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# CORR Curriculum — Orthopaedic Education

# *CORR*® Curriculum — Orthopaedic Education: Quality Improvement in Resident Education

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## Introduction

The Accreditation Council for Graduate Medical Education (ACGME) requires residents to demonstrate proficiency in quality improvement (QI) [5]. By the time of graduation, residents are expected to participate in a QI or patient-safety program or incorporate QI and patient safety into their clinical practice [4]. With these requirements firmly in place, residency programs are emphasizing resident education and participation in QI processes. But what do we really know about QI? How will residency programs incorporate QI education into their curricula to best prepare residents for the postgraduation world?

The US Department of Health and Human Services defines QI as "systematic and continuous actions that lead to measurable improvement in healthcare services and the health status of targeted patient groups" [7]. This broad definition does little to nail down QI. Diving deeper, we find that regulatory agencies like the Joint Commission and the Accreditation Council for Graduate Medical Education (ACGME) routinely monitor teaching hospitals based on the quality and safety of the care they provide, patient-care outcomes, and most recently, the "clinical learning environment" [8]. These agencies mandate and oversee physician competence, individual practice patterns, and hospital proficiency in monitoring, reporting, and improving quality metrics related to patient care.

Patients can now search for a hospital's compliance with patient-care guidelines through organizations such as The Leapfrog Group and Hospital Compare [1]. In the next few years, the Centers for Medicare & Medicaid Services' use of QI will be one factor used in determining successful care with bundled payments, and it appears that reimbursement will also be tied to QI measures. This makes QI education within residency paramount to produce successfully trained doctors.

Participation in QI practices is not limited to resident training. If you are a practicing, board-certified physician pursuing recertification in the United States, you must demonstrate involvement in the QI process as well [1]. The recently implemented Maintenance of Certification (MOC) and hospital-credentialing processes include requirements for participation in QI activities.

*Note from the Editor-in-Chief: We are pleased to offer the next installment of* CORR® Curriculum—Orthopaedic Education*, a quarterly column. The goal of this column is to focus on the mechanics of resident education. We welcome reader feedback on all of our columns and articles; please send your comments to eic@clinorthop.org.*

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## What Are The Guidelines?

The ACGME recently initiated the Milestones Project, which is "a framework for the assessment of the development of the resident physician in key dimensions of the elements of physician competency in a specialty or subspecialty" [3, 4]. Milestones include targets for resident performance organized by the six core competencies (patient care, medical knowledge, practice-based learning and improvement, interprofessional and communication skills, professionalism, and systems-based practice). While the areas of patient care and medical knowledge differ between specialties, the other four milestone competencies apply to all specialties with similar performance expectations, albeit with different milestone assessment items. The orthopaedic surgery systems-based practice milestones include QI skills (Fig. 1) that each resident should develop prior to graduation.

The ACGME collects residency program data during the ACGME annual resident/faculty surveys, Program Director and Designated Institutional Official ACGME annual cupdates, and ACGME Clinical Learning Environment interviews (conducted approximately every 2 years). The plethora of requirements and multiple data collection points can lead to a number of challenges for a program director who must interpret the expectations of sponsoring institutions, residents, the program itself, and the timing of required actions.

## Resident Engagement in QI

Both the GME-sponsoring institutions and residency program administrators bear responsibility for resident participation in meaningful QI. Resident engagement requirements for QI programs are outlined in both the ACGME Institutional [3] and Common Program Requirements [2] and include expectations for access to data, development of QI skills, opportunity for interprofessional QI teamwork, involvement in detecting system errors and implementing solutions, and active participation in clinical QI and patient safety programs.

Engagement in system and program-level QI projects may seem onerous and time consuming for residents who are already experiencing an overloaded curriculum. In addition to typical didactic sessions, restricted duty hours, and clinical education, there is limited additional time for QI meetings, literature review, data gathering, implementation of a change, and tracking outcomes. Without additional resources, it may be burdensome for every resident to truly meet the requirements outlined by the ACGME.

