**Quality Improvement and Psychiatric Training: A Review of the Literature, Description of Educational Approaches, and Future Directions**

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In psychiatry, graduating psychiatry residents and fellows will need to be equipped with knowledge around quality improvement (QI), especially if the trainees have an interest in becoming successful future healthcare leaders and hospital administrators (1). Since the initial publishing of *To Err is Human* and the Institute of Medicine’s Report of *Crossing the Quality Chasm*, healthcare regulatory agencies such as the Joint Commission and the Centers of Medicare and Medicaid have instituted multiple quality metrics for hospitals and healthcare organizations (2,3). As healthcare reform continues to tie reimbursement and fiscal compensation to quality of care metrics and value, practitioners will need to become adept at managing and implementing successful quality improvements initiatives within an existing healthcare delivery settings (4–6). As psychiatric trainees enter clinical or administrative roles outside of private practice, they will be tasked with understanding health systems, and have working knowledge around billing structures, hospital compliance, and quality metrics, all while delivering excellent clinical care. This article will begin by sharing about the educational guidelines around QI and patient safety (PS). It will then discuss about current QI resources and concepts, describe innovative educational approaches, and conclude with recommendations for future directions.

Residency education guidelines by the Accreditation Council for Graduate Medical Education (ACGME) have included QI as an important portion of training in the adult general psychiatry residency program (7). QI is included as a designated section within the Psychiatry Milestone Project. The guidelines detail a five-point grading system for formal participation in practice-based quality improvement using established and accepted methodologies. The guidelines specify two components, including didactic knowledge and participation on a QI project. In the footnote guidelines of the Milestone Project, there is information about accepted QI methodologies, in which residency program directors and trainees can find more information through the Institute of Healthcare Improvement (IHI) Open School, the World Health Organization (WHO) Patient Safety Curriculum, and the Department of Veterans Affairs (VA) Patient Safety Curriculum. These various curricula share concepts within healthcare QI and patient safety (PS) around the Plan-Do-Study-Act (PDSA) methodology, the Lean/Six-Sigma model, and management philosophies that improve efficiency, minimize human error, and encourage collaborative approach. Many of these QI concepts originated from management strategies in industries outside of medicine, and now are being applied to residency education. For instance, Lean/Six-Sigma models were first utilized within the car manufacturing industry and now have been widely used in healthcare management (8,9).

Similarly, other familiar concepts in the QI literature include the use of SMART goals, Root Cause Analyses (RCAs), the Swiss Cheese Model, and Checklists. These are all approaches that are utilized to prevent errors, study the source of these errors, and addressing through systems change the errors that do occur. For example, SMART is a mnemonic for specific, measurable, achievable, relevant, and time-bound. SMART goals are an approach to clearly define a specific target for any QI project, and was first developed for management and then adapted for healthcare performance improvement in a variety of settings (10,11). The use of RCAs has been widely reported and can be helpful in identifying specific errors that have occurred, and studying the underlying systems-level, group-level, and individual-level factors that led to a particular error, and allow members conducting the RCA to identify solutions for consideration and implementation (12,13). Similarly, the Swiss Cheese Model is an accident causation model that used to explore risks and prevent single, high-impact failures from occurring, such as a plane crash or wrong-sided surgery (14). The model presupposes that several different factors, such as organization, supervision, preconditions, and specific individual acts have to all align in order permit an accident or a major adverse event to occur (15,16). Finally, checklists widely been adopted in healthcare, especially in surgical subspecialties in order to reduce complexity and encourage standardization for procedures that would benefit from uniformity (17,18). Although some of these concepts are important within psychiatry, the practical application of quality improvement from idea to project formation to implementation to sustained change is frequently less described in the literature.

Within psychiatry, residency programs have started to document about curricular changes to teach about QI. For example, one U.S. residency program developed a curriculum that combines didactic and experiential components of QI for 2 cohorts of residents (totaling 16 residents), which showed positive improvement in a scale for learning about QI concepts known as the QI Knowledge Application Tool (QIKAT) (19). Another psychiatry residency has established a year-long curriculum to train residents on quality improvement initiatives and methodology for approaching change (20). The curriculum includes seven sessions with a conceptual portion consisting of three sessions (phase I) and a project implementation portion consisting of four sessions (phase II). The study utilized PDSA methodology and cycles to develop and implement projects. Although both papers shared resident improvement of content knowledge around QI, the authors did not share about the overall impact of the resident-led QI projects on patient care QI metrics nor the overall sustainability following the initiation of the QI projects.

