NewsFeatures/2014/March/Veterans-Tell-Their-Stories.asp. Published March 20, 2014. Accessed May 22, 2018.

advancing the art & science of medicine in the midwest

WMJ

WMJ (ISSN 1098-1861) is published through a collaboration between The Medical College of Wisconsin and The University of Wisconsin School of Medicine and Public Health. The mission of *WMJ* is to provide an opportunity to publish original research, case reports, review articles, and essays about current medical and public health issues.

Visit www.wmjonline.org to learn more.