Learning by Doing: Practical Strategies to Integrate Resident Education and Quality Improvement Initiatives

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The Accreditation Council for Graduate Medical Education (ACGME) established the Clinical Learning Environment Review (CLER) program in 2012 to provide graduate medical education (GME) and executive leaders with formative feedback aimed at improving patient care.[1] Two areas of focus for the CLER program were quality improvement (QI) and patient safety (PS). Recommendations for integrating QI into residency training included education, engaging residents in QI activities, and designing interprofessional activities aligned with clinical site priorities.[2]

Despite these recommendations, several recent publications have highlighted the challenges with integrating QI initiatives and resident education. Residents often experience QI as isolated projects without an interdisciplinary team and separate from patient care activities. The improvements achieved by these projects are often not sustained and rarely align with their clinical site's priorities.[3] A recent study, titled "It Feels Like a Lot of Extra Work," noted that residents are eager to improve care for patients but lack a shared understanding of the purposes of QI and do not have dedicated time for QI.[4] Other studies have found that residents are in need of foundational QI/PS skills, faculty role models, and data support.[5]

In this perspective, we combine our experiences as a resident, medical educators, and QI experts at 3 institutions along with relevant literature to provide recommendations and examples (TABLE) to effectively integrate residents into QI initiatives. Employing meaningful QI education based in experiential learning, our framework simultaneously improves resident knowledge of QI and the quality of patient care.

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Identifying QI Initiatives

Embrace Residents' Frontline Perspectives

Residents have a frontline role in patient care and are uniquely integrated in settings that provide a rich environment for identifying QI opportunities. Residents' practices and perspectives may be less entrenched, and residents often present fresh ideas for improvement.[17] Despite residents' insights, their workflow challenges are not often prioritized by institutions.[18] GME and health system leadership should embrace and allow residents to "treat the system"[17] through involvement in QI activities such as process mapping the current state, solution generating of what "ideal" would look like, and ensuring that residents are included in outcomes feedback of QI initiatives.

Identify QI Initiatives That Mutually Benefit Resident Workflow and Patient Care

Current models of QI education are generally not well integrated with the practical flow of clinical care.[10] Preventing the perception of added work and making QI fit in with day-to-day patient care is key for resident engagement and project sustainability. Adding time for QI education and projects appears daunting and impractical when there is already such limited face-to-face patient contact.[19] Giving residents a role in project selection, focusing initiatives on streamlining clinical care processes, and integrating QI into daily work may lead to feelings of resident empowerment[20] and future application of QI concepts in practice after training.[21] Examples include improving note templates to streamline documentation and implementing 2-way text communication for team members.

Understand the Clinical Learning Environment

Not only do residents feel the burden of indirect patient care duties, but they also operate within

TABLE
Recommendations to Integrate Residents Into Quality Improvement With Project Examples

Recommendation	Implementation Examples
Embrace the resident's frontline perspective	▪ Create a process map on discharge medication reconciliation "current state" and brainstorm what "ideal" would look like ▪ Remove overutilized, low-value lab orders from ordersets[6] ▪ Reduce delayed first-start surgery cases[7]
Identify initiatives that mutually benefit resident workflow and patient care	▪ Assign case managers to resident teams rather than to units ▪ Streamline documentation with improved note templates[8] ▪ Create pharmacy-driven vancomycin dosing protocol ▪ Implement 2-way text communication for physicians, nurses, pharmacists, and case managers
Understand the resident's clinical learning environment	▪ Align team-, unit-, or system-based QI initiatives with residents depending on clinical interest and rotation[5] ▪ Implement monthly protected QI time during ambulatory schedule ▪ Implement weekly "QI rounds" during hospital rotations for leadership to discuss unit QI initiatives with residents
Align QI initiatives with GME and health system priorities	▪ Implement a resident safety council to provide opportunities for resident leaders in QI ▪ Encourage residents to participate in existing health system QI/PS committee ▪ Ensure institutional and program support of QI fellows or QI chief residents[9] ▪ Recognize and reward resident QI efforts, by hospital leadership attending an annual QI/PS symposium, and consider group financial incentives for residents[10]
Simplify and standardize resident education in QI methods	▪ Simplify QI methodology by teaching the overlap among QI methods[11] and standardizing QI/PS approaches such as goal setting, choosing measures, conducting rapid cycle improvement, data collection and display, and event reporting ▪ Use interactive QI/PS curriculum tools such as SafetyQuest[12] ▪ Conduct resident led morbidity and mortality conferences to identify systems-based opportunities to improve care delivery[13]
Support QI/PS faculty development	▪ Identify faculty interested in QI/PS and provide support such as protected time, CME/MOC credit, faculty promotion, career pathway[14] ▪ Create GME QI/PS institutional leadership roles[9,15] ▪ Encourage faculty participation in institutional or external QI programs such as Institute for Healthcare Improvement, Association of American Medical Colleges Teaching for Quality,[16] Society of Hospital Medicine Quality and Safety Educators Academy
Encourage interdisciplinary and cross-institution collaboration	▪ Create a resident safety council for resident representation and collaboration among residency programs ▪ Encourage scholarly presentations at institutional (Stanford Resident/Fellow Quality Improvement & Safety Symposium), regional, and national conferences