Considering the volume of accreditation requirements that program directors face (Next Accreditation

| Resident will work in interprofessional teams to enhance patient safety and quality care – Systems-based Practice | | | | |
|---|---|---|---|---|
| Level 1 | Level 2 | Level 3 | Level 4 | Level 5 |
| • Recognizes importance of complete and timely documentation in teamwork and patient safety | • Uses checklists and briefings to prevent adverse events in health care | • Participates in quality improvement or patient safety program and/or project | • Maintains team situational awareness and promote "speaking up" with concerns<br>• Incorporates clinical quality improvement and patient safety into clinical practice | • Develops and publishes quality improvement project results<br>• Leads local or regional quality improvement project |

**Fig. 1** The orthopaedic surgery systems-based practice milestones include QI skills that each resident should develop prior to graduation (Published with permission from the ACGME).

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System compliance, program oversight, monitoring, and reporting in preparation for the ACGME Self-Study and new Residency Review Committee annual review process) it is essential to employ QI curricula and programs that maximize learning outcomes, while also minimizing resident and program administration burden or duplicity.

## Education

The purpose of QI education is to imprint practices that surgeons can use throughout his or her career. It is clear that residents and faculty should be provided education in QI, have guided access to clinical data regarding their own performance, initiate changes, and followup to determine if those changes resulted in improvements.

Most institutions have standardized education (online modules, formal didactics, or formalized institutional patient safety and/or QI programs) that cover QI and patient safety for both faculty and residents. Providing this introduction to QI as part of the PGY1 intern surgical skills curriculum exposes residents to the process, expectations, and perhaps a multidisciplinary team approach. Additionally, in the era of decreasing time and finances, residency programs should consider consolidating its resources. By doing so, a common framework and institutional culture can be initiated at the beginning of graduate medical education.

Healthcare organizations often use data-driven QI models (Six Sigma, Plan-Do-Study-Act, Focus-Analyze-Develop-Execute) to help guide their QI activities and to improve patient care. These models all incorporate a similar framework—they identify a problem, determine the cause, implement changes, and then analyze the results [6]. Residency programs should educate residents and faculty on these QI data-driven processes, as well as provide opportunities to access clinical data.

## Developing QI Practice Habits

The ACGME requirements for QI can be subject to interpretation. Take the language in the Level 4 (graduating) milestone in Fig. 1: "Incorporates clinical QI and patient safety into clinical practice." Does this mean an institutional project, which does not necessarily affect the resident's own clinical practice, could be used? Or, should it apply to the resident's own practice, combined with other disciplines if possible? Both areas are probably acceptable. Ideally, a resident will design, develop, implement, and evaluate the outcomes of a QI project specific to his or her own practice by the time of graduation, as well as take part in system-level institutional QI programs. This would fulfill the Level 4 (graduating) milestone of incorporating QI into a resident's practice while simultaneously ensuring that residents understand both "bottom up" (resident- and program-initiated) and "top down" (institution-initiated) approaches to QI [6].

It may be practical to require residents to perform activities similar to what they will need to do to fulfill the MOC for the American Board of Orthopaedic Surgeons (ABOS). To this end, residents should collect their own cases, review their results, and make specific changes for improvement. Then, after a period to time, restudy the same problem(s) to see if the postulated improvements took place, making adjustments if necessary. This review could be incorporated into a yearly oral exam for individual residents. Residents would benefit from following up on patients for longer than a normal rotation length. They can also learn how to review their own clinical practice as expected for their MOC. Residents would find value in experiencing oral examinations for their own cases, since they will be expected to do so during the ABOS Part 2 Certifying Examination.

While the program described above does not necessarily fulfill all of the guidelines, it would potentially provide a needed benefit for resident

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education by developing practice habits that future orthopaedic surgeons will incorporate postgraduation, both as part of their practices and for MOC.

## Goals

Engaging in QI projects as a part of a multidisciplinary team is one of the goals of the ACGME requirements. Ideally, resident members would be part of the QI planning, implementation, and evaluation teams to ensure both engagement in, and understanding of, the QI process.

The goal of orthopaedic surgery programs' approach to resident engagement in QI is to adequately prepare the resident for board certification, MOC activities, and postgraduation responsibilities as part of an active member of the hospital staff. Utilizing both "bottom-up" and "top-down" approaches increases the likelihood that residents will understand the range of QI activities required for true clinical practice evaluation and improvement. Leveraging already existing program and system-level frameworks to ensure compliance can minimize the burden for program administrators and residents, fulfill ACGME requirements, and provide practical experience for postgraduation life.

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