Beyond curricular change, other educational approaches for QI initiatives within psychiatric training include utilizing peer review, maximizing the “resident-as-teacher” model, forming resident-faculty collaborations, specific targeted QI projects, and initiating a resident-led morbidity and mortality (M&M) conference. A paper on peer review details a model in which a workshop was developed to train residents around administrative leadership skills, facilitate identification of clinical site challenges, and capture peer input on a weekly basis for the duration of the project with the aim of improving managerial skills, decision-making, and communication (21). The “Resident-As-Teacher” method approach allows for senior psychiatry residents in their fourth year of training to receive a 10-session course around QI-related content, including PDSA, selecting SMART goals, development of objectives, and feedback. The results show that residents were able to write clear problem statements and use change cycles (22). In addition, a short report around resident-faculty collaboration shows some success with residents working alongside faculty in the form of “Action Teams” around projects of duty-hours and fatigue intervention, among others, to facilitate QI projects and systems-based practice (23). One author shares a specific, targeted, QI project that was led by residents to improve metabolic monitoring for atypical antipsychotics (24). In this study, residents learned about metabolic monitoring guidelines, peer-reviewed charts, conducted surveys, and significantly increased the overall frequency of metabolic monitoring of children taking atypical antipsychotics. Finally, a group reported a practical framework and approach in QI problem solving in psychiatric settings, which utilizes a morbidity and mortality (M&M)-style conference to share with interdisciplinary team about adverse psychiatric patient safety events. Some of the positive outcomes resulting from the conference include the development of a substance abuse consult team for patients with high utilization of services, creation of laminated safety cards describing safety protocols, and improved communication during patient transfers and handoffs (25).

In addition to curricular change and creative approaches within clinical training, another approach for QI expertise has been the development of chief resident roles. One report in the literature has described the establishment of a chief residency opportunity for internal medicine trainees interested in a more comprehensive exposure to quality improvement (26). In this report, the authors share the development of a chief resident role in quality and safety (CRQS) for an internal medicine resident at two different training programs, with one role in Indiana University School of Medicine coupled with funding from the VA hospital and other role in New-York Presbyterian/Weill Cornell Medical College coupled with funding from a vacant fellowship position. Both the roles emphasized four main components, including clinical activities, educational activities, scholarship production, and leadership development QI and PS. Some important elements of the CRQS role included the responsibility for coordinating key stakeholder PS conferences, presenting at conferences, and developing leadership skills around stakeholder engagement, negotiation, diplomacy, and management. Another program described a QI chief resident role within the San Antonio Uniformed Services Health Education Consortium, as part of the residency programs within the Department of Defense. The chief residents were internal medicine residents who were involved in M&M conferences, committee coordination, curricular development, and mock RCAs (27).

In recent years, the Veterans Affairs Hospital has expanded its chief resident role in QI/PS to include several “core” specialties, including internal medicine, psychiatry, and general surgery (28). Through this VA fellowship program, there are 84 CRQS funded positions across 57 VA Medical Centers. These roles are non-accredited, and are filled as post-residency jobs. In this program, there are several advantages, including the “CRQS Boot Camp,” and monthly interactive conference calls and mentorship alongside a QI/PS project, that can be both regional or national. However, a disadvantage is that the positions are post-residency, and add an additional year outside of a traditional residency role. The VA program is the only one of its kind to describe a chief resident role where a licensed psychiatrist can apply and be involved in patient safety/quality.

In the 2017-2018 academic year, Yale New Haven Psychiatric Hospital funded its first ever psychiatric chief resident role in QI and administration. A similar role has not been described in the literature, and is the first of its kind to be a chief residency role prior to graduation from psychiatric residency training. The role involves a 50% clinical role, with 50% administrative and QI related education and project work. The clinical role includes service in a variety of clinical settings, including the inpatient units and intensive outpatient programs on weekly to month-long rotational basis. In addition, there is mentorship supervision by the associate chief of psychiatry and medical director on a weekly basis. The role also includes participation on hospital-wide committees for QI/PS, and the opportunity for career growth through attendance at national conferences involving QI and administration. The chief resident was sponsored to attend the National Association of Behavioral Healthcare (NABH, previously known as the National Association of Psychiatric Health Systems) Meeting in Washington, D.C. and meet with leading thinkers and executives involved with guiding the development of inpatient psychiatric quality metrics and shaping implementation within large behavioral healthcare systems. In addition, using the academic and administrative time, the chief resident was able to submit a workshop on QI, which will be presented at the national American Psychiatric Association meeting. The funding for the position initially utilized monies from an unfilled senior chief resident role in the inpatient psychiatry setting. However, because the psychiatric hospital administrative leadership were able to see value in the role, the new chief resident role will likely remain a permanent addition to the senior resident opportunities for future trainees.

In summary, although some educational reports have been described for training psychiatry residents in QI, the literature around psychiatric QI training is still very limited. However, more literature does exist in fields outside of psychiatry, such as in internal medicine, surgery, and pediatrics, which have established programs and numerous publications on QI projects, initiatives, and curricula, and can be used as frameworks or guides for the future development of psychiatric programs or opportunities in QI (29–33). Some of the challenges for residency program directors, trainees, psychiatrists interested in a career in QI and administration include the lack of clarity around academic promotion, lack of mentorship, lack of resource and senior leadership support around QI activities and initiatives. Despite these challenges, however, there is an urgency to trainee residents/fellows on QI/PS. Regulatory reform, quality metrics and compliance, and movement toward high quality, value-based payment necessitate that the next generation of psychiatry trainees be knowledgeable about the frameworks for QI/PS, both conceptually and practically. QI/PS, alongside knowledge about healthcare systems, should be a future focus of research and a regular part of clinical practice as residents are tasked with managing teams, leading collaborative services, and serving as role models within a changing healthcare landscape (34).

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