Abbreviations: QI, quality improvement; GME, graduate medical education; QI/PS, quality improvement/patient safety; CME, continuing medical education; MOC, Maintenance of Certification.

frequently changing schedules and environments. Because this lack of clinical continuity may limit commitment to identify or pursue QI opportunities, it is necessary to find ways to balance QI initiatives with barriers created by clinical rotations, patient volume, and residency workload. While no single best approach or evidence-based model exists, adapting to the clinical learning environment should take into account duration and location of resident rotations. For example, improving VTE prophylaxis rates can be done in several ways, including a short 2- to 3-week team-based initiative during a general medicine rotation, a 2- to 4-month unit-based initiative involving multiple rotating teams, or a long-term system-based hospital-wide initiative.[5] Other ways to integrate QI education with the clinical environment include developing routine QI habits, such as standard work and root cause problem-solving around adverse events.

Align Health System and GME Priorities

GME and associated health systems must partner and share a common patient-centered alignment with resident QI efforts. While both are likely to tout shared goals of resident education and QI efforts, translation into practice and accountability remain inconsistent.[15] Lack of alignment between the 2 groups can lead to inadequate sponsors or leaders for resident QI projects and impede project

sustainability, reducing the likelihood of overall project success and dampening resident enthusiasm for future QI work.[10] Involving residents adds clinical relevance to health system initiatives while providing resources and support for QI opportunities identified by residents. Specific GME or health system leadership roles for faculty can help align priorities and make initiatives more sustainable for residents by removing barriers, creating QI curricula, and assisting with faculty development.[15] For example, involving health system QI leadership representatives in resident quality and safety councils and providing support for positions such as QI fellows or QI chief residents may assist with alignment.

Supporting QI/PS Educational Infrastructure

Simplify and Standardize Resident Education in QI Methods

Residency represents a crucial time for determining the level of future engagement in QI/PS work. Trainees have varying career goals with regard to QI involvement, from a basic understanding to a strong focus in QI/PS postgraduation.[5] Common pitfalls of resident-led projects include vague problem characterization, improper data collection, quick fix solutions, and failure to refine the project or intervention.[17] Teaching basic methodologies, such as process mapping, goal setting, project measures, and plan-do-study-act cycles, as essential curriculum elements through local didactics or inclusion of preexisting resources from organizations like the Institute for Healthcare Improvement will strengthen resident knowledge and projects. Combining these basic methodologies with a formal reporting structure, such as the SQUIRE guidelines or Wong and Sullivan's framework[22] for QI publishing, will help with translation of these activities into scholarship, an often underexploited opportunity of QI projects.

Support Faculty Development

Teaching QI requires experienced knowledgeable faculty to help build these core skill sets. Unfortunately, residency programs often lack faculty role models with QI knowledge and skills. Similar to residents, faculty may have difficulty finding dedicated time to commit to QI endeavors or continuing education.[5,15] Health system and GME leadership can support faculty development in several ways, such as involving GME faculty on health system QI/PS committees, establishing formal QI/PS roles in academic departments, writing specific promotion criteria that reward QI/PS work, and offering Maintenance of Certification/continuing medical education (MOC/CME) credit for QI/PS learning.

Encourage Interdisciplinary and Cross-Institution Collaboration

Collaboration is an important component of QI projects. Successful QI initiatives are typically interdisciplinary, as clinical care is provided by a variety of different specialties and providers. Projects should strive to incorporate representation from different levels of training including students, residents, and faculty, as well as across programs, through venues such as quality and safety councils, to gain different perspectives and share workloads. While leadership and change management are more institution-specific, QI initiatives should be shared in a variety of spaces, including health system, regional, and national conferences. These forums inspire ideas and methodology and allow for collaboration across institutions. Leveraging technology to document, track, and share project ideas at the GME and health system levels may promote collaboration among departments and prevent duplication of efforts.

Conclusions

Although resident QI education has expanded since the ACGME CLER recommendations in 2012, more work needs to be done to improve resident integration with QI initiatives.[1] Health system and GME leadership must align frontline resident perspectives with the clinical learning environment while enhancing faculty development and supporting interdisciplinary QI efforts. This approach will help engage residents in meaningful and sustainable initiatives while providing practical QI skills that will be used during and after training.